Policy relevance and the valence of interests: policy learning in the liberalization of the railways and the electricity sector in Belgium

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INTRODUCTION

The liberalization policy process has embodied, in a great part, the political action of the European Union in many utilities for the last decades. It is particularly the case in network industries such as the telecoms, the energy sector, or the railways. Opening up the delivery of goods and services to competition is the main objective of the liberalization policy. However, the effectiveness and the efficacy of this policy are much discussed. On the one hand, many related decisions are not very good implemented (effectiveness). For example, the independence of the agencies responsible for market regulation is still not perfect in many EU countries. On the other hand, many effects expected from the liberalization policy are still not commonly acknowledged (efficacy). For example, it is not clearly observable that this policy has decreased the price of goods and services, in liberalized industries[1].

The feasibility and quality of policy change in a sector largely depend upon the attitude of policymakers with regard to the new political project. In the case of the European liberalization policy process, national policymakers make decisions to implement the policy designed at the European level. There is still much debate, however, about the appropriateness of the liberalization policy among policymakers within network industries. Most importantly, the adhesion of these policymakers to the main principles of the liberalization process has sometimes disfavourably evolved during the last decade (as it is the case in the Belgian electricity sector, for example).

Why do policymakers' beliefs not evolve in a common direction, when faced with a common exogenous change like the European liberalization policy process? One way to answer this question is to focus on the interests of the individual policymakers confronted with the exogenous shock. *The objective of this paper is to assess the influence of policymakers' interests on the evolution of their beliefs with regard to policies*. Policy learning designates the relatively enduring alterations of policymakers' beliefs regarding policies, following new information and experience. Beliefs include constructs such as knowledge, values, intentions, or preferences. This paper contributes to the literature on policy learning by clarifying some individual, psychological conditions conducive to policy learning following exogenous events.

Much scholarly attention has been given to the role of interests as a determinant of political attitudes. When significant, this connection has been found to be positive. In this paper, "policy relevance" covers the consequences of a policy on the interests of a policymaker: are his interests positively, negatively, or un-influenced by the implementation of this policy? Hence, according to a first hypothesis, *policy learning should be positively related to policy relevance*. Positive consequences of the liberalization policy for an actor's interests should push him to become more favourable to this policy. Many studies, however, argue that the connection between interests and political attitudes has still to be demonstrated because the research results about the significance of this connection are inconclusive. I suggest that an examination of the valence of interests could improve our understanding of the relation between policy relevance policy learning. The valence characterizes the emotional quality of an idea that makes it more or less attractive. The valence of interests is high for people who attach a lot of importance to their material well-being in their daily

life. If, on the contrary, their interests are not important for them, the valence of their interests is low. If there is some internal consistency among the attitudes of an individual, *the valence of interests should positively moderate the relation between policy relevance and policy learning*. According to this second hypothesis, the relation between policy relevance and policy learning should be weak for people with a low valence of interests: their attitude toward a policy should not be influenced by the consequences of this policy on their interests. By contrast, the relation between policy relevance and policy learning should be stronger for people with a higher valence of interests.

To test these two hypotheses, 413 policymakers were surveyed about their attitude with regard to the liberalization policy process in two Belgian network industries: the railways and the electricity sector. They were asked to compare their beliefs regarding the European liberalization policy at the beginning of the process with their current beliefs. Their personal interests and their organizational interests were then considered.

This paper contributes to the literature on political attitudes by considering the influence of interests on attitude *change* and by introducing the concept of valence. It also improves the measurement of interests by adopting subjective approach of interests: rather than an indirect measure of interests deduced by the researcher from the standing of the respondent, the study is based on the subjective answers of the respondents about the relevance of the liberalization policy for their interests, as well as about the valence of their interests.

The rest of the paper proceeds as follows. In the theoretical part, policy learning is discussed and the two hypotheses are introduced with respect to existing literature about policy learning and political attitudes. The second part explains how data are measured. In the third part, methodological apparatus is presented. The results are presented and discussed in a fourth part.

THEORETICAL BACKGROUND

Policy learning

In cognitive psychology, learning may be defined as the re-organization of cognitive, emotional, and social constructs which change the long-term potential behavior of the learning entity, as a result of new information and experience. The learning entity may be individual or collective (e.g., an organization). Constructs can change through two processes: a process of interaction with the social, cultural, and material environment, and an internal process of acquisition and elaboration, connecting new impulses with existing constructs. Finally, several levels are most often distinguished to characterize the impact of learning on constructs, with entry levels for small changes and higher-order levels for deeper changes (Illeris, 2002, 2003).

Policy learning comes from cognitive psychology (Harguindéguy, 2007) and affects constructs related to policies[2]. Deutsch (1963) is widely recognized as the first political scientist theorizing the influence of learning on policy change. He points to the role of policy feedback in enhancing the

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[2] In this paper, I focus on theories specifically related to policy learning. Of course, many other theories are concerned with the role of ideas in policy change. For a review, see Sabatier and Schlager (2000), Campbell (2002), or Béland and Cox (2011). In addition, policies may change as a result of other types of learning processes, like organizational learning (see Busenberg, 2001).

governmental "learning capacity". Following Deutsch, Heclo (1974, pp. 305-306) shows that "political learning" alters the behavior of policymakers and results in policy change: "politics finds it sources not only in power but also in uncertainty – men collectively wondering what to do … Governments not only "power"… they also puzzle. Policy making is a form of collective puzzlement on society's behalf; it entails both deciding and knowing… Much political interaction has constituted a process of social learning expressed through policy". Hence, policy learning is strongly related to policy change. Policy learning is most often the matter of people active in a policy domain, holding a position in which they are able to influence the course of policy decisions. However, because policy learning theories result from the will to account for the influence of the civil society on the course of policymaking, most of these theories have a wide acceptation of policymakers, including state officials but also any other active stakeholders and interest groups influencing the course of policy decisions[3]. In addition, policy learning theories recognize the role of public opinion changes as a possible stimulus for these policymakers to learn. Finally, while many approaches theorize the link between learning and change in one policy area, policy learning also plays a role in policy transfer through geographical and functional areas. It is the case when a policy is learned from one country in another country, through a process of "lesson-drawing" (Rose, 1991). It is also case when a policy of one governmental level is transferred into another, nested level (Sabatier, 1993).

One fine conceptualization of policy learning has been developed by Sabatier and colleagues (Sabatier & Jenkins-Smith, 1999, 1993; Sabatier & Weible, 2007)[4]. According to their Advocacy Coalition Framework (ACF), policies evolve in "subsystems", defined as a "a set of actors who are involved in dealing with a policy problem such as air pollution control, mental health, or energy" (Sabatier, 1993). The beliefs of subsystem members are organized into three levels according to their topics and scope. At the first level, deep core beliefs are ontological and normative axioms related to the nature of man, the relative priority of basic values, as well as the basic criteria of redistributive justice (topics). They have a potential influence on the behavior of actors in any policy area (scope). Deep core beliefs are very difficult to change; they are akin to a religious conversion. At the second level, policy core beliefs apply to virtually all aspects of policy within one subsystem (scope). They are the more concrete translation of fundamental axioms into precepts related to the priorities in the policy subsystem. They identify groups or other entities whose the welfare is of greatest concern in the subsystem. Deep core beliefs also relate to the seriousness and causes of the policy problem, the distribution of authority between market and government, the priority accorded to various policy instruments, the ability of society to resolve the problem, or the responsibility of public versus experts (topics). At the third level, secondary beliefs are instrumental decisions and information searches necessary to implement policy core beliefs. They apply to a part of the subsystem only (scope). They relate to the seriousness of specific aspects of the problem in specific locales, as well as to administrative rules, budgetary allocations, disposition of cases, statutory interpretation, statutory revision, and information regarding performance of specific programs or institutions (topics).

In the ACF, policy learning involves "relatively enduring alterations of thought or behavioral intentions which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectivities, following new information and experiences" (Jenkins-Smith &

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[3] Etheredge (1981), focalized on learning by state officials within formal institutions, is a notable exception.

[4] Other well-known conceptualizations of policy learning include: Etheredge (1981), May (1992), and Hall (1993). Bennett and Howlett (1992), as well as Kemp and Weehuizen (2005) propose two good reviews of policy learning approaches.

Sabatier, 1993, p. 42). Shortly, policy learning may be defined as an enduring change of policy beliefs. Information and experiences that involve learning result from events and interactions among policymakers occurring within and outside the subsystem (Sabatier & Jenkins-Smith, 1999, pp. 133-134).

