Policy or Partisanship: Replicating Results From An Analysis of Quasi-Experimental Evidence From Brexit

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Thanks also to my "Room 4" group; you made this class fun and memorable.

I. Introduction: Overview of Original Paper

This replication examines the paper "Policy or Partisanship: Replicating Results From An Analysis of Quasi-Experimental Evidence From Brexit." In the paper, the authors aim to explore one key question: "are voters motivated by policy preferences, or partisan identities?" (Schonfeld and Winter-Levy 2019). The authors answer the question in the context of the UK's political system, exploiting the UK's Brexit referendum – which caused an abrupt change in the British Conservative Party's stance on leaving the European Union, and via a vote "so narrow that it was more or less a coin flip" (Schonfeld and Winter-Levy 2019). The authors' methodology is relatively simple: they employ an uninterrupted time-series design, examining panel survey data from the British Election Study to compare referendum attitudes and party affiliation in the data immediately before and after the referendum ("Wave 8" and "Wave 9" data, respectively). Given the brief gap between the 2 waves, and their ability to identify/eliminate potential confounders (e.g. a change in the Labour Party's stance on Brexit), they assume their identification strategy is sound. They ultimately fit and run several linear regression models that find that voters are most motivated by policy: following Brexit, "Europhilic" (citizens that supported remaining in the EU) Conservatives disaffiliated from the Conservative party; indeed, the less Euroskeptic a Conservative was pre-referendum, the more likely they were to disaffiliate. The "policy story" holds when examining pre-referendum non-Conservatives; here, the authors determine that the more Euroskeptic pre-referendum non-Conservatives were, the more likely they were to switch to the Conservative Party.

The authors also explore various related questions, such as whether the intensity of pre-referendum Conservatives' partisanship influenced to what degree they followed their party as it adopted a new position; they ultimately find that the positive relationship between Conservatives' perception of their party's position on Brexit and their position on Brexit is strongest for the most partisan Conservatives. The authors also look at whether newly minted Conservative voters also updated their stances on other policy issues to further align themselves with the Conservative party; looking specifically at the issue of redistribution, they find that this is indeed the case. The authors' other results/conclusions are discussed in detail in the next section.

In the next section, I replicate [1] the authors' main results (6 tables and 2 figures), providing my analyses/interpretation. Then, in the third section, I consider ways to extend the authors' work, in this case, by employing another regression method particularly suited to analyses with binary outcomes (such as switching parties) – logistic regression.

[1] The data and code used in the report can be obtained here:

Note for Trisha: Add footnote linking to original paper/replication code!

II. Replicated Results and Discussion

Table 1: Euroskepticism and Defection from the Conservatives

	Dependent variable:		
	Defect from Conservatives		
	(1)	(2)	(3)
Pre-Referendum Euroskepticism	-0.003^{*}	-0.001	0.0001
	(0.001)	(0.001)	(0.001)
Perceived Change in Conservative Euroskepticism		0.011^{*}	0.009^{*}
		(0.004)	(0.004)
Age			-0.001^{***}
			(0.0002)
Female			-0.007
			(0.007)
White			-0.058^{**}
			(0.019)
Scotland			0.002
			(0.012)
Wales			0.021
			(0.014)
Pre-Referendum Euroskepticism:Perceived Change in Conservative Euroskepticism		-0.001^{*}	-0.001^{*}
		(0.001)	(0.001)
Constant	0.101^{***}	0.084^{***}	0.181^{***}
	(0.011)	(0.011)	(0.023)
Observations	7,330	6,476	6,216
R^2	0.001	0.001	0.006
Adjusted R^2	0.0004	0.001	0.005
Residual Std. Error	0.272 (df = 7328)	0.261 (df = 6472)	0.258 (df = 6207)
F Statistic	3.912^{*} (df = 1; 7328)	2.709^{*} (df = 3; 6472)	4.554^{***} (df = 8; 6207)
Note:			*p<0.05; **p<0.01; ***p<0.001

I began by replicating Table 1 of the paper, which aims to answer the paper's most fundamental question: are voters motivated by policy or partisanship? As discussed, the authors operationalize that question by examining if/how party affiliation evolved in the wake of Brexit. In Table 1, the authors examine defection from the Conservative Party. Like the authors, I began by focusing in on Waves 8 and 9 of the data (immediately pre and post-referendum). I first created a "Conservative Party ID" variable that indicated if, for each wave, a given unit reported being a member of the Conservative party; I then used that information to subset to Wave 8 Conservatives, which I then merged with the Wave 9 data. I also created another variable, "partyswitcher," that indicated switching out of the Conservative Party – a Wave 8 Unit that did not report affiliating with the Conservatives in Wave 9. Like the authors, I then regressed this "partyswitcher" variable on the respondent's self-reported level of Euroskepticism (on a 0 - 10 scale) pre-referendum; in 2 other regressions, I also included the perceived change in Euroskepticism of Conservatives as an interaction, as well as threw in a range of demographic information (e.g. age, gender, etc.). The coefficient associated with the first regression, which is significant at the 0.05 level, suggests that "a one-point increase in pre-referendum Euroskepticism yields a 0.3 percent decrease in the probability of defection" (Schonfeld and Winter-Levy 2019). The interaction coefficient in the second/third column of the data is also significant at the 0.05 level; the negative value indicates that " less Euroskeptic Conservatives who perceive that the party has become increasingly Euroskeptic are especially likely to reject it" (Schonfeld and Winter-Levy 2019). Policy, not partisanship, it seems, is what matters.

Table 2: Euroskepticism and Joining the Conservatives

	Dependent variable:		
	Joined Conservatives		
	(1)	(2)	(3)
Pre-Referendum Euroskepticism	0.007^{***}	0.007^{***}	0.006^{***}
	(0.0005)	(0.001)	(0.001)
Perceived Change in Conservative Euroskepticism		-0.003^{*}	-0.004^{**}
		(0.001)	(0.001)
Age			0.0004^{***}
			(0.0001)
Female			-0.002
			(0.003)
White			-0.008
			(0.007)
Scotland			-0.017^{***}
			(0.005)
Wales			-0.012
			(0.006)
Pre-Referendum Euroskepticism:Perceived Change in Conservative Euroskepticism		0.001^{***}	0.001^{***}
		(0.0002)	(0.0002)
Constant	-0.001	0.00004	-0.007
	(0.003)	(0.004)	(0.009)
Observations	18,517	15,139	14,554
R^2	0.012	0.015	0.017
Adjusted R^2	0.012	0.015	0.017
Residual Std. Error	0.198 (df = 18515)	0.204 (df = 15135)	0.202 (df = 14545)
F Statistic	216.857^{***} (df = 1; 18515)	78.431^{***} (df = 3; 15135)	31.854^{***} (df = 8; 14545)
Note:			*p<0.05; **p<0.01; ***p<0.001

That conclusion was strengthened upon creating/examining Table 2. Here, I followed the same steps as I did to create Table 1, with alterations to examine not defection, but joining the Conservatives. Thus, like the authors, I subsetted to pre-referendum (Wave 8) non-Conservatives, which I merged with the Wave 9 data, and created a switching variable "switchtocons" that indicated joining the Conservative Party – a Wave 8 unit that reported affiliating with the Conservative Party in Wave 9. I repeated the 3 same regressions as in Table 1, regressing my new switching variable, "switchtocons," on pre-referendum self-reported levels of Euroskepticism, including perceived changes in the Euroskepticism of the Conservative Party as an interaction, and finally, throwing a number of relevant predictors in. The "policy matters" finding held: as reported in the paper, the coefficient associated with the first regression, significant at the 0.001 level, suggests "a one-point increase in pre-referendum Euroskepticism generates a .7 percent increase in the probability of switching loyalties to the Conservatives" (Schonfeld and Winter-Levy 2019).

