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Federica Liberini, ETH, Zurich
Michela Redoano, University of Warwick and
Eugenio Proto, University of Warwick

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Federica Liberini
ETH, Zurich

Michela Redoano*[(a)]
University of Warwick

Eugenio Proto
University of Warwick

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Abstract

In this paper we investigate whether or not recent initiatives taken by governments and international organizations to come up with indicators of Subjective Well Being (SWB) to inform policy makers go in the same direction as citizens expectations on what policy makers should do. We test retrospective voting hypotheses by using standard measures of SWB as a proxy for utility instead of the commonly used indicators of economic and financial circumstances. Using the British Household Panel Survey Data we find that citizens who are satisfied with their life are more likely to cast their vote in favour of the ruling party, even taking into account ideological preferences. We show that SWB influences voting decision even when the event affecting the SWB is beyond the government's control, like the spouse death.

KEYWORDS: Wellbeing, Political Competition, Swing Voter Hypothesis, Retrospective Voting.

JEL CLASSIFICATION: H11, H2, H77, H87, D7, N12.

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*Address for correspondence; Department of Economics, Warwick University, Coventry, CV4 7 AL, United Kingdom. E-mail Michela.Redoano@warwick.ac.uk.

1 Introduction

The idea that states should support and protect citizens' wellbeing goes back at least two hundred and fifty years; as stated in the 1776 United States Declaration of Independence.[1] However in most of the countries around the world common measures for governments' performances and political objectives still rely mainly on wealth indicators, such as GDP, GNP.[2]

More recently, the idea that, to assess how a country is doing, policy makers should consider not only monetary and financial indicators but also rely on more comprehensive measures of wellbeing has become highly debated among western policy makers and scholars. Steps in this direction have been taken by the British and French governments as well as international organizations such as the World Bank, the European Commission, the United Nations, and the OECD.[3]

In this paper we investigate whether or not these initiatives taken by governments and international organizations to come up with indicators of wellbeing to inform policies go in the same direction as citizens' expectations on what policy makers should do. Do citizens really care about their level of "happiness" when they have to evaluate the performances of their policy makers? In other words, do citizens reward policy makers for making them happier by voting for the incumbents?

There is a large literature in political science and economics on retrospective voting, the proposition that citizens examine whether the state of the world has improved under a politician's watch, and vote accordingly. There is a wide consensus that voters evaluate diagnostic information such as macroeconomic trends and their personal financial circumstances to reward good performance while ridding themselves of leaders who are corrupt, incompetent, or ineffective [e.g., Kramer (1971), Fiorina (1978), (1981); Kinder

[1] It reads "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their creator with certain unalienable Rights, that among these are Life, Liberty, and the pursuit of Happiness".

[2] A noticeble exception is Buthan; where, in 1972 the term "gross national happiness" was coined and the Centre for Bhutan Studies started developing a sophisticated survey instrument to measure population's general level of well-being.

[3] For example, in 2008 the French government set up a Commission led by Joseph Stiglitz for the measurement of economic performance and social progress. The aim of the commission was to make proposals about incorporating the new indicators of economics outputs in national accounts. In the UK, following the initiative taken by the current Prime Minister David Cameron, the Office for National Statistics initiated the National Wellbeing Project, culminated with the construction of an "happiness index".

and Kiewiet (1981); Markus (1988); Lewis-Beck (1988)]. These works primarily look at the effect of financial and economic outcomes on voting decisions.

Our first contribution to this literature is to augment standard models of voting behaviour with measures of wellbeing. Looking directly at individuals' wellbeing has the advantage of providing a better and more comprehensive empirical test for the retrospective voting hypotheses; there are no reasons to limit the analysis to macroeconomics data or individual financial circumstances. In retrospective voting models, individuals look at their own utility before considering for which party cast their vote.

There is growing consensus that indexes of subjective wellbeing (SWB) constitute a reasonably good proxy for utility. These indexes can be understood as an application of experienced utility that, as discussed in Kahneman and Thaler (1991), is the pleasure derived from consumption. Rabin (1998) makes the connection between happiness data and experienced utility explicitly. Recently, Benjamin et al. (2012) go even further showing that 80% of the times individuals choose the alternatives that maximise their SWB, which leads to the conclusion that SWB is a good approximation of the modern concept of Utility.

We construct measures of voting intentions and SWB using the British Household Panel Survey (BHPS), a rich database started in 1991 containing information on over 10,000 British households on yearly basis. We add indicators of wellbeing as additional explanatory variables to standard empirical model of retrospective voting. We find that citizens who are satisfied with their life are more likely to cast their vote in favour of the ruling party. For example, those who declare themselves as highly satisfied are 1.7% more likely to support the prime minister party in future elections, which goes in addition of being 1.5 (1.1)% more (less) likely to be pro-incumbent following a perceived improvement (worsening) of their financial situation.

We identify two possible sources of concern. First, those citizens, whose favorite party is in power, might become happier just because of the victory of their party, and not because "good" policies have been implemented, as Di Tella and MacCulloch (2005) have shown. In order to address this source of reverse causality, we split our sample between partisan and swing voters. Our conjecture is that if an individual does not have any *ex ante* party preference (i.e she is a swing voter), the identity of the party in power should not affect *per se* the degree of happiness. Also swing voters should be more responsive to policies than partisan voters because they should switch voting choices entirely in response to policy choices. The results are consistent with this view, we find that the

effect of wellbeing on voting for this group is stronger than for the full sample. For example, being satisfied with life increases the probability of supporting the incumbent of about 1.9%.

The second source of possible concern is due to the fact that we can show that voters, who have experienced an increased level of wellbeing, are more likely to support the ruling party but we are not able to tell which share of this wellbeing is directly imputable to policy making decisions. The challenge is to understand if citizens are able to make policy makers accountable only for increased wellbeing that is the direct effect of government' policies, or rather they are unable to separate the latter from the effect of government-unrelated outcomes on life satisfaction. There is evidence for that in the literature; Achen and Bartels (2004) argue that "retrospection is blind" and show that voters are more likely to oust incumbents following natural disasters, such as shark attacks, floods and droughts. Wolfer (2009), following this view, measures the extent to which voters in state gubernatorial elections irrationally attribute credit to the state governor for economic fluctuations unrelated to their actions. Healy, Malhotra and Hyunjung Mo (2010) explore the electoral impact of local college football games just before an election and find that a win in the ten days before Election Day causes the incumbent to receive an additional 1.6 percentage points. But none of these contributions explicitly includes measures of happiness into their analysis.

Our strategy to address the above point is as follows. First, we find an exogenous shock of life satisfaction affecting only some respondents (the treated group). Second, we select a matched sample of individuals who did not experience the shock (matched control group) but who had the same *ex ante* probability of experiencing the shock (propensity score matching). Last, we compare *before*- and *after*-the-shock changes in political support responses of affected individuals to changes in political support responses of unaffected individuals (difference in difference estimation).

In looking for a shock that has a strong and significant impact on wellbeing and that is independent from government actions, we think that *experiencing widowhood* is a good candidate. Specifically, widowhood (and widowerhood) is largely beyond individuals' or government control and is well known to have a deep impact on SWB.[4] Clark et (2006), in particular, using the German Socio Economic Panel Survey show that the death of the spouse has a strong negative and temporary impact on individuals' wellbeing and also

[4]See for example Chipperfield and Havens (2001), Clark and Oswald (2002), Clark (2004), Gardner and Oswald (2006), Clark et al (2006).

that women suffer more than men.

There are 268 respondents in the BHPS whose spouse dies between 1992 and 2008, the period covered by our analysis, 185 are women and 82 men; this is our treated group. Similar to Clark et al (2006) we find that the 185 women show a larger drop in life satisfaction following the death of their husband than the 82 men who lost their wife and that this effect lasts for two years after the loss. We use propensity score to match one to one the treated respondents with untreated respondents, with similar probability at the beginning of the period (in 1991) of experiencing widowhood. Using a reduced form DiD estimation strategy we find that women in the treated group are between 10 and 12% less likely to be pro-incumbent than individuals in the control group, in the following two years after the death of their partner. For men, instead, consistently with the less strong effect of widowhood on wellbeing, we do not find any significant difference in voting intentions between treated and control group after the event. We take this result as evidence that voters are not able to make distinction between the source of their wellbeing.

Overall the results seem to indicate quite clearly that life satisfaction measures have a good explanatory power in predicting voting behavior, they also show that voters are not able to separate the source/cause of their wellbeing when they decide who to vote for. We believe that this has quite a strong implication for policy makers, who care about being re-elected.

Finally this paper adds to a growing literature on happiness and political economy. Most of the papers in this literature focus on the relationship between voting and wellbeing. For example Flavin and Keane (2012) study the effect of life satisfaction on political participation while Pacheco and Lange (2010) and Dolan, Metcalfe, and Powdthavee (2008) look at the reverse causality in this relationship.

An interesting branch of this literature looks at the relationship between partisanship and wellbeing; noticeably MacCulloch, Di Tella and Oswald, (2001), (2003) look at preferences over inflation and unemployment; Di Tella and MacCulloch (2005) show that left-wing voters' wellbeing is positively affected by *left-wing* policy outcomes (like unemployment) and right-wing voters' by *right-wing* policy outcomes (inflation targeting); while Oswald and Powdthavee (2010) study the effect of the sex of children on party support.

The remainder of the paper is organised as follows. Section 2 presents and discusses the data, Section 3 introduce the empirical strategy and preliminary results; Section 4 presents the analysis of the effect of widowhood on wellbeing. Discussions and conclusions

are in the last part of the paper.

2 The Data

The empirical work is based on data from 18 waves of the British Household Panel Survey (BHPS), spanning the period 1991-2008. The BHPS is a rich database collecting information on over 10,000 British households on a yearly basis. It contains, beside wellbeing questions, information on political orientation and participation, voting behavior and intentions, as well as personal information on finances, jobs, family status, education and region of residence. Note that the same individuals are interviewed every year, which allow us to exploit the properties of a panel.

Our main variable of interest is a measure for voting intention. We construct this measure by aggregating the responses from two questions available in the BHPS. First, if respondents claim not to be close or support any political parties, they are asked *"If there were to be a General Election tomorrow, which political party do you think you would be most likely to support?"* Second, if respondents declare to have some political bias, they are asked to express their party preference. By merging these information together we construct the variable *SupportInc*. The variable takes value equal to one if the named party is the same as the national government party (i.e. Conservative party in the period 1991 to 1997, and the Labour Party from 1997 onwards) and zero otherwise.

