

# Risk Aversion, Gender, and Constitutional Change

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## Abstract

The effect of risk aversion on political behavior has received little scholarly attention. High-stake political decisions involving large amounts of uncertainty such as sovereignty referendums, though, provide a fertile ground to measure the effects of the psychological dispositions toward risk on voters' decisions. Using experimental survey data, this article explores how risk-adverse attitudes might contribute to explaining the gender gap in support for independence in the Catalan case. The empirical analysis suggests that risk aversion has heterogeneous effects across gender. Women's likelihood of voting in favor of secession is depressed by uneasiness with risk taking while men's is not. Yet, the gendered impact of risk aversion on support for independence is conditional upon the type of hypothetical conjunctures about the future of the independent state respondents are confronted with. Whereas positive scenarios do not produce differences across groups, under negative scenarios risk-adverse women are significantly less likely to vote in favor of secession than men.

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## **Introduction**

Independence movements are nowadays present in several stateless territorially-concentrated nations, irrespective of their level of self-government. Among advanced industrial democracies, the stronger secessionist movements are found in Belgium, Canada, Italy, Spain and the United Kingdom (Keating 1996; Sorens 2009). In the absence of a secession clause in their respective constitutions, a broad array of political parties and civil society groups have mobilized to demand a self-determination referendum as a means to let the citizenry of their territories express their will (Muñoz and Guinjoan 2013). Canada held a referendum on the secession of Quebec in 1980 and 1995. The United Kingdom called a popular vote on Scotland's independence in September 2014. In the Spanish case, Catalonia convoked a consultation in November 2014, although the central government did not recognize its legality.

Once the date of the referendums has been established, media, political and scholarly attention are put not only on the evolution of the positive and negative votes but also on disentangling the determinants of support and rejection for independence. Regarding the two referenda held in 2014, the Scottish and the Catalan ones, individuals' national identity and their expectations about the economic consequences of independence were identified as the main factors underpinning support for secession (Kopasker 2014; Muñoz and Tormos 2014). Although gender differences were non-existent in regards to these variables, opinion polls showed a significant gender gap in support for constitutional change, which presents a puzzle for further research (Ormston 2013).

Scholarly research on political behavior has extensively explored the gender differences found in aspects such as voting patterns, political engagement, political ambition, ideology, party identification, and political knowledge. While the gender gap in

attitudes toward institutional and constitutional change has been identified (Wenzel et al. 2000) it has, nonetheless, been barely studied. This article examines gender differences in support for secession by focusing on the Catalan case. In doing so, we factor saliency of the debate on constitutional change and risk aversion attitudes in the empirical analysis. Specifically, we delve into how female and male voters' psychological disposition toward risk taking might affect their position towards secession and pay especial attention to its potential heterogeneous effects across gender.

Whereas economics, social psychology and behavioral medicine have long studied how attitudes towards risk taking shape individuals' economic and social behavior in fields such as investment, savings, gambling, consumption, health or executive decision making, the effect of risk aversion on political behavior has received little scholarly attention (see Ansolabehere and Iyengar 1995; Muñoz and Tormos 2014; Soroka 2014). Risk aversion is a 'reasonable assumption' in the context of referendums (Hobolt 2006: 627). Debates and referendums over sovereignty, as argued by Nadeau et al. (1999: 524), are an 'ideal setting' for exploring how risk attitudes may influence voters' decision making since they are "based in large part on hypothetical conjectures about the future and because the decision portend[s] potentially huge consequences".

The remainder of the article is structured as follows. The first section discusses our theoretical arguments regarding the relationship between constitutional preferences, risk aversion and gender. The second section describes the main factors leading to secessionist mobilization in Catalonia. The third section outlines the data and research strategy followed in the empirical analysis, whose results are discussed in section four. The last section presents the main findings and suggests new avenues for further research.

## **Constitutional change, risk aversion and gender**

The concept of risk is applied to those situations in which individuals must make decisions or choices between different alternatives with uncertain future consequences (Schubert 2006: 706). The recurring finding in the literature is that men tend to be less risk averse than women (see, among others, Arch 1993; Jianakoplos and Bernasek 1998; Byrnes et al. 1999). Explanations accounting for this phenomenon, though, are not much developed. Some scholars have noted that women and men “may attach different meanings to what appear to be the ‘same’ risks” based on gendered practices and gendered ideologies on social roles (Gustafson 1998: 810). As Booth et al. (2014: 128) argue, gender differences in behavior under uncertainty might stem from social learning rather than from inherent gender traits. Others have pointed that the risks investigated chiefly reflect male experiences, such as investment decisions, which may bias the results – those subjects more familiar with the risks will be more likely to perceive them as less frightening (Cutter et al. 1992: 18).

Risk aversion is a promising variable to study vote intention in sovereignty referendums since, under these circumstances, voters cannot draw on past experience and the decision at stake is confronted with hypothetical conjunctures about the future that both sides of the debate seek to shape to their advantage (cf. Nadeau et al. 1999: 523). Although a No-vote is not free of uncertainty and a simple continuation of the status quo cannot be assumed (for example, a new territorial accommodation agreement might be offered by the unionist camp), a Yes-vote leading to constitutional change is usually perceived as being riskier (Dion 2010: 120). In the context of the Scottish and Catalan referendums, when making up their minds, voters might well have considered relationships with the European Union or the economic viability of the new independent state. Therefore, since the

outcomes of independence processes are largely uncertain, risk disposition is likely to affect how citizens shape their preferences towards secession (Johns et al. 2012: 595).