Most existing studies use policy learning as an independent variable explaining policy change or other events within subsystems (for example, Cheng, Danks, & Allred, 2011). The classical questions raised by these studies about policy learning include: "who learns, what is learned, and with what effects?" (Bennett & Howlett, 1992). Being part of the "how and why does one learn?" questions, the psychological conditions of learning are most often associated with cognitive psychology, where the concept comes from. These conditions are, however, particular to field of political science in the case of the policy learning. As a result, a missing stone exists in our comprehension of the policy process. In the ACF, for example, more attention could be given to the processes by which beliefs systems are constructed over time (Sabatier & Jenkins-Smith, 1999). In addition, collective learning by "coalitions" of actors sharing similar beliefs has been well documented by ACF studies but has still to be connected with individual learning by each policymaker (Hann, 1995; Dudley, 2007). Finally, questions remain about the role of policy learning in linking external events to policy change within subsystems (Weible, Sabatier, & McQueen, 2009). How learning occurs within the policy process, after an external event, remains unclear (Radaelli, 1997, p. 168; Dudley, 2007). External events include perturbations such as the changing socioeconomic conditions and technology, changes in public opinion, changes of systemic governing coalitions, as well as the decisions and impacts from other subsystems.

From the point of view of the policymakers, the implementation of the European liberalization policy process may be considered as an external event from outside their subsystem. The policy transfer from the European towards Belgian subsystems is only partially authoritarian. Of course, Members State have to comply with European rules. The European liberalization policy, however, is legally modeled by European directives, which allows a certain degree of interpretation by national authorities. It creates a variable distance between the "paradigmatic" acceptation of the European law and its effective implementation in each country. The suppleness also occurs at the level of the time-limit for transposing directives in national legislation, which may be respected more or less strictly. Hence, policy learning on the part of subsystem members remains decisive for policy change to occur.

Interests and policy learning

The objective of this paper is to examine the relation between policymakers' interests and the evolution of their policy beliefs. This objective is part of the effort to answer several questions about the individual factors of policy learning, taken as a dependent variable. Scholar attention to the psychology of policy learning could also improve our understanding of the conditions in which, following external events, policymakers learn and change policies. Faced with a common external perturbation in their subsystem's environment, why do the beliefs of subsystem members not evolve in the same direction? Of course, many contextual factors can influence policy learning. For example, the beliefs of policymakers belonging to an organization negatively affected by the external event will probably evolve more negatively than in organizations to which the external event gives new

opportunities. This does not exhaust the explanation, however, given that beliefs may evolve quite differently from a policymaker to another, in the same organization of a same subsystem[5].

Interests belong to the psychological factors susceptible to influence policy learning. In political science, the examination of the relation between the interests and political attitudes is part of a well-documented research tradition (Green, 1988; Lau & Heldman, 2009; Margalit, 2013; Martinussen, 2008; Sears & Funk, 1991; Sears, Lau, Tyler, & Allen, 1980; Sudit, 1988). Most often, these studies analyze interests at the individual level and, for conceptual reasons, limit their scope to the material aspects. In this sense, personal interests relate to the personal, material well-being of an individual (or that of his immediate family). Outside this conceptual limit, the distinction between interests and other constructs (such as beliefs) can quickly become blurred. The findings of this research tradition are very inconclusive about the significance level of the connection between personal interests and political attitudes. When significant, however, the relation is positive: people tend to be more favourable to a political object (a policy, the result of an election, or any other event) when their interests are positively influenced by this object. I suggest that, if significant, this relation should also be observed between the evolution of policymakers' beliefs and the consequences of the liberalization policy process on their interests (hypothesis 1). In this research, personal interests as well as organizational interests will be considered. Indeed, most studies testing the connection between interests and political attitudes focus on personal interests, whereas organizational interests can influence policy learning differently. By analogy with personal interests, organizational interests are defined with respect to the material prosperity of an organization.

The relation between interests and policy learning has no reason to be similar from one individual to another. Cox and Béland (2013) introduce the concept of "valence" in policy studies, which they define as "the emotional quality of an idea that makes it more or less attractive". According to its value on a continuum from aversiveness to attractiveness, valence influences political attitudes and behaviors. For example, the valence of ideas explains the motivation and support for policies which they are associated with. Creating such an association may be a tool that policy entrepreneurs use to open a window of opportunity (Cox & Béland, 2013). The motivational factor of ideas in the support for policies was already demonstrated in the case of ideology (Frederico, 2007; Frederico & Schneider, 2007). Given this, I suggest that the strength of the relation between interests and policy learning should vary according to the valence of interests (hypothesis 2).

This paper contributes to the literature on political attitudes by considering policy learning, that is an attitudinal change, rather an attitude at one point in time. Many existing studies investigate the role of interests on policy attitudes at one point in time. The role played by interests in attitudinal change is far less documented[6]. Policy learning, however, allows a subtler approach of attitudes. For example, let's take two policymakers with a similar value on interests-related variables.

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[5] At the theoretical level, to my knowledge, there is no psychological reason to think that pre-existing beliefs can influence policy learning. At the methodological level, however, the "ceiling effect" suggests that the beliefs of a policymaker very favourable to one policy before an external event will probably less positively evolve than the beliefs of a policymaker less favourable to the policy. Indeed, on a scale, people very favourable to one policy have less available margin than other people, to be even more favourable to this policy after the external event. In another part of my research, however, I show that this effect is not much important and does certainly not exhaust the explanation of policy learning at the individual level. The same holds for the opposite, "floor" effect.

[6] Exceptions include studies based on panel surveys, such as Margalit (2013).

Ten years ago, their beliefs with regard to a policy were similar. After a perturbation exogenous to their subsystem, their policy beliefs have, in a similar extent, evolved more favourably than the beliefs of the other policymakers. One survey conducted on the attitude of these policymakers before or after the exogenous change would not capture any relation between interests and political attitudes based. By contrast, a survey conducted on policy learning could suggest that the common value of their interests may explain the common evolution of their policy beliefs.

Finally, this paper addresses an empirical challenge by adopting a subjective measure of policy relevance. Most studies examining the connection between interests and political attitudes use indirect measures of policy relevance. In this case, respondents' interests are deduced by the researcher from their economic or political standing. Then, the influence of interests is detected if the political attitude of the respondents is consistent with the interests deduced by the researcher. However, the indirect approximation of policy relevance can be hazardous and can result in biased results if the researcher makes wrong deductions[7]. This bias could partly explain the inconclusive results about the connection between interests and political attitudes. Crano (1997a, 1997b) "suggested that the survey literature underestimated the link between self-interest and attitudes because individuals' self-interests were assumed on the basis of proxy factors (e.g., that one's children would be bused) rather than assessed using more direct subjective measures (e.g., Would it be bad for you personally if your children were bused?)" (Darke & Chaiken, 2005, p. 865). The empirical part of this research is based on a subjective evaluation of policy relevance, by the respondents. Of course, a subjective evaluation of policy relevance is subject to the respondent's interpretation of the situation. Their bounded rationality, in addition to other psychological predispositions, can lead them to overestimate or underestimate the impacts of the policy on their interests (Simon, 1985; Lau & Heldman, 2009). But the measurement errors resulting from these problems are supposed to be normally distributed (i.e. unbiased). Hence, the drawbacks of the subjective approach of interests (possible random errors) are much smaller than the drawbacks of the indirect approach (possible non-random bias).

DATA MEASUREMENT

Policy learning is defined as an enduring change of policy beliefs. Belief change is a first condition for policy learning to occur. As an operational measure of belief change, this research focuses on the changes in the policy core policy preferences of policymakers. Policy core policy preferences are the beliefs of policymakers with concern to the core aspects of the policy, those that are "subsystem-wide in scope, are "highly salient", and "have been a major source of cleavage for some time" (Sabatier & Jenkins-Smith, 1999, pp. 133-134). Policy core policy preferences are "normative beliefs that project an image of how the policy subsystem ought to be, provide the vision that guides coalition strategic behavior, and helps unite allies and divide opponents" (Sabatier & Weible, 2007, p. 195). Hence, policy core policy preferences are the most decisive beliefs with regard to policy change.