Moreover, the fact that questions on party support and closeness are asked allows us to identify two groups of citizens: we define *swing voters*, those respondents who do not support or are close to any particular party (and therefore they are likely to swing their vote from one party to the other), and *partisan voters*, those respondents who have strong *ex ante* political preferences towards one party. The identification of these two groups will be discussed in details later in Section 3.2 and will be central for the analysis developed later in the paper.

Our key explanatory variable to analyse voting intentions is subjective wellbeing. We use different proxies for it. We derive the main measures of wellbeing from the responses to the question *"How dissatisfied or satisfied are you with your life overall?"* This question is asked to all respondents every year in the BHPS starting from 1996. Respondents have seven possible categories from among which to choose, these go from #1 (not satisfied at all), to #7 (completely satisfied).

As a robustness checks we also use the answers to two questions to construct alternative

measures for wellbeing. The first question is *"How is your life satisfaction compared to the previous year?"*There are three possible answers: *less then* (equal to # 1), *same as* (equal to #2), and *more than* (equal to #3). Like for the life overall satisfaction question also this started only in 1996. The second question is *"Have you recently....been feeling reasonably happy, all things considered?"* Respondents have to assess their degree of happiness from a scale 1 to 4 (More than usual, same as, less and much less than usual). Happiness information are available from the first wave of the BHPS.

One important difference between the first and the other two measures of subjective wellbeing is that the former is measured on an absolute scale, whereas the latters require that the respondent assesses her own life satisfaction on a intertermporal basis, by comparing her present wellbeing with the one attained in the immediate past.

Figure 1 shows the distribution of life satisfaction across British individuals interviewed between 1996 and 2008. The unconditional mean for life satisfaction reported over these years is 5.2, with a median of 5. Table 1 shows the mean of life satisfaction during the different legislatures covered by the period 1996-2008, conditional on the respondents' political ideology. These statistics lead to some preliminary observations: swing voters report, on average, a lower life satisfaction than partisan voters (independently on their political orientation), and labour partisan voters report, on average, a lower life satisfaction than conservative partisan voters. Both observations suggest there could be reverse causality between the (strong) political ideology and life satisfaction, which provides valid support to our strategy of conducting the baseline analysis on the split sample of swing voters only.

As mentioned earlier, the literature on retrospective voting has recognised the importance of monetary and financial indicators to determine voting choices. Following Fiorina (1979) and many others we use a subjective indicator to account for them, which we derive from the responses to the question *"How is your financial situation compared to last year?"* There are three possible answers respondent can choose from: the financial situation is *better*, *same as* and *worse* compared to last year. Taking these answers we construct the dichotomous variables $BetterFin$ and $WorseFin$ taking values of one if the respondents believe that their financial situation is respectively better and worse than last year and zero otherwise. We also compute respondents family income following the standard procedure of dividing the family income by the number of family members squared. Finally we account for a set of controls which are usually included in the literature of wellbeing and voting behaviour. These are: age of respondents (linear and squared), sex,

marital status, income. Summary statistics for these controls are displayed in Table 2.

3 Empirical Strategy

The empirical strategy is based on assessing the main assumptions of retrospective voting models using wellbeing measures rather than monetary and financial ones. This class of models assumes that voting decisions are based on utility comparison between different periods. The main idea is that if utility levels have increased overtime voters are more likely to cast their vote in favour of the incumbent. Previous research testing retrospective voting models have used exclusively monetary and financial indicators to proxy for utility.

Our hypothesis is that wellbeing indicators constitute a better and more comprehensive proxy for utility, which take into account all those factors which are not measurable in monetary terms. There is growing consensus on the fact that indexes of subjective wellbeing (SWB) constitute a reasonably good proxy for utility, see for example Kahneman and Thaler (1991), Benjamin et al. (2012). So our first goal is to test the validity of retrospective voting models replacing financial and monetary measures with our life satisfaction measures to proxy for utility.

We proceed as follows. We first start by replicating the main estimations employed in previous research, to investigate whether voting decisions depend on evaluation of financial situation. In particular, following Fiorina (1979), which uses subjective questionnaire responses to show that voters are more (less) likely to cast their votes for the incumbent if they believe that their financial situation has improved (got worse) compared to the past, we first estimate our *traditional* model (Model 1):

$$SupportInc_{it} = 1[\beta_1 BetterFin_{it} + \beta_2 WorseFin_{it} + \gamma X_{it} + \eta_t + a_i + \varepsilon_{it} > 0] \quad (1)$$

where $SupportInc_{it}$ is our proxy for voting intention described in the previous section, $BetterFin_{it}$ and $WorseFin_{it}$ are two dummy variables taking values of 1 if the respondent has replied that her financial situation is respectively better or worse than in the past, aiming to capture variations in utility due to monetary/financial components; X_{it} is a vector if individuals' personal characteristics (age, sex, income, marital status etc.), η_t is a year effects, a_i is an individual effect (either random or fixed) and ε_{it} is the error term. The coefficients of interests are β_1 and β_2. Trivially β_1 is expected to be positive and β_2 negative.

Next, we replace $BetterFin_{it}$ and $WorseFin_{it}$ with our wellbeing measures to account for the non-financial component of individuals' utility. So we estimate the *wellbeing* model (Model 2):

$$SupportInc_{it} = 1[\delta Wellbeing_{it} + \gamma X_{it} + \eta_t + a_i + \varepsilon_{it} > 0] \quad (2)$$

Where $WellBeing$ is constructed from respondents' answers on life satisfaction and happiness. The coefficient of interest is now δ, which is expected to be positive. Finally, we combine equations (1) and (2), to estimate a *general* model (Model 3) where both wellbeing and financial indicators are included as regressors:

$$SupportInc_{it} = 1[\delta' Wellbeing_{it} + \beta_1' BetterFin_{it} + \beta_2' WorseFin_{it} + \gamma X_{it} + \eta_t + a_i + \varepsilon_{it}] \quad (3)$$

We start off by estimating equations (1), (2) and (3) as linear probability model (LPM) with and without fixed effects (FE), so to control for the effect of a within variation in life satisfaction over the voting behaviour. However, since $SupportInc_{it}$ is a dichotomous variable, we also propose an alternative specification where we employ both pooled and RE Probit model, for the conditional distribution of the probability that the respondent supports the incumbent party. To allow for correlation between the model's covariates and the unobserved heterogeneity, a_i, we follow Chamberlain (1980), and assume the latter follows a normal distribution with linear expectation and constant variance. So we augment our model with a series of individual specific observable characteristics.[5]

3.1 Preliminary Results: the Full Sample

Results are displayed in Table 3 and 4. Both tables have the same format. In the first one we present the result for the LPM (without and with FE), in the second one those for the Probit model (without and with RE). In the first two columns we report the estimated coefficients for model (1), the traditional retrospective voting model. In columns 3 to 6 of both Tables we display results for model (2), the wellbeing model. The tables use two variations of $Wellbeing_{it}$. First we construct a dummy variable taking the value equal

[5]The vector of individual characteristics includes information such as whether the respondent regularly reads newspapers, wehther she ever smoked over the years, whether her partner has ever been out of employment, and what is the average income of her household. By adding these variables, the Chamberlain's RE Probit essentially estimates the effect of varying the model's covariates while holding these individual's specific characteroistics fixed.

to one if the respondent has chosen the answer #5, #6 or #7 to the question on life satisfaction and zero otherwise, this indicates that the respondent is highly satisfied with life. Second we treat the answers (from #1 to #7) to the question on life satisfaction as a continuous variable. Finally, in the last two columns we propose the results of the *full model*, where both wellbeing measures and financial indicators are included, as in equation (3). All the regressions include the same set of controls, i.e. marital status, sex, age and age squared, along with the logarithm of family income, a set of region of residence-dummies and a set of wave-dummies. Standard errors are clustered at the individual level.

There are just over 4,200 individuals, who were interviewed for the all period and for which we have information on wellbeing and voting intentions. The dataset is made up of over 55,000 observations.

Starting from the results on the *traditional model*, both the LPM (Table 3) and Probit model (Table 4) estimates are in line with the basic hypothesis on the retrospective voting model, according to which one's financial situation matters for voting decisions. All the relevant coefficients are highly significant, at lest at 5% level. In particular respondents who believe that their financial situation has improved compared to the previous year are more likely to support the incumbent compared to those whose financial situation has not changed, the estimated coefficients suggest that, approximately, the magnitude of the effect is an increase in the likelihood of supporting the incumbent of between 1.4 (in the pooled regression) and 1.6% . Respondents who are instead worse off compared to the previous year appear to punish the incumbent by reducing the likelihood of granting their support by approximately 1.8%.

Moving to the wellbeing model, where measures of subjective financial performances are substitute with life satisfaction indicators, we can see that all the estimated coefficients of interest are highly significant in all our specifications, using both variations of wellbeing measures. The magnitude of the response is similar to those recorded for the previous model, if a respondent is very satisfied with life she will be about 2% more likely to support the incumbent than if not. Similarly using life satisfaction as continuous variable, an increase of one percentage point in life satisfaction is associated with an increase of about half percentage points in the likelihood to be pro-incumbent.

In the final model we include both indicators of wellbeing and of subjective financial position. We find that both indicators remain with the same sign and magnitude as in the previous set of regressions and they do not loose significance, which indicates that the

two measures do not capture the same thing. Finally, as a robustness check, we run our baseline models using alternative measure of subjective wellbeing.

In summary, our results support the idea that citizens' wellbeing matters for voting decisions, and in particular our findings suggest that measuring utility in terms only of monetary and financial indicators leaves out an important component, which has a significant impact on voting decisions. In Table 12 (in the Appendix) , as a robustness checks, we report the results for the estimation of model (1), (2) and (3) using alternative wellbeing indicators. The coefficients of interest are overall similar to those presented here even if their significance is generally lower.

However, the role of ideology and the possibility of reverse causality between $SupportInc$ and $Wellbeing$ needs to be addressed. As for the results presented in Table 3 and 4, we cannot rule out a possible positive effect on wellbeing triggered by the victory of the preferred party, and therefore we could misleadingly interpret our results. In the next section we address this.

3.2 Further Results: Swing Voters Only

Broadly speaking, ideological preferences towards one party (party bias) are modelled in the literature on (retrospective) voting as given parameters, heterogeneously distributed within the population. In particular, some citizens are assumed to have strong partisan preferences (either towards the incumbent or the challenger) while others to be more ideologically neutral (i.e. they do not care about party identity). In this setting, voting decisions become the outcomes stemming from two different components, the "ideological" one coming from party bias and the "policy" one coming from government's choices. Partisan citizens will cast their vote on both grounds (ideological and policy related), and the weights on each component will depend on the intensity of their party bias. Ideologically neutral voters instead will swing their vote exclusively in response to government policies.

