Legislator Income, Policy Attitudes, and Voting Behavior*

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Abstract

The study of the impact of legislators' social and economic backgrounds on their policy preferences and behavior in office has been revived in recent years, fueled by debates on representational inequalities. We contribute to this literature by focusing on the case of Switzerland, which has a non-professional parliament. Taking advantage of the large variation in legislators' income, we analyze the effect of income on their attitudes as revealed by survey data and their complete voting records from the 2007-2011 legislative period. Based on an IRT model, we find that legislators who belong to the top income group are significantly more conservative on economic issues than representatives with lower incomes. We find no such effect for sociocultural issues. Furthermore, counterfactual analyses show that for a considerable share of proposals income affects legislators' voting behavior in nonnegligible ways. This suggests that vote outcomes could be different if the socioeconomic composition of parliament mirrored that of citizens more closely. Therefore, our results are important for our understanding of the impact of the descriptive representation of income groups on their substantive representation.

1 Introduction

Whether legislators' social and economic backgrounds influence their behavior in office is an issue that has been debated since the foundation of modern democracy.[1] A classical answer to the question of whether representatives' backgrounds matter has been that accountability trumps personal background and that, given their dependence on voters' choices, representatives will seek to represent the preferences of all constituents independent of their own backgrounds. Recent research points to imperfections in this accountability mechanism and documents that legislators' personal backgrounds do, under certain circumstances, influence their policy preferences, legislative activity, and behavior in roll call votes (Carnes 2012; Griffin and Anewalt-Remsburg 2013; Carnes and Lupu 2015). These studies imply that the descriptive underrepresentation of social groups might also lead to substantive underrepresentation, i.e., a disproportionally low influence of these groups on political decisions and public policy. There is, however, no consensus on the magnitude of that phenomenon, the relevant background characteristics to be studied, and the institutional settings under which such effects are likely (Pontusson 2015). Another open question relates to the stages of the legislative process in which social background might have an influence. Provided that legislators with different backgrounds have different preferences over policy, do they behave differently only in pre-voting stages or also in the voting stage, where parties might be more likely to constrain their members?

We contribute to this debate by analyzing the effect of income on the policy preferences and voting behavior of Swiss members of parliament (MPs) in the 48th legislative period (2007-2011). The focus on income is related to the fact that economic disparities structure political competition and are tightly related to individual self-interest, which is one of the reasons to suspect individual economic status to influence behavior. The focus on the case of Switzerland complements

[1] For instance, the Federalist Papers, whose aim was to persuade state delegates to support the Federal constitution of 1787-1788, included debates on descriptive representation. Hamilton (2008 [1788], 166), for example, noted in Federalist 35, "[i]t is said to be necessary, that all classes of citizens should have some of their own number in the representative body, in order that their feelings and interests may be the better understood and attended to. But we have seen that this will never happen under any arrangement that leaves the votes of the people free. Where this is the case, the representative body, with too few exceptions to have any influence on the spirit of the government, will be composed of landholders, merchants, and men of the learned professions."

current studies by adding a European case to the comparative literature, which has so far mostly focused on the Americas. With its non-professional parliament, Switzerland also represents a particularly well-suited case to study the effect of economic status on legislators' attitudes and behavior. Swiss MPs differ quite substantially in their income given that they do not receive a parliamentary salary and often retain a professional activity outside their mandate. In practice, only about 15% of MPs are professional politicians who do not have sources of income other than the compensations they receive for sitting in parliament (Pilotti, Mach and Mazzoleni 2010).[2] Most MPs continue to work in their learned professions, which can lead to substantial differences in terms of income.

Our analysis is based on data on average incomes in legislators' learned professions as well as survey data on legislators' policy preferences and roll call data on their voting behavior in the 2007-2011 legislative period of the Swiss lower chamber (the National Council). Our results show that even when controlling for party family, high-income legislators hold preferences that are significantly more conservative, especially on economic issues. They also place themselves more to the right on a general left-right ideological scale when asked about their ideology. These preferences do at least in part translate into behavior as income also has a significant effect on legislators' ideological positions as revealed by their voting behavior in parliament.

The remainder of this paper is structured as follows. The next section discusses the reasons that might explain a potential link between representatives' economic status and their preferences and actions. We then turn to the current evidence on the topic in a comparative perspective and discuss the case of Switzerland. The next sections are devoted to presenting our data as well as our research design. We then discuss our results and conclude with a more general discussion of the implications and limitations of our findings.

[2]These compensations include lump sums for attending parliamentary sessions and contributions that cover travel expenses or lodging during the parliamentary sessions.

2 Do the Economic Backgrounds of MPs Matter for Their Attitudes and Behavior?

Descriptive representation refers to the similarity between representatives and the represented in terms of individual characteristics. The concept has been used extensively with regard to gender, race, and ethnicity (Phillips 1995; Mansbridge 1999) and, more recently, with regard to social class and income groups (Pontusson 2015).[3] Based on these characteristics, most parliaments do not mirror the make-up of society very well: almost everywhere, affluent men from the majority ethnic group populate the majority of parliamentary seats, although they only make up a fraction of the people they are elected to represent.

Do these biases in descriptive representation matter for how parliaments make policy? Theories about the impact of representatives' backgrounds on their policy preferences and policy-making behavior point to two main mechanisms.

First, diversity in social and economic backgrounds is expected to be associated with a diversity of information, as individuals might be more aware of the needs of people who are like them. Research has shown that black constituents are more likely to contact their representatives when they are also black (Gay 2002), and the same may hold for other disadvantaged groups such as the less affluent. Given that representatives tend to infer the preferences of their constituents from information they get from active constituents (Miler 2007), there are reasons to think that such information gaps matter for substantive representation. In addition to the information received from active constituents, the daily lives of representatives are also likely to influence their perceptions of social problems. If economic and social class influence one's lifestyle—the neighborhood in which one lives, the type of infrastructure one uses, the places where one shops—it is likely that there is also a direct effect of legislators' backgrounds on the perception of their constituents' needs and the political steps necessary to address them.[4] Consequently, we may expect that the individual backgrounds

[3]The focus on these categories can be explained, on the one hand, on the grounds that these social groups are expected to share specific interests with regard to politics and, on the other hand, by the fact that historically women, racial/ethnic minorities, and the poor were the largest disenfranchised groups in early representative democracies.