While some individuals may just vote expressively in these contexts, which might moderate the impact of their risk aversion attitudes, the Scottish and Catalan cases suggest that the growth of pro-independence support from levels below a fifth to about half the population in just a few years is largely explained by instrumental and welfare-maximizing reasons (Muñoz and Tormos 2014). It is precisely on these premises that the Yes campaigns in both countries have been structured, making them subject to risk considerations. In fact, individuals' risk aversion may be a rational reaction to the uncertainty underpinning constitutional change, especially where issues of legality and process are more prominent in the debates than discussions about the implications of the different constitutional options (Bell and Mackay 2013), as it happened in Scotland at the onset of the referendum campaign and in Catalonia until the very same day of the consultation. Given that women tend to be, on average, more risk averse than men and that uncertain scenarios correlate with risk aversion attitudes (Dohmen et al. 2011), along with the fact that the exclusion or low prominence of gender issues (and gender equality more broadly) in the debates on constitutional change may increase women's uncertainties about what independence would mean for their everyday lives (Kenny 2014), *we expect women to be less supportive of secession (H1)*.

Gender differences in risk attitudes, though, might not hold unconditionally. Risk in politics is largely a function of an issue's salience (Saalfeld 2006: 69). As argued by Hobolt (2006: 627), "voters' utility of voting for the proposal is reduced when they know little about the position". Individuals are more or less risk averse or risk prone depending on the levels of information they feel they have when taking a decision (Cutter et al. 1992).

Indeed, information about risks alters the perception of the potential benefits (Slovic 1999: 694; Finucane et al. 2000). In the specific case of sovereignty debates, public discourse on economic and political issues might well “involve areas that are relatively unfamiliar to the electorate” (Kopasker 2014: 104), which might increase individuals’ uneasiness with the political process and the decision at stake (Ormston 2013: 5). That is, the lesser the available information, the more uncertain people will be about the outcomes of constitutional change and the more supportive of the status quo they are likely to be.

As the salience of the political debate increases and more information is available, the level of uncertainty will be lower thereby depressing the impact of risk aversion attitudes (Van Schie and Van Der Pligt 1995; see also Behrens et al 2007). When uncertainty decreases, No-votes might be largely explained by expressively negative positions towards constitutional change rather than by lack of information. Given that when “feel[ing] properly informed women are not particularly risk averse” (Schubert 2006: 710), *we expect gender differences in support for secession to gradually vanish as the debate on secession becomes more salient* (H2).

This notwithstanding, *we cannot rule out the possibility that risk aversion may have heterogeneous effects across gender* (H3). Research on risk aversion has identified systematically different responses to risk across gender, which may have important implications for behavior (Slovic 1999: 694). Men and women systematically differ in their responses to risk, with women making less individually-oriented and more socially-oriented choices than men (Eckel and Grossman 2008: 518). Similarly, gender differences have been identified in emotional experiences of outcomes when risk is involved (Croson and Gneezy 2009: 452). One of the most consistent gender differences is found in reactions to positive and negative stimuli (see Soroka 2014: 45-47). Women’s uneasiness when anticipating

negative outcomes is stronger than men's (Fujita et al. 1999). As pointed by Schubert (2006: 710), even "[when] the probability for a positive outcome increases, women are not necessarily more likely to choose the corresponding alternative". Conversely, men's overconfidence may cancel out the impact of risk (Niederle and Vesterlund 2007). Indeed, men's interpretation of risk is usually seen as a challenge needing response (Arch 1993). While negatively framed messages tend to activate an 'avoidance response' among women, men present the highest arousal levels and comprehension scores for negatively valenced messages (Grabe and Kamhawi 2006).

Framings of messages have been found to produce gendered outcomes in risk aversion assessments (Booth and Nolen 2012: 520). Yet, while women are generally affected by framing, men are not (Fagley and Miller 1990). In sovereignty referendums, both unionist and secessionist actors struggle to impose their definition of risk to convince the electorate that their solution is the most cost-effective, welfare-maximizing or safest whereas their rivals' would bring about catastrophic outcomes. In particular, while we acknowledge that the impact of positive and negative visions depends on their credibility (Nadeau et al. 1999: 537), in light of the literature discussed above, *we expect risk averse women to show a lower support for secession than risk averse men when confronted with negative scenarios* (H4).

### **Support for secession in Catalonia**

Up to the mid 2000s, the debate on Catalonia's territorial accommodation within Spain revolved around whether the 'State of Autonomies' could develop into an asymmetrical model through which the so-called 'historical nations' could enjoy a higher degree of regional competencies than the rest of Autonomous Communities (Serrano 2013).



However, this possibility has systematically faced the opposition of several regions, whose autonomy was gradually enlarged out of competitive bargaining based on perceived comparative grievances (Muro 2009; Guinjoan and Rodon 2014). The two largest statewide political parties have also resisted moving away from the Spanish ‘coffee-for-all’ model for electoral, territorial and ideological logics (Verge 2013).