What are the core aspects of the liberalization policy process? The main objective of the liberalization policy is the introduction of competition in the delivery of goods (electricity) and

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[7] I show this in another part of my research.

services (railway transportation). To ensure the enforcement of this objective, the other core aspects of the liberalization policy include the reduction of the market power of the public organization historically holding a monopole in the sector (the "incumbent"). The operations related the management of infrastructures must be held by an independent infrastructure manager, ensuring an impartial access to the network for the incumbent and for new entrants in the market. Finally, the enforcement of regulation should be held by several bodies independent from any other stakeholder (the new entrants, but also the incumbent and the State). The research compares the support of respondents for each of those aspects between the beginning of the liberalization process and today[8]. In the end, policy learning is operationalized as the sum of those variations. The scale of the variable is comprised between -48 (for the respondents whose the beliefs have evolved very disfavourably with respect to the liberalization policy) to +48 (for the respondents whose the beliefs have evolved very favourably). Policy learning equals 0 when their beliefs have not changed.

As a second conceptual condition for learning to occur, belief change must be enduring. Beliefs must not only have evolved, they also must be stabilized at the two compared moments. One way to evaluate the stability of beliefs is to ask respondents with their degree of certainty in their beliefs. Beliefs of which individuals are convinced are more likely to be stable (Holland, Verplanken, & van Knippenberg, 2003; Krosnick & Petty, 1995). Attitude certainty is a meta-attitudinal measure of attitude strength. Attitude strength is usually defined "in terms of its consequences" (Holland et al., 2003, p. 594). Among other things, strong attitudes are persistent over time and resistant to change (Krosnick & Petty, 1995). By contrast, uncertain beliefs are less likely to be stable. Bassili (1996, p. 641) contrasts "operative" and "meta-attitudinal" strength measures. Meta-attitudinal strength measures are based on "respondents' impressions of their own attitudes", in contrast with those measures based on the judgment of the attitude as "operative" strength measures. For example, "attitude accessibility is usually measured by the response time with which an attitude is indicated and is assumed to reflect the strength of the association between an object and its evaluation" (Holland et al., 2003, p. 595). Attitude certainty is a meta-attitudinal measure of attitude strength "based on the impression of the confidence with which an attitude is held" (Holland et al., 2003, p. 595). Respondents were asked to evaluate their degree of conviction in the beliefs that they reported to have at the beginning of the liberalization and today. On a 5-point scale ranging from "completely unconvinced" [-2] to "completely convinced" [+2], those respondents having reported a [-2] with respect to their starting beliefs and a [-2] or a [-1] with respect to their current beliefs were dismissed from the analyses because they had reported too "volatile" beliefs for considering that policy learning have actually occurred.

Policy relevance corresponds to the perceived impacts of the liberalization policy process on policymakers' interests. Policy relevance is positive when policymakers judge that the liberalization policy has had positive consequences on their (material) interests; it is negative when they judge that the policy has had negative consequences on their interests. With regard to personal interests, the respondents were asked to assess the influence of the liberalization policy on: (1) their salary, (2) their professional opportunities, and (3) their material working environment. With regard to organizational interests, they were asked to assess the influence of the liberalization policy on (1) the success and on (2) the finances of their organization. 5-point Likert scales ranging from [-2] to [+2]

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[8] In both sectors, the first European decision involving implementation measures related to the liberalization policy within Member States corresponds to the beginning of the policy process. In the railways, it occurred in 1991 with the directive 91/440/EEC. In the electricity, it occurred in 1996 with the directive 96/9/CE.

were used. They allowed respondents to answer whether or not they agree with the positive impact of the liberalization policy on their material interests (for example, "the liberalization policy has had positive impacts on my salary": [-2] Strongly disagree; [-1] "disagree"; [0] "nor agree nor disagree"; [+1] "Agree"; [+2] "Strongly agree"). Personal policy relevance and organizational policy relevance are composite constructs equal to the sum of the scores reported by the respondent on the indicators operationalizing those two variables. The scale of personal policy relevance ranges from -6 for the respondents who think that the policy has had very negative consequences on their personal interests, to +6 for the respondents who think that the policy has had very positive consequences. A total score of 0 means that the respondent does not see any consequence of the liberalization policy on his personal interests. The scale of organizational policy relevance is from -4 for the respondents who think that the policy has had very negative consequences on their organizational interests, to +4 for the respondents who think that the policy has had very positive consequences. A total score o 0 means that the respondent does not see any consequence of the liberalization on his organizational interests.

The *valence of interests* was likewise measured with 5-point Likert scales asking respondents about their general support for the same aspects of their interests, in their daily life (for example, "I attach importance to the amount of salary I receive": [-2] Strongly disagree; [-1] "disagree"; [0] "nor agree nor disagree"; [+1] "Agree"; [+2] "Strongly agree"). The valence of personal interests and the valence of organizational interests are composite constructs equal to the sum of scores reported by the respondent on the indicators operationalizing these two variables. The scale of the valence of personal interests varies from -6 for the respondents who say that their personal interests are not a priority, to +6 for the respondents who attach a lot of importance to their personal interests. A total score of 0 means that the respondent is indifferent to this issue. The scale of the valence of organizational interests varies from -4 for the respondents who answer that their organizational interests are not a priority, to +4 for the respondents who attach a lot of importance to their organizational interests. A total score of 0 means that the respondent is indifferent to this issue.

METHOD

The data of this research result from the electronic questionnaires sent back between April 2012 and November 2012 by 413 policymakers surveyed in the Belgian railways and electricity sector. The response rate is 36%[9]. Each group of policymakers they come from may be considered as an autonomous policy subsystem, in ACF terms. Policymakers are the members of the top and middle management of several types of organizations within these two subsystems. The penetration rate of the survey may not be calculated but its optimization results from a preliminary documentary analysis and a campaign of 28 semi-structured interviews during which all the organizations belonging to each sector have been identified by way of a snowball sampling method[10].

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[9] 192 questionnaires come from respondents in the railways and 207 questionnaires come from respondents in the electricity sector.

[10] This method "yields a study sample through referrals made among people who share or know of others who possess some characteristics that are of research interest" (Biernacki & Waldorf, 1981, p. 141; see also Atkinson & Flint, 2001; Noy, 2008; Sadler, Lee, Lim, & Fullerton, 2010). Concretely, "informants refer the researcher to other informants, who are contacted by the researcher and then refer her or him to yet other informants, and so on. Hence the evolving "snowball"

Contextual factors may stimulate or dampen policy learning. Policymakers are nested within organizations and within one of the two subsystems (railways/electricity). In each subsystem, 6 organizations types were distinguished: public administration, regulator, infrastructure manager, incumbent, new entrant, and interest group. As a result of the liberalization policy and according to its type, each organization is expected to play a certain role in the liberalized network industry. This role has a strong impact on the opportunities and constraints of organizations. For example, the liberalization process imposed constraints to the incumbents whereas it gave new powers to the infrastructure managers. Given this, the liberalization policy is supposed to have an average impact on the respondents in each type of organization. The policy history of the liberalization process has also differed in each sector. This results in a different, average impact of liberalization on policymakers' beliefs in the two subsystems. These organization-level and subsystem-level impacts on policy learning are not related to the influence psychological characteristics that this research focuses on, at the individual level.

To account for the impact of the sector and the organization type on policymakers' beliefs, the relation between interests and policy learning is analyzed in the context of two-level linear regression models. Individual respondents are situated at the first of the two levels. The whole variation of policy learning due to organization-level and subsystem-level factors is summarized at the second level. Indeed, as each of the 6 organization types is nested within one (and only one) subsystem, a second level composed of 12 subjects captures all the variation due to contextual factors, as it is illustrated in the Figure 1.

[Here Figure 1]

This research has an "effects-of-causes" approach (Mahoney & Goertz, 2006; Goertz & Mahoney, 2012). The objective of this research is to provide robust findings about the effects of interests on learning for the "average" policymaker. In other words, it is the objective to maximize the chance that the results of the research fit with a new policymaker randomly taken in the "population" of policymakers (rather than to describe as precisely as possible several particular policymakers). In a model, the "residual" $\hat{\varepsilon}_i$ measures, for each observation i, the distance between the value of the dependent variable predicted by the estimated model and the value actually observed in the sample. Studentized residuals are a standardized version of residuals. It is commonly admitted that those observations having studentized residuals outside the interval [-3;+3] are really extreme with respect to a regression model (Pardoe, 2012). To increase the robustness of this research's findings, those respondents with a studentized residual outside [-3;+3] in the null model of policy learning were dismissed from subsequent analyses[11]. In addition, the hierarchical models are

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effect, captured in a metaphor that touches on the central quality of this sampling procedure: its accumulative (diachronic and dynamic) dimension" (Noy, 2008, p. 330).