Table 3: Individual Shifts in Euroskepticism

	Dependent variable:	
	Change in Personal Euroskepticism:	
	Moderate Conservatives	Very Strong Conservatives
Perceived Change in Conservative Euroskepticism	0.139***	0.220***
	(0.011)	(0.020)
Female	−0.055	−0.109
	(0.054)	(0.113)
Age	0.006***	0.004
	(0.002)	(0.004)
White	0.094	−0.186
	(0.154)	(0.300)
Scotland	0.131	0.099
	(0.096)	(0.192)
Wales	0.017	−0.324
	(0.111)	(0.245)
Constant	−1.161***	−0.573
	(0.178)	(0.340)
Observations	5,000	1,180
R^2	0.038	0.101
Adjusted R^2	0.036	0.097
Residual Std. Error	1.882 (df = 4993)	1.883 (df = 1173)
F Statistic	32.559*** (df = 6; 4993)	22.025*** (df = 6; 1173)
Note:		*p<0.05; **p<0.01; ***p<0.001

Table 3 reflects the results of the authors' exploration of an area of inquiry adjacent to the paper's central question: post-referendum, do Conservatives experience evolution in Brexit policy preference, and does that evolution vary across strong and less strong Conservatives? In particular,"do strong partisans (e.g. very committed to Conservatives) change their policy preferences?" (Schonfeld and Winter-Levy 2019). Like the authors, I conducted this analysis by creating a variable - "Euroskepticismchange" - that represents the change in a given unit's level of Euroskepticism from Wave 8 to Wave 9 (from pre-referendum to post-referendum). Using the dataset subsetted to Wave 8 Conservatives/all Wave 9 data, I then further subsetted this dataset to create 2 datasets, 1 representing units that characterized their affiliation to the Conservative Party as "very strong," and another representing units that did not. For each dataset ("very strong" Conservatives, and those that are not), I then regressed "Euroskepticismchange" on perceived increase in Conservative Euroskepticism. As Table 3 indicates, "there is a clear, statistically significant, positive relationship between Conservative partisans' perception of their party's increasing Euroskepticism and their own Euroskepticism"; the value of the coefficient is higher for self-characterized "Very strong" Conservatives, as we'd expect.

Does this negate the authors' conclusion that policy rules over partisanship/ party affiliation? The authors argue no, not really – as we can see in Table 3, "even for very strong Conservatives, a one-unit increase in perceived Conservative Euroskepticism on a ten-point scale yields only a 0.22-unit increase in personal Euroskepticism" (Schonfeld and Winter-Levy 2019), a relatively small value. Note that this value is significant at the 0.001 level.

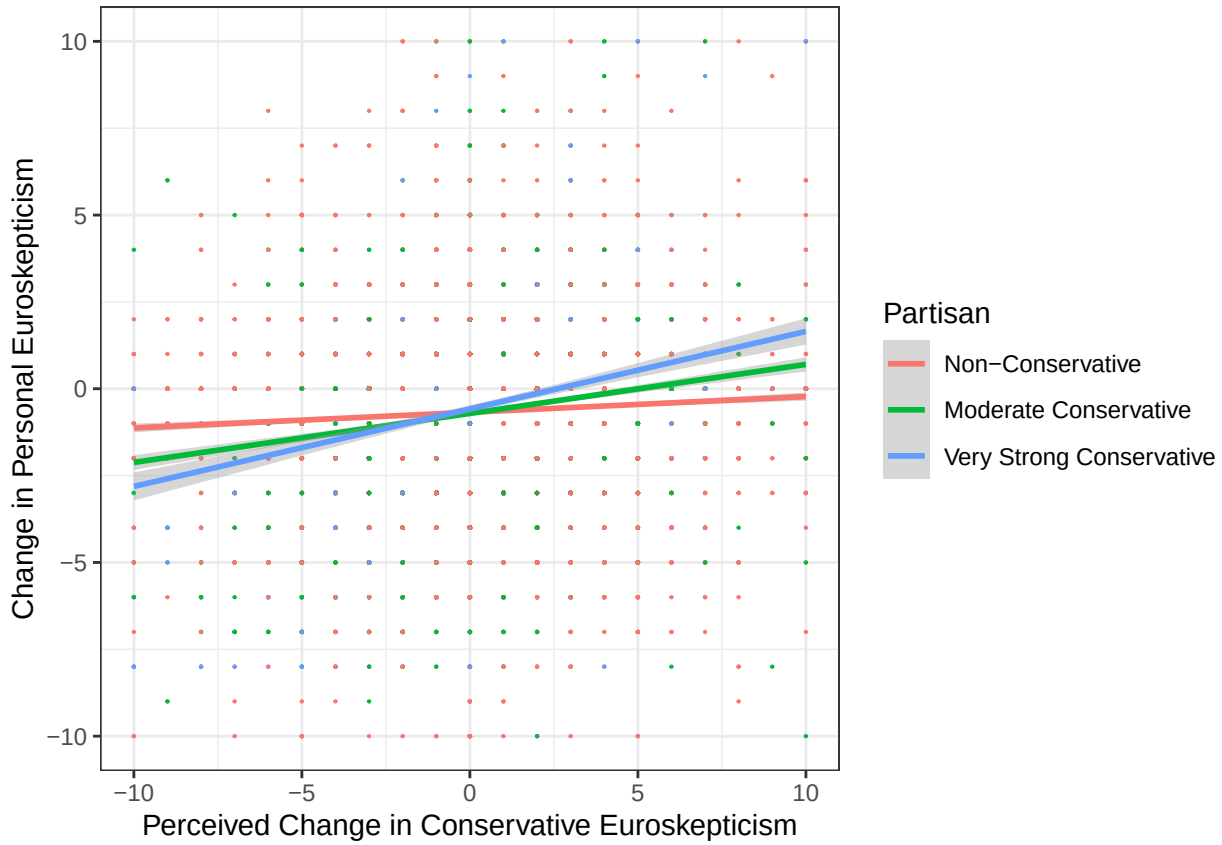


Figure 1 is a visual display of the results discussed in Table 3; here, we can clearly see the relationship between a unit's perceived change in the Euroskepticism of the Conservative Party and their personal change in their views on Euroskepticism; for non-Conservatives, there's almost no relationship, whilst the slope is positive and steeper for "Moderate Conservatives" and even more steep for "Very Strong Conservatives," as we observed. These results are best summarized by the authors themselves: "the intensity of Conservative partisanship determined the extent to which voters followed the party's evolving position on the EU – or, more precisely, their perception of the party's evolving position" (Schonfeld and Winter-Levy 2019).