[4]The argument is that individuals form their judgment based on what they see around them. A good illustration is how people form their opinions about income inequality. Cruces, Perez-Truglia and Tetaz (2013, 101) note that: "[i]ndividuals observe the income levels of no more than a sub-sample of the population and must infer the entire distribution from that

of representatives are associated with the information based on which they make policy.

Second, individuals' life experiences might influence their own interests with regard to specific policies. Therefore, representatives with different backgrounds might differ with regard to how they value a policy not only because the policy has distinct consequences for their constituents, but also because it will affect them personally in different ways. For example, a legislator who is a parent might be more likely to support childcare subsidies than a legislator who has no children.

We may expect, due to the above mentioned mechanisms, that legislator income has an effect on the attitudes and behavior of legislators. Specifically, we may expect that the income of legislators affects their preferences and behavior especially with regard to economic issues. As low- and high-income legislators are each likely to receive information that is biased in favor of the preferences of constituents who are like them, and as low- and high-income legislators are likely to have different personal preferences over taxation and redistribution policies, we might expect that higher legislator incomes are negatively associated with support for more redistributive policies.

On the other hand, there are also good reasons to believe that while legislators' economic backgrounds might have some effect on their attitudes, they have little influence on their behavior. Issues related to the economic cleavage tend to be crystallized in the party system (Mansbridge 2015), and legislators are likely to be in line with their parties, independent of their individual characteristics.[5] Seeking nomination by the party and then reelection, legislators have little incentive to take positions that are at odds with those of their parties. In addition, given the importance of issues related to the economic cleavage in Western democracies, it is also likely that legislators are well informed on these issues independent of their personal backgrounds. Therefore, it is not entirely clear to what extent legislators' social and economic backgrounds have an influence, especially with regard to their behavior but also with regard to their attitudes.

A further interesting differentiation can be made between potential effects of

information. If agents do not fully account for the selection process involved in the formation of the sample they observe, their inferences will be systematically biased."

[5]Note that economic status could affect the political orientations, and therefore the choice of party, of legislators.

legislators' backgrounds on their attitudes on the one hand and on their behavior on the other. Some of the arguments regarding the lack of influence of social background relate specifically to the process of decision making within party structures and the fact that legislators are incentivized to vote in line with their party in spite of their potentially diverging individual preferences. This is particularly to be expected when the voting behavior of individual MPs is recorded and made publicly available (Wüest 2016). Accordingly, previous research on legislator social background or on gender has documented that these individual characteristics tend to have a larger effect on legislator attitudes than on their behavior (Schwindt-Bayer 2010; Carnes and Lupu 2015).

3 Current Evidence on Economic Status and Political Attitudes and Behavior

The current evidence on the link between economic background and political behavior is rather mixed. In fact, there have been only relatively few studies addressing the effect of legislators' socioeconomic backgrounds on their attitudes and behavior. For instance, when discussing the current literature on class, Carnes and Lupu (2015, 2) note that "[w]hen scholars say that past work 'has not clearly established that the social background of politicians has a significant influence,' it is not because dozens of studies have asked whether class is related to legislative conduct and concluded that it is not. It is because, for the most part, scholars have not asked." Nevertheless, those few studies that have addressed the issue find different results, which seem to some extent to be linked to the specific context or to the operationalization of economic status.

In the context of the United States, research by Carnes (2012) shows that income and wealth have little influence on congressional voting behavior, while social class operationalized as legislators' last non-political jobs matters a great deal for voting on economic issues. This finding also holds when partisanship is controlled for. It suggests that the descriptive representation of the working class matters for its substantive representation. Another study focusing specifically on estate tax legislation shows, in contrast, that legislators' wealth measured by assets holding matters substantially for both voting behavior and bill co-sponsorship behavior, even when controlling for the partisan affiliation and attitudes of legis-

lators (Griffin and Anewalt-Remsburg 2013). A similar pattern has been found in Latin American countries, where MPs' working class backgrounds are associated with their attitudes on economic matters (Carnes and Lupu 2015). As for the effect of social background on legislative behavior, Carnes and Lupu (2015) showed for the case of Argentina that background matters for the type of bills sponsored by MPs but has little effect on voting behavior, which is arguably more constrained by party discipline. These recent results seem to contrast with earlier research that failed to establish a link between MPs' social and economic backgrounds and their behavior (Matthews 1984; Norris and Lovenduski 1995).

In Europe, there is evidence that individual characteristics such as religiosity influence the voting behavior of MPs, for instance on morality issues (Baumann, Debus and Müller 2015). However, studies that specifically focus on the link between economic status and legislative behavior are scarce. Given the centrality of the economic cleavage in politics and the general underrepresentation of individuals coming from the lower income strata in representative bodies also in Europe (Cotta and Best 2007), studying this link is particularly important.

One of the few European countries that have attracted scholarly attention is Switzerland, which provides a particularly well-suited case to study the impact of economic status given that its legislature is not a professional parliament. As a consequence, MPs differ substantially in their incomes. In this context, research has established a link between the income of electoral candidates and their stances on issues related to redistribution (Rosset 2016). But these diverse attitudes seem not to materialize in a different voting behavior with regard to proposals that are later voted on by the people (Lloren, Rosset and Wüest 2015). However, this research has only focused on proposals that were also put to a direct democratic vote and that were therefore highly mediatized and politicized around partisan cleavages.[6] By matching survey data from the Swiss part of the comparative candidate survey and roll call data, we are able to expand the existing research in several ways. First, we study MPs' in terms of their preferences on different policy issues as well as in terms of their general ideological positions on a left-right scale. Second, we analyze MPs' voting behavior based on a much wider range of proposals than only those that were subject to a direct democratic vote. Third,

[6]In the context of Swiss direct democratic votes, parties have a strong incentive to display unity as they issue voting recommendations, which have a large influence on citizens' voting behavior.

our analysis focuses on MPs' potential income as estimated from the average earnings of individuals working in their learned professions, which circumvents misreporting issues that arise with the use of declared income from survey data. Finally, we employ a hierarchical item-response theory (IRT) model that allows us to estimate MPs' ideal points as well as the effect of income on MPs' ideal points.