Our strategy to reduce the possible bias due to the influence of political ideology on self reported wellbeing is to isolate voters according to their political allignment and analyse the voting behavior of a more ideologically neutral group, that of the *swing voters*. Since these type of respondents do not have any *ex ante* party preferences, they choose who to vote exclusively by evaluating government policies. Therefore for this group it can only be that increased utility (i.e. wellbeing) causes $SupportInc$ and not *vice versa*.

Luckly, two questions asked in the BHPS allow us to split the sample between partisan

and swing voters. The survey questions used to this purpose are: (i) *"Do you support any political party"*? and (ii) *"Are you close to any political party?"* If respondents answer *"No"* to both we classify them as a swing voters. The subsample of swing voters is made up of about 2,800 individuals, about three quarter of the full sample. We then re-estimate equations (1), (2) and (3) using this subsample. The results are reported in Table 5 and 6, which have the same format as, respectively, Table 3 and 4, and use the same set of controls.

Broadly speaking the results are in line with the one presented in the previous sections, most of the coefficients remain highly significant. There are two main changes to note. First the coefficients of wellbeing measures are still very significant and, generally, higher in magnitude than those presented in Table 3 and 4; for example looking at our preferred estimation, the RE-Probit in the last column, the coefficient for $Wellbeing$ is now 0.099 compared with 0.080 in the correspondent column of Table 3 and 4. Second, the indicators of individual economic performance became instead much less significant. For example, the positive effect of improved financial situation becomes non significant in all specifications except from under specification (1) and using the FE-LPM. Similarly, the significance of the negative effect on *worse financial situation* is almost always wiped out of its significance, apart from under specification (1) and pooled models.

As a robustness check, we re-estimate our preferred model on both the full sample and the restricted subsample of swing voters, while using alternative measures of subjective wellbeing. Table 7 reports all our additional results. First, we use life satisfaction as a categorical variable (columns [a] and [d]), then we substitute it with a variable (ghql) informing about an intertemporal comparison of the respondent's happiness (columns [b] and [e]), to finally conclude with a second categorical measure of subjective wellbeing, where evaluation of one's happiness is measured on a scale of four levels (column [f] and [c]). Observations on this last variable were collected since the beginning of the BHPS.

So overall, the emerging picture is that, when taking out the ideological component from voting intentions, it seems that using wellbeing measures generates more consistent and significant results. We interpret this as an indication that using wellbeing indicators to proxy for utility is more appropriate than using only monetary of financial proxies.

However there is still an important link in the relationship between policy choices, wellbeing and voting that need to be address: the possibility that citizens are not able distinguish if wellbeing/utility is a consequence of policy makers' policy choices or it is determined by government-unrelated events. We address this in the next section.

4 Exogenous shocks of (un)happiness

In the previous section we have established that those voters whose level of wellbeing is (or become) higher are more likely to support the incumbent. But is this increased wellbeing the results of government's actions? In the first part of the paper we have shown that using wellbeing indicators to proxy for utility is better than using only financial or economic subjective measures. However we still have to understand if voters can distinguish between sources of wellbeing when they make their voting decisions. Wellbeing indicators have indeed the nice characteristics to be more comprehensive than standard proxies for utility, but they are affected by different events, some of which are beyond governments control.

In this section we address this problem: can citizens/voters understand whether their increased life satisfaction, and more broadly wellbeing, is a consequence of some enacted policy? and if so, would they be more likely to vote for the incumbent also following improvements in their life satisfaction that are clearly unrelated to government's actions?

Our strategy to address this is, first, to find an exogenous - not dependent on government's policies- shock of life satisfaction affecting only some respondents, our *treated group*. Second to select a matched sample of individuals who did not experience the shock (matched control group), but who have the same *ex ante* probability of experiencing the shock (propensity score matching). Last, to compare *before*-and *after*- shock changes in political support responses of affected individuals to changes in political support responses of unaffected individuals (difference in difference estimation).

The kind of shock that allows us to proceed (i) has to have a strong and significant impact on wellbeing and, (ii) has to be independent from government actions. Clark et al. (2006), analyses different shocks of un/happiness using the German Socio-Economic Panel (GSOEP). These are: marriage, birth of a child, unemployment, outlays and widowhood. Some of these shocks have little or no effect on wellbeing, like birth of a child and marriage. Other may be the outcomes from policy choices, and therefore not exogenous, like unemployment and outlays. One that is just right for our purposes is widowhood (widowerhood).

This event, largely beyond individuals' or government control, is well known to have a deep impact on wellbeing (see for example Phlbad and Adamic (1972), Stevens (1995), Chipperfield and Havens (2000), Clark and Oswald (2002), Clark (2005), Gardner and Oswald (2006), Clark et al (2006)). Also, according to Clark et al. (2008) in their widely cited paper on the leads and lags of shocks of life satisfaction, the spouse death has a strong negative temporary impact on individuals' wellbeing and also a significantly

stronger effect on women than men.

4.1 Propensity Score Matching

In order to be able to analyse the response to negative shocks of life satisfaction, such as those caused by an event like widohwood, we encounter two problems. First a direct comparison between treated and untreated individuals is biased by the fact that differences across these two groups depend on selection. Second, the time of the treatment is respondent specific and cannot be imputed for the members of the non-treated group. Propensity score matching provides a solution to both problems. It consists in relying on a set of observables that affect the "probability of being treated" (propensity score), in an attempt to reproduce the treatment group among the non-treated. Imputation of the time of treatment to the members of the control group is therefore made by pairing each of its individuals to a member of the treated group. Becker and Hvide (2013) use a similar approach to match firms with deceased entrepreuner with firms where the organization never experienced a similar shock.

We use nearest neighbour mathcing to select the group of individuals whose probability of experiencing widowhood (or widowerhood) between 1992 and 2008 (the whole length of the BHPS), conditional on characteristics observed in 1991, is the closest to that of the 287 individuals who did experience widowhood over the same period.[6] We start from estimating the propensity score by running a probit for the likelihood of becoming widow. Table 8 provides evidence of the good explanatory power of the chosen covariates, given the significance of their coefficients and the high $pseudo - R^2$ of 0.32.[7] The predicted probabilities from this model constitute our propensity scores. Before matching, the average propensity score is 0.3428 for the treated group , and only 0.0621 for the non-treated group. After imposing a radius of 0.01 for the identification of the nearest neighbour to any individual belonging to the control group, we discard 58 individuals and remain with a sample of 229 respondents (127 of these are women and 82 men) who did experience widowhood and 229 matched respondents who didn't. In the matched sample, the average propensity score is reduced to 0.2566 for the treated group and 0.2578 for

[6]This procedure involved omitting from the sample the individuals who had never been married, those who were always reported as widows, and those who re-married after widowhood.

[7]We also estimated this model with a larger set of variables controlling for a full set of personal, health-related and financial characteristics. Other explanatory variables not included in this preferred specification resulted as consistently insignificant in all other robustness checks.

the control group. Figure 2 provides histograms for the estimated propensity score before and after matching.

Table 9 reports statistics for the reduction in bias attained through the matching procedure: it reports test of equality in the means of all used covariates across the Treated and Control group, both before and after matching. The results from the last column suggest that, for all covariates, we fail to reject the null of mean equality after the matching procedure is concluded. Figure 3 provides a graphical representation of the same bias reduction.

4.2 Difference-in-differences setup

Here we are interested in whether a negative shock of wellbeing, independent on government's policies, can affect voting behavior. In the Appendix we produce formal and graphical analysis that show that, consistently with previous research, the shock in life satisfaction is significant only for women and its duration if of two years after the death. To address this problem we want to understand whether individuals experiencing this shock change their voting intention in response to the shock compared to individuals whose spouse does not die. If this is the case, we take this as evidence that voters are not able to distinguish between government -related and unrelated events when they decide their voting strategy. We are mainly interested in the differences after the event (the death), but we also look into the behavior before the death. As we will show there is no different behavior before the death which is consistent with the fact that the matching procedure has effectively worked by selecting individuals who do not have pre-treatment differences, even if the death is preceded by long period of illness.

Our main focus is now to understand whether the spouse death affects voting behavior. There are two main reasons why we do not perform standard OLS. The first is that control and treated group are not necessarily comparable*ex ante*, see for example Becker and Hvide (2013) for a detailed explanation on this point. The second, and most important reason, is that the spouse death does not occur for every individuals in the same year (see Table 12 in the Appendix), so matching is a way of finding comparable controls who at the beginning of the period, i.e. in 1991, had the same probability of loosing husband or wife. We then use year of spouse death of treated respondents to impute the counterfactual year of spouse death of the matched control. So, we are able to define before and after spouse death for both treated respondents and matched controls.

We start by looking at the basic difference in differences regression, where we compare

treated and matched controls to assess how voting intentions are affected by the spouse death (treatment).

$$SupportInc_{it} = \alpha + \lambda_1 \times treated_i + \lambda_2 \times after_{it} \times treated_i + \lambda_3 \times after_{it} + \gamma \times X_{it} + \delta_t + u_{it} \quad (4)$$

The coefficient of interest is λ_2, which measures the difference between treated respondents and control respondents after the treatment. The coefficient λ_1 also presents some interest because it constitutes a test for the lack of pre-treatment effect. We include all the controls that have been previously included in the regressions; these are age (in linear and squared form), logarithm of family income, sex as well as year and region dummies. Standard errors are cluster at individuals level. We estimate equation (4) using LPM.

Equation (4) is also extended several directions to include some of the shock's characteristics that are formally reported in the Appendix. First, since the shock turned out to be significant only for women, we look at the responses of men and women separately. We do it in two ways: (i) by interacting $after_{it} \times treated_i$ by sex of the respondent dummies; (ii) by running separate regressions for male and female respondents. Second, since the shock of wellbeing lasts for only two years after the death, we look if treated respondents differs from the control group only in the same period of the shock. To address this we estimate separately the effect on the year of the death, and 1, 2, 3 and 4 years after,

So if the we find that the effect on the probability of supporting the incumbent in the treated group last for the same period as the shock of life satisfaction and the effect on women is stronger than in men, we can attribute quite confidently the effect of the treatment on voting intention to the shock of unhappiness.

4.3 Difference-in-differences results

Estimation results for equation (4) and its variations are displayed in Tables 10, 11A and 11B. In most of our regressions we consider windows of three years after and before the spouse death, but we also experiment with shorter and longer periods. To note that we have shown in Section 4.2 that there are no differences between control and treated group at the beginning of the period. When we estimate (4) we also carry out tests that the two groups remain comparable in the periods before the treatment, to make sure that there are no pre-treatment differences between the two groups. The coefficients λ_1 presented in the first row of Tables 10, 11A and 11B show that this is indeed the case. To provide further evidence we interact the pre treatment period with pre-treatment *years*

before {*1,2, 1-2*} dummies . The results displayed in the tables are again consistent with the assumption that there is no pre-treatment effect.