In 2003, in a new attempt to increase the level of both self-rule and shared-rule, several Catalan political parties agreed to draft a new Statute of Autonomy (i.e. regional constitution), which stirred a political strife in both Catalan and Spanish politics (Colino 2009). The reformed Statute of Autonomy was eventually passed by the Catalan and the Spanish parliaments and, finally, voted by Catalans through referendum in 2006. The main right-wing statewide party, the Popular Party, the Spanish Ombudsman and several regional governments lodged an appeal before the Constitutional Court, which kept the issue of Catalan autonomy at the top of the political agenda and radicalized both the secessionist and unionist camps (Muñoz and Guinjoan 2013).

In 2010 the Spanish Constitutional Court ruled out against several key articles of the new Statute. This ruling largely contributed to sparking a feeling of uneasiness in Catalonia with the existing territorial accommodation within Spain and the resulting social mobilization decisively spurred the pro-independence movement. When asked about constitutional preferences, the share of respondents supporting a Catalan independent state more than trebled, rising from 14 per cent in 2006 to 45 per cent in 2014.<sup>1</sup> Similarly, when asked about intended vote in a hypothetical sovereignty referendum, over the past few years support for secession skyrocketed, reaching 60 per cent by late 2014.<sup>2</sup>

As a result of steady social mobilization, in December 2013 the leaders of the six Catalan parties supporting self-determination agreed on the date and question of a

sovereignty referendum. Although public opinion surveys consistently showed that around 70-80 per cent of the Catalan population supported holding such a referendum, the various requests made by the Catalan parliament and government to allow this possibility were repeatedly voted down by the Spanish institutions and the largest statewide parties. In spite of this, the Catalan government, with the support of all parties defending the right to self-determination, organized a non-binding consultation on November 9, 2014<sup>3</sup>. Over 2.3 million Catalans turned out, with over 80 percent of voters endorsing independence.

The pro-independence movement in Catalonia presents important differences with the Quebecois and the Scottish ones. Firstly, the Yes platform is not monopolized by a single party but, instead, it is integrated by parties all along the ideological spectrum, from the extreme left to the centre-right (Serrano 2013). Secondly, the political process has been bottom-up, with civil society leading the demands for self-determination and pushing political parties to move forward through massive demonstrations and cyberactivism. Finally, while public events and media coverage of the Scottish referendum were largely male-dominated for most part of the campaign (Kenny 2014), in Catalonia the Yes camp is much more feminized. Most of the social organizations supporting the referendum or specifically created to galvanize support for independence are led by women and their membership is gender-balanced, although media coverage is also gender-biased<sup>4</sup>.

## **Data and method**

The empirical analysis proceeds in two steps. Firstly, we use the various waves of the Political Opinion Barometer administered by the *Centre d'Estudis d'Opinió* (CEO) from 2011 to 2013, the only ones with a direct question on intended referendum vote<sup>5</sup>, to trace from a longitudinal perspective the evolution of gender differences in support for secession.

The series under exploration includes seven identical surveys, each one containing between 2,000 and 2,500 individuals interviewed by telephone (CATI). This makes a total sum of 16,500 respondents stratified by gender, age and town size.

Secondly, we adopt a static perspective to examine the impact of risk aversion on support for independence and to tease out the potential heterogeneous effects of risk aversion across gender. In this case, we turn to a very useful piece of survey research, namely an online experimental survey also carried out by CEO in December 2013. In this survey, ten treatment sub-groups had the question on intended vote in a secession referendum primed (i.e. framed) by a prior statement. The statement presented five positive and five negative hypothetical conjunctures about negotiation scenarios with Spain or about the costs and benefits of independence, which echo current public debates. For example, the unionist camp typically flags the fear of Catalonia being expelled from the European Union and suffering from acute economic problems whereas secessionists maintain that membership into the EU would be kept and that independence would boost economic growth in Catalonia. Thus, by manipulating framing operations, the heterogeneous effect of risk across gender can be empirically tackled.<sup>6</sup>

The total number of individuals to whom a positive or a negative treatment was administered is 1,635 respondents, while 202 received no treatment and act thus as the control group. Respondents were selected from a commercial online pool of respondents among Catalan residents over 17 years old. While not being a probability sample of the population, the survey design used gender, age, and area of residence (i.e. provinces, the sub-regional administrative divisions matching the electoral constituencies) quotas thereby granting sufficient variance in key demographics to prevent the results from being driven by the heterogeneous effects of the stimuli on a specific group of the population.<sup>7</sup>

In order to explore the determinants of voting in favor/against/undecided towards secession, our dependent variable in the two analyses, we will carry out multinomial logistic models, taking voting against independence as the baseline category.<sup>8</sup> In the longitudinal analysis, the main independent variable is the ‘salience’ of the territorial debate, which is captured through a question tapping what respondents consider to be the most important problem in Catalonia. This is an open question asked throughout the seven surveys under exploration that the CEO clusters into 18 categories, two of which directly tackle territorial politics and the accommodation of Catalonia within Spain. For each of the waves, we take the sum of the percentage of respondents in these two categories as a proxy for the salience of the territorial debate.