[11] In multilevel analysis, "null" (or "intercept-only") models are those models which do not include any explanatory variable and try to predict the dependent variable on the only basis of its average value within each higher-level subject (in this research, within each of the 12 organization types – 6 by subsystem).

estimated with the restricted maximum likelihood estimation method, which is more realistic with respect to the significance and effect of explanatory variables than the simple maximum likelihood estimation method (Hox, 2002).

The significance of explanatory variables will be assessed with the p-value of t tests. All the variables introduced in the models are standardized, in such a way that the coefficient of explanatory variables may be considered as a measure of the size of their effect on the dependent variable. In the context of multilevel analysis and with respect to Cohen (1988, 1992)'s typology of effect sizes, a 0.10 coefficient means that the explanatory variable has a small effect size, 0.31 a medium effect size, and 0.58 a large effect size (Hox, 2002).

Fit statistics of the overall models will include a test of their likelihood with respect to the null model (Hox, 2002). They will also include a measure of how well observed outcomes are replicated by the model at the individual level (individual-level coefficient of determination, R^2_1). This coefficient of determination is a pseudo-R^2_1 estimated with the Snijders and Bosker (1999)'s algorithm and should be interpreted as the proportional reduction in mean squared prediction error (rather than the explained proportion of variance), at the individual level. But it has the same properties as classical coefficients of determination in non-multilevel contexts[12]. Finally, in well-fitted regression model, only 5% of the observations should have a studentized residual outside the interval [-2.5;2.5] (Fox, 2008). How much this proportion is far from 5% in the estimated models will be an additional indication of the quality of their fit.

RESULTS

Policy learning theories put forward that policymakers' beliefs are, most often, quite stable. The research sample confirms this finding: on average, on a scale ranging from -48 to +48, policy learning equals -1.4486 with a standard deviation of 8.0636. That policy learning is on average negative also reflects the negative evolution of policymakers' beliefs with regard to the liberalization policy process, since its beginning. The story differs from one sector to another, however: the average value of policy learning is positive in the railways (0.3958, with standard deviation = 6.1440) whereas it is negative in the electricity sector (-3.1594, with standard deviation = 9.1931). The internal consistency of policy learning is acceptable in the electricity sector (α_c = 0.72) and a little more questionable in the railways (α_c = 0.61)[13]. However, no indicator of the variable does seem to be substantially unrelated to the others: interitem correlations are homogeneous and similar to each other. A weaker α_c may indicate that respondents are cognitively complex and evaluate each aspect of the liberalization policy process as a different aspect of a same, overall process. This is quite expectable on the part of well-informed policy elites. The Figure 2 shows the probability density function of policy learning in the whole sample.

[Here Figure 2]

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[12] A special algorithm is required to isolate the level-1 coefficient of determination, in a multilevel model.

[13] About internal consistency measurement and rules of thumb, see Cronbach (1951) as well as George and Mallery (2003).

The average value of personal policy relevance is -0.8959 in the sample, with a standard deviation of 2.6715. The average value of organizational policy relevance is -0.5472 with a standard deviation of 2.0291. Hence, globally, respondents judge that their experience of the liberalization was negative for their personal material interests and for the interests of their organization. The histograms of these variables appear in the Figure 3 and the Figure 4. The average value of the valence of personal interests is 2.3244 in the sample, with a standard deviation of 1.9648. The average value of the valence of organizational interests is 2.8523, with a standard deviation of 1.1191. Hence, generally speaking, respondents report that they are rather sensitive to their interests[14]. The histograms of these variables appear in the Figure 5 and the Figure 6.

[Here Figures 3 to 6]

The null model of policy learning informs us that the 11% of the variation of this variable is situated at the second level, i.e. where the organization and the sector of the respondent influence his beliefs. This is substantial and justifies the use of multilevel analysis to isolate individual factors from contextual ones. The hypotheses of the research are tested with the models presented in the Table 1 (hypotheses 1 and 2 in the case of personal interests) and the Table 2 (the same hypotheses 1 and 2 but in the case of organizational interests).

[Here Table 1 and Table 2]

Policy learning and policy relevance (hypothesis 1)

The first hypothesis of the research suggests that the relation between policy relevance and policy learning should be positive.

With regard to personal interests, the Model 1 shows that policy relevance is very significantly related to policy learning (p-value < 0.0001) with a small but substantial effect size (0.15). The fit statistics of this model are very good. The increase of the pseudo-R^2_1 with respect to the null model is substantial (+0.03) and the likelihood ratio test is very significant (p-value < 0.0001). Finally, the proportion of studentized residuals outside [-2.5;+2.5] is acceptable (6.95%).

With regard to organizational interests, the Model 5 is even more convincing. Organizational policy relevance is very significantly related to policy learning (p-value < 0.0001) with a small to medium effect size (0.21). The increase of the pseudo-R^2_1 due to this sole variable is very important

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[14] The value is particularly high for the valence of organizational interests. It should be noted that respondents generally responded to the survey questionnaire on their computer at their workplace, which could have an influence on these descriptive statistics. For example, even if confidentiality and anonymity were guaranteed, at the workplace it is perhaps a little more difficult for the respondent to fill that he or she gives no importance to the interests of his organization.

(+0.08) and the likelihood ratio test is significant too (p-value <0.0001). Finally, the proportion of studentized residuals outside [-2.5;+2.5] is still acceptable (6.88%).

The Model 1 and the Model 5 support the hypothesis 1 that there is a positive relation between policy relevance and policy learning. In other words, the evolution of policymakers' beliefs is positively related to their perception of the consequences of the liberalization policy on their interests.

Policy learning and the valence of interests (no hypothesis)

No research hypothesis has been formulated about the relation between the valence of interests and policy learning; they were supposed to be independent. While the Model 6 fits with this expectation with respect to the valence of organizational interests, the Model 2 provides some contradictory evidence with respect to the valence of personal interests. In the model 2, the test of the variable has a p-value of 0.0599, which may be considered as a first, consistent indication of significance. The size of its effect on policy learning is small but substantial, and negative (-0.08): policymakers who attach more importance to their personal interests tend to report a less positive change of their beliefs with respect to the liberalization policy process.

The analysis of the relation between policy learning and the valence of personal interests should deserve additional research because the fit statistics of the Model 2 are not satisfactory. The estimator of the R^2_1 did not achieve to find a substantial difference between this model and the null model (+0.0025) and the likelihood ratio test is significant but only at 0.06[15]. The proportion of studentized residuals outside [-2.5;+2.5] remains acceptable (6.95%).

The combined influence of valence and relevance on policy learning (hypothesis 2)

The second hypothesis of the research suggested that policy relevance should exert a greater influence on policy learning when the valence of interests is more important. Statistically speaking, this means that one should find a significant interaction term between the valence of interests and policy relevance, in a model of policy learning.

I begin with a model including policy relevance and the valence of interests, without interaction term. In the case of personal interests, the comparison of the Model 3 with the Model 1 and the Model 2 shows that the average effect of both explanatory variables on policy learning, when controlled for the effect of each other, does not change a lot. They also keep the same significance level. The results are similar in the case of organizational interests when comparing the Model 7 with the Model 5 and the Model 6.

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[15] About the weak value of the pseudo R^2_1: the negative relation between the valence of interests and policy learning is mostly due to the respondents with a high value on the explanatory variable (4,5,6), whereas this relation exists but is less strong among respondents with a lowest a value of valence. But, as suggested by the Figure 5, the valence of personal interests is lower than 4 for 90% of the respondents: this explains why the introduction of the valence does not increase the pseudo R^2_1 very much.

To test the second hypothesis of the research, the Model 4 and the Model 8 including an interaction term between both explanatory variables are respectively confronted with the Model 3 and the Model 7, which do not include the interaction term. These interactive models do not support the second hypothesis of the research. On the one hand, the test of the interaction term is insignificant in both cases. On the other hand, the likelihood ratio test is unsignificant. The variation of the pseudo-R^2_1 is quasi-null, which means that the models do not improve the explanation of policy learning by introducing the interaction term. In addition, the proportion of studentized residuals outside [-2.5;+2.5] becomes quite important in the case of the Model 8.