4 Data and Model

Our empirical analysis relies on three types of data: roll call data from the 48th legislative period (2007-2011) of the Swiss lower chamber,[7] data from the Selects 2007 Candidate Survey,[8] and information obtained from the Federal Statistical Office (FSO) on the party lists in the 2007 parliamentary election and on the average incomes in different professional categories.[9]

The Selects 2007 Candidate Survey data contain verbatim descriptions of MPs' professions. We have recoded these text data into the categories used in the classification of economic activities developed by the Federal Statistical Office (2008). This then allowed us to merge our data on individual MPs with figures on average income in different professions as published by the Swiss Statistical Office, based on the Swiss Earnings Structure Survey (ESS).[10] We then used these data to classify MPs into three income groups: a bottom group containing average incomes ranging from CHF 5,039 to CHF 7,953, a middle group containing average incomes ranging from CHF 8,581 to CHF 10,732, and a top group containing average incomes ranging from CHF 11,137 to CHF 15,884.

To measure attitudes, we use the responses MPs gave to questions on policy preferences asked in the Selects Candidate Survey. Specifically, we use MPs' stances in relation to the following statements (for each statement they were

[7] For more information, see `https://www.parlament.ch/en/ratsbetrieb/abstimmungen/abstimmungs-datenbank-nr` (last accessed on 6/9/2016).

[8] See `http://forscenter.ch/en/our-surveys/selects/1993-2/selects-2007/` (last accessed on 6/9/2016).

[9] See `http://www.bfs.admin.ch/bfs/portal/de/index/themen/17/02/blank/data/04/02.html` for the data on party lists (last accessed on 6/9/2016) and `https://www.bfs.admin.ch/bfs/fr/home/statistiques/travail-remuneration/enquetes/ess.html` for data on incomes (last accessed on 22/01/2018).

[10] See `https://www.bfs.admin.ch/bfs/fr/home/statistiques/travail-remuneration/enquetes/ess.html` (last accessed on 22/01/2018).

asked to position themselves on a 5-point agreement scale):[11]

- Income and wealth should be redistributed in favor of the less affluent;
- Government should abstain from intervening in the economy;
- Providing a stable network of social security should be the prime goal of government;
- Further opening of global markets would benefit everyone;
- Immigrants are good for the Swiss economy.

Analyzing these five different policy statements allows us to capture legislator stances on some of the most relevant issues in current Swiss politics. It also enables us to include issues that are related to economic policies (first three items) as well as issues that concern so-called cultural or identity issues, which have gained in importance in West European countries in general and in Switzerland in particular (Kriesi et al. 2008). Based the above discussion, and recent literature on the effect of economic background on citizens' preferences, we expect that legislators' economic status will have more influence on their stances on economic issues than on cultural issues (Rosset and Stecker 2016).

In addition, we also analyze MPs' positions on a left-right ideological scale on which they were asked to position themselves.[12] Using this scale allows us to compare results on attitudes with our analysis of voting behavior as the stances of MPs as estimated by our IRT model are most directly comparable to this one-dimensional political cleavage which structures the voting behavior of MPs on a variety of bills (Hug and Schulz 2007).

We also analyze MPs' voting behavior based on roll call data. Since 2007, voting in the Swiss lower chamber is systematically carried out by roll call.[13]

[11] The question asked in the survey was the following: "People hold different views on political issues. What do you think of the following? [...]." The response categories were: 1 = "strongly agree;" 2 = "agree;" 3 = "neither agree nor disagree;" 4 = "disagree;" and 5 = "strongly disagree."

[12] The original scale is an 11-point scale ranging from 0 to 10. We rescaled the original scale to make it comparable with the scale used to measure MPs' ideology as revealed by their voting behavior (see results section below).

[13] Hence, as we can draw on the complete record of floor votes, we do not need to worry about potential selection problems (Carrubba et al. 2006; Hug 2010; Crisp and Driscoll 2012).

There were 3,444 non-unanimous roll call votes in the 48th legislature.[14] After merging the roll call data with the information on legislators' incomes, we fit a hierarchical IRT model. Taking as a starting point the classic "two-parameter" IRT model, we model the probability (π_{ij}) of a yes-vote ($y_{ij} = 1$) by legislator i on proposal j as follows (Jackman 2009, 455):[15]

$$\pi_{ij} = \Pr(y_{ij} = 1 \mid \xi_i, \beta_j, \alpha_j) = F(\beta_j \xi_i - \alpha_j), \tag{1}$$

where ξ_i is the unobserved ideal point of legislator i and β_j and α_j are the unknown item discrimination and item difficulty parameters of proposal j. $F(\cdot)$ is assumed to be the standard logistic CDF.[16]

We let the information on legislators' income, together with information on their party family, enter the model via the following prior for the ideal point ξ_i:

$$\begin{aligned} \xi_i &\sim N(\mu_i, \sigma^2) \\ \mu_i &= \mathbf{X}_i' \boldsymbol{\gamma}, \end{aligned} \tag{2}$$

where $\mathbf{X}$ is a matrix containing a constant, a dummy variable taking the value of one if a legislator is in the middle income group, a dummy variable taking the value of one if he or she is in the top income group, a dummy variable taking the value of one if he or she is a member of a center party, and, finally, a dummy variable taking the value of one if he or she is a member of a right-wing party (therefore, the reference group are legislators who are in the bottom income group and member of a left-wing party). We fit the model using `RStan` (Stan Development Team 2018).[17] The `Stan` code for the model is shown in Appendix A.1. Our results are based on a chain of 200,000 iterations, of which we discarded the first 100,000 as burn-in. We then retained every 20th from the remaining 100,000 iterations to generate the posterior distributions. Convergence

[14] Because the votes from the April 2008 and the August 2009 special sessions are not available on the website of the Swiss parliament, they are missing in our data set.

[15] As is usually done in roll call analyses, we treat abstentions and absences as missing values.

[16] In their analyses of roll call data from the Swiss National Council, Hug and Schulz (2007) and Hug and Wüest (2014) showed that adding a second dimension to their scaling models improves classification fit only modestly. Given these results, we confine ourselves to the estimation of a one-dimensional model.

