Daughters and Left-Wing Voting

Andrew J. Oswald
Department of Economics, University of Warwick
Email: andrew.oswald@warwick.ac.uk

Nattavudh Powdthavee
Institute of Education, University of London
Email: n.powdthavee@ioe.ac.uk

April 23, 2006

Abstract

This paper provides evidence that daughters make people more left-wing. Having sons, by contrast, makes them more right-wing. Parents, politicians and voters are probably not aware of this phenomenon -- nor are social scientists. The paper discusses its economic and evolutionary roots. It also speculates on where research might lead. The paper ends with a conjecture: left-wing individuals are people who come from families into which, over recent past generations, many females have been born.

Keywords: Voting; gender; daughters; political preferences; attitudes.

JEL codes: D1, D72, H1, J7

For many helpful suggestions, we thank seminar audiences at Harvard, LSE, MIT, Nottingham Trent, Bath, and Warwick, and also Roland Benabou, Chuck Blackorby, Janet Box-Steffensmeier, Bruce Charlton, David De Meza, Peter Dolton, Danny Dorling, Patrick Dunleavy, Amy Finkelstein, Jeff Frieden, Andrew Gelman, Ed Glaeser, Claudia Goldin, Amanda Goodall, Jon Gruber, Dan Hamermesh, John Hudson, Nick Humphrey, Stephen Jenkins, Ron Johnston, Satoshi Kanazawa, Emanuel Kohlscheen, Praniel Ladwa, Robert MacCulloch, Robin Naylor, Claire Oswald, Felicity Oswald, John Pencavel, Carlo Perroni, Steve Pischke, David Sanders, Elizabeth Sanders, Jeremy Smith, Ulli Stein, Andranik Tangian, Mark Philip Taylor, Leighton Vaughan-Williams, Ian Walker, and Ken Wallis. We have also benefited greatly from written suggestions from members of the Harvard Political Economy reading group and the University of Manchester's Gender Research Network reading group.

Daughters and Left-Wing Voting

1. Introduction

This paper argues that children shape their parents' political preferences. It provides evidence that having daughters pushes people to become more left-wing. Giving birth to sons, by contrast, makes people more likely to vote in a right-wing way. Parents are probably not aware of this -- nor are social scientists.

The data, which are primarily from Great Britain, are longitudinal. Political parties and institutions vary, of course, from one nation to another. We are not sure how far these results will generalize. However, because of their statistical robustness and the generality of the issues, we would conjecture that a version of the same phenomenon will be found more widely in international panel data on voting (such data sets are currently rare).

Later sections blend theoretical argument with empirical evidence. Although, to our knowledge, no investigator has documented the effect discussed later, there is a literature of a related kind. Pioneering work on the role of gender has been done by Angrist and Evans (1998), Ben-Porath and Welch (1976), Bird (2005), Butcher and Case (1994), Chattopadhyay and Duflo (2004), Edlund (1999), Edlund and Pande (2002), Kamo and Warner (1997), Kohler et al (2005), Lundberg and Rose (2002), Norris (2004), Peresie (2005), Morgan, Lye and Condran (1988), Warner (1991) and Washington (2004). A lucid overview of much of this field is provided in the recent paper by Lundberg (2005).

The research literature finds, for example, that the gender of children appears to affect both labour supply decisions and parents' attitudes to their own roles in the family. Female politicians have been shown to raise different questions in political debates than men (Bird, 2005). The literature also demonstrates that fathers' views on women's issues, such as the ethics of abortion, are influenced by whether they have daughters; people tend to be more liberal if

they have female children and less liberal if they have male children. This result, due to the innovative research of Washington (2004), is probably the closest to the spirit of the conclusions to be discussed later. More broadly, our paper is relevant to the ideas of Benabou and Tirole (2003) on parental-child interactions, and fits within work on the nature of endogenous preferences (see, for instance, Bowles 1998).

One way to rationalize the paper's empirical findings is to appeal to evolutionary principles. Parents care about their offspring and wish to see those offspring prosper; the childless may not have the same social and economic objectives. Hence the political preferences of men and women might, in principle, alter as they acquire children.

We build on this idea. As an aid to thinking, the next section of the paper sets out a (highly stylized) model in which it is evolutionarily rational for male and female parents to change their voting preferences. Our framework has an economic flavour.

The model's intuition is simple. What happens behind the formal analytics is that, because

- there is pay discrimination against women, and
- females derive greater utility from public goods like community safety,

it transpires that women are intrinsically more left-wing than men. When compared to males, women prefer a larger supply of the public good and a greater tax rate on income. The reason is that their marginal utility from the first is relatively high and the tax penalty they face from the latter relatively low. As men acquire female children, however, those men gradually shift their political stance and become more sympathetic to the 'female' desire for a steeper income tax schedule and a larger amount of the public good. They become more left-wing. Similarly, a mother with many sons becomes sympathetic to the 'male' case for lower taxes and a smaller supply of public goods. She becomes more right-wing.