In the static model, the main independent variable is risk aversion. We rely on a direct question of subjective risk aversion that asks respondents to evaluate how comfortable they feel when taking risks. This is a continuous variable ranging from 1 ‘I feel very comfortable taking risks’ to 5 ‘I feel very uncomfortable taking risks’, so the higher the value the more risk averse an individual is. This variable takes after the one used by Nadeau et al. (1999) in their study of the Quebec referendum. Along with self-reported risk, the experimental survey included an alternative measure. Respondents were required to decide how much of the money won in a lottery they would invest – with an associated risk of either doubling or halving the prize. While the empirical analyses yield virtually the same results with the two measures, we have chosen the former for various reasons. Firstly, gambling or investment measures may fail to elicit typical decision behaviors and it is unclear whether such measures relate more generally to other choice contexts. Secondly, investment decisions, even after winning a lottery, are strongly conditioned by other factors, such as individuals’ social class and gender (see Mandrik and Bao 2005).

Investment decisions may predominantly reflect male experiences, as men are more familiar with financial risks and are thus more likely to perceive them as less frightening (Cutter et al. 1992), which adds to the fact that women tend to perceive smaller probabilities for gains (Schubert 2006: 711).

Both the longitudinal and the static analyses include a variable identifying sex, which takes value 1 for 'women' and 0 for 'men', and control for several variables that have proved to be relevant when explaining Catalans' support for independence (Muñoz and Tormos 2014), namely: Subjective national identification (1 'I feel only Spanish' to 5 'I feel only Catalan'); Left-right self-placement (0 'Extreme left' to 7 –in the longitudinal analysis– or 10 –in the survey experiment– 'Extreme right'); Household income (12 categories ranging from below 300€ a month to over 6,000€); and Age (continuous variable). Due to data availability the effect of individuals' educational level can only be assessed in the longitudinal analysis (from 1 'Primary education' to 6 'University education'). Both analyses also include a question measuring the frequency of political discussion with friends and family as a proxy for political sophistication. The variable ranges from 1 'Never' to 4 'Almost every day or every day' in the static analysis, and from 1 'No frequency at all' to 5 'Very frequently' in the longitudinal analysis.

## **Empirical Results**

While Catalans' support for secession has tremendously increased in the past few years, some relevant gender differences have been observed when examining intended vote in a referendum, as Table 1 shows. Whereas gender differences were negligible with regard to the negative vote, men were consistently more likely than women to vote Yes.

Simultaneously, women were more inclined than men to abstain or to remain undecided,

with statistically significant differences sustained over time, thus confirming our first hypothesis. The gender gap, though, gradually shrank and eventually vanished. From June 2013 onwards no statistical differences are found in support for independence between women and men. In what follows we seek to unveil the factors lying behind the evaporation of the gender gap and the extent to which the determinants of support for independence may still vary across gender.

[TABLE 1 HERE]

*The vanishing of the gender gap in support for independence*

Model 1 in Table 2 presents the results of a multinomial logistic regression model on voting in favor of secession (using voting against secession as the baseline category), and data clustered by opinion poll (wave).<sup>9</sup> The results show that, on average, women have consistently been less supportive of secession than men, with the coefficient being statistically significant at the 10 percent level. Yet, as argued in the theoretical section, we expect that the growing salience of the debate over Catalonia's secession has made women more favorable to constitutional change. The salience variable, which taps the perceived most important problem in Catalonia, takes its lowest value in June 2011 (4.2 percent), the first wave, and its highest value in June 2013 (11.1 percent). Except for a non-significant decrease in February 2012, the salience of the territorial debate has steadily increased over consecutive waves. The growing importance of independence in the public sphere may have decreased the uncertainty associated with constitutional change, especially by providing information about the different plausible outcomes.

[TABLE 2 HERE]

To identify whether increased salience has contributed to eliminating gender differences in support for secession, Model 2 in Table 2 introduces an interaction term between ‘women’ and ‘salience’ of the territorial debate – with data clustered by opinion poll.<sup>10</sup> The constitutive term for salience is, as expected, positive and statistically significant, indicating that, as the debate became more salient, support for independence among men increased. The interaction of salience of the debate with women – which shows the marginal increase of salience of the debate among women as compared to men – is also positive, although it does not reach statistical significance. Nonetheless, when we plot the predicted values of support for secession for men and women as a function of the salience of the territorial debate, gender differences shrink. Figure 1 shows that, in line with our second hypothesis, as the salience of the territorial debate increased gender differences in support for secession eventually vanished.

[FIGURE 1 HERE]

#### *Risk aversion, gender and support for secession*

With a view to assessing the impact of risk aversion on support for secession, Table 3 shows the results of a multinomial logistic model – voting against Catalan independence being again the baseline category. Model 1 in Table 3 shows that gender is not statistically significant. It is worth noting that the experimental survey used for this purpose was administered in December 2013, when the overall gender gap in intended referendum vote was already non-existent (see Table 1). Women are thus equally likely to vote in favor of

secession than men, when national identity, ideology, political discussion, income and age are controlled for. Similarly, risk aversion does not reach on its own statistical significance. The remaining variables show that national identity is the strongest predictor of voting in favor of secession. The more Catalan an individual feels, the more likely (s)he is to cast a favorable vote in the event of a referendum. Individuals placed in the right of the ideological spectrum are less likely to support independence. These two findings align with previous studies (Muñoz and Tormos 2014). Last, the model shows that political discussion, income and age have basically no impact on support for secession.