[17] We specified vague priors for both the item discrimination and item difficulty parameters and the hyperparameters: $(\beta_j, \alpha_j)' \sim N(\mathbf{0}, 5^2 \cdot \mathbf{I}_2)$, $\forall j$, and $\boldsymbol{\gamma} \sim N(\mathbf{0}, 10^2 \cdot \mathbf{I}_5)$, $\sigma^2 \sim \text{Unif}(0.01, 1)$ (Jackman 2009, 468f.).

diagnostics are shown in Appendix A.2 (see Gill 2008, 475-489 for an overview of diagnostics commonly used to assess the convergence of Markov chains). The diagnostics show no indication of nonconvergence.

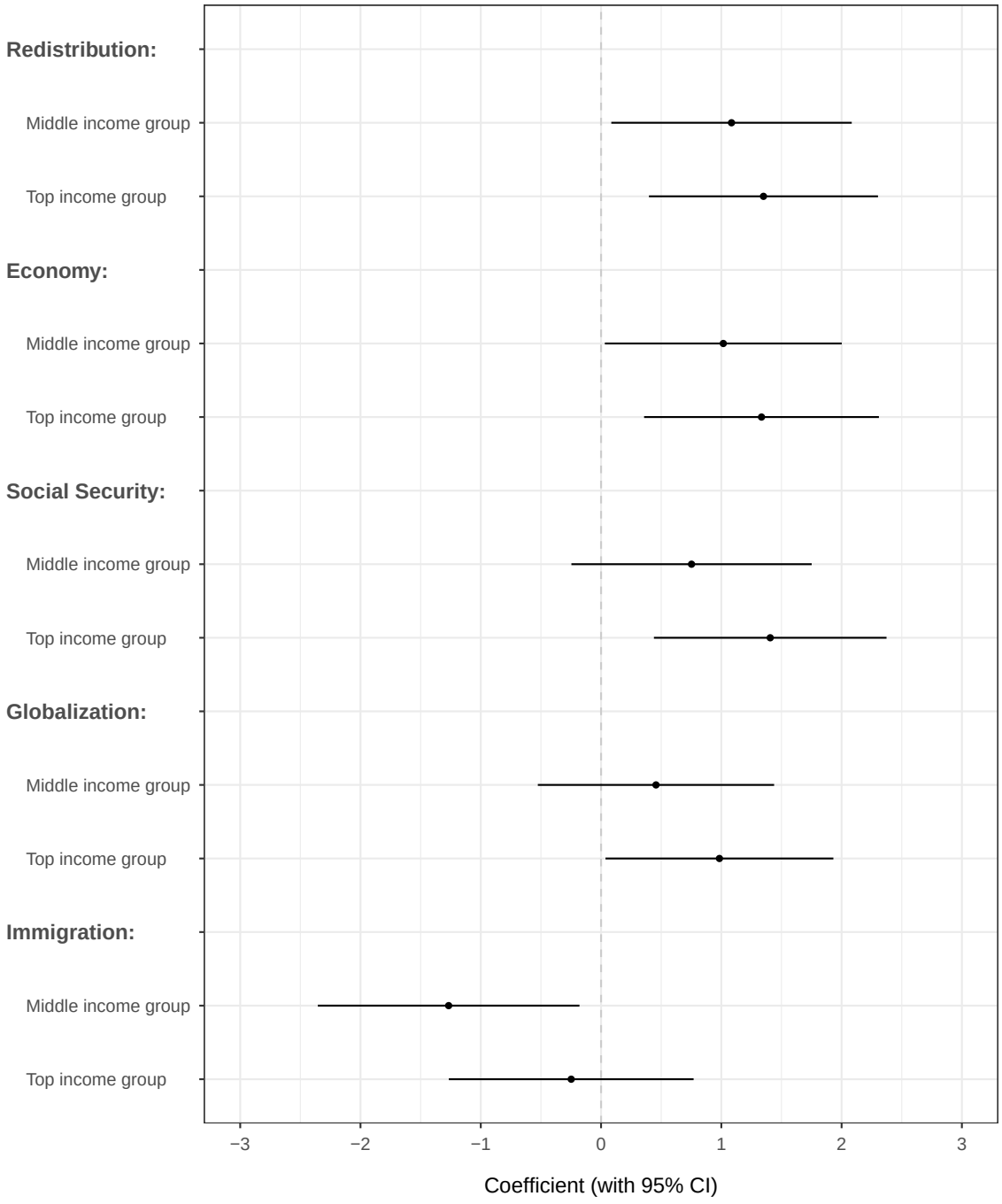
5 Results

We first present the results of the ordinal logistic regressions of MPs' policy preferences on income. We recoded the dependent variables so that higher values indicate more conservative policy attitudes. As in the IRT model, we included control variables for center and right-wing parties in these models. Figure 1 presents the coefficients of the middle and top income categories relative to the low income category which serves as the reference category. The results are unambiguous concerning the effect of income on legislators' preferences regarding economic policy: the top income category variable has a statistically significant effect on preferences regarding redistribution, the involvement of the state in the economy, and social security. In all cases, belonging to the top income group increases the odds of favoring pro-market policies in these areas. In all three cases, the effect of middle income goes in the same direction but fails to reach statistical significance. Results with regard to globalization and immigration are more nuanced and the effect of income is less systematic.

Figure 2 shows that with regard to MPs' ideological self-placement on a left-right scale, we also find systematic income effects with top income group legislators taking somewhat more conservative positions than their colleagues from parties with a similar ideology. Unsurprisingly, we find that the "effect" of party on ideology is of greater magnitude than that of individual economic background. Nevertheless legislators' economic situation also matters for their self-reported ideological positions.