In practice, these forces operate at a subconscious level. Our paper assumes that people optimize as if they were conscious of their deeper motives.

2. A Model

Consider a world in which there is a public good denoted P and people earn a level of real income denoted y. The public good -- it might be thought of as a good such as the safety of the community or the quality of the environment -- is funded out of tax revenue. There is a single tax rate, t, which is levied on personal income. Individuals have political preferences. To keep things as clear as possible, assume that the political shade of government in this world can be captured by a single variable, r. It is useful to view r as some uni-dimensional measure of how left-wing (or collectivist) the government of this society is in its actions and philosophy.

Loosely, in the later model, the variable r might be thought of as the shade of 'red' of this society.

Consider a male who has no children. Assume this male individual has the following simple and separable utility function

$$V = v(P) + y(1-t) \qquad (1)$$

where the function v(P) captures the utility from the public good, and v(.) is assumed to be differentiable, increasing and concave. It is straightforward to allow for concavity with respect to income, but linearity simplifies the later algebra.

Assume the existence of a monotonic function linking the supply of the public good to the tax rate. Define it simply as P = P(t). Assume this function is increasing and differentiable. Greater income taxes thus lead to a larger supply of the public good. It seems natural to define a left-wing society, with a high value of r, as being one which provides a relatively large amount of the public good and funds this with a relatively high tax rate on income. Right-wing societies, by contrast, have low P and low t. Assume that the marginal

tax rate on income can also be thought of as a monotonic function of r, the political redness of the voters. Define it t = t(r). Assume that t(r) is increasing and differentiable. The amount of the public good that is provided is thus usefully condensed into

$$P = P(t(r)) = p(r) \qquad (2)$$

where the new function p(r) is the supply of the public good written in a compressed way as a function of the political shade of the society.

It is now possible to solve out in a simple way for the individual's preference on his society's optimal political colour, r. At the margin, he balances his desire for low taxes with his desire for the public good. Formally, a male voter's utility maximization decision can be written as the choice of the level of r that maximizes:

$$V = v(p(r)) + y(1 - t(r)) \qquad (3)$$

and at an interior optimum this is

$$\frac{\partial V}{\partial r} = v'(p(r))p'(r) - yt'(r) = 0 \qquad (4)$$

after assuming, as will be done throughout, that the citizen's maximand V(r) is concave in r, so that the second-order condition for a maximum holds.

Now consider a female voter. In this world, a childless woman's utility function is assumed to be of form

$$U = (1 + \alpha)v(p(r)) + y(1 - \delta)(1 - t) \qquad (5)$$

where a non-negative parameter alpha, α, captures any extra relative weight that females put on the public good P relative to the males, and another non-negative parameter delta, δ, is the degree of pay discrimination, if any, within the society. These seem the two salient characteristics to explore. We later examine the effects of variations in these parameters. A woman's optimal shade of political red, therefore, need not be identical to a man's. It is given at an interior maximum by

$$\frac{\partial U}{\partial r} = (1 + \alpha)v'(p(r))p'(r) - y(1 - \delta)t'(r) = 0 \qquad (6)$$

which can be rewritten for ease of comparison as

$$v'(p(r))p'(r) - yt'(r) = -\delta yt'(r) - \alpha v'(p(r))p'(r) \qquad (7)$$

and contrasted with the condition in the male equation in equation (4). This calculation leads to the following result:

Proposition 1

Given these assumptions, women are more left-wing than men.

Proof

The result is immediate from concavity and the fact that v(.), p(.) and t(.) are increasing functions. The right-hand side of equation (7) is negative. Because the function V is increasing and concave, therefore, r exceeds the level that satisfies the male optimality equation (4). In this way, equation (7) establishes that the optimal political shade of red, r*, is higher among females than it is among males. It is then straightforward to prove a number of other results.

Proposition 2

The greater is their level of income, y, the less left-wing are individuals (of either sex).

Proof

In choosing x to maximize a well-behaved concave function J(x, a), where a is some shift parameter, the sign of the comparative static result dx*/da is given by the sign of the cross-partial derivative of J(..). Hence the sign here of the derivative of r*, the optimal choice of r, with respect to any variable is given by the sign of the cross-partial derivative of the first-order condition for a maximum with respect to that particular variable. Consider income, y. For men, from equation (4), the cross-partial of the maximand with respect to r and y is given by the term

$$-t'(r) < 0 \qquad (8)$$

and for women

$$-(1-\delta)t'(r) < 0 \qquad (9)$$

which, because each is negative, establishes the proposition for each sex. In this framework, a higher level of income y induces a lower optimal level of political ‘redness’, r*.