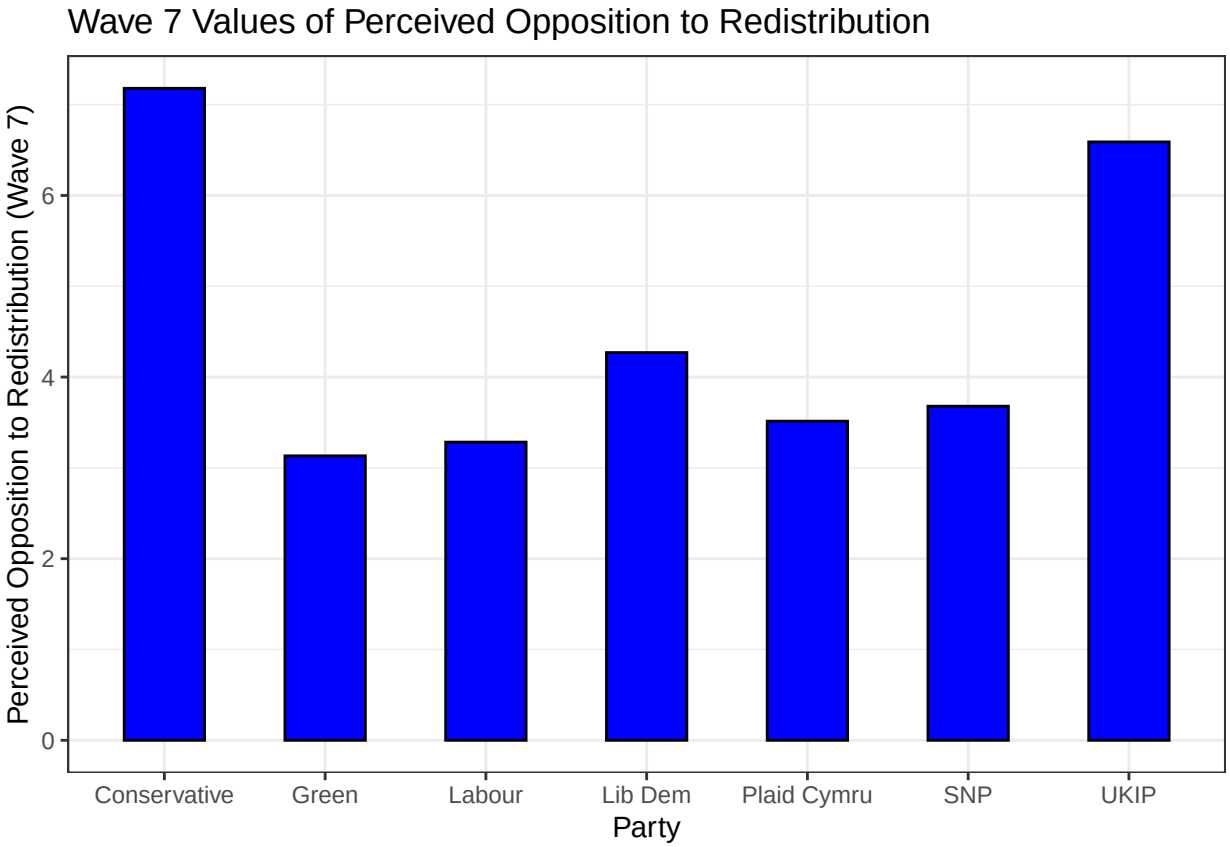
Table 4: Joining the Conservatives and Opposition to Redistribution

	Dependent variable:		
	Change in Opposition to Redistribution		
	Overall	Non-UKIP	UKIP
Joined Conservatives	0.542***	0.605***	0.042
	(0.133)	(0.158)	(0.285)
White	0.179	0.155	0.360
	(0.119)	(0.120)	(0.528)
Age	−0.001	−0.003	0.008
	(0.002)	(0.002)	(0.007)
Female	−0.009	0.0001	0.003
	(0.052)	(0.054)	(0.191)
Scotland	−0.162*	−0.109	−0.472
	(0.071)	(0.071)	(0.468)
Wales	−0.051	−0.112	0.536
	(0.091)	(0.094)	(0.312)
Constant	−0.161	−0.094	−0.518
	(0.144)	(0.146)	(0.631)
Observations	9,065	8,086	979
R^2	0.003	0.003	0.007
Adjusted R^2	0.002	0.002	0.001
Residual Std. Error	2.477 (df = 9058)	2.415 (df = 8079)	2.906 (df = 972)
F Statistic	4.155*** (df = 6; 9058)	3.804*** (df = 6; 8079)	1.090 (df = 6; 972)
Note:			*p<0.05; **p<0.01; ***p<0.001

The authors then turned to another interesting, related question: "As previously non-Conservative Euroskeptics flocked to the party, what happened to their views on other issues?" (Schonfeld and Winter-Levy 2019). In particular, the authors were curious to see if these newly minted Conservatives adopted the Conservative stance on other policy issues; this could shed light into whether "partisanship shapes the development of voters' policy preferences" (Schonfeld and Winter-Levy 2019).

To answer this question, the authors selected redistribution as the policy issue they examined; they noted that it remains a key political issue in the UK. I began by looking at Waves 7 and 11 (the pre and post-referendum surveys that ask about redistribution). Like the authors, I created a new variable, "redistchange," which represents the change in the level of opposition to redistribution between the 2 waves (a positive value suggests an increase in opposition). I then regressed this variable on our "switchtocons" variable (an indicator of whether a given unit switched to the Conservative Party). I do this for the general dataset, as well as for 2 other specific datasets, one representing units that switched to Conservative from the United Kingdom Independence Party (UKIP), and another representing units that did not switch from UKIP. UKIP is a right-wing populist party already quite opposed to redistribution; with that said, "the effect of joining the Conservatives on redistributive attitudes should be stronger among respondents who were not previously members of UKIP" (Schonfeld and Winter-Levy 2019).

As Table 4 shows us, overall, switching to the Conservative Party is associated with a 0.542 point increase in the level of opposition to redistribution on a ten-point scale; this coefficient is significant at the 0.001 level. As we'd expect, this value is even larger – 0.605 – for those switching from a non-UKIP party; further, the coefficient remains significant at the 0.01 level. Finally, though not significant at the 0.05 level, the coefficient associated with those switching from UKIP suggests an almost negligible change (on a 10-point scale) in opposition to redistribution (as we'd expect).