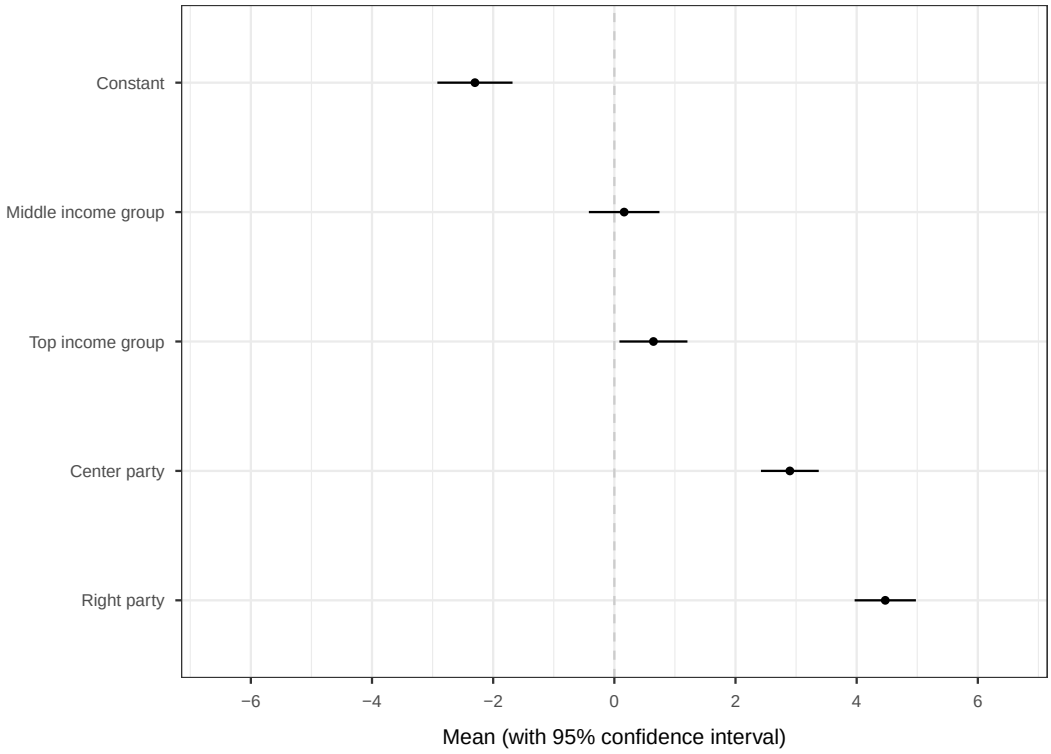
Taken together, our analysis of legislators' policy preferences reveals that the economic background of MPs plays a significant role in their policy positioning, especially on economic issues. It also plays a role in defining their ideological self-placement. These results thus confirm that even among elected politicians, one's economic background matters for political attitudes. More generally, these results confirm the important role that the descriptive representation of economic groups has for the representation of different attitudes in the policy-making arena. But does descriptive representation also matter when it comes to legislators' voting

Figure 1: Estimated Coefficients for the Middle and Top Income Group Variables in the Regressions of MPs' Policy Preferences on Income



Note: The figure shows the point estimates and the 95% confidence intervals for the coefficients of the middle and top income group variables in the ordinal logistic regressions of MPs' policy preferences on income.

Figure 2: Effect of Income on Legislators' Self-Reported Ideology



Note: The figure shows the point estimates and 95% confidence intervals for the coefficients in the linear regression of legislators' self-reported ideology on income and party.

behavior?

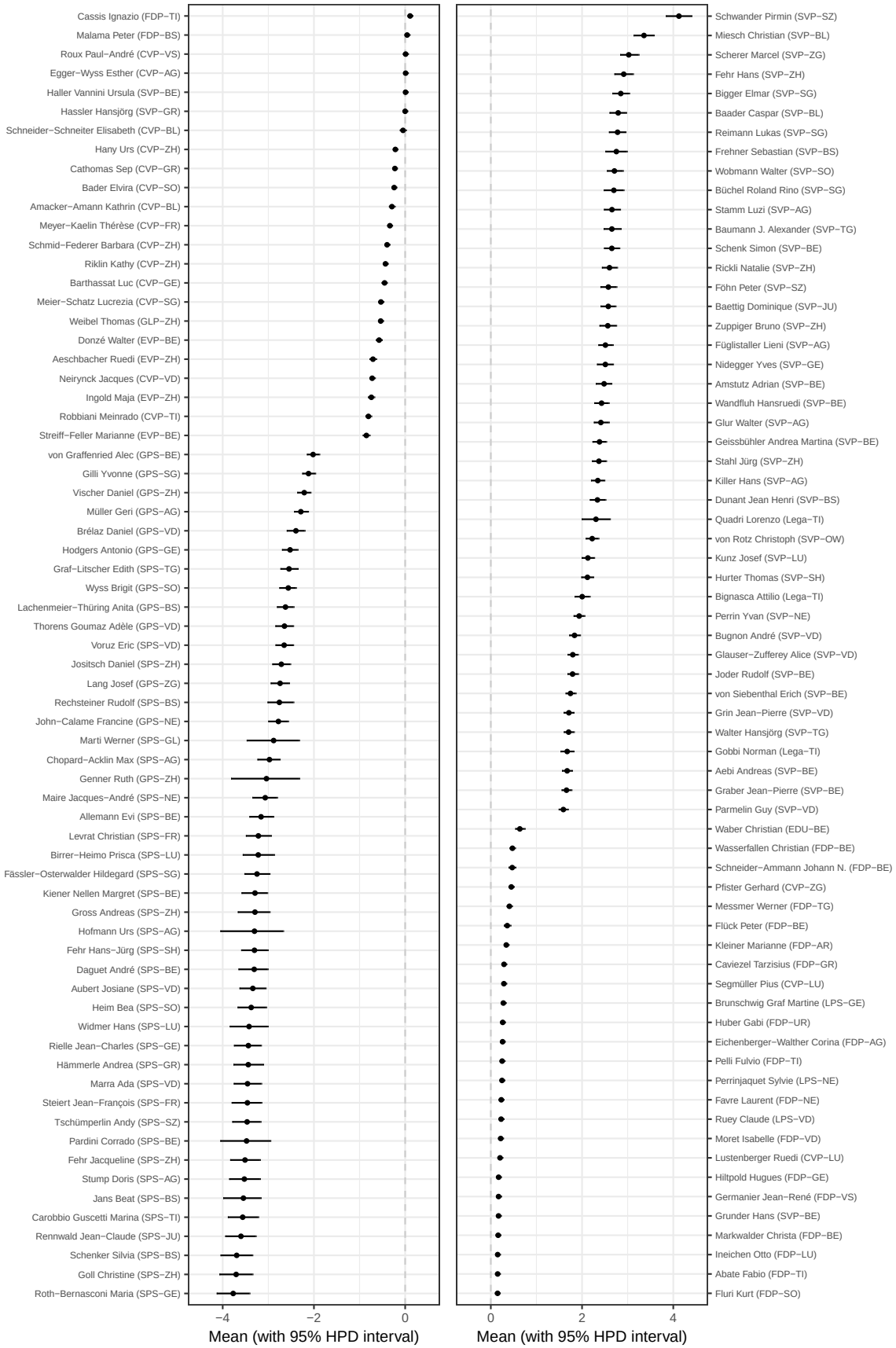
To answer this question, we now turn our attention to legislators' voting records, which we used to fit the hierarchical IRT model described above. Figure 3 shows the estimated ideal points of legislators (i.e., $\widehat{\boldsymbol{\xi}}$). As expected, there are three clusters of legislator ideal points: a left-wing group consisting of legislators from the Social Democratic Party (SPS) and the Green Party (GPS), a middle group consisting largely of legislators from the Christian Democratic People's Party (CVP), the Liberal Democratic Party (FDP), the Evangelical People's Party (EVP), and the Liberal Party (LPS), and a right-wing group that consists mainly of members of the Swiss People's Party (SVP).