Best models

The Figures 7 to 13 present the graphical predictions and diagnostics of the models with the best fit statistics in each table. In the case of personal interests, the Model 3 has the best fit statistics (Figures 7 to 10). As two explanatory variables are introduced in this model, the Figure 7 presents a first plot of policy learning on personal policy relevance in which the positive relation between both variables appears clearly. The Figure 8 shows a second plot of policy learning on the valence of personal interests. The negative relation between both variables is also visible, even if it is less strong. The graphical diagnostics in the Figures 9 and 10 suggest that the model 3 is well specified[16].

[Here Figures 7 to 10]

In the case of organizational interests, the model 5 has the best fit statistics and only includes one explanatory variable: the organizational policy relevance. The plot of policy learning on organizational policy relevance, in the Figure 11, shows the positive relation between both variables. The graphical diagnostics in the Figures 12 and 13 suggest that the model is well specified[17].

[Here Figures 11 to 13]

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[16] The Figure 9 shows the distribution of residuals for the Model 3. The test of skewness is insignificant, which confirms that the distribution is symmetrical. But the Shapiro-Wilk test rejects the normality of the overall distribution because of a problem of kurtosis: the central peak is too high and sharp with respect to a normal distribution. However, moving toward the distribution of residuals within each organization type, the Shapiro-wilk test does still rejects normality for only two out of the 12 organization types, those in which there are the fewest respondents (<15). The plot of residuals on predicted values (Figure 10) does not suggest any strong problem of heteroskedasticity. In addition, a Levene's test applied to residuals does not reject the homogeneity of their variance between organization types.

[17] The Figure 12 shows the distribution of residuals for the Model 5. Again, the test of skewness is good but there is a problem of kurtosis that causes the Shapiro-Wilk test to reject normality. However, moving toward the distribution of residuals within each organization type, normality is rejected only in two cases, again those in which there are the fewest respondents. The plot of residuals on predicted values in the Figure 13 does not suggest any strong problem of heteroskedasticity. In addition, the Levene's test applied to residuals does not reject the homogeneity of their variance between organization types.

CONCLUSION

The findings of existing studies are inconclusive about the significance of the connection between (material) interests and political attitudes. This research has raised this issue in the case of policymakers – whose the behavior is decisive for policy change – and with regard to policy learning by examining the following question: do the beliefs of policymakers evolve according to the consequences of a policy on their personal and organizational interests?

In addition, the paper has put forward three propositions to improve the analysis of the influence of interests. At the conceptual level, it has distinguished the role played by personal interests and by organizational interests. At the theoretical level, it has tested the classical hypothesis that interests can prompt or dampen policy learning because of the consequences involved by policies (policy relevance). But it has also examined the effect of the valence of interests on policy learning and on the relation between policy relevance and policy learning. Finally, at the methodological level, the research is based on a direct and subjective measure of policy relevance rather than an indirect measure constructed by the researcher and based on the institutional, organizational, or socio-economic standing of the respondent. The data have been modeled in a multilevel context, to isolate the psychological effects of interests at the individual level from the contextual variables due the organizational context or the sector-specific policy history.

According to the *first research hypothesis*, one should find a positive relation between policy relevance and policy learning: the policy beliefs of policymakers perceiving more positive consequences of the policy on their interests should evolve more favourably than the policy beliefs of other respondents. This hypothesis has been confirmed in the case of personal interests and in the case of organizational interests. The *second research hypothesis* had suggested the existence of a positive interaction between the valence of interests and policy relevance: belief change would be more influenced by policy relevance among the policymakers who give more importance to their interests than among the other policymakers. This hypothesis was not supported by the results of the analyses. This means that the internal attitudinal coherence of individuals should not be overestimated, even in the case of elites surveyed about the policies that they daily implement. The results, however, have suggested that a relation that had not been hypothesized could actually exist between the valence of personal interests and policy learning: the beliefs of those policymakers who give more important to their interests have evolved less positively with respect to the liberalization policy than the beliefs of the other policymakers. The *model* that best predicts policy learning in the case of personal interests includes personal policy relevance and the valence of personal interests, without interaction term. The model that best predicts policy learning in the case of organizational interests only includes organizational policy relevance.

This paper has contributed to the ACF literature by answering some questions about the link between external perturbations and policy change within subsystems. It has also contributed to the literature on policy learning at large by considering some of its individual, psychological factors. The exact role played by the valence of interests remains not completely clarified and could deserve more attention in future research.

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TABLES

Table 1 : Models of policy learning related to personal interests

Dependent variable: **POLICY LEARNING**	Model 1 against null Model	Model 2 against null Model	Model 3 against null Model	Model 4 Against Model 3
	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:				
Personal policy relevance	0.1459***		0.1414***	*0.1508****
	(0.0470)		(0.0436)	*(0.0478)*
Valence of personal interests		-0.0830*	-0.0802*	*-0.0919**
		(0.0440)	(0.0436)	*(0.0446)*
Interaction term				-0.0531
				(0.0441)
intercept	0.1003	0.1186	0.1060	0.1038
	(0.0863)	(0.1126)	(0.1034)	(0.1039)
Random part:				
Sector-Organization level: σ^2_{u0}	0.0471	0.0968*	0.0777*	0.0787*
	(0.0374)	(0.0691)	(0.0894)	(0.0585)
Individual level (residuals): σ^2_e	0.035**	0.7241***	0.7117***	0.7107***
	(0.0514)	(0.0535)	(0.0526)	(0.0526)
Fit statistics:				
Pseudo R^2 at the individual level	0.0775	0.0466	0.0814	0.0846
	(+0.0334)	(+0.0025)	(+0.0373)	(+0.0032)
-2 full log likelihood	985.7	982.1	972.8	971.3
	(-9.5441)	(-3.5381)	(-12.8959)	(-1.4638)
P-value of the likelihood ratio test	0.0020	0.0600	0.0016	0.2263
% studentized residuals outside [-2;+2]	6.95%	6.95%	6.18%	6.70%
Number of cases	388	388	388	388

Standard coefficients (b) are computed with a restricted maximum likelihood estimation method. Standard errors are within brackets. ∗ $p < 0.10$ ∗$p < 0.05$, ∗∗∗ $p < 0.01$. The pseudo R^2 is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, Education, Language, Organizational level) and political predispositions to policy learning (Political interest, Satisfaction with democracy, Dependence upon State services).

Table 2 : Models of policy learning related to organizational interests

Dependent variable: **POLICY LEARNING**	Model 5 against null Model	Model 6 against null Model	Model 7 against null Model	Model 8 Against Model 7
	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:				
Organizational policy relevance	0.2117*** (0.0478)		0.2109*** (0.0479)	*0.1997**** *(0.0493)*
Valence of organizational interests		-0.02254 (0.04653)	-0.0167 (0.0454)	*-0.0200* *(0.0455)*
Interaction term				0.0486 (0.0469)
intercept	0.0746 (0.0813)	0.1202 (0.1092)	0.0755 (0.0825)	0.0760 (0.0799)
Random part:				
Sector-Organization level: σ^2_{u0}	0.0392 (0.0359)	0.0894 (0.0647)	0.0408 (0.0370)	0.0369 (0.0349)
Individual level (residuals): σ^2_e	0.7003*** (0.0513)	0.7252*** (0.0532)	0.7015*** (0.0515)	0.7023*** (0.0516)
Fit statistics:				
Pseudo R^2 at the individual level	0.1114 (+0.0771)	0.0341 (-0.0002)	0.1110 (+0.0767)	0.1159 (+0.0049)
-2 full log likelihood	972.7 (-19.7365)	992.3 (-0.2213)	972.6 (-19.8301)	971.4 (-1.2444)
P-value of the likelihood ratio test	<0.0001	0.6380	<0.0001	0.2646
% studentized residuals outside [-2;+2]	6.88%	6.88%	7.14%	7.40%
Number of cases	392	392	392	392

Standard coefficients (b) are computed with a restricted maximum likelihood estimation method. Standard errors are within brackets. ∗ p < 0.10 ∗p < 0.05, ∗∗∗ p < 0.01. The pseudo R^2 is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, Education, Language, Organizational level) and political predispositions to policy learning (Political interest, Satisfaction with democracy, Dependence upon State services).