Proposition 3

The greater is the degree of wage discrimination, the more left-wing are females.

Proof

By the same one-line algebraic method, the result is immediate from an inspection of the cross-partial of equation (6) with respect to delta, δ. Its sign, which is positive, is determined by that of $yt'(r) > 0$.

Proposition 4

The greater is females' utility weight on the public good, P, the more left-wing are females.

Proof

Immediate from inspection of the cross-partial of equation (6) with respect to alpha, α. Its sign is positive and is given by that of $v'(p(r))p'(r) > 0$.

What can now be said about the political preferences of men and women with children? In particular, how might parents be rationally affected by having male and female offspring?

Consider a man with children. Assume he has f female children and m male children. It is not obvious, intuitively, how such a case should be analyzed. However, one plausible assumption is that he will act in a way that puts some weight on his own (personal) preferences and some weight on the preferences of his offspring. A strict Darwinian might even argue that he would be put complete weight on his children's utilities, but that seems an extreme position.

Define an equivalent to the earlier V function -- this time for a man with children. Let the preferences of a father be represented by the new utility function

$$V^c = \gamma V + (1-\gamma)[fU + mV] \qquad (10)$$

in which the assigned weight on own utility is γ and that on the children's utility is an assigned weight of $1-\gamma$. Here the individual acts somewhat like a utilitarian planner (and if the weight is 0.5 it is exactly family utilitarianism). For simplicity, equation (10) imposes the assumption of a steady state in utilities, and ignores discounting. In other words, male children are assigned within their male parent's maximand the same utility function as that of childless males, V, and female children are assigned the utility function of childless females, U. This might seem myopic, because parents may bear in mind that their own children will reproduce, but it can be checked that such extra terms eventually disappear algebraically because, in general, the expectation of the difference between the number of male grandchildren and female grandchildren can be taken to be zero.

Intuitively, what happens is that a father takes on some of the preferences of his female offspring, and, for their sake, begins to vote accordingly. The optimal political shade of the father is given by maximizing the function in equation (10), which produces first-order condition

$$\frac{\partial V^c}{\partial r} = [\gamma + (1-\gamma)m]\frac{\partial V}{\partial r} + (1-\gamma)f\frac{\partial U}{\partial r} = 0 \qquad (11)$$

where, as before, we concentrate on well-determined interior optima. Under these assumptions, the model makes a simple prediction:

Proposition 5

The more daughters a man has, the more he votes to the left. The more sons he has, the more (weakly) he votes to the right.

Proof

In the notation of the model, all that is necessary is to show that as the number of daughters, f, rises, the optimal political shade of red of this individual, r*, also increases. Using the previous methods, the sign of dr*/df is given by the sign of the partial derivative of equation (11) with respect to the number of female children, f. The sign of that cross-partial is determined solely by the sign of the following term:

$$(1-\gamma)\frac{\partial U}{\partial r}. \qquad (12)$$

It might be thought that this term could not be signed unambiguously, but equation (11) provides a route to do so.

By combining the earlier equations (4) and (6), we can write

$$\frac{\partial U}{\partial r} = \frac{\partial V}{\partial r} + \alpha v'(p(r))p'(r) + \delta t'(r). \qquad (13)$$

The last two right-hand terms in this equation are necessarily non-negative: utility is increasing in the public good; the supply of the public good is an increasing function of the tax rate; taxes are increasing in the left-wing colour, r, of the government. Therefore

$$\frac{\partial U}{\partial r} \geq \frac{\partial V}{\partial r} \qquad (14)$$

and, in general, this inequality will hold strictly. But for equation (11) to be satisfied, the two partial derivatives in (14) must have opposite signs. Thus from equations (11) and (14) it follows that:

$$\frac{\partial U}{\partial r} > 0 \qquad (15)$$

and

$$\frac{\partial V}{\partial r} < 0. \qquad (16)$$

This completes the proof. The sign of expression (12) is positive, and that establishes the first part of Proposition 6. An equivalent proof (not included here) establishes the second part of the proposition, about the influence of sons. If, in the limiting case, the father has only sons, he continues to vote in the same way as a childless male, namely, as that given by the much earlier equation (4).

Similar results apply for females:

Proposition 6

The more sons a woman has, the more she votes to the right. The more daughters she has, the more (weakly) she votes to the left.

Proof

The mother's utility function is assumed to be

$$U^c = zU + (1-z)[fU + mV] \qquad (17)$$

where z is used here the symbol for the weight on own utility and 1-z is the weight on the wellbeing of her offspring. As before, U measures the utility of female children, and she has f of them. V is the utility of male children, and the mother has m of those male children. The sign of the response of r* to an increase in f is given by the cross-partial of equation (17) with respect to r and f. Although the algebra is omitted, it is straightforward to show, using the methods of the previous proof, that the cross-partial is positive. In general, the effect of daughters is to tilt the mother to the left (the limiting case being where she has purely daughters, in which case the mother continues to vote like a childless female). Similarly, the effect of sons is to tilt the mother politically towards the right.