Figure 4 shows the estimated effects of income on the ideological positions of legislators as revealed by their voting behavior. Again, top income group MPs tend to be somewhat more conservative than low-income MPs. Middle income group legislators are also slightly more conservative, but this effect is not statistically significant.

With regard to the magnitude of the effects of income on voting behavior and on attitudes, we can try to make a comparison between the results obtained from the IRT model and those obtained from the linear regression using left-right self-placement as a dependent variable. Arguably, the dimension of political competition that emerges from the IRT model is closely related to the ideological left-right divide that structures Swiss politics. We have sought to make the scales of the two models comparable by rescaling the left-right self-placement scale to scale of ideal points retrieved from the IRT model. It appears that the magnitudes of the income effects are very similar in both cases (see Figures 2 and 4). Another way to approach the question is to analyze the effect of income relative to the party effect in each model. Employing this strategy, we observe that relative to the party effects, economic background characteristics play a slightly greater role for MPs' attitudes than for their voting behavior. However, this comparison does not lend strong support to the idea that MPs' economic background would matter much more for attitudes than for behavior. In other words, we find that economic differences in preferences also translate into differences in voting patterns, despite the pressure MPs might feel from their parties.

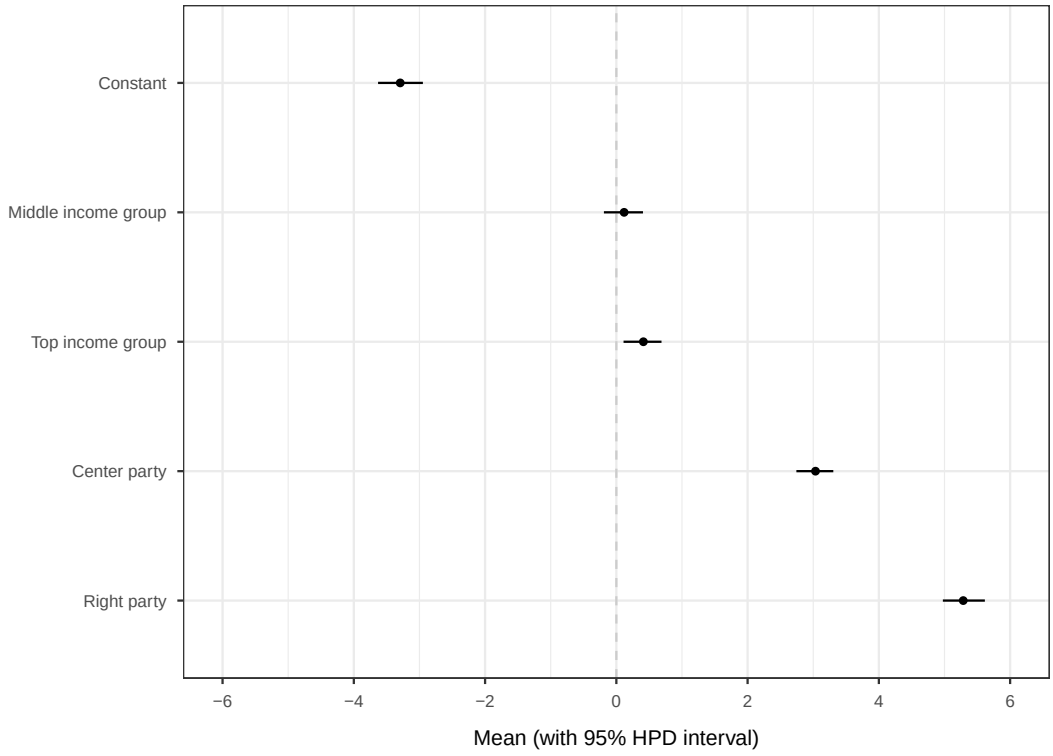
Finally, we are interested in the extent to which the income effects on voting behavior revealed by the IRT model are substantially important. Based on

Figure 3: Legislators' Ideology as Revealed by Their Voting Behavior



Note: The figure shows the means as well as the 95% credible intervals (CIs) for the posterior distributions of the ideal points ξ_i in Model (1).

Figure 4: Effect of Income on Legislators' Ideology as Revealed by Their Voting Behavior



Note: The figure shows the means as well as the 95% credible intervals (CIs) for the posterior distributions of the parameters in Model (2).