We start the discussion of our results with Table 10. The first six columns of the table present the results for λ_2 when the data are restricted to 4, 3 and 2 years after and before the treatment. In columns 1, 3 and 5 we impose the restriction that men and women react in the same way to their loss. From the inspection of the table we can observe that overall there is a weak negative effect of widowhood on the probability of incumbent support, but this effect becomes significant only when restricting the sample to the two year window. In columns 2, 4 and 6 we relax the restriction of homogeneous treatment effect by sex and we estimate different coefficients for men and women in the treated group. Consistently with the asymmetric shock of happiness that hits the two sexes differently, the results show clearly that women are the ones who changes their voting behavior following the spouse death, the λ_2 are negative and become significant when we restrict the sample to the two or three years from the treatment.

In columns 7 and 8, we try to get more precise estimates of the effect's duration, by estimating different coefficients for {0,1,2} years after and before and {3} years after. Again, we first start by estimating a common λ_2 for men and women and then one for each sex. The results suggest that women are 10% less likely to vote for the incumbent in the following two years after their husband death, there is no significant effect for men. Finally in the last four columns we estimate the effect of widowhood in each single year after and before the treatment. Again we obtain significant and negative coefficients for women in the year of the event (-8.8%) and in the following year (-13%) and insignificant one for men.

As a robustness checks, we run separate regressions for men and women. The results are displayed in Tables 11A and 11B . From the inspection of the tables, we can clearly see that all the previous results are confirmed both in term of magnitude and significance.

One possible concern is how to guarantee that the revealed negative treatment effect in women is due to the happiness shock rather than to a switch towards the Labour party (who was in power in the second period of our dataset). Alimenting this concern, there is the observation that the Labour party political agenda is well known to be more benevolent to (poorer) pensioners than the Conservative, so widows effectively loose also the current and future earnings of their late husband, which represents a clear economic reasons why the same person should move her party preferences towards the Labour party. Our argument, in the contest of this paper, is that if the loss of a partner was perceived

mainly in economic terms (i.e. as the loss of a portiong of the household's income), then we should observe a permanent negative effect, instead of the temporary effect reported in our data, where widowhood affects voting behavior only for one, maximum two years after the shock.

Another possible concern could be that, if the death of the spouse follows a long illness and/or hospital care, the drop in the support for the incumbent could be due to the (negative) evaluation of the National Health Service. However, we can rule out this because control and treated group are matched in a way that individuals in the two groups experience the same exposure to the national health care system (NHS in the UK), and the correctness of the matching procedure has been validated by the absence of pre-treatment effects, as we have shown.

5 Conclusion

Motivated by recent initiatives taken by governments and international organisations to come up with measures of wellbeing to inform policies to integrate standard monetary and financial measures, we test if wellbeing data can be used to predict voting behavior.

Our aim was to contribute to the empirical literature on retrospective voting by augmenting standard models of voting behavior with measure of wellbeing to proxy for utility. Preliminary results suggest that wellbeing data are good proxies for utility and in particular that voters changes their voting intentions in response to changes in their level of life satisfaction.

There are two main sources of concern we address in the paper. The first one is the possible reverse causality between voting and wellbeing when political ideology enter into the equation. For example, a strong Conservative supporter may be happy when the Tories are in power and not because of specific policy choices implemented by the party. To address this we split the sample between partisan and ideologically neutral voters, and we look at the behavior of the latter group. This exercise confirms our previous results, that being high satisfied with life increases the probability of supporting the ruling party of about 1.9 percentage points.

Once established that wellbeing measures are good indicators for predicting voters' behavior, we proceeded in the direction of asking whether or not voters are able to correctly reward or punish the incumbent government only for the variation in life satisfaction that is directly imputable to government actions. People' happiness may indeed depend on

several factors and many of them are not directly imputable to government's action. To address this we test whether or not an exogenous shock of happiness affects voter's preference toward the incumbent. We use difference in difference estimation and propensity score matching to identify the effect that widowhood (the exogenous shock) has on the probability of supporting the incumbent party. We find that women who loose their husband are, in the following two years from the death, between 10 and 12% less likely to be pro-incumbent than (similar) individuals who do not. For men, instead, consistently with the less strong effect of widowhood on wellbeing, we do not find any significant difference in voting intentions between treated and control group after the event. We take this result as evidence that voters are not able to make distinction between the source of their wellbeing.

We believe that our results bring some interesting implications. First of all, they motivate the efforts taken by governments and international organizations in producing better and more comprehensive measures for wellbeing, since they appear to have good explanatory power to predict voters' intentions, which is consistent with retrospective voting models. Second, they highlight citizens' inability to correctly blame or reward policy makers only for the actions they are responsible for. Taking this result to an extreme, given happy pills before elections to every citizen would certainly increase the re-election chances of the incumbent. Why are elections always held in May (in the UK), when the sun shine high and makes everybody happy?

References

[1] Achen, C. H., L. M. Bartels (2004). Blind Retrospection: Electoral Responses to Droughts, Flu, and Shark Attacks. Estudio/Working Paper 2004/199.

[2] Becker S.O. , H.K., Hvide (2013) . Do entrepreneurs matter?, CAGE (Warwick) wp, 109.

[3] Benjamin, Daniel J., Ori Heffetz, Miles S. Kimball, and Alex Rees-Jones (2012). What Do You Think Would Make You Happier? What Do You Think You Would Choose?. *American Economic Review*, 102(5), 20832110.

[4] Brender, A. (2003). The Effect of Fiscal Performance on Local Government Election Results in Israel: 1989–1998. *Journal of Public Economics,* 87 (9), 2187–2205.

[5] Chamberlain, G. (1980). Analysis of Covariance with Qualitative Data. *Review of Economic Studies*, 225-238.

[6] Cheibub, J. A., A. Przeworski (1999). Democracy, Elections, and Accountability for Economic Outcomes. In *Democracy Accountability, and Representation*, ed. A. Przeworski, S. Stokes and B. Manin. Cambridge: Cambridge University Press, 222–50.

[7] Chipperfield, J. G., Havens, B. (2001). Gender differences in the relationship between marital status transitions and life satisfaction in later life. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 56(3), P176-P186.

[8] Chubb, J. E. (1988). Institutions, The Economy, and the Dynamics of State Elections. *American Political Science Review*, 82(1).

[9] Clark, A. Fabrice Etil Fabien Postel-Vinay Claudia Senik Karine Van der Straeten, 2005. "Heterogeneity in Reported Well-Being: Evidence from Twelve European Countries," *Economic Journal, Royal Economic Society*, vol. 115(502), pages C118-C132, 03.

[10] Clark A., E. Diener, Y. Georgellis R. Lucas (2006). Lags and Leads in Life Satisfaction : A Test of the Baseline Hypothesis. *Economic Journal*, 118, 222–243.

[11] Clark, A. E., Oswald, A. J. (2002). A simple statistical method for measuring how life events affect happiness. International Journal of Epidemiology, 31(6), 1139-1144.

[12] Di Tella R., R. MacCulloch R., A. J. Oswald (2001). Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness. American Economic Review, 91(1), 335-341.

[13] Di Tella R., R. MacCulloch R., A. J. Oswald (2003). The Macroeconomics of Happiness, *The Review of Economics and Statistics*, 85(4), 809-827.

[14] Di Tella R., R. MacCulloch R. (2005). Partisan Social Happiness. *Review of Economic Studies*, 72(2), 367-393.

[15] Dolan, P., Metcalfe, R., and Powdthavee, N. (2008). Electing happiness: does happiness affect voting and do elections affect happiness? *Discussion Papers on Economics, 08/30. University of York.*

[16] Fair, R. C. (1978). The Effect of Economic Effects on Votes for President. *Review of Economics and Statistics,* 60(2).

[17] Ferejohn, J. (1986). Incumbent Performance and Electoral Control. *Public Choice,* 50 (2): 5–26.

[18] Fiorina, M. P. (1978). Economic retrospective voting in American national elections: A micro-analysis. American Journal of Political Science, 426-443.

[19] Fiorina, M. (1981). Retrospective Voting in American National Elections. New Haven, CT: Yale University Press.

[20] Flavin, P. and Keane, M. J. (2012). Life satisfaction and political participation: evidence from the United States. *Journal of Happiness Studies*, 13 (1), 63-78.

[21] Gardner, J. and Oswald, A. J. (2006), Do divorcing couples become happier by breaking up?. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 169: 319–336

[22] Healy, A., N. Malhotra, C. Hyunjung Mo (2010). Irrelevant Events Affect Voters' Evaluations of Government Performance, *Proceedings of the National Academy of Sciences* 107(29): 12804-12809.

[23] Kinder, D. R., Kiewiet, D. R. (1981). Sociotropic politics: the American case. *British Journal of Political Science*, 11(2), 129-161.

[24] Kramer, G. H. (1971). Short Term Fluctuations in U.S. Voting Behavior, 1896–1964. *American Political Science Review*, 65.

[25] Kahaneman, D. and Thaler, R. (1991). Economic Analysis and the Psychology of Utility: Applications to Compensation Policy. *American Economic Review*, 81 (2), 341-346

[26] Lewis-Beck, M., M. Stegmaier (2000). Economic Determinants of Electoral Outcomes. *Annual Review of Political Science,* 3 (1), 183–219.

[27] Lewis-Beck, M. (1988). Economics and Elections: The Major Western Democracies. Ann Arbor: University of Michigan Press.

[28] Lowry, R. C., J. E. Alt, and K. E. Ferree (1998). Fiscal Policy Outcomes and Electoral Accountability in American States. *American Political Science Review,* 92(4).

[29] Markus, G. B. (1988). The impact of personal and national economic conditions on the presidential vote: A pooled cross-sectional analysis. *American Journal of Political Science*, 137-154.

[30] Oswald, A.J., N. Powdthavee (2010). Daughters and Left-Wing Voting, *The Review of Economics and Statistics*, 92(2), 213-227.

[31] Pacheco G., T. Lange (2010). Political participation and life satisfaction: a cross-European analysis. *International Journal of Social Economics*, 37(9), 686-702

[32] Peltzman, S. (1987). Economic Conditions and Gubernatorial Elections. *American Economic Review,* 77(2).

[33] Rabin, M. (1998). Psychology and Economics. *Journal of Economic Literature*, 36, 11-46.