FIGURES

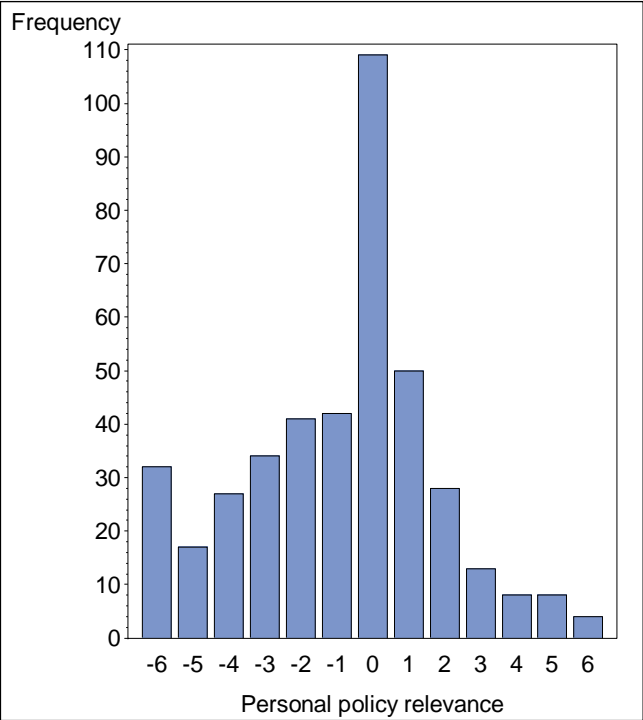**Figure 1 : Subjects of the second level of hierarchical models in this research**
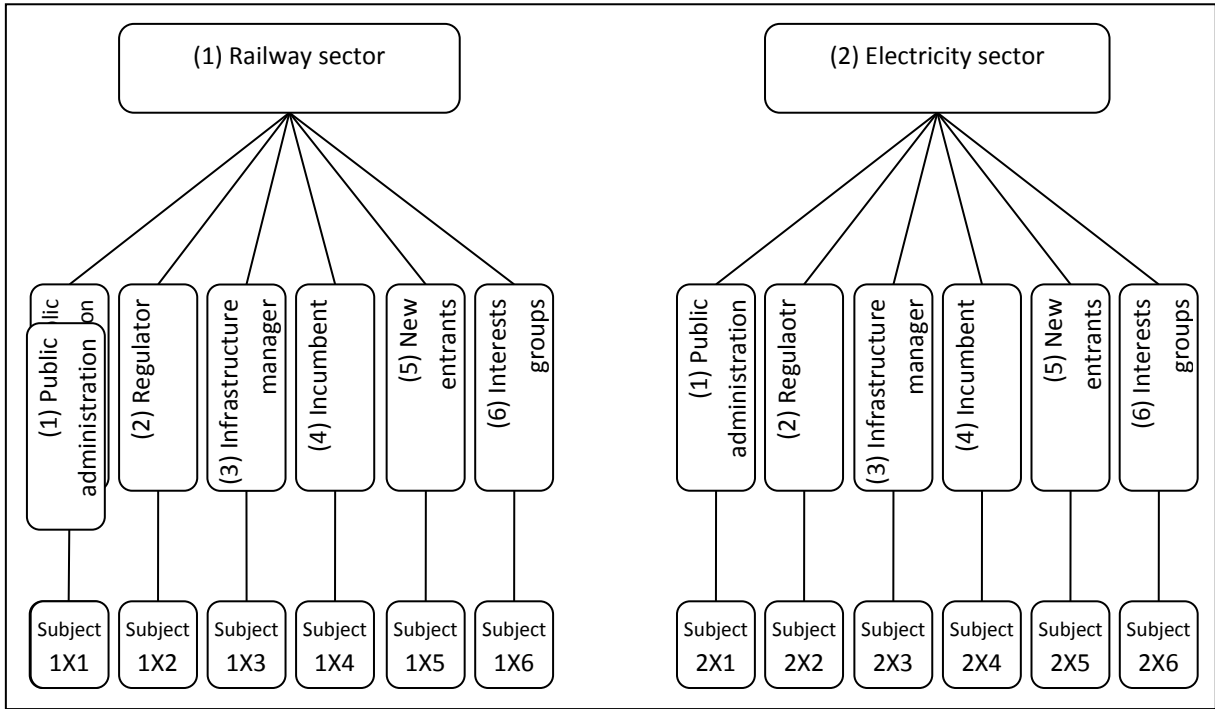
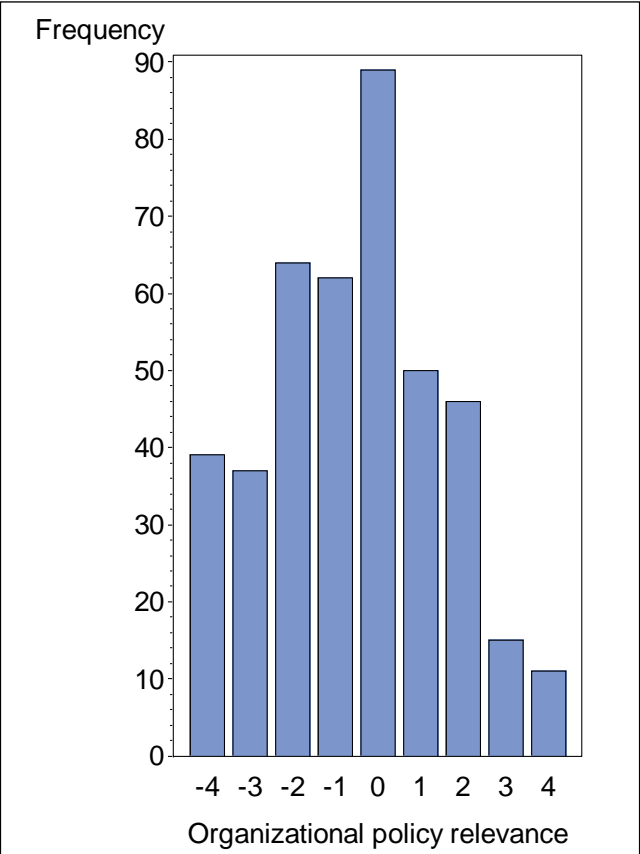*Descriptive statistics of the variables of the research*