Wave 7 Values of Perceived Opposition to Redistribution
Perceived Opposition to Redistribution (Wave 7)
0
2
4
6
Conservative
Green
Labour
Lib Dem
Plaid Cymru
SNP
UKIP
Party

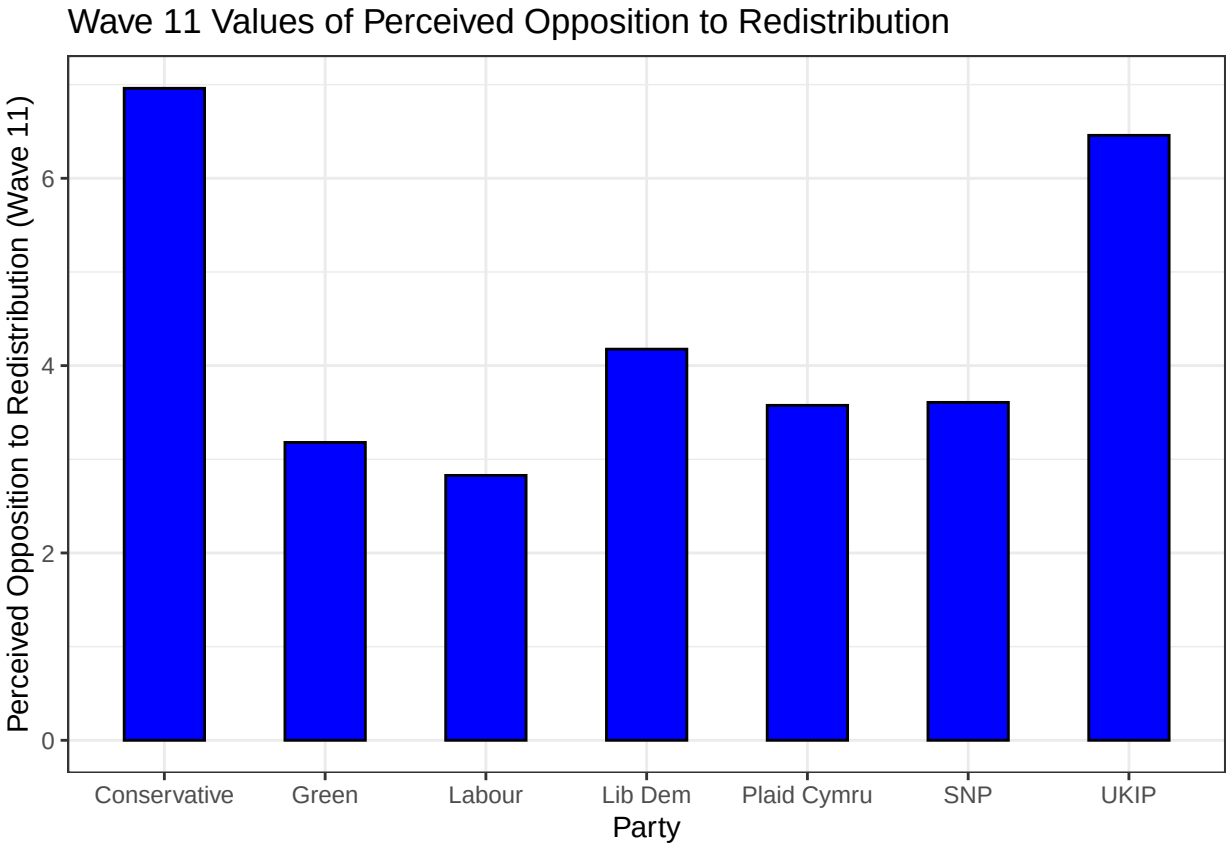


Figure 2 (both graphs) supports Table 4; in particular, they help support our assumption that affiliating with the Conservative Party should – if partisan affiliation influences policy preferences – lead to an increase in opposition to redistribution. As the graphs show, "the Conservatives were the most anti-redistribution party in both Wave 7 – before the referendum – and Wave 11 – after the referendum" (Schonfeld and Winter-Levy 2019).

Table 5: Euroskepticism and Defecting from Conservatives

	Dependent variable:		
	Defected from Conservatives		
	(1)	(2)	(3)
2015 Euroskepticism	-0.029^{***}	-0.031^{***}	-0.026^{***}
	(0.003)	(0.003)	(0.003)
Perceived Change in Conservative Euroskepticism		0.009	0.010
		(0.008)	(0.008)
Age			-0.004^{***}
			(0.001)
Female			0.023
			(0.015)
White			-0.020
			(0.041)
Scotland			-0.053^{*}
			(0.026)
Wales			0.024
			(0.027)
Interaction		-0.001	-0.001
		(0.001)	(0.001)
Constant	0.358^{***}	0.362^{***}	0.608^{***}
	(0.023)	(0.028)	(0.053)
Observations	2,142	1,902	1,902
R^2	0.047	0.059	0.096
Adjusted R^2	0.047	0.058	0.092
Residual Std. Error	0.332 (df = 2140)	0.321 (df = 1898)	0.315 (df = 1893)
F Statistic	105.620^{***} (df = 1; 2140)	39.927^{***} (df = 3; 1898)	25.150^{***} (df = 8; 1893)
Note:			*p<0.05; **p<0.01; ***p<0.001

Finally, the authors ask one last, related (and once again, fascinating) question: yes, we've observed changing partisanship, but "has changing partisanship influenced actual voting?" (Schonfeld and Winter-Levy 2019).

While, as the authors point out, it's impossible to isolate causality for voting changes, we can still "assess the relationship between Euroskepticism and voting in the UK's 2015 and 2017 elections" (Schonfeld and Winter-Levy 2019).

Like the authors, I began by looking at individuals who reported voting for the Conservative Party in 2015 (pre-referendum). I then created a "voteswitcher" variable, which indicated if a given unit ultimately defected/voted for another party in 2017. I regressed voteswitcher on the voter's level of Euroskepticism in 2015; in 2 other regressions, I added perceived changes in the Euroskepticism of the Conservative Party as an interaction, as well as threw in a bunch of relevant covariates.

The results suggest that there is a relatively strong negative relationship between 2015 Euroskepticism and the likelihood of defecting from the Conservative Party in the 2017 election; indeed, "a one-unit increase in Euroskepticism (on the ten-point scale) in 2015 makes someone 2.9 percent less likely to abandon the Conservatives in the 2017 election." This coefficient is significant at the 0.001 level.