[TABLE 3 HERE]

We do not expect, though, gender differences in support for secession to be additive but rather conditional on the presence of risk aversion attitudes. To test whether aversion attitudes toward risk-taking have heterogeneous effects among women and men, Model 2 in Table 3 includes an interaction term between individuals' level of risk aversion and gender. The interaction term is significant and negative, indicating that risk averse women are less likely to vote in favor of independence than men with similar psychological dispositions, thereby confirming our third hypothesis. Figure 2 plots the interaction and shows the predicted probabilities of voting in favor of independence across gender for different levels of risk aversion. Whereas for the male group predicted probabilities are very stable across varying degrees of subjective risk taking attitudes, for the female group the highest the uneasiness with assuming risks, the lower the support for secession. The remaining variables show considerable consistency with Model 1. National identity and ideology are



still, in this order, the most relevant predictors of voting in favor of secession, whereas income, political discussion and age are not statistically significant.

[FIGURE 2 HERE]

Having confirmed that risk aversion produces heterogeneous effects by gender, we proceed next to explore them in greater detail by factoring in the empirical analysis the framing of hypothetical positive or negative scenarios surrounding the independence process or independence itself. Almost half of the surveyed individuals were primed with a positive treatment, some other half with a negative treatment, whereas the remaining group received no treatment (control group). Following our theoretical expectations, we test whether manipulating the framing, that is administering a positive or a negative treatment, has a differential effect on the conditional relationship between gender and risk aversion. More concretely, we hypothesized that risk averse women would show a lower support for secession than men with a similar psychological disposition when confronted with negative scenarios (H4).

This expectation requires modeling a triple interaction between gender, risk-aversion and treatment category (positive/negative/control group). Triple interactions mean that there is a two-way interaction that varies across the levels of a third variable<sup>11</sup>. In our case, we want to test whether the interaction between risk-aversion and the positive/negative treatment differs across gender. Model 3 in Table 3 indicates that the triple interaction is statistically significant. In order to make the interpretation of the results easier, Figure 3 plots the impact of the negative and positive treatments among women and men as a function of their risk aversion. As can be seen, negative treatments dramatically

drive downwards support for independence. Likewise, women who feel very uncomfortable with taking risks but did not receive any treatment also have a significantly lower probability to vote in favor, as compared to low risk-averse women. Although the slope is shallower, the same trend is observed for women having received the positive treatment. These results indicate that risk aversion shapes women's position on independence, with negative treatment magnifying this pattern and positive treatment moderating (albeit not eliminating) it.

[FIGURE 3 HERE]

Positive and negative treatments impact differently on men (see also Figure 3). Under positive treatments, like in the case of women, men with higher levels of risk aversion are less likely to vote in favor of secession than those with lower levels of risk aversion. Interestingly, negative treatments do not depress men's support for independence, regardless of their level of risk aversion as it does in the case of women. Indeed, as men's risk aversion boosts, negative priming slightly increases support for independence. Although the effect of positive and negative priming is also statistically significant for men, it is weaker than for women, thereby accepting H4.

Overall, the findings from the experimental survey clearly corroborate our expectation of gendered heterogeneous effects of risk aversion on voting for secession when negative or positive treatments (priming) are administered<sup>12</sup>. As expected, women are less likely to vote in favor of independence at higher levels of risk aversion and when primed with negative scenarios about independence. Conversely, men's probability to vote in favor of independence is only slightly shaped by risk aversion, with positive treatments

inducing a lower probability of voting for secession and negative treatments having the opposite effect.

## **Conclusions**

This article has shown that the effects of the psychological dispositions toward risk can also be expanded to voters' decisions, especially high-stake political decisions. Referendums, and especially consultations on the possibility to create a new state, are a good case to study this relationship since secession entails a large amount of uncertainty. Precisely, political actors structure the public debate around the positive or negative effects that secession might bring about, thereby seeking to shape voters' risk aversion attitudes. Our empirical analysis of the Catalan case suggests that while the gender gap in constitutional preferences existed at the onset of the independence debate – with women being less supportive of independence – it disappeared as the salience of the debate increased.

The empirical analysis also shows that risk aversion attitudes produce heterogeneous effects across gender in the case of sovereignty referendums. The results indicate that women's likelihood of voting in favor of secession is depressed by uneasiness with risk taking, even in contexts where vote intention does no longer show a significant gender gap, such as in Catalonia. Yet, the effect of risk aversion on women's support for independence seems to be moderated by the framing of the risks at stake. The gendered impact of risk on support for independence is thus conditional upon the type of hypothetical conjunctures about the future of the independent state respondents are confronted with. Whereas positive scenarios (treatments) do not produce significant differences across groups, negative scenarios (treatments) do generate heterogeneous effects. Under these

scenarios, risk averse women are significantly less likely to vote in favor of secession than men with similar risk taking attitudes.

Bearing in mind that this heterogeneous response to risk is found in a no-stakes survey, where respondents might feel they can safely express opinions at a low-cost opportunity, we can expect to find either a similar behavior or even larger gender differences in the event of an actual vote (i.e. a binding referendum) where voters would then be more trepidatious about the consequences of their decision. Indeed, the lower support for independence in the Scottish referendum among women over 55 and its impact on the overall results suggest that women may play a crucial role in determining the outcome of sovereignty referendums, specifically if catastrophic visions manage to dominate the public debate.