Figure 2 : Probability density function of policy learning
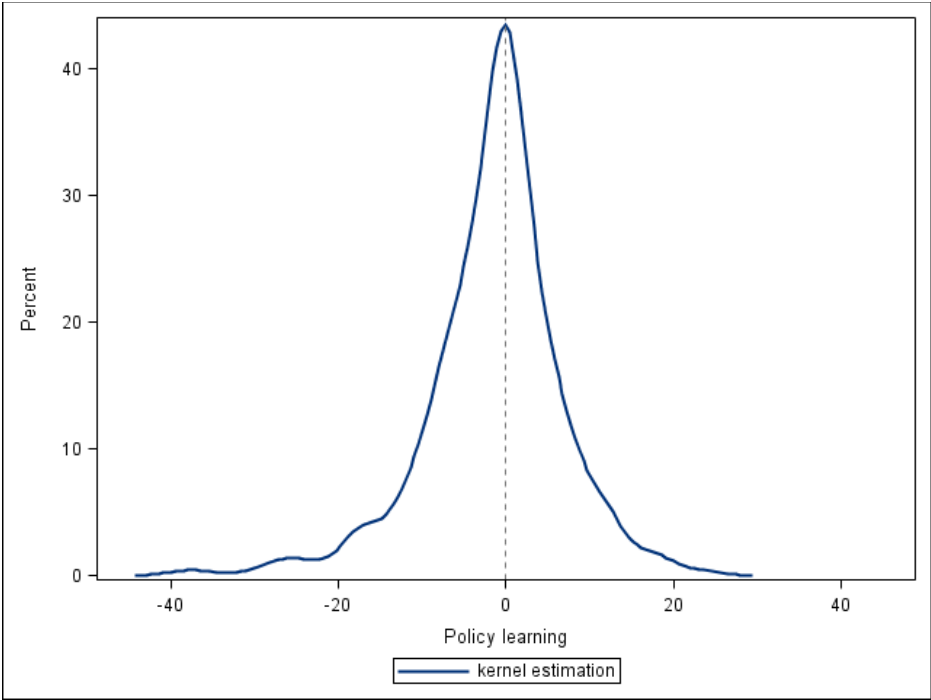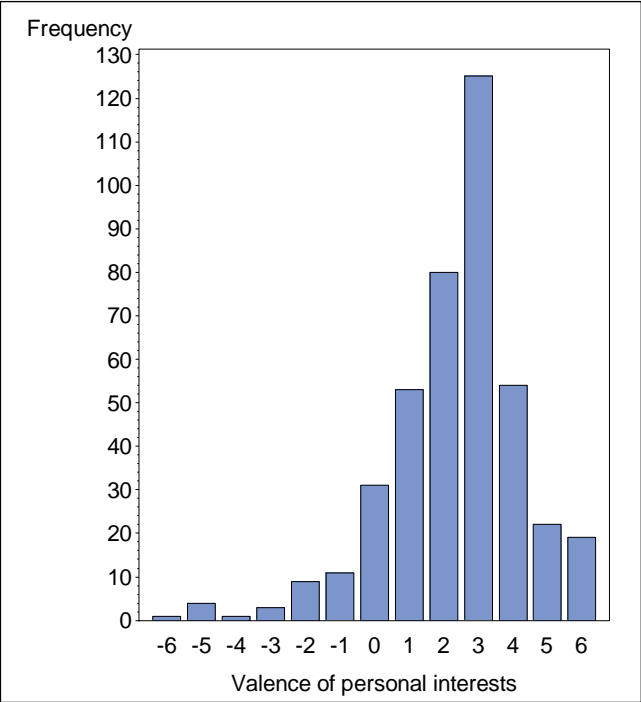
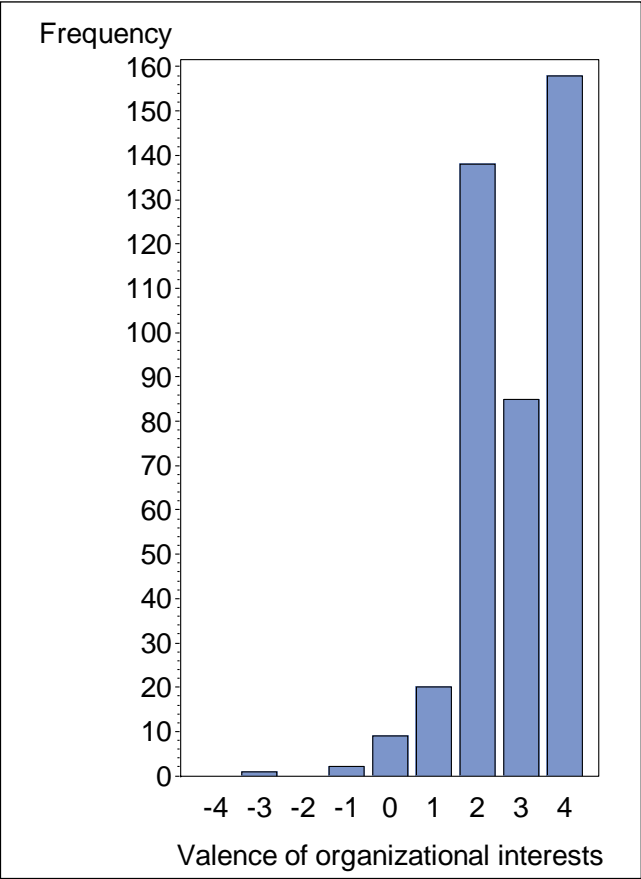**Figure 3 : Histogram of Personal policy relevance**

Figure 4 : Histogram of organizational policy relevance

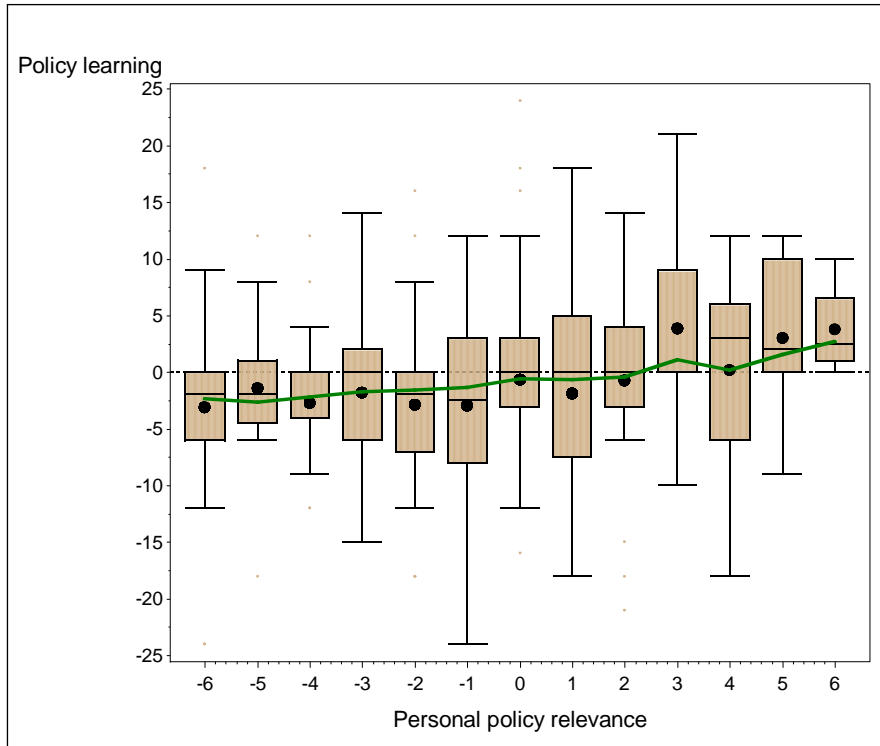**Figure 5 : Histogram of the Valence of personal interests**
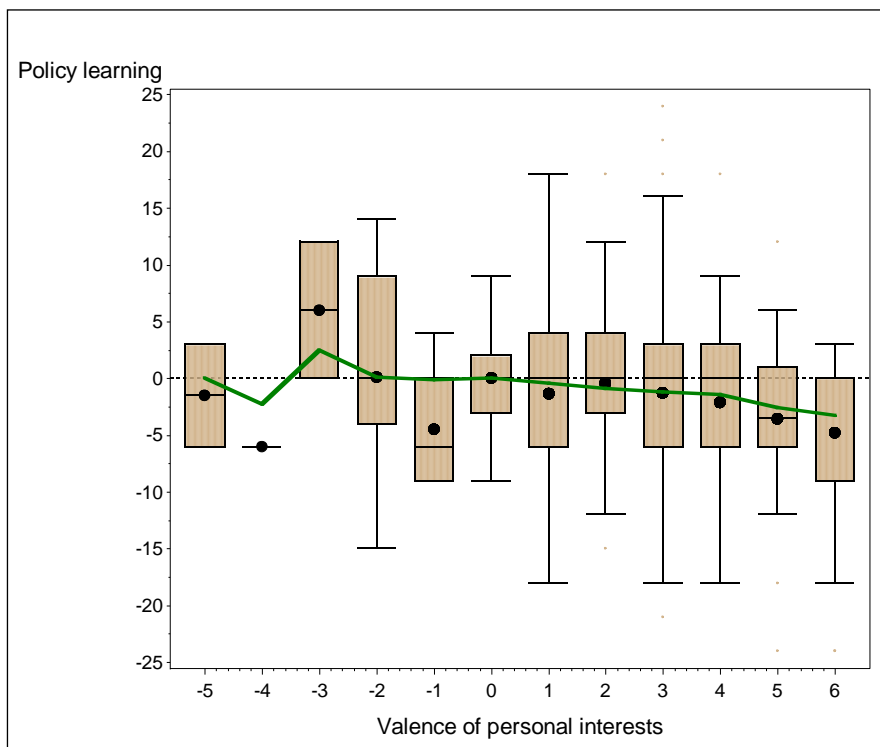