[34] Wolfers, J. (2009). Are Voters Rational? Evidence from Gubernatorial Elections. *Working Paper Wharton School of Business.*

Figure 1: Distribution of Life Satisfaction Levels among British People

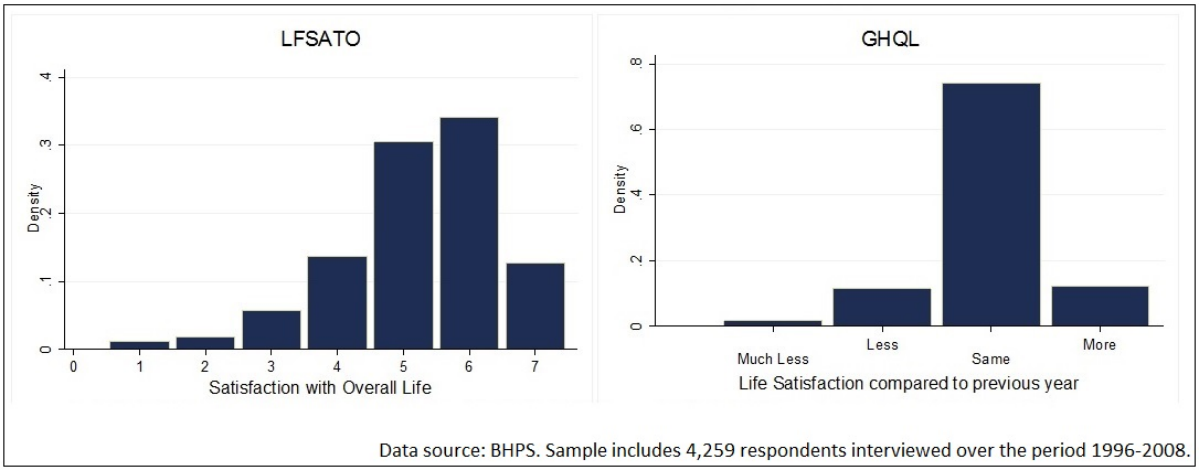

Table 1: Life Satisfaction, conditional on Political Ideology

	Labour Partisan			Swing Voter	Conservative Partisan		
Legislature	Strong	Medium	Weak	-	Weak	Medium	Strong
Conservative 1992	5.111	5.135	5.172	5.201	5.420	5.467	5.638
	(1.558)	(1.435)	(1.306)	(1.337)	(1.147)	(1.307)	(1.435)
Labour 1997	5.176	5.223	5.186	5.182	5.371	5.448	5.433
	(1.582)	(1.362)	(1.296)	(1.320)	(1.182)	(1.284)	(1.491)
Labour 2001	5.474	5.299	5.202	5.190	5.367	5.464	5.497
	(1.421)	(1.323)	(1.269)	(1.316)	(1.151)	(1.201)	(1.339)
Labour 2005	5.418	5.263	5.196	5.166	5.348	5.326	5.450
	(1.438)	(1.274)	(1.217)	(1.282)	(1.102)	(1.222)	(1.279)

Table 2: Descriptive Statistics for main Covariates

Variable	Obs	Resp.	Mean	Std. Dev.	Min	Max
Support Incumbent	67189	3773	0.373	0.484	0	1
Life Satisfaction	49987	2868	5.249	1.223	1	7
Happiness	74004	4160	2.026	0.558	1	4
Swing Voter	75051	4215	0.327	0.469	0	1
Partisan Voter	75051	4215	0.673	0.469	0	1
Conservative Supporter	74032	4154	0.286	0.452	0	1
Labour Supporter	74032	4154	0.352	0.477	0	1
Married	75857	4259	0.668	0.471	0	1
Widow	55383	3087	0.085	0.279	0	1
Income (in th. $)	75857	4259	20.389	16.109	0.108	86.612
Female	75857	4259	0.558	0.497	0	1
Age	75857	4259	48.411	15.572	15	97
Fiancial Situation Compared to last year: Better	75857	4259	0.242	0.428	0	1
Fiancial Situation Compared to last year: Worse	75857	4259	0.253	0.435	0	1

Note: data used for these descriptive statistics include the balanced sample of all individuals observed consecutively for all years between 1996 and 2008. Respondents dropped from the sample also include those who were below the age of 16 in 1991, those who never got married over the full length of the dataset, those who were always recorded as widow from the beginning of the dataset and those who experienced widowhood but then re-married in a subsequent year. The sample also excludes individuals in the top percentile of the income distribution and of the age distribution.

Table 3: Baseline Equation, estimated with Linear Probability Models on full sample of respondents

Dependent variable: 1 if Support Incumbent Party		Financial Situation Only (Model 1)		High Satisfaction Only (Model 2a)		Life Satisfaction Only (Model 2b)		Financial Situation and Life Satisfaction (Model 3)	
		Pooled	FE	Pooled	FE	Pooled	FE	Pooled	FE
Financial Situation	Better	0.0141***	0.0163***					0.0120**	0.0156***
		(0.0047)	(0.0046)					(0.0056)	(0.0045)
	Worse	-0.0342***	-0.0299***					-0.0264***	-0.0114**
		(0.0045)	(0.0045)					(0.0056)	(0.0045)
Satisfied With Life	Very Satisfied			0.0177***	0.0193***			0.0131**	0.0172***
	[5, 6, 7]			(0.0054)	(0.0050)			(0.0054)	(0.0050)
Satisfied With Life (continuous var)	[1, 2, ,7]					0.00684***	0.00786***		
						(0.0018)	(0.0019)		
	R-squared	0.030	0.026	0.046	0.032	0.046	0.032	0.047	0.032
	Observations	67,885	67,885	46,182	46,182	46,182	46,182	46,010	46,010
	Number of respondents		4,649		4,628		4,628		4,628

Note: Baseline Model looking at determinants of the Probability of Supporting the Incumbent Party. Sample: 4,628 respondents observed since 1996. All specifications also include auxiliary control variables (a dummy for "married" individuals, the natural logaritm of yearly Household Income, Age, Age squared and a dummy for female). Region and wave dummies are also always included. The variable "lfsato" from BHPS was used to define the level of life satisfaction. It is equal to seven different levels of life satisfaction, varying from Completely Satisfied (=7) to Not At All Satisfied (=1). For Model 2a and Model 3, the variable is re-coded as a dummy identifying whether the individual is "very satisfied" (lfsato¿4), whereas for Model 2b it is treated a continuous variables. Standard Errors are reported in parenthesis.

Table 4: Baseline Equation, estimated with Probit Models on full sample of respondents

Dependent variable: 1 if Support Incumbent Party		Financial Situation Only (Model 1)		High Satisfaction Only (Model 2a)		Life Satisfaction Only (Model 2b)		Financial Situation and Life Satisfaction (Model 3)	
		Pooled	C-RE	Pooled	C-RE	Pooled	C-RE	Pooled	C-RE
Financial Situation	Better	0.0224	0.0722***					0.0338**	0.0697***
		(0.0150)	(0.0208)					(0.0153)	(0.0208)
	Worse	-0.1043***	-0.0802***					-0.0740***	-0.0762***
		(0.0149)	(0.0213)					(0.0154)	(0.0213)
Satisfied With Life	Very Satisfied			0.0264*	0.0902***			0.0356**	0.0796***
	[5, 6, 7]			(0.0144)	(0.0226)			(0.0150)	(0.0227)
Satisfied With Life (continuous var)	[1, 2, ,7]					0.0188*** (0.00505)	0.0320*** (0.0089)		
	Max. Likelihood	-30990.91	-21323.52	-31021.42	-21334.63	-31019.65	-21112.15	-30990.50	-21318.00
	Observations	49,062	49,062	49,062	49,062	49,062	49,062	49,062	49,062
	Number of pid		4,215		4,215		4,215		4,215
Average Partial Effects									
	Better Financial	0.0081	0.0160					0.0080	0.0155
		(0.0054)	(0.0050)					(0.0054)	(0.0046)
	Worse Financial	-0.0374	-0.0177					-0.0369	-0.0168
		(0.0053)	(0.0047)					(0.0053)	(0.0047)
	Life Satisfaction			0.0095	0.0199	0.0001	0.0071	0.0048	0.0175
				(0.0052)	(0.0050)	(0.00002)	(0.0020)	(0.0052)	(0.0049)

Note: Baseline Model looking at determinants of the Probability of Supporting the Incumbent Party. Sample: 4,215 respondents observed since 1996. All specifications also include auxiliary control variables (a dummy for "married" individuals, the natural logaritm of yearly Household Income, Age, Age squared and a dummy for female). Region and wave dummies are also always included. The variable "lfsato" from BHPS was used to define the level of life satisfaction. It is equal to seven different levels of life satisfaction, varying from Completely Satisfied (=7) to Not At All Satisfied (=1). For Model 2a and Model 3, the variable is re-coded as a dummy identifying whether the individual is "very satisfied" (lfsato¿4), whereas for Model 2b it is treated a continuous variables. Standard Errors are reported in parenthesis. Standard Error for the RE Probit's APE were computed using the Delta Method.

Table 5: Baseline Equation, estimated with Linear Probability Models on sample of swing-voters

Dependent variable: 1 if Support Incumbent Party		Financial Situation Only (Model 1)		High Satisfaction Only (Model 2a)		Life Satisfaction Only (Model 2b)		Financial Situation and Life Satisfaction (Model 3)	
		Pooled	FE	Pooled	FE	Pooled	FE	Pooled	FE
Financial Situation	Better	0.0109	0.0203***					0.00292	0.0121
		(0.00677)	(0.00686)					(0.00795)	(0.00794)
	Worse	-0.0152**	-0.00661					-0.00712	0.00326
		(0.00683)	(0.00698)					(0.00817)	(0.00816)
Satisfied With Life	Very Satisfied			0.0179**	0.0190**			0.0169**	0.0188**
	[5, 6, 7]			(0.00742)	(0.00851)			(0.00753)	(0.00861)
Satisfied With Life	[1, 2, ,7]					0.00718***	0.00567*		
	(continuous var)					(0.00258)	(0.00325)		
	R-squared	0.040	0.051	0.045	0.056	0.045	0.056	0.045	0.057
	Observations	17,466	17,466	12,856	12,856	12,856	12,856	12,795	12,795
	Number of respondents		3,281		3,012		3,012		3,008

Note: Baseline Model looking at determinants of the Probability of Supporting the Incumbent Party. Sample: 2,845 Swing Voters observed since 1996. All specifications also include auxiliary control variables (a dummy for "married" individuals, the natural logaritm of yearly Household Income, Age, Age squared and a dummy for female). Region and wave dummies are also always included. The variable "lfsato" from BHPS was used to define the level of life satisfaction. It is equal to seven different levels of life satisfaction, varying from Completely Satisfied (=7) to Not At All Satisfied (=1). For Model 2a and Model 3, the variable is re-coded as a dummy identifying whether the individual is "very satisfied" (lfsato¿4), whereas for Model 2b it is treated a continuous variables. Standard Errors are reported in parenthesis.