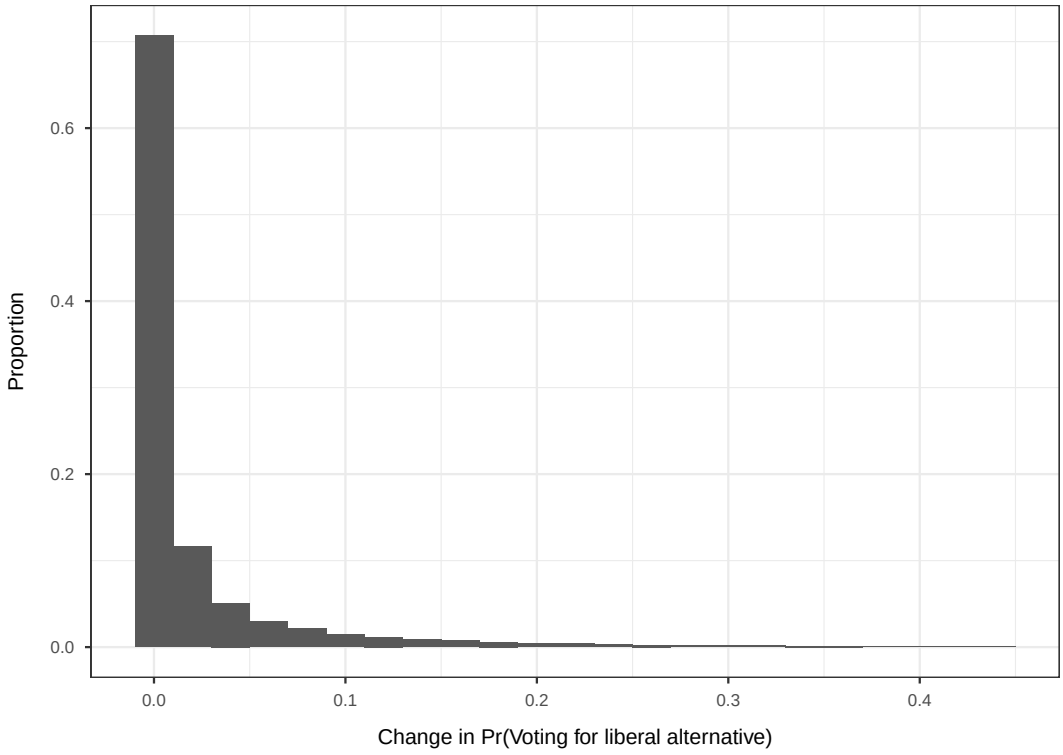
the estimated parameters, we can calculate counterfactual predictions. We are interested in how the predicted probability of voting for the more liberal alternative changes if MPs in the top and middle income groups (we call them the "affluent" MPs) belonged to the bottom income group (MPs in the bottom group have salaries that are close to median salary in the Swiss population). Figure 5 shows that income considerably affects the voting behavior of legislators (at least for a subset of votes). If affluent MPs had low incomes, their probability of voting for the more liberal alternative would have changed by more than five percentage points in 13% of all cases (note that "all cases" here means all affluent MP-proposal dyads). In 8% of the cases, the change in predicted probability even amounts to ten percentage points or more. Finally, in 3% of the cases, the predicted probability of voting for the more liberal alternative changed from below 0.5 to above 0.5, or vice versa (such a change would lead us to expect a change in the voting decision of a legislator). These numbers illustrate that if the social composition of the Swiss parliament more closely resembled the make-up of the Swiss population, there would likely be some substantial consequences for policy-making.

6 Conclusion

Understanding how the socioeconomic status of legislators affects their attitudes and voting behavior is important for several reasons. On the one hand, we can learn about the motives behind individual policy preferences and voting decisions and, on the other hand, it helps us understand whether the often significant mismatch between the socioeconomic backgrounds of legislators and those of the citizens they represent might influence legislation at the expense of the groups that are descriptively underrepresented. If high-income MPs differ systematically in their preferences and voting behavior from their low-income counterparts, chances are that if the legislature reflected the social composition of the citizenry more accurately, policy outputs would differ.

In this article, we approached this issue by focusing on the case of Switzerland, which has the peculiarity of having a non-professional parliament. One consequence of the non-professional parliament is that the incomes of MPs vary considerably. Our analysis draws on the complete voting record of the Swiss lower chamber during the 2007-2011 legislative period as well as on survey data con-

Figure 5: Change in Affluent Legislators' Probability of Voting for the Liberal Alternative if They Were from the Bottom Income Group



Note: The figure shows the changes in the predicted probability of voting for the more liberal alternative for the counterfactual where affluent legislators (i.e., legislators in the top and middle income groups) have low incomes (i.e., are instead in the bottom income group).

taining information on legislators' monthly incomes and attitudes. We estimated legislators' potential income based on the average income in their profession reported in the Selects Candidate Survey. Our analysis of MPs' policy preferences shows that MPs' economic background significantly affects their preferences. This is particularly true for economic issues but also for their positioning on an ideological left-right scale, with richer MPs holding more conservative preferences than other MPs from the same party family. Using an IRT model, we also analyzed legislators' voting behavior and find that high-income legislators vote significantly more conservatively than legislators with low incomes.

These findings complement the current literature in several ways. First, they show that the descriptive representation of socioeconomic groups is likely to matter for the representation of these groups' political interests. The evidence presented here suggests that the descriptive underrepresentation of the less affluent can at least partially explain why their economic preferences are also less well channeled into representative bodies, which has been documented in earlier research on Switzerland (Wüest and Lloren 2015; Rosset 2016). From a comparative perspective, our study corroborates findings from the United States and Latin America that show that the class or economic status of representatives matters in the legislative process (Carnes 2012; Griffin and Anewalt-Remsburg 2013; Carnes and Lupu 2015). Our findings largely echo the results reported in these studies but some nuances need to be pointed out. First, our analysis shows that unlike in the Argentinian case, Swiss legislators' socioeconomic background matters for both their attitudes and voting behavior, suggesting that descriptive representation is likely to matter not only in pre-voting stages of the legislative process. Second, with regard to the operationalization of legislators' socioeconomic backgrounds, studying the Swiss parliament enabled us to take average income earned in legislators' economic activity as the variable of interest. This stands in contrast to Carnes (2012) and Carnes and Lupu (2015), who operationalize class as the last occupation a legislator had before entering politics, and Griffin and Anewalt-Remsburg (2013), who do so by relying on MPs' assets. In future research it would be interesting to analyze whether class operationalized as occupation or actual economic status matters more for the behavior of Swiss legislators. This could also give us some hints about the mechanisms that link legislators' characteristics to their behavior. If legislators' occupation has an im-

pact on their behavior independent of their income, socialization might be the primary reason for cross-class differences. On the other hand, if actual economic status has a greater impact, we could point to short-term self-interest as one of the driving forces behind our results. Another interesting puzzle we are left with concerns the different effects income has on economic and sociocultural issues. These issues are very closely associated with one another at the party level and Swiss parties tend to align around a single left-right dimension encompassing both economic and sociocultural issues. It seems, however, that MPs' individual characteristics have diverse effects on attitudes on each of these dimensions. As a result, a more accurate descriptive representation of low income groups would not simply shift the position of the legislature to the left on all issues but only on economic ones, potentially also affecting the structure of party competition. Studying the differential effects of economic status on legislators' voting behavior across parties could be an extension of our analysis that would help us understand descriptive representation may affect the structure of the party system.