Table 6: Euroskepticism and Switching Vote to Conservatives

	Dependent variable:		
	Switched to Conservatives		
	(1)	(2)	(3)
2015 Euroskepticism	0.047^{***}	0.049^{***}	0.047^{***}
	(0.002)	(0.002)	(0.002)
Perceived Change in Conservative Euroskepticism		0.005	0.004
		(0.004)	(0.004)
Age			0.002^{***}
			(0.0004)
Female			-0.015
			(0.012)
White			0.061^{*}
			(0.028)
Scotland			0.010
			(0.015)
Wales			-0.034
			(0.020)
Interaction		0.001^{*}	0.001^{*}
		(0.001)	(0.001)
Constant	-0.068^{***}	-0.076^{***}	-0.228^{***}
	(0.011)	(0.012)	(0.035)
Observations	4,388	3,758	3,758
R^2	0.164	0.203	0.210
Adjusted R^2	0.164	0.202	0.208
Residual Std. Error	0.367 (df = 4386)	0.364 (df = 3754)	0.363 (df = 3749)
F Statistic	861.685^{***} (df = 1; 4386)	318.651^{***} (df = 3; 3754)	124.664^{***} (df = 8; 3749)
Note:			*p<0.05; **p<0.01; ***p<0.001

What about non-Conservatives? In Table 6, the authors extend their analysis in Table 5 to answer exactly that question. Here, I began by looking at individuals who reported not voting for the Conservative Party in 2015 (pre-referendum); I then created a "switchtocon" variable that indicated if a given unit ultimately switched to the Conservative Party in 2017. Once again, I regressed my "switchtocon" variable on voters' level of Euroskepticism in 2015, creating 2 other regressions, 1 with perceived changes in the Euroskepticism of the Conservative Party as an interaction, and another with a number of additional covariates.

The results suggest the relationship we'd expect: a one-unit increase (on a 10- point scale) in a non-Conservative voter's level of Euroskepticism in 2015 is associated with a 4.7% increase in the likelihood of voting for the Conservative Party in 2017. Once again, this coefficient is significant at the 0.001 level.

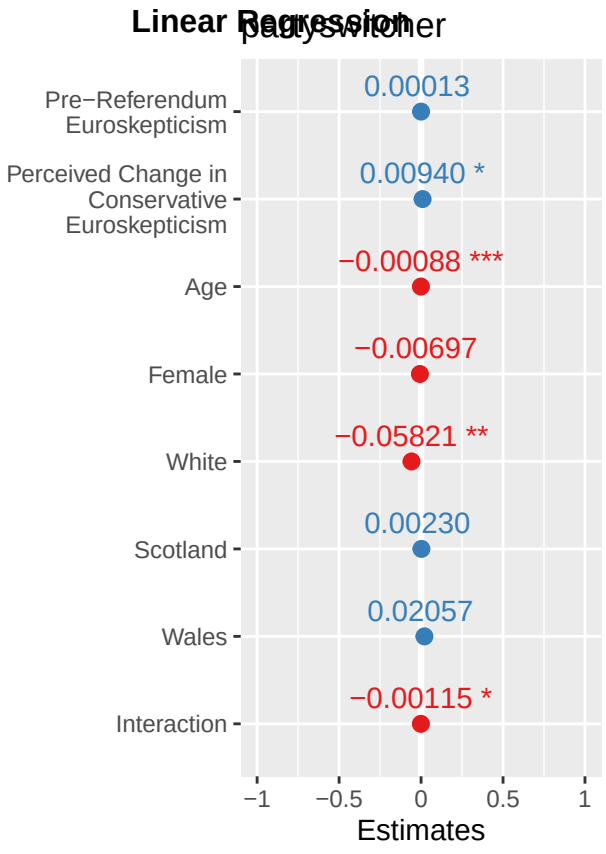
III. Proposed Extension

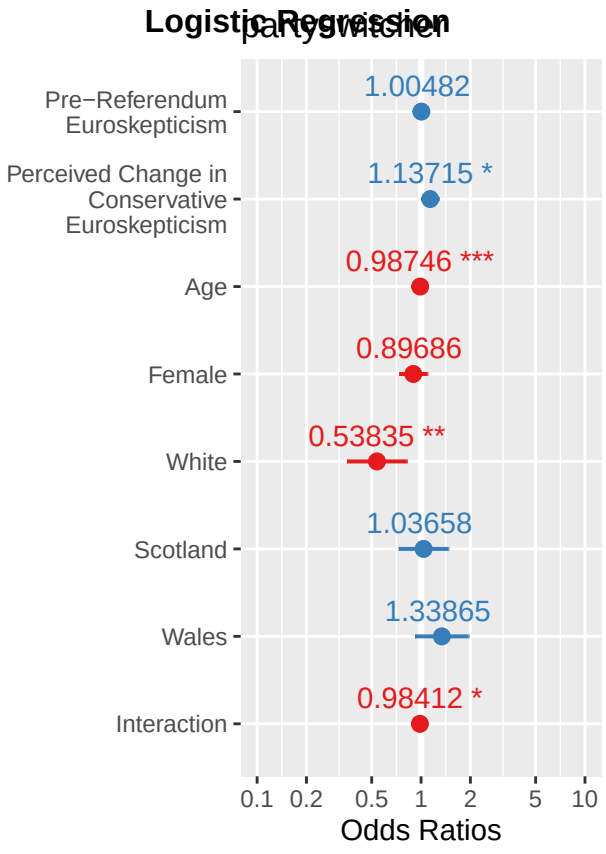
In replicating the results of this paper, I noticed an area for potential extension of the authors' original results: as discussed above, Tables 1 and 2, which examine the probability of defecting from the Conservative Party and probability of switching to the Conservative Party, respectively, as a function of an individual's pre-referendum level of Euroskepticism, have a binary outcome/dependent variable (partyswitcher and switchtocon are indicator variables, with 1 indicating defection/switching, and 0 indicating otherwise). As described in Gelman and Hill, "logistic regression is the standard way to model binary outcomes" (Gelman and Hill 2007); nevertheless, the authors never employ it in the paper. What if, I wondered, I performed the

regressions summarized in Table 1 and 2 via logistic regression? Would the results change; otherwise, would we see any interesting findings?

Table 7: Euroskepticism and Defection from the Conservatives (Logistic)

	Dependent variable:		
	Defect from Conservatives		
	(1)	(2)	(3)
Pre-Referendum Euroskepticism	-0.033^{*}	-0.015	0.005
	(0.017)	(0.020)	(0.021)
Perceived Change in Conservative Euroskepticism		0.140^{*}	0.129^{*}
		(0.058)	(0.062)
Age			-0.013^{***}
			(0.003)
Female			-0.109
			(0.101)
White			-0.619^{**}
			(0.214)
Scotland			0.036
			(0.178)
Wales			0.292
			(0.192)
Pre-Referendum Euroskepticism:Perceived Change in Conservative Euroskepticism		-0.017^{*}	-0.016^{*}
		(0.007)	(0.007)
Constant	-2.170^{***}	-2.415^{***}	-1.260^{***}
	(0.139)	(0.165)	(0.293)
Observations	7,330	6,476	6,216
Log Likelihood	$-2,052.692$	$-1,699.461$	$-1,588.203$
Akaike Inf. Crit.	4,109.383	3,406.922	3,194.406
Note:			*p<0.05; **p<0.01; ***p<0.001