Although the experimental survey does not contain questions that could help us delve into the reasons behind the heterogeneous effects of risk aversion across gender, we suggest that the answer lies in a combination of factors. As already pointed by existing literature, heterogeneity might be due to the fact that men tend to be aroused by negative scenarios or face them as challenges instead of deploying an avoidance reaction, as it is more common among women. It might also be the case that men hold a stronger expressive position for independence, which may moderate the effects of risk aversion levels on this population group, whereas women's vote (or vote intention) may be less expressively based and rely instead, to a larger extent, on instrumental reasons – especially on those that maximize the economic, social or cultural well-being of the whole population. These nuances are thus needed to avoid over-emphasizing gender differences in risk aversion and its impact on political behavior.

We cannot disregard, though, that risk aversion attitudes may not be equally measurable and comparable among women and men due to the very same gendered practices and ideologies on both social roles and risk evaluations of uncertain scenarios. To shed more light on the heterogeneous impact of risk aversion across gender we call scholars to further explore it and to expand analyses to other high-stake political decisions, such as the implementation of institutional reforms or the adoption of certain public policies.

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## List of tables and figures

Table 1. Gender differences in intended referendum vote

	June 2011	Oct. 2011	Feb. 2012	June 2012	Oct. 2012	Feb. 2013	June 2013	Nov. 2013
Favor	-5.4%**	-6.6%***	-6.6%**	-5.2%**	-6.3%**	-6.6%**	-3.4%	-2.2%
Against	-1.2%	.8%	.0%	-.2%	-1.3%	.7%	.0%	-1.4%
Abstention	4.2%*	4.7%**	4.5%**	3.7%*	3.0%*	3.3%*	2.6% <sup>+</sup>	1.4%
DK/NA	2.2%*	1.0%	1.9%*	2.0%*	4.4%***	2.4%*	1.0%	2.8%**

Source: Centre d'Estudis d'Opinió, Baròmetre d'Opinió Política. 2011 and 2012 waves include 2,500 respondents and 2013 waves include 2,000 respondents.

+ p<.1, \* p<.05, \*\* p<.01, \*\*\* p<.001

Notes: Men-women differences.

Table 2. The determinants of voting in favor of secession: Longitudinal model

	M1	M2
Women	-.097 <sup>+</sup> (.056)	-.223 <sup>+</sup> (.136)
Political discussion	.018 (.044)	.018 (.044)
National identity	2.580*** (.122)	2.580*** (.122)
Ideology	-.165*** (.018)	-.165*** (.019)
Income	-.052** (.019)	-.052** (.019)
Age	.001 (.003)	.001 (.003)
Education	-.108*** (.016)	-.108*** (.016)
Saliience	4.977*** (1.040)	4.034** (1.361)
Women*Saliience		1.935 (1.351)
Constant	-6.842*** (.491)	-6.959*** (.470)
Observations	29151	29151
Number of clusters	7	7
R <sup>2</sup>	.302	.302

Standard errors in parentheses.

+ p<.1, \* p<.05, \*\* p<.01, \*\*\* p<.001.

Figure 1. Predicted probabilities of voting in favor of secession across salience levels by gender