Figure 6 : Histogram of the Valence of organizational interests

Graphical diagnostics of the Model 3

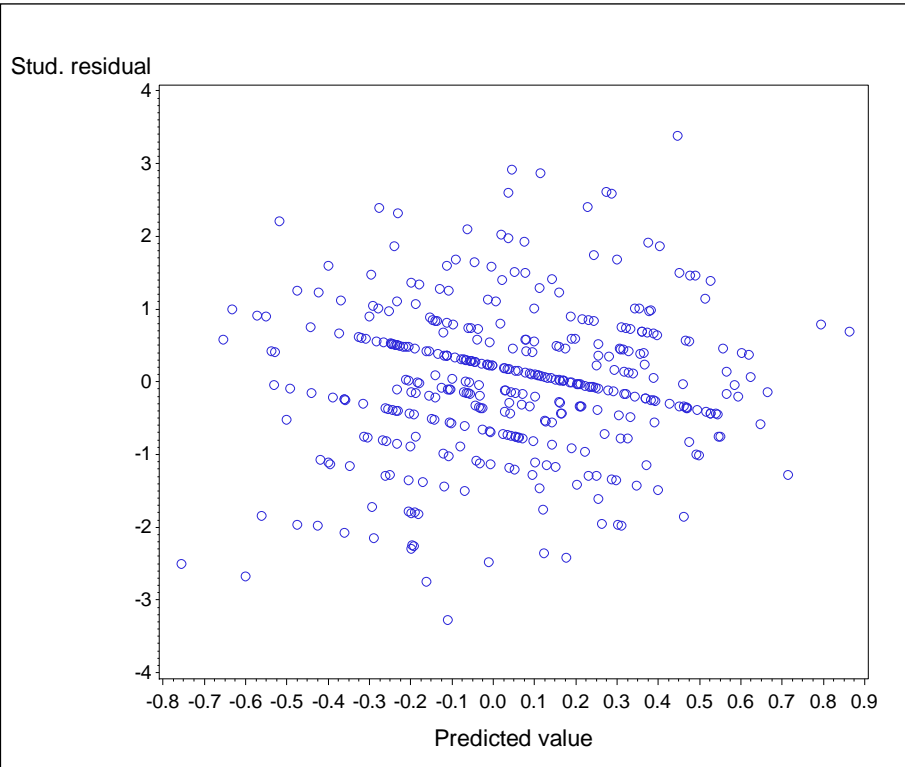**Figure 7 : Relation between personal policy relevance and policy learning in the Model 3**

Figure 8 : Relation between the valence of personal interests and policy learning in the Model 3

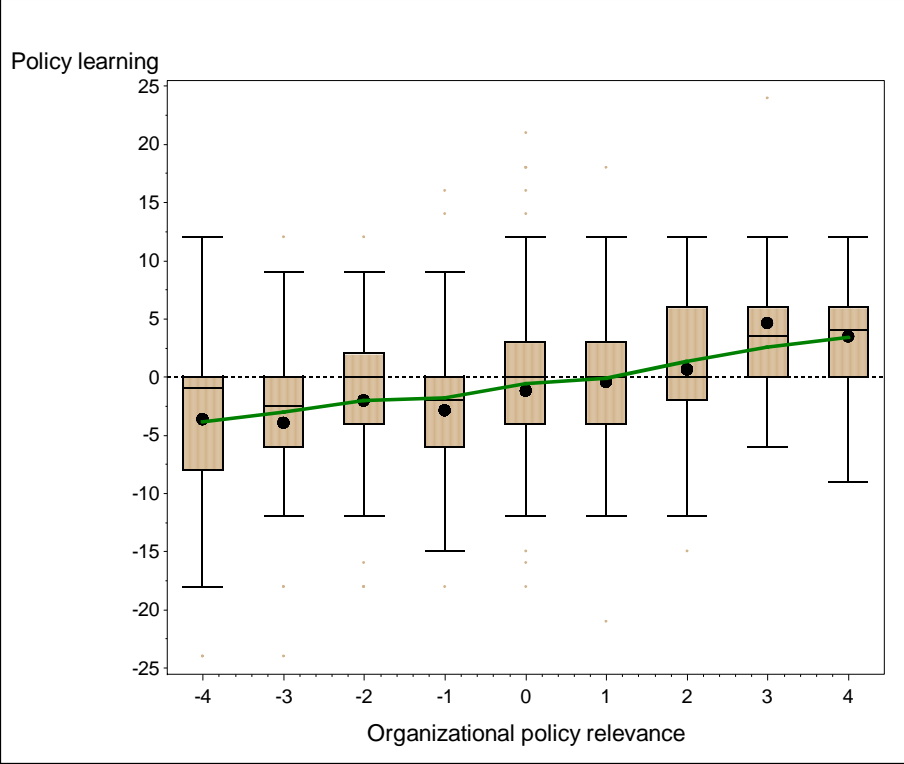**Figure 9 : Probability density function of the studentized residuals in the Model 3**
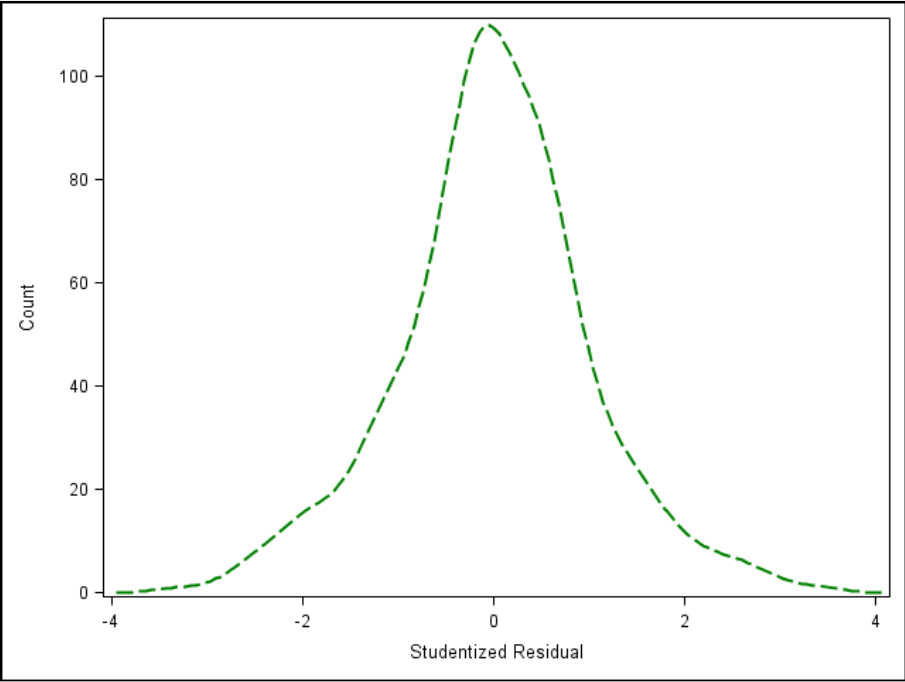
Figure 10 : Plot of the studentized residuals on the predicted values in the Model 3

Graphical diagnostics of the model 5

Figure 11 : Relation between organizational policy relevance and policy learning in the Model 5

Figure 12 : Probability density function of the studentized residuals in the Model 5
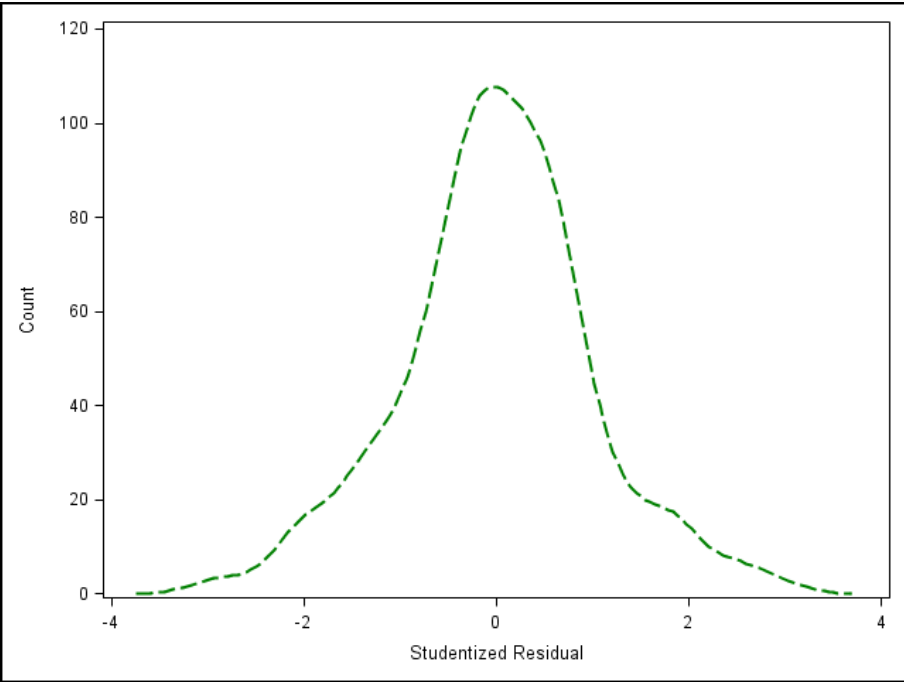
Figure 13 : Plot of the studentized residuals on the predicted values in the Model 5