Table 6: Baseline Equation, estimated with Probit Models on sample of swing voters

Dependent variable: 1 if Support Incumbent Party		Financial Situation Only (Model 1)		High Satisfaction Only (Model 2a)		Life Satisfaction Only (Model 2b)		Financial Situation and Life Satisfaction (Model 3)	
		Pooled	C-RE	Pooled	C-RE	Pooled	C-RE	Pooled	C-RE
Financial Situation	Better	0.0431	0.0534					0.0110	0.0501
		(0.0287)	(0.0464)					(0.0337)	(0.0464)
	Worse	-0.0688**	-0.0146					-0.0336	-0.0102
		(0.0299)	(0.0488)					(0.0352)	(0.0490)
Satisfied With Life :	Very Satisfied			0.0767**	0.1032**			0.0726**	0.0989*
	[5, 6, 7]			(0.0322)	(0.0505)			(0.0326)	(0.0508)
Satisfied With Life	[1, 2, ,7]					0.0311***	0.0487**		
(continuous var) :						(0.0111)	(0.0204)		
	Max. Likelihood		-4891.10105		-4890.0969		-4826.61533		-4889.32648
	Observations	13,115	13,115	13,115	13,115	13,115	13,115	13,115	13,115
	Number of pid		2,845		2,845		2,845		2,845
Average Partial Effects									
	Better Financial		0.0090						0.0085
			(0.0079)						(0.0079)
	Worse Financial		-0.0025						-0.0017
			(0.0082)						(0.0082)
	Life Satisfaction				0.0171		0.0082		0.0164
					(0.0082)		(0.0034)		(0.0083)

Note: Baseline Model looking at determinants of the Probability of Supporting the Incumbent Party. Sample: 2,845 Swing Voters observed since 1996. All specifications also include auxiliary control variables (a dummy for "married" individuals, the natural logaritm of yearly Household Income, Age, Age squared and a dummy for female). Region and wave dummies are also always included. The variable "lfsato" from BHPS was used to define the level of life satisfaction. It is equal to seven different levels of life satisfaction, varying from Completely Satisfied (=7) to Not At All Satisfied (=1). For Model 2a and Model 3, the variable is re-coded as a dummy identifying whether the individual is "very satisfied" (lfsato¿4), whereas for Model 2b it is treated a continuous variables. Standard Errors are reported in parenthesis. Standard Error for the RE Probit's APE were computed using the Delta Method.

Table 7: Baseline Equation, estimated with Probit Models on sample of swing voters

Dependent variable: 1 if Support Incumbent Party		All Respondents			Only Respondents Classified as Swing Voters		
		[a]	[b]	[c]	[d]	[e]	[f]
Financial Situation	Better	0.0741***	0.0304*	0.0304*	0.0126	0.0342	0.0342
		-0.0242	-0.0162	-0.0162	-0.0554	-0.0427	-0.0427
	Worse	-0.0673***	-0.0961***	-0.0964***	-0.000694	-0.052	-0.0519
		-0.0244	-0.016	-0.016	-0.0569	-0.0439	-0.0439
Satisfied With Life	[= 1]	-0.104			-0.221		
		-0.0995			-0.213		
	[= 2]	-0.0814			-0.0397		
		-0.0789			-0.173		
	[= 3]	-0.173***			-0.336***		
		-0.055			-0.12		
	[= 4]	-0.0929**			-0.245***		
		-0.0439			-0.0946		
	[= 5]	-0.0345			-0.119		
		-0.0381			-0.0825		
	[= 6]	-0.00494			-0.0127		
		-0.0355			-0.0777		
Satisfied (w.r.t. same as in the past)	Less than in the past		-0.0236			-0.0511	
			-0.0199			-0.0524	
	More than in the past		0.0370*			0.0167	
			-0.0199			-0.0524	
Happiness (w.r.t. Much More than Usual)	Less than usual			0.00834			0.0738
				-0.0503			-0.129
	As Usual			-0.0288			0.0571
				-0.0476			-0.122
	More than Usual			-0.0598			0.00699
				-0.0495			-0.127
	Observations	38,062	56,563	56,563	10,118	13,883	13,883
	Number of respondents	3,826	3,843	3,843	2,439	2,662	2,662

Note: the table departs from the preferred model from tables 3 to 6 for both the group of all individuals and the group of only swing voters. These models are then re-estimated using alternative measures of Life Satisfaction: columns [a] and [d] uses the life satisfaction variable as a full categorical variable, columns [b]and [e] uses the variable reporting the answer to the question "How Happy are you with respect to the past", with "As happy as in the past" as a reference group, columns [c] and [f] uses the variable reporting the answer to the question "How Happy are you in general?", with "Much more than usual" as a reference group. All regression use the Chamberlain Method on a RE Probit, and all include dummies for the wave and the region of the respondent ass well as the same set of controls employed in tables 3 and 5.

Table 8: Propensity Score Estimation

Dependent Variable: equal 1 if ever been widowed between 1992 and 2008	Probit
Age in 1991	0.0464***
	(.004)
Female	0.5393***
	(.087)
In Working Age in 1991	-0.4127***
	(.141)
Spouse Employed in 1991	-0.2751***
	(.098)
ln (Household Income) in 1991	-0.1788***
	(.067)
Dummy: 1 if visited GP more than twice in 1991	-0.2250***
	(.087)
Dummy: 1 if uses alternative medicine	0.0349
	(.199)
Dummy: 1 if Checked Cholesterole in 1991	-0.2013*
	(.115)
Constant	-1.2518
	(.762)
No. Respondents	4,125
Log-Likelihood	-665.458
Pseudo R-squared	0.3208

Note: Probit Model for the likelihood of experiencing widowhood, conditional on personal characteristics observed in 1991. Sample: 4,125 respondents from the balanced sample of BHPS, as observed in 1991. All specifications also include region of residence and household type dummies. Standard Errors are reported in parenthesis.