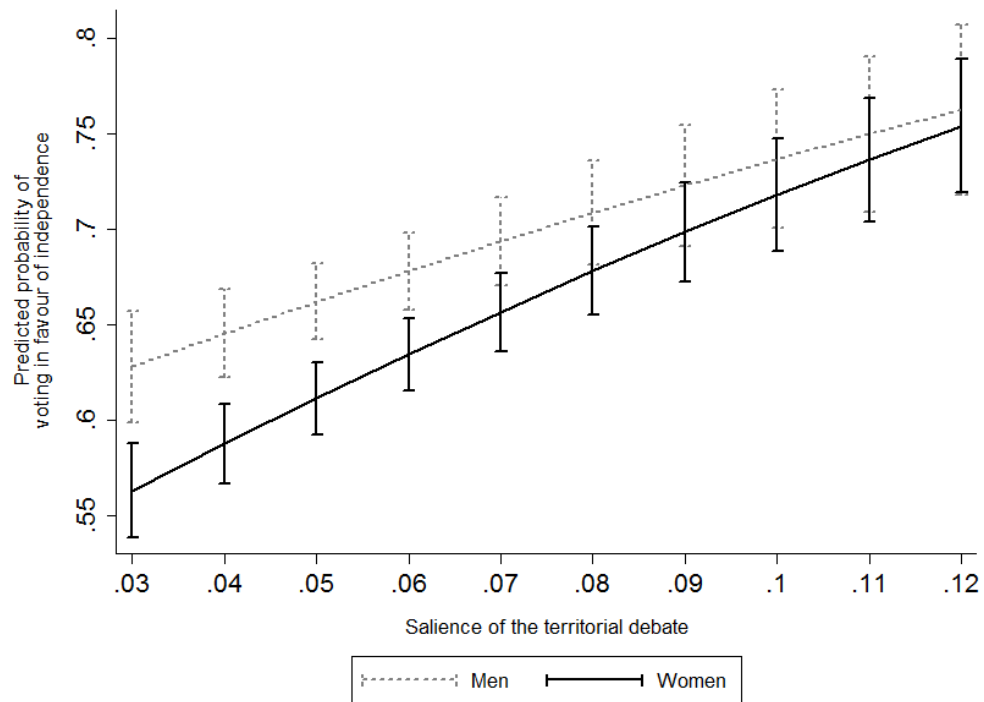


Table 3. The determinants of voting in favor of secession: Static model

	M1	M2	M3
Women	-.119 (.166)	.712 (.443)	1.58*** (.02)
Risk aversion	-.127 (.099)	.012 (.124)	.186*** (.01)
Political discussion	-.081 (.107)	-.080 (.109)	-.069 <sup>+</sup> (.04)
National identity	2.846*** (.187)	2.863*** (.192)	2.935*** (.222)
Ideology	-.199*** (.068)	-.198** (.071)	-.201*** (.054)
Income	.009 (.060)	.014 (.061)	.01 (.067)
Age	-.092 (.158)	-.102 (.158)	-.109 (.193)
Women*Risk aversion		-.271* (.127)	-.598*** (.022)
Treatment (Negative ref. category)			
Positive treatment			1.831*** (.109)
Control group			.239* (.113)
Positive treatment*Risk aversion			-.439*** (.042)
Control group*Risk aversion			.062 (.043)
Women*Positive treatment			-1.717*** (0.060)
Women*Control group			-0.505*** (.159)
Women*Positive treatment*Risk aversion			.651*** (.031)
Women*Control group*Risk aversion			.187*** (.044)
Constant	-8.243*** (0.809)	-8.723*** (0.847)	-9.678*** (1.183)
Observations	1222	1222	1222
Pseudo R <sup>2</sup>	.357	.359	.370

DV: Intended referendum vote (voting against independence used as baseline category).

Standard errors in parentheses.

+ p<.1, \* p<.05, \*\* p<.01, \*\*\* p<.001.

Figure 2. Predicted probabilities of voting in favor of secession across risk-aversion attitudes by gender

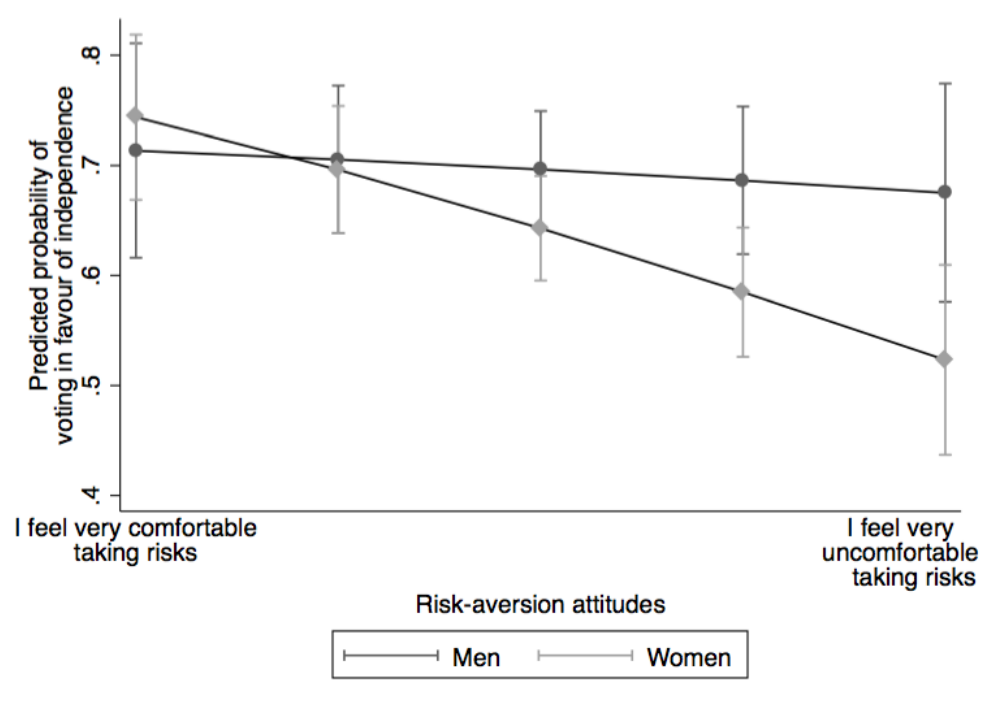
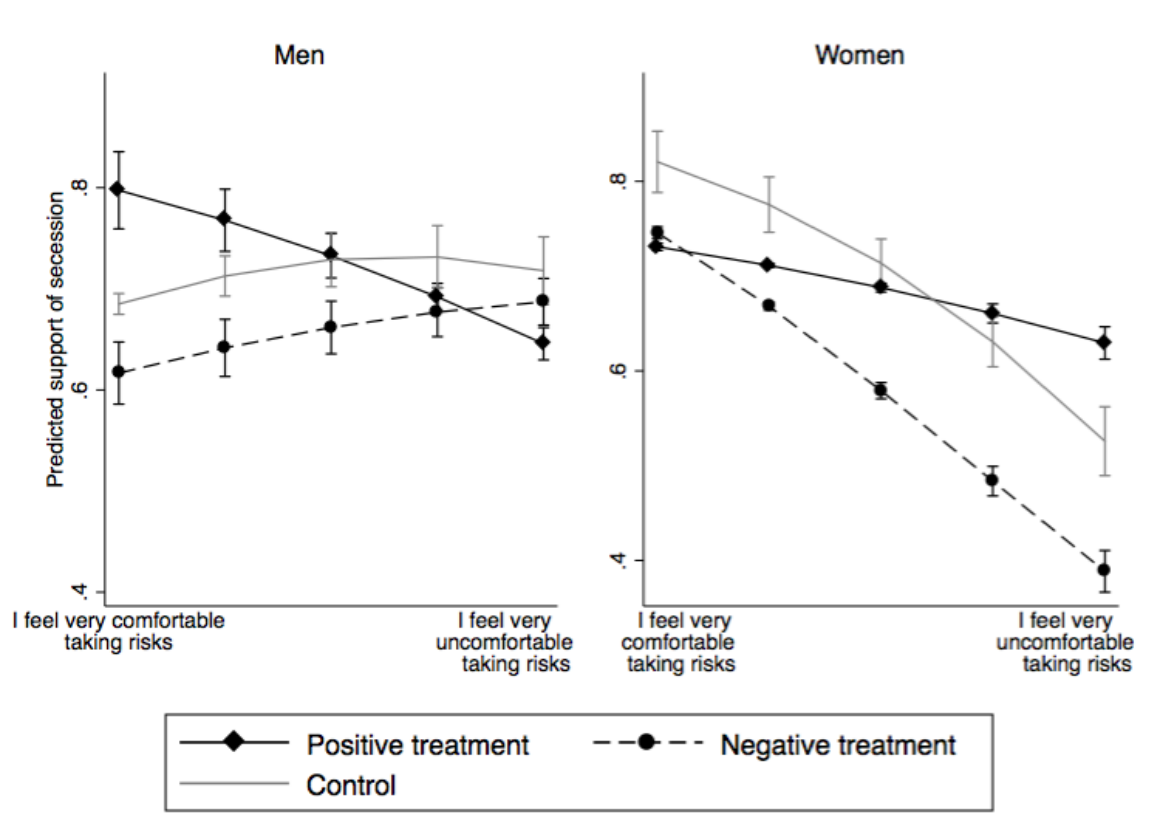