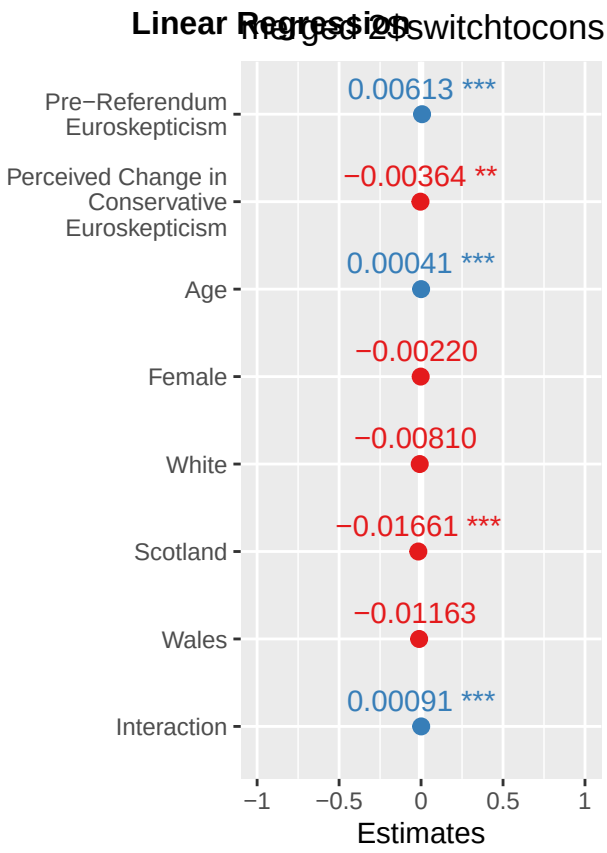


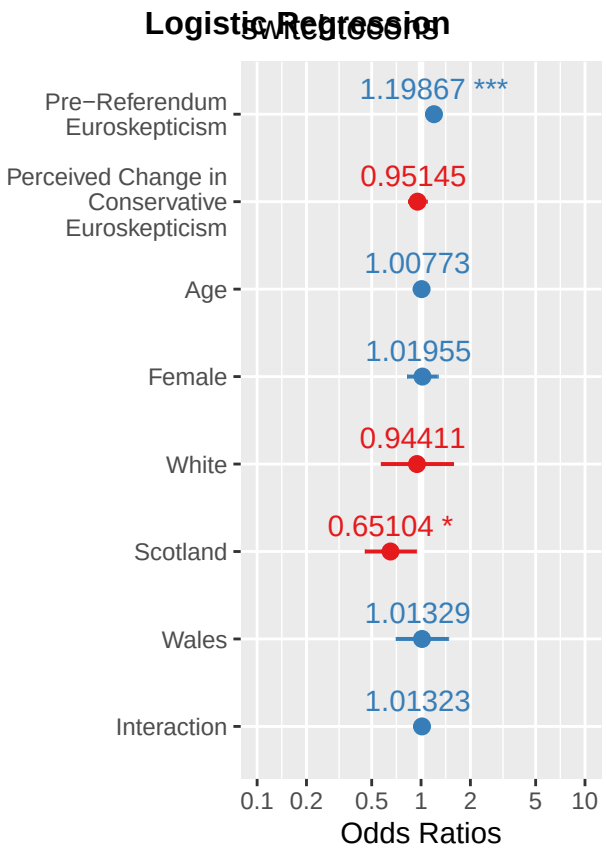


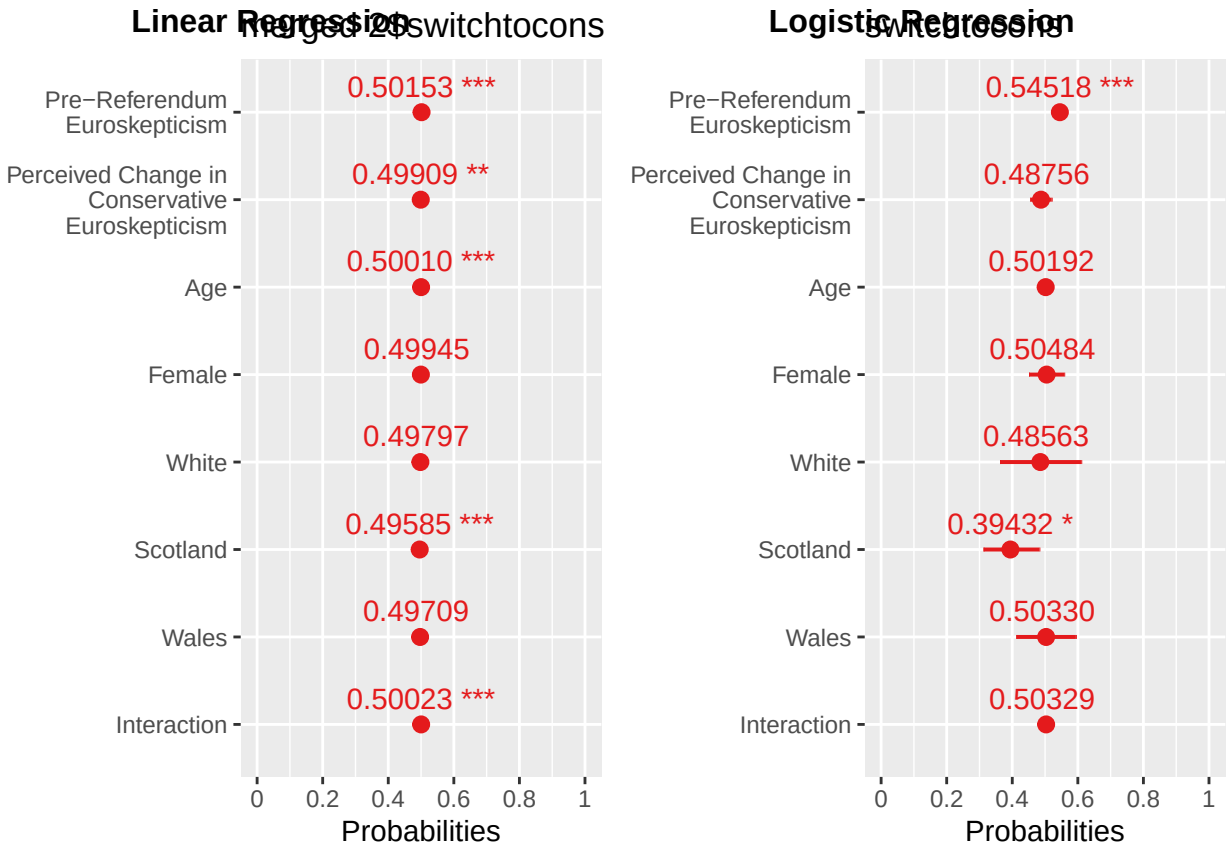
The results above suggest that in the case of Table 1, the authors ultimately didn't have a lot to gain in utilizing logistic regression instead of linear regression; neither the significance nor the direction of any of the coefficient estimates change. With that said, we do get a clearer, more nuanced picture of the results with an odds ratio interpretation; specifically, it more concretely allows us to compare the relative magnitudes of the various coefficients. The same is true in the case of the probability values: while, across both linear and logistic, the direction/significance of probabilities stay the same, we do see the logistic probability estimates vary a bit more in magnitude, suggesting additional nuance.