Figure 2: Histogram of Propensity Score, conditional on Treatment Status

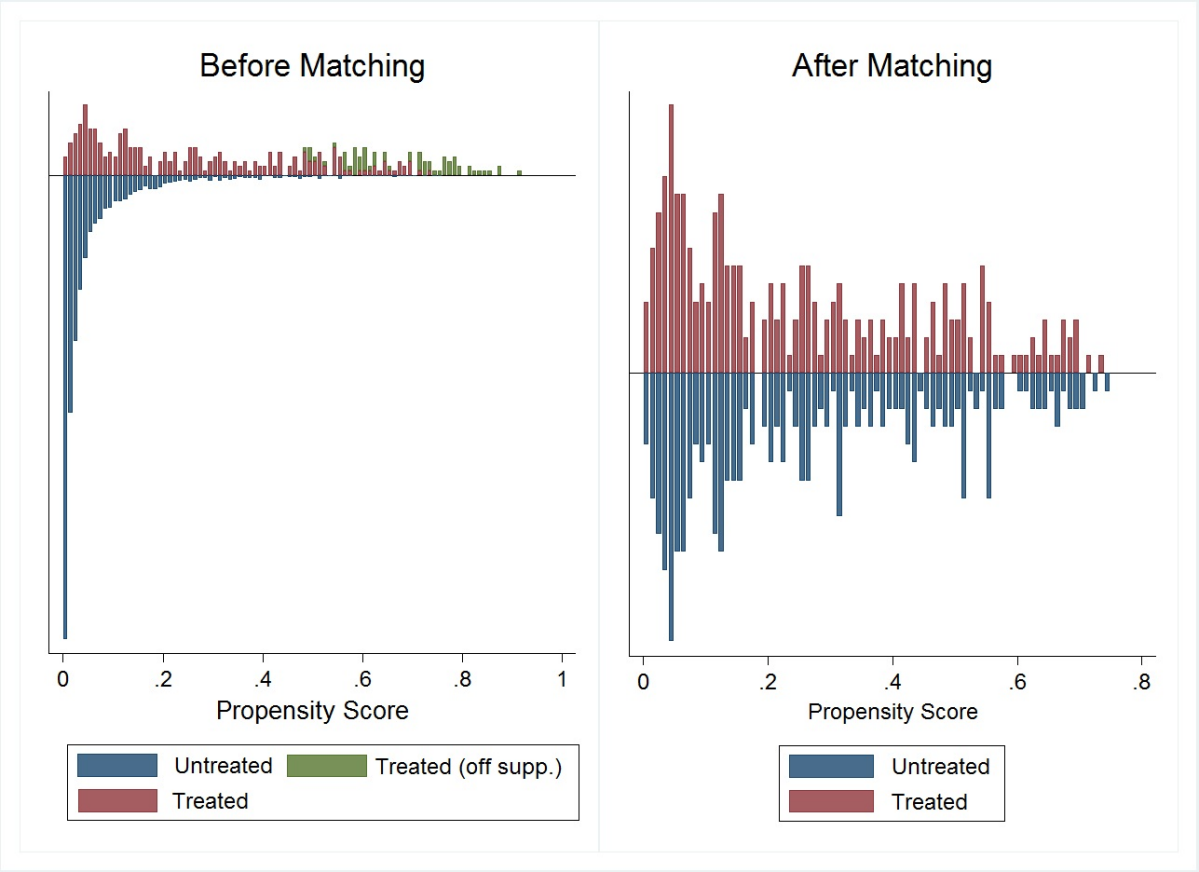

Table 9: Balancing Across Covariates used in the Propensity Score Estimation

Variable (as observed in 1991)		Bias		Mean		Test for Equality of Means	
	Sample	Treated	Control	%	% Reduced	t-test	$p > t$
Age of Respondent	*Unmatched*	56.472	37.770	141.4	98.8	23.120	0.000
	Matched	53.341	53.563	-1.7		-0.190	0.851
Female	*Unmatched*	0.726	0.541	38.9	97.6	6.050	0.000
	Matched	0.681	0.686	-0.9		-0.100	0.920
In Working Age	*Unmatched*	0.549	0.960	-108.6	96.8	-28.070	0.000
	Matched	0.690	0.677	3.5		0.300	0.764
Dummy: 1 if smoke	*Unmatched*	0.243	0.262	-4.3	-17.9	-0.690	0.493
	Matched	0.249	0.227	5.0		0.550	0.584
Dummy: 1 if Permanent Job	*Unmatched*	0.389	0.689	-63.1	95.6	-10.470	0.000
	Matched	0.476	0.463	2.8		0.280	0.779
Dummy: 1 if full time emplyed	*Unmatched*	0.285	0.570	-60.3	80.1	-9.430	0.000
	Matched	0.358	0.301	12.0		1.290	0.197
Dummy: 1 if retired	*Unmatched*	0.365	0.043	87.1	95.9	21.810	0.000
	Matched	0.262	0.249	3.5		0.320	0.749
Dummy: 1 if full spouse employed	*Unmatched*	0.330	0.604	-57.0	92.0	-9.110	0.000
	Matched	0.410	0.432	-4.5		-0.470	0.637
ln(Household Yearly Income)	*Unmatched*	9.453	9.910	-67.4	96.8	-11.360	0.000
	Matched	9.565	9.580	-2.1		-0.220	0.826
Respond. in good health	*Unmatched*	0.753	0.795	-9.9	89.4	-1.650	0.099
	Matched	0.760	0.755	1.0		0.110	0.913
Dummy: respondent visits GP at least twice a year	*Unmatched*	0.708	0.741	-7.4	73.6	-1.220	0.223
	Matched	0.703	0.712	-2.0		-0.200	0.838
Dummy: respondent ever hospitalized	*Unmatched*	0.090	0.105	-4.9	-142.3	-0.770	0.443
	Matched	0.105	0.070	11.8		1.320	0.186
Dummy: respondent uses alternative medicine	*Unmatched*	0.035	0.038	-1.5	-56.7	-0.240	0.811
	Matched	0.035	0.031	2.3		0.260	0.793
Respondent did blood test	*Unmatched*	0.563	0.509	10.7	1.8	1.730	0.083
	Matched	0.559	0.507	10.5		1.120	0.262
Respondent did x-ray checkup	*Unmatched*	0.160	0.133	7.5	-80.2	1.260	0.206
	Matched	0.162	0.114	13.6		1.490	0.136
Respondent did cholesterol checkup	*Unmatched*	0.101	0.126	-8.0	-4.0	-1.240	0.214
	Matched	0.122	0.148	-8.3		-0.820	0.414
Female Respondent did breast cancer test	*Unmatched*	0.285	0.249	8.2	63.8	1.350	0.176
	Matched	0.306	0.293	3.0		0.310	0.760

The table reports the mean of the covariates relevant to the Propensity Score Estimation across the Treated and Control group for both the matched and unmatched samples. It also reports indication of the bias across the Treated and Control group and the reduction in bias attained through the matching procedure. Finally,it shows the results for a test of equality in the means of these covariates across the Treated and Control group both before and after the matching.

Figure 3: Covariates Imbalance before and after Matching

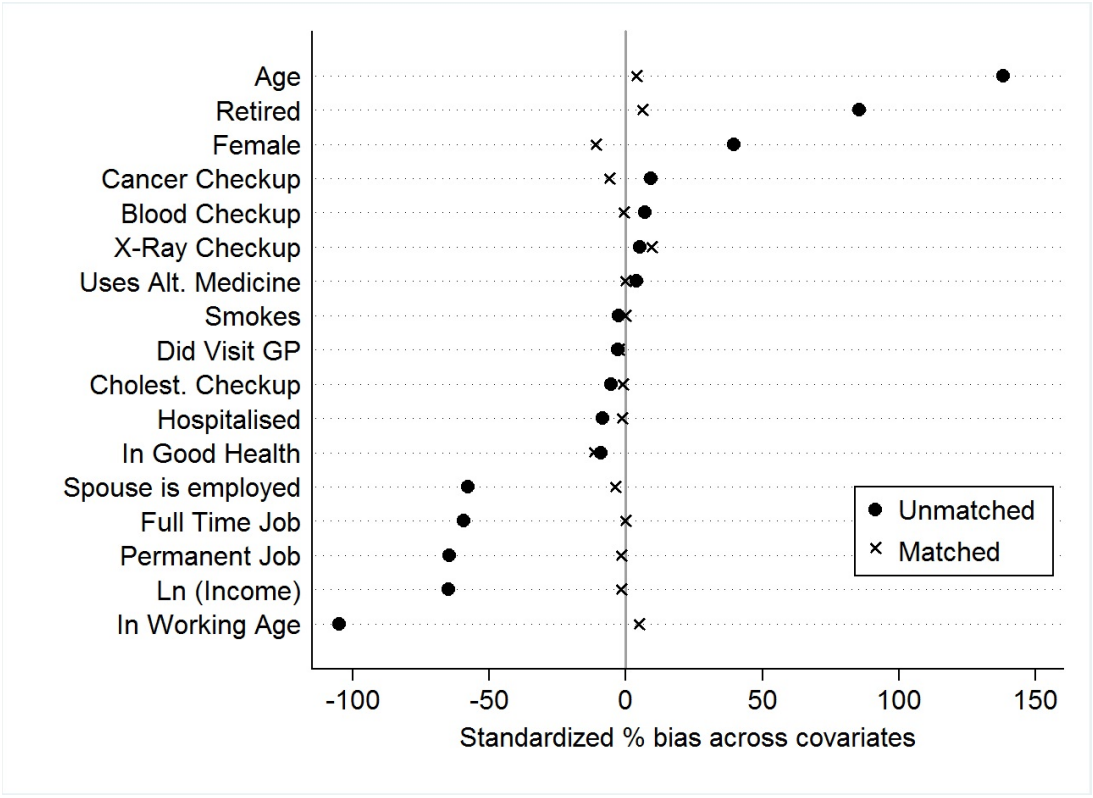

Table 10: Results from Difference in Difference Estimates on full matched sample

Dep. Variable: Supp. Incumb.	(1)[a]	(2)[a]	(3)[b]	(4)[b]	(5)[c]	(6)[c]	(7)[b]	(8)[b]	(9)[b]	(10)[b]	(11)[b]	(12)[b]
Treated	0.017	0.015	0.034	0.033	0.046	0.045	0.041	0.040	0.034	0.033	0.042	0.040
	(0.039)	(0.039)	(0.041)	(0.041)	(0.044)	(0.044)	(0.045)	(0.045)	(0.041)	(0.041)	(0.045)	(0.045)
After*TRTD*F		-0.054		-0.083*		-0.107***						
		(0.045)		(0.043)		(0.040)						
After*TRTD*M		0.075		0.056		0.048						
		(0.059)		(0.057)		(0.056)						
After*TRTD	-0.013		-0.039		-0.058*							
	(0.040)		(0.037)		(0.034)							
TRTD*(3,4,5) yrs after							-0.021					
							(0.055)					
TRTD*(0,1,2) yrs after*F							-0.053					
							(0.044)					
TRTD*(1,2) yrs before							-0.010					
							(0.027)					
TRTD*(0,1,2) yrs after*M								0.058				
								(0.070)				
TRTD*(3,4,5) yrs after*M								0.073				
								(0.084)				
TRTD*(1,2) yrs before*M								0.047				
								(0.061)				
TRTD*(0,1,2) yrs after*F								-0.104**				
								(0.050)				
TRTD*(3,4,5) yrs after*F								-0.064				
								(0.062)				
TRTD*(1,2) yrs before*F								-0.037				
								(0.035)				
TRTD* (0) yrs after									-0.034		-0.041	
									(0.037)		(0.044)	
TRTD*(1) yrs after									-0.058		-0.065	
									(0.041)		(0.048)	
TRTD*(2) yrs after									-0.047		-0.054	
									(0.043)		(0.051)	
TRTD*(3) yrs after									-0.014		-0.021	
									(0.048)		(0.055)	
TRTD* (0) yrs after*F										-0.075*		-0.088*
										(0.044)		(0.051)
TRTD*(1) yrs after*F										-0.117**		-0.130**
										(0.047)		(0.055)
TRTD*(2) yrs after*F										-0.083		-0.095
										(0.050)		(0.058)
TRTD*(3) yrs after *F										-0.051		-0.064
										(0.056)		(0.062)
TRTD* yrs after *M										0.053		0.058
										(0.061)		(0.073)
TRTD*(1) yrs after *M										0.067		0.072
										(0.065)		(0.076)
TRTD*(2) yrs after *M										0.036		0.041
										(0.070)		(0.080)
TRTD*(3) yrs after *M										0.068		0.073
										(0.076)		(0.084)
TRTD*(1) yrs before											-0.021	
											(0.031)	
TRTD*(2) yrs before											0.001	
											(0.029)	
TRTD*(2) yrs before *F												-0.026
												(0.038)
TRTD*(1) yrs before *F												-0.049
												(0.039)
TRTD*(2) yrs before *M												0.057
												(0.064)
TRTD*(1) yrs before *M												0.038
												(0.066)
Observations	3,373	3,373	2,707	2,707	1,986	1,986	2,707	2,707	2,707	2,707	2,707	2,707
R-squared	0.060	0.063	0.062	0.066	0.060	0.065	0.063	0.067	0.063	0.066	0.063	0.067
F-stat	2.697	2.775	2.702	2.898	1.854	2.080	2.669	2.790	2.625	2.738	2.532	2.550
R2	0.0597	0.0626	0.0624	0.0658	0.0605	0.0650	0.0626	0.0669	0.0627	0.0663	0.0628	0.0672

Note: Robust standard errors in parentheses clustered by individuals: *significant at * 10, ** 5, *** 1 percent. [a] Sample restricted to 4 yrs after and before the event, [b] Sample restricted to 3 yrs after and before the event, [c] Sample restricted to 2 yrs after and before the event.