A Appendix

A.1 Stan Code for the IRT Model

```
data {
  int<lower=1> J;  // number of legislators
  int<lower=1> K;  // number of votes
  int<lower=1> N;  // number of observations
  int<lower=1> L;  // number of ideal point predictors
  int<lower=1,upper=J> j[N];  // legislator for observation n
  int<lower=1,upper=K> k[N];  // vote for observation n
  int<lower=0,upper=1> y[N];  // observed vote for observation n
  matrix[J, L] x;  // predictors for ideal points
}
parameters {
  real alpha[K];  // item difficulty of vote k
  real beta[K];  // item discrimination of vote k
  real xi[J];  // ideal point of legislator j
  vector[L] gamma;  // coefficients for ideal point predictors
  real<lower=0.1> sigma;  // standard deviation of ideal points
}
model {
  alpha ~ normal(0, 5);
  beta ~ normal(0, 5);
  gamma ~ normal(0, 10);
  sigma ~ uniform(0.1, 1);
  for (i in 1:J) {
    xi[i] ~ normal(x[i] * gamma, sigma);
  }
  for (n in 1:N) {
    y[n] ~ bernoulli_logit(beta[k[n]] * xi[j[n]] - alpha[k[n]]);
  }
}
```

A.2 Convergence Diagnostics

Figure 6 shows the distribution of the Z-scores of the Geweke diagnostic (Geweke 1992) (black line) and compares it to the standard normal distribution (gray line). The Z-scores are approximately standard normally distributed and, therefore, show no indication of nonconvergence.

Figure 6: Geweke Diagnostic for the IRT Model

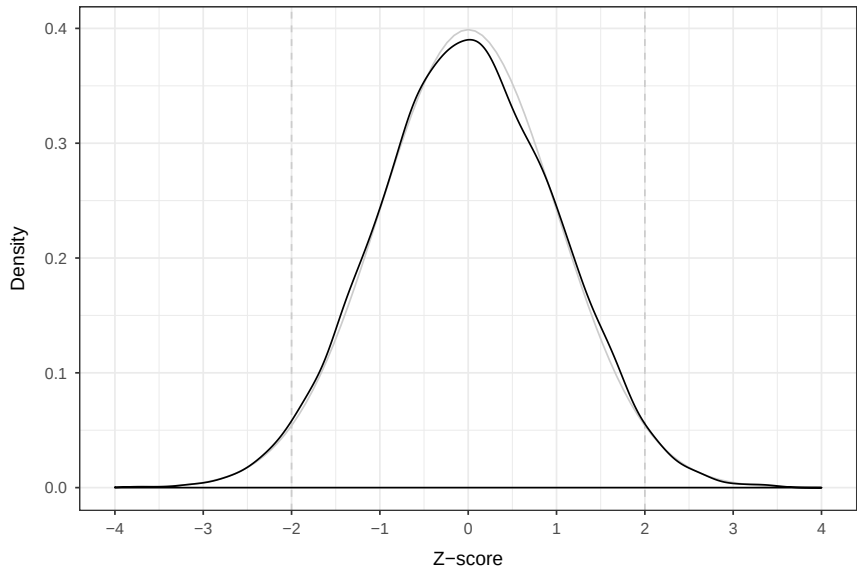


Figure 7 plots the "dependence factors" from the Raftery and Lewis diagnostic (Raftery and Lewis 1992). The Raftery and Lewis diagnostic provides a dependence factor that estimates the extent to which autocorrelation inflates the required number of iterations of a Markov chain. According to Raftery and Lewis (1992), values greater than five indicate strong autocorrelation. As can be seen in the figure, there are no large dependence factors to worry about.

Table 1 shows the percentages of estimated parameters that passed the "stationarity test" (Column 2) and the "halfwidth test" (Column 3) from the Heidelberger and Welch diagnostic. Our model shows good convergence properties according to the Heidelberger and Welch diagnostic: both the stationarity test and the halfwidth test are passed by almost all parameters in the model.

Figure 7: Raftery and Lewis Diagnostic for the IRT Model

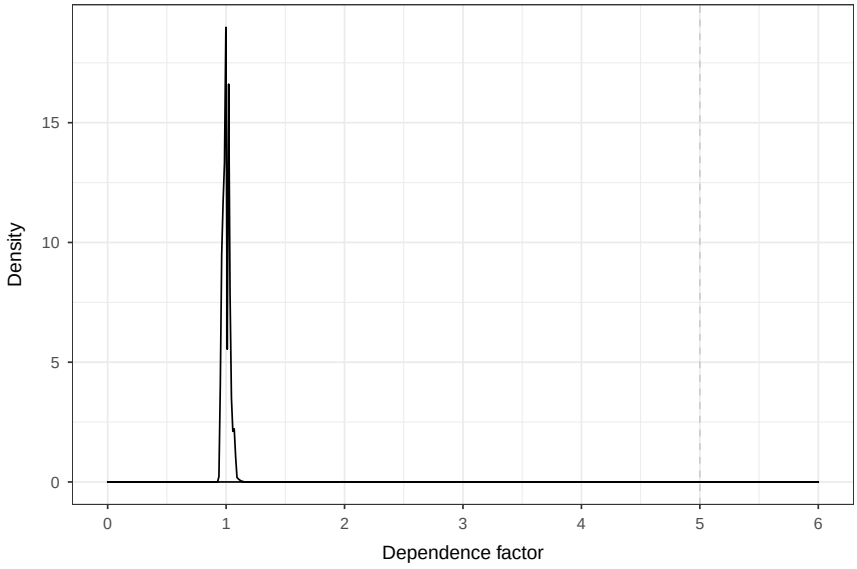


Table 1: Heidelberger and Welch diagnostic for the IRT Model

	Stationarity Test	**Halfwidth Test**
Parameters that passed the test	99.26%	97.50%
Parameters that failed the test	0.74%	2.50%
Total	100%	100%

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