Table 8: Euroskepticism and Joining the Conservatives (Logistic)

	Dependent variable:		
	Joined Conservatives		
	(1)	(2)	(3)
Pre-Referendum Euroskepticism	0.197***		
	(0.020)		
Perceived Change in Conservative Euroskepticism		0.194***	0.181***
		(0.022)	(0.022)
Age		−0.052	−0.050
		(0.067)	(0.067)
Female			0.008
			(0.004)
White			0.019
			(0.110)
Scotland			−0.058
			(0.258)
Wales			−0.429*
			(0.184)
Pre-Referendum Euroskepticism:Perceived Change in Conservative Euroskepticism			0.013
			(0.188)
Constant		0.013	0.013
		(0.008)	(0.008)
Constant	−4.615***	−4.576***	−4.810***
	(0.166)	(0.182)	(0.350)
Observations	10,125	8,293	8,292
Log Likelihood	−1,646.992	−1,400.798	−1,396.024
Akaike Inf. Crit.	3,297.984	2,809.597	2,810.048
Note:			*p<0.05; **p<0.01; ***p<0.001


Linear Regression
Pre−Referendum Euroskepticism
Perceived Change in Conservative Euroskepticism
Age
Female
White
Scotland
Wales
Interaction
0.00613 ***
−0.00364 **
0.00041 ***
−0.00220
−0.00810
−0.01661 ***
−0.01163
0.00091 ***
−1
−0.5
0
0.5
1
Estimates


Logistic Regression
Pre−Referendum Euroskepticism
Perceived Change in Conservative Euroskepticism
Age
Female
White
Scotland
Wales
Interaction
1.19867 ***
0.95145
1.00773
1.01955
0.94411
0.65104 *
1.01329
1.01323
0.1
0.2
0.5
1
2
5
10
Odds Ratios



Discuss significance/direction changes; keep in mind if initial value was significant, as this can explain direction changes.

Logit curve; don 't have to do for all plot_model(m, type = "eff", terms = "Days") terms – what variables you want to explorer type – what curve you wnat to create

IV. Conclusion

End with some takeaways: based on my analysis, what should be done?

Ignore - Delete Before Submitting:

```
# Look at the table, and say that the findings stay the same; the authors
# ultimately didn't have a ton to gain by pursuing logistic regression.

# Le: Maybe look at interaction and the other 2 model
# sjPlot; plot_model - compare to linear model

# Let's look at the null and residual deviance for our last model:

pchisq(3209.2 - 3176.4, 6215 - 6207, lower = FALSE)
```

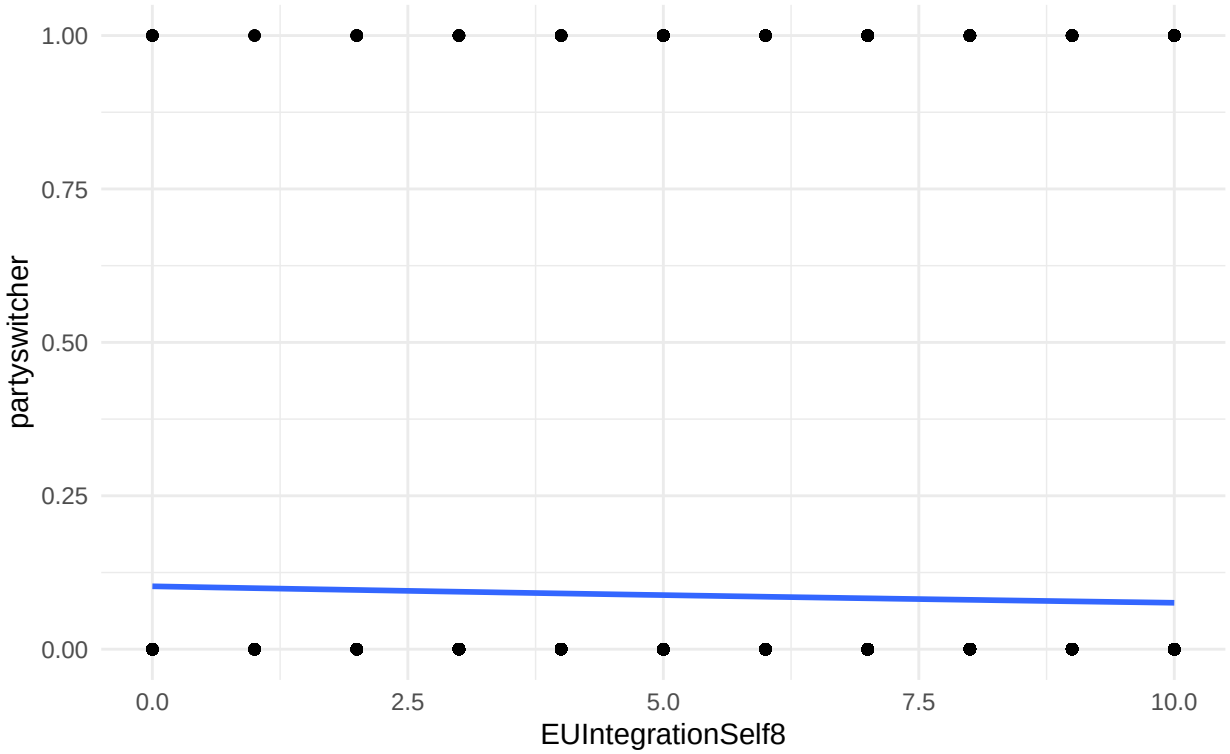
[1] 6.691329e-05

```r
# We're definitely in the tail, which suggests that our model is statistically
# different from the mean model. That's good!

# Let's look at the odds ratios:

exp(table1reg_logistic$coefficients[])
```

```
   (Intercept) EUIntegrationSelf8
     0.1142154          0.9672463
```

```r
# Question for Le: How should I interpret/consider the logistic regression
# approach -- in particular, how should I compare it to the "regular" lm
# approach utilized in the paper?

# Can plot some graphs -- look at the magnitudes across the scales of indep.
# variable.

merged %>%
  ggplot(aes(EUIntegrationSelf8, partyswitcher)) +
  geom_point() +
  stat_smooth(method = "glm", se = FALSE,
              method.args = list(binomial(link = "logit"))) +
  theme_minimal() +
  labs(title = "Logistic regression is...",
       subtitle = "")
```