Table 11: Results from Difference in Difference Estimates on separated samples of females and males respondents

Table 10A - Female Respondents Only

Dependent Variable: Support Incumbent	(1)[a]	(2)[b]	(3)[c]	(4)[b]	(5)[b]	(6)[b]
Treated	0.007	0.011	0.011	0.011	0.019	0.019
	(0.047)	(0.050)	(0.053)	(0.050)	(0.053)	(0.053)
After*Treated	-0.074	-0.089**	-0.097**			
	(0.047)	(0.045)	(0.041)			
Treated*(1) year before spouse death					-0.023	
					(0.035)	
Treated*(2) years before spouse death					-0.000	
					(0.033)	
Treated* year of spouse death				-0.081*	-0.089*	
				(0.046)	(0.052)	
Treated*(1) year after spouse death				-0.123**	-0.131**	
				(0.049)	(0.057)	
Treated*(2) years after spouse death				-0.088*	-0.096	
				(0.052)	(0.060)	
Treated*(3) years after spouse death				-0.059	-0.067	
				(0.058)	(0.066)	
Treated*(1,2) years before spouse death						-0.012
						(0.031)
Treated*(0,1,2) years after spouse death						-0.105**
						(0.052)
Treated*(3) years after spouse death						-0.067
						(0.065)
Observations	2,240	1,797	1,317	1,797	1,797	1,797
R-squared	0.083	0.090	0.091	0.091	0.091	0.091

Table 10B - Male Respondents Only

Dependent Variable: Support Incumbent	(1)[a]	(2)[b]	(3)[c]	(4)[b]	(5)[b]	(6)[b]
Treated	0.042	0.086	0.118	0.086	0.096	0.096
	(0.067)	(0.069)	(0.074)	(0.069)	(0.078)	(0.078)
After*Treated					-0.021	
					(0.066)	
Treated*(1) year before spouse death					-0.009	
					(0.058)	
Treated*(2) years before spouse death				0.069	0.059	
				(0.065)	(0.083)	
Treated* year of spouse death				0.069	0.059	
				(0.073)	(0.089)	
Treated*(1) year after spouse death				0.033	0.023	
				(0.077)	(0.091)	
Treated*(2) years after spouse death				0.047	0.037	
				(0.086)	(0.101)	
Treated*(3) years after spouse death	0.102	0.056	0.019			
	(0.072)	(0.066)	(0.060)			
Treated*(1,2) years before spouse death						-0.015
						(0.057)
Treated*(0,1,2) years after spouse death						0.048
						(0.082)
Treated*(3) years after spouse death						0.037
						(0.101)
Observations	1,133	910	669	910	910	910
R-squared	0.086	0.107	0.120	0.107	0.107	0.107

Robust standard errors in parentheses clustered by individuals: *significant at * 10, ** 5, *** 1 percent. [a] Sample restricted to 4 yrs after and before the event, [b] Sample restricted to 3 yrs after and before the event, [c] Sample restricted to 2 yrs after and before the event.

A Appendix

A.1 The Effect of Widowhood on SWB

To support the validity of our empirical strategy, we show in this section that widowhood actually constitute a negative shock to life satisfaction, measured by self reported subjective wellbeing. Using our matched sample, we run a diff-in-diff model for comparing the effect widowhood had on the life satisfaction of the individivuals who did experience the shock to the effect it would have had on the counterfactual group. Our final sample is made out of 229 treated respondents, i.e. whose spouse died between 1992 and 2008 (127 of these are women and 82 men) and of 229 control respondents, i.e. whose spouse did not die (141 women and 69 men) but who share the same *ex ante* probability as treated individuals of experiencing widowhood between 1992 and 2008.

The study by Clark et al. (2008) shows that it persists significantly for a year after the event (but only for women) and that it is fully reabsorbed after four years. Figure 4 clearly shows the impact of experiencing widowhood on self reported life satisfaction. From the top graph, we see how reported life satisfaction starts decreasing in the two years preceeding the death of the spouse, reaches its lowest peak during the year of the spouse death and then fastly readjusts toward the average level during the two years following the loss of the spouse. The bottom graphs of figure 4 show that this trend is lead by female widows, as already noticed by CLark et al. (2008). To see it works in the same way also for our dataset we estimate the following model:

$$Wellbeing_{it} = \alpha + \sigma_1 \times treated_i + \sigma_2 \times after_{it} \times treated_i + \sigma_3 \times after_{it} + \gamma \times X_{it} + \delta_t + u_{it}$$

The coefficient of interest is σ_2, which is the effect of widowhood on wellbeing for those individuals whose spouse died. We estimates several variations of this model, which include interacting $treated_i$ both with the sex of the respondents as well as with dummies indicating the number of year after the event, {*year of the death*}, {1, 2, ..4, 5 years after}, {0-2, 3-5 years after}.

The results for this exercise are reported in Table A1. Overall, in line with previous research, the shock of unhappiness is only significant for women, and it is reabsorbed after two years from the event. There is no evidence of significant different level of wellbeing between the treated and the control group after three years from the event. Graph A1 visualise these results.

Figure 4: Effect of Widowhood on Life Satisfaction

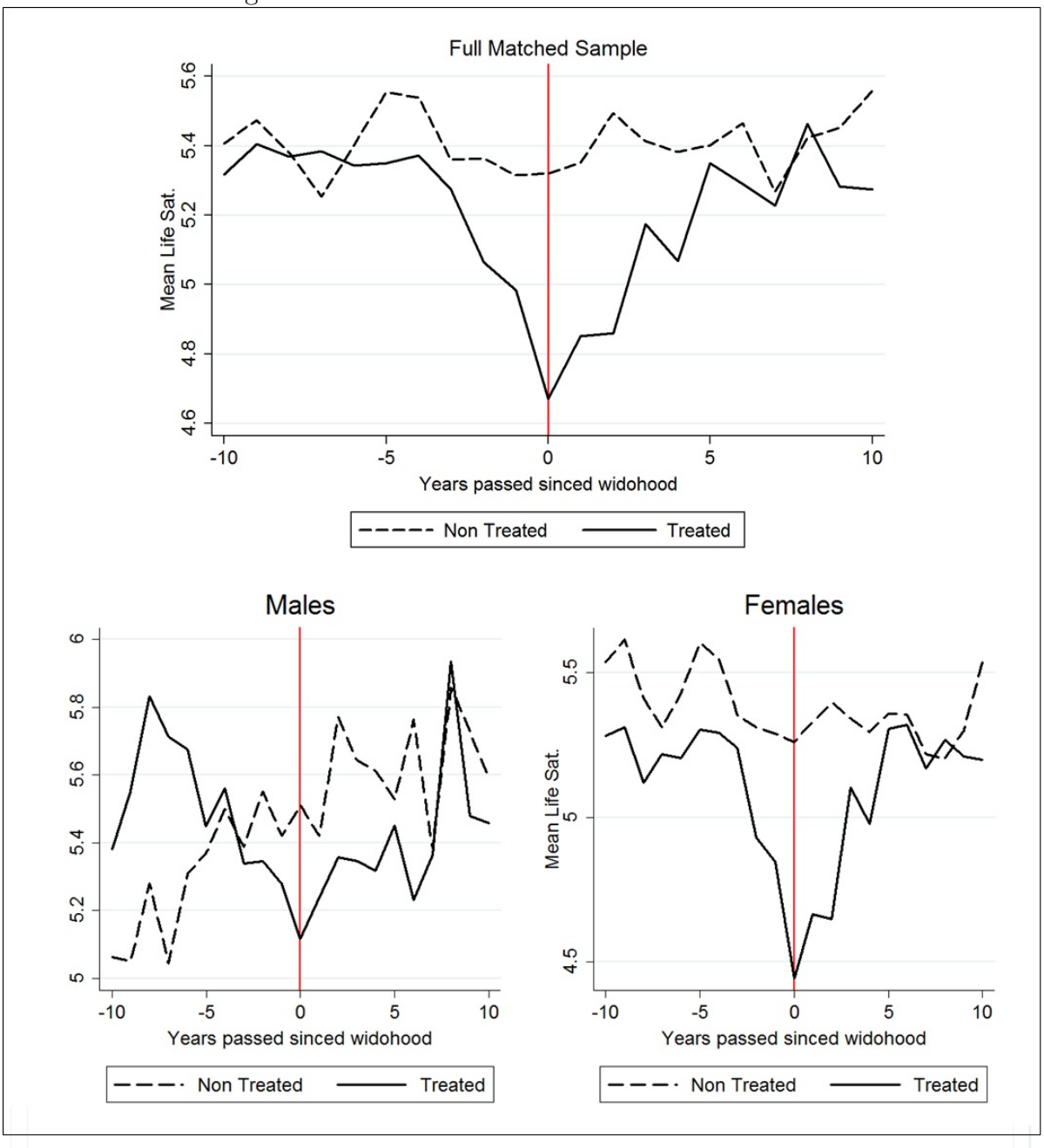

Table 12: Results from Difference in Difference Estimates of Widohood on Life Satisfaction

Dependent Variable: Life Satisfaction	(1)	(2)	(3)	(4)	(5)	(6)
Treated	-0.193	-0.198	-0.060	-0.067	-0.091	-0.068
	(0.120)	(0.120)	(0.126)	(0.126)	(0.154)	(0.126)
After*Treated*Female		-0.283**				
		(0.123)				
After*Treated*Male		0.108				
		(0.158)				
After*Treated	-0.164					
	(0.110)					
Treated*(3,4,5) years after spouse death			-0.090			
			(0.127)			
Treated*(1,2) year after spouse death			-0.480***			
			(0.127)			
Treated*(0,1,2) years after spouse death*Male				-0.121		
				(0.178)		
Treated*(3,4,5) years after spouse death*Male				0.114		
				(0.199)		
Treated*(0,1,2) years after spouse death*Female				-0.639***		
				(0.147)		
Treated*(3,4,5) years after spouse death*Female				-0.177		
				(0.138)		
Treated* (0) year of spouse death					-0.693***	
					(0.196)	
Treated*(1) year after spouse death					-0.530***	
					(0.173)	
Treated*(2) year after spouse death					-0.501***	
					(0.171)	
Treated*(3) year after spouse death					-0.006	
					(0.175)	
Treated*(4) year after spouse death					-0.287*	
					(0.159)	
Treated*(5) year after spouse death					-0.008	
					(0.180)	
Treated* (0) year of spouse death*Female						-0.773***
						(0.187)
Treated*(1) year after spouse death*Female						-0.590***
						(0.160)
Treated*(2) year after spouse death* Female						-0.551***
						(0.163)
Treated*(3) year after spouse death*Female						-0.082
						(0.165)
Treated*(4) year after spouse death* Female						-0.352**
						(0.149)
Treated*(5) year after spouse death*Female						-0.078
						(0.164)
Treated* year of spouse death*Male						-0.094
						(0.211)
Treated*(1) year after spouse death*Male						-0.227
						(0.207)
Treated*(2) year after spouse death* Male						-0.028
						(0.223)
Treated*(3) year after spouse death*Male						0.067
						(0.212)
Treated*(4) year after spouse death* Male						0.093
						(0.225)
Treated*(5) year after spouse death*Male						0.205
						(0.248)
Observations	3,212	3,212	3,212	3,212	2,143	3,212
R-squared	0.113	0.116	0.121	0.125	0.146	0.126
R2	0.113	0.116	0.121	0.125	0.146	0.126

Note: the sample used is restricted to 5 years before and after the event. Robust standard errors, clustered at individual level, in parentheses. *significant at * 10, ** 5, *** 1 percent.