Figure 3. Predicted probabilities of voting in favor of secession across risk-aversion attitudes by gender and treatment group



## Endnotes

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<sup>1</sup> Centre d'Estudis d'Opinió, Political Opinion Barometer, April 2006 and October 2014. The constitutional preference question reads as follows: "In your opinion, Catalonia should be: 1) A Spanish region, 2) A Spanish Autonomous Community, 3) A state within a federal Spain, 4) An independent state".

<sup>2</sup> Centre d'Estudis d'Opinió, Political Opinion Barometer, October 2014

<sup>3</sup> The Spanish government lodged an appeal to the Constitutional Court which suspended the referendum decree of the Catalan government. To circumvent the suspension, the referendum was substituted for a participatory process, keeping the same date and question wording, which was also suspended by the Constitutional Court but nonetheless carried out. The question entailed a double option: "Do you want Catalonia to be a state?", and "If so, do you want this state to be independent?". The percentage reported (80 per cent) refers to Yes-Yes votes. The political consequences of this consultation are yet to be seen.

<sup>4</sup> These organizations include, among others, the Catalan National Assembly/*Assemblea Nacional Catalana* (ANC), which organized the massive rallies in the streets of Barcelona in 2012, 2013 and 2014, *Òmnium Cultural*, and Constituent Process/*Procés Constituent*.

<sup>5</sup> The exact wording of the question included in the survey is: "If a referendum on the independence of Catalonia were held tomorrow, what would you do? 1) Vote in favour of independence, 2) Vote against independence, 3) Abstain, 4) Don't know/No answer. The surveys carried out in 2014 cannot be included in our sample since the question wording changed to reflect the actual question of the November 2014 consultation (see endnote 3).

<sup>6</sup> No statistical differences are found within the different positive or negative treatments. Actually differences are only statistically significant when comparing positive and negative treatments.

<sup>7</sup> If observations are cell-weighted to fit the real distribution of population in each province (see Berinsky 2006), we obtain the same results.

<sup>8</sup> Even though our dependent variable is strictly binary (voting in favour or against secession), in the two analyses a multinomial model is a better estimation procedure than a logistic regression since survey respondents are provided with three alternative categories (vote in favour, vote against or abstain). Running

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the analysis through a logistic regression, or even with an ordered logit, virtually provides the same results. To make the interpretation of results easier only the coefficients for the ‘Yes’ category are shown. Full estimates are available upon request.

<sup>9</sup> Due to unavailability of data on political discussion in the November 2013 wave it cannot be included in the empirical analysis.

<sup>10</sup> The inclusion of a continuous variable identifying the temporal dimension is not appropriate due to its collinearity with the salience of the territorial debate, which steadily increases over time. If the regression is run with a series of dummy variables identifying the waves instead of clustering the data, the results hold the same. Likewise, the inclusion of a dummy variable for the February 2012 wave does not affect the results.

<sup>11</sup> Following Dawson and Richter (2006), we have checked whether the three-way interaction is the result of significant differences among any combination of the moderator variables at high and low levels or of whether any difference between pairs of slopes is significant; and whether an individual slope is a significant predictor of the dependent variable. Robustness checks provided the same results. Additionally, the interaction between risk aversion and the treatment in two separate models (one for men, one for women) did not alter the results.

<sup>12</sup> One could also argue that the effect of the treatment is not direct but it is rather mediated by individuals’ risk aversion attitudes. If it were the case, we would find a direct effect between the treatment and Yes votes and a mediated effect by which the treatment indirectly affects the outcome through risk aversion (see Imai et al 2011). A mediation analysis ruled out this alternative explanation.