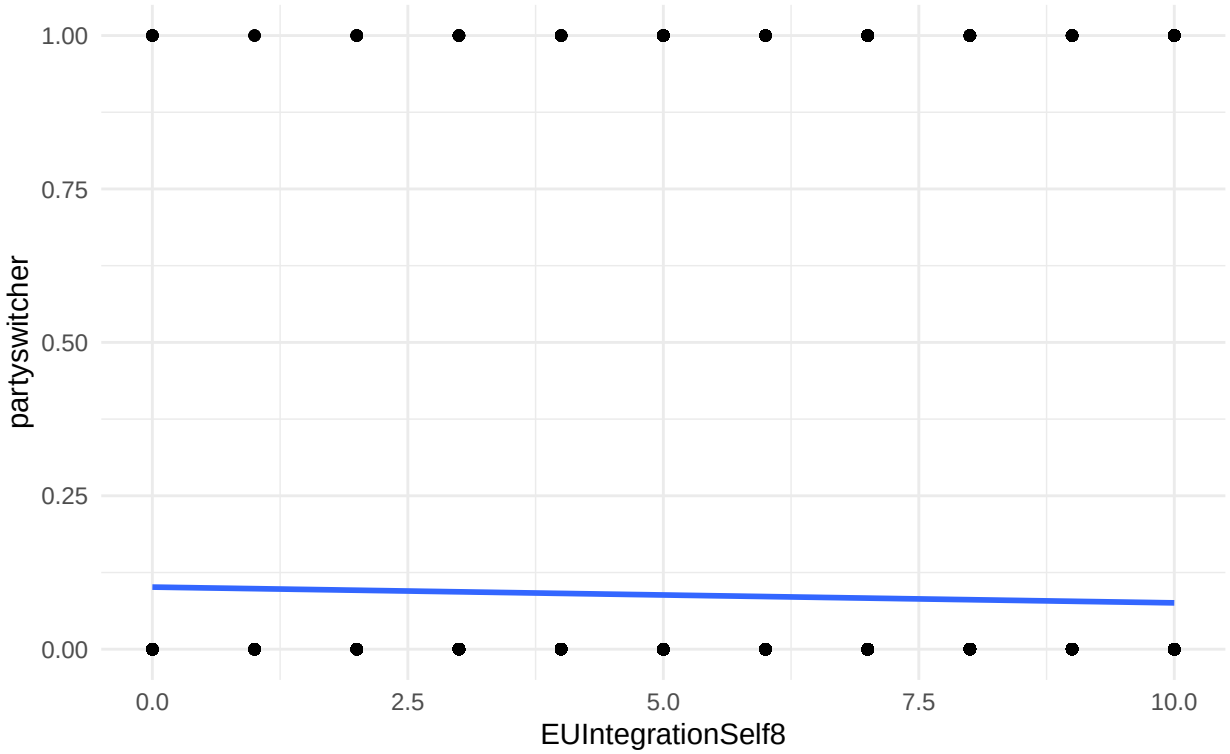
```
## `geom_smooth()` using formula 'y ~ x'

## Warning: Removed 197 rows containing non-finite values (stat_smooth).

## Warning: Removed 197 rows containing missing values (geom_point).
```



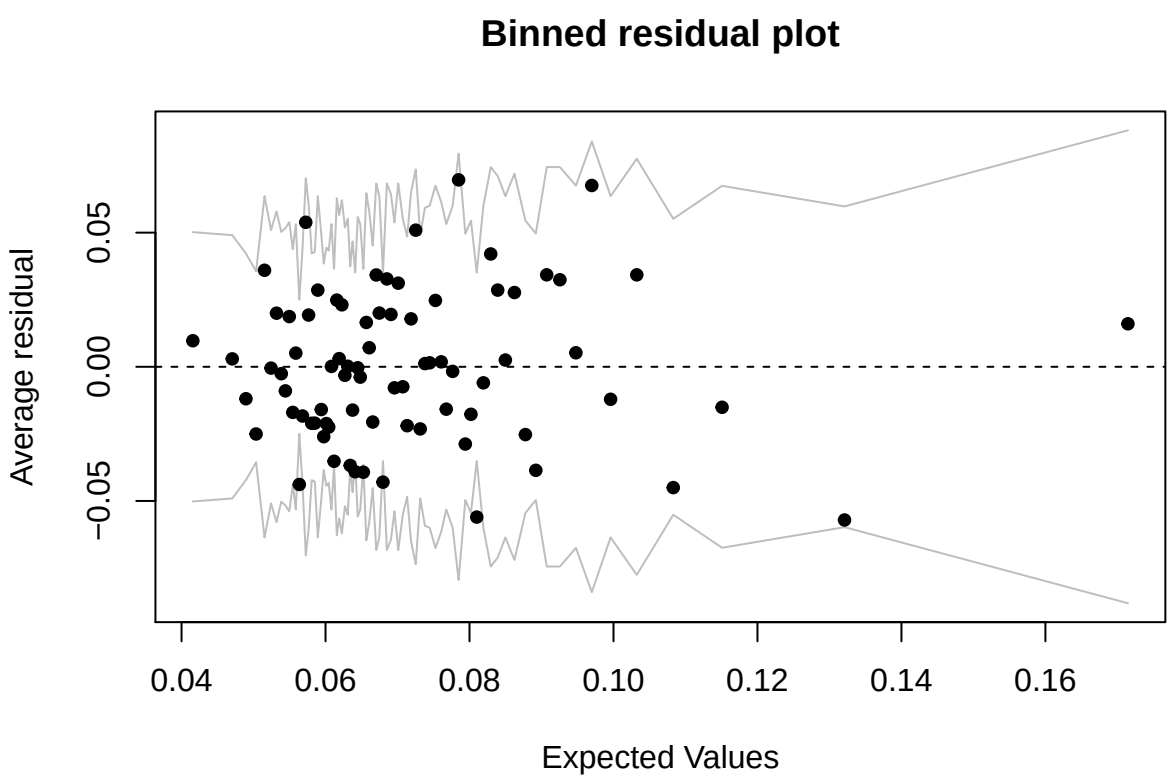

```
merged %>%
  ggplot(aes(EUIntegrationSelf8, partyswitcher)) +
  geom_point() +
  stat_smooth(method = "lm", se = FALSE) +
  theme_minimal() +
  labs(title = "Linear regression is...",
       subtitle = "")
```

```
## `geom_smooth()` using formula 'y ~ x'

## Warning: Removed 197 rows containing non-finite values (stat_smooth).

## Warning: Removed 197 rows containing missing values (geom_point).
```

Linear regression is...




```
binnedplot(x = intreg1a_logistic$fitted.values,
           y = resid(intreg1a_logistic, type = "response"))
```




```
# Can do some inverse-logit/predict -- can define high level and a low level; compare
# 1 to 2, 2 to 3, etc. -- and discuss your findings in your report.

# Initial attempt at interpretation of Table 1 logistic regressions:

# Here, for each model, we calculate the odds ratio of the various coefficients; the odds
# ratio represents: P/1-P (or the probability of leaving the Conservatives/the
# probability of not leaving the Conservatives). With that said, if the value of
# an odds ratio is > 1, then the ratio suggests the predictor is associated with
# an increase in the probability of leaving the Conservatives. The magnitude of
# that effect can be directly compared via the numbers, with adjustment for
# variation via multiplication by the standard deviation.

# Let's consider the most simple regression/model:

# The odds ratio for EUIntegrationSelf8 is 0.9672463; this suggests that a one-unit increase
# in pre-referendum Euroskepticism is associated with a decrease in the
# probability of defection from the Conservatives (as we would predict, given
# that the Conservatives adopt an anti-integration view post-referendum).

#...
```

IV. Bibliography

https://poseidon01.ssrn.com/delivery.php?ID=527000067124025067095113075070106108039003024042071075093075112088110
EXT=pdf&INDEX=TRUE

https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/QVTCYP