This model is a stylized one and cannot explain the details of the political world. Its aim is instead to contribute to analysis of the possible sources of gender differences -- to say something about broad averages within a population. In real life, individuals are likely to have political preferences that stem from a panoply of influences, and in empirical analysis it will be necessary to try to control for as many as possible.

3. Empirical Testing

The paper proposes an empirical exploration of these ideas. The source used in the analysis is the British Household Panel Survey (BHPS). This is a nationally representative sample of British households, containing over 10,000 adult individuals, conducted between September and Christmas of each year from 1991 (see Taylor *et al*, 2002). Respondents are interviewed in successive waves; households who move to a new residence are interviewed at their new location; if an individual splits off from the original household, the adult members of their new household are also interviewed. Children are interviewed once they reach 11 years old. The sample has remained representative of the British population since the early 1990s. Once children leave home, no information is available on them. Numbers of adult children

are not recorded in the data set, so this paper focuses on offspring who live at home. Relatively little research appears to have been done on political preferences in BHPS data. Some exceptions are Sanders and Brynin (1999), Johnston, Sarker et al (2005) and Johnston, Jones et al (2005), but these do not explore the influence of children upon their parents' politics.

A chief focus here is on which political party an individual supports. The exact question used (# AV8 in the survey) is as follows, with, for illustration, people's mean answers given for the year 1991:

Which party do you regard yourself as being closer to than the others?

Conservative (3110 individuals, 46.3%)
Labour (2707 individuals, 40.3%)
Liberal Democrats (698 individuals, 10.4%)
Scottish National Party (91 individuals, 1.4%)
Plaid Cymru (7 individuals, 0.1%)
Green Party (76 individuals, 1.1%
Other Parties (22 individuals, 0.3%)
Other answer (7 individuals, 0.1%)

Don't know/no answer (3546 individuals)

In the later analysis, we measure 'left-wing' by using individuals' expressed support for the Labour Party or Liberal Democrat Party. We measure 'right-wing' by using expressed support for the Conservative Party. Because they are hard to classify, and numbers are small, individual voters for other political parties are eventually eliminated from the data. Clearly it is not possible in this way -- or arguably any simple way -- to do justice to the full complexities of human beings' political preferences. A trade-off exists between tractability and generality. Nevertheless, there is agreement that Labour is to the left (it has traditionally promoted socialist ideas) and the Conservatives are to the right (it has promoted the free market). The Liberal Democrats are more centrist, and thus in between the two larger parties, but have often been seen

as closer to the left than the right. The Labour and Liberal Democrats are combined only for simplicity; the results of the paper do not rest upon such an aggregation. Later analysis will not distinguish between whether the individual survey respondent is literally happier when his or her political party is in power, though it is natural to assume so (and Di Tella and MacCulloch (2005) find evidence for that in Western Europe). It is clear from these data, moreover, that many voters say they are undecided. We assume in the paper that this is inevitable in empirical work on political preferences, and, for simplicity, generally leave aside these observations.

The interesting recent work of Campbell (2004) documents systematic gender differences in modern British political attitudes. The author tabulates answers given in the British Election Survey of 2001. She shows that the single most-important issue to males is lower taxes. For females, by contrast, it is the quality of the National Health Service. Norris (2002) studies the gradual shift to the left of women in Britain's politics since World War 2.

Before moving to a formal analysis of the data set, it is natural to mention the political complexion of current female Members of Parliament in Great Britain. At the time of writing, there are 127 women in the House of Commons, which is the main legislative body. Of those, 17 are Conservative. More than 100 of the women are Labour or Liberal Democrat. This highly unequal division between right-wing and left-wing among female politicians contrasts with an approximately equal split among male politicians.

While the theoretical model may apply more generally, this paper will be silent empirically on a large range of nations. Women in the United States, for instance, are known to be more pro-Democrat in general than men, and this tendency has grown over the last few decades (Edlund and Pande 2002; Box-Steffensmeier, De Boef and Lin 2004). Greenberg (1998) concludes: "There is no question that, in general, women are more likely than men to favor activist government, the sort of agenda traditionally associated with the Democratic Party." Nevertheless, it is not clear how, for example, the principles of Britain's Labour Party should be viewed relative to those of the

U.S. Democratic Party. In modern data, Inglehart and Norris (1999) find some evidence of a more widespread female tendency to vote left in other countries (although in older data this was less common). Further research will be needed to compare the paper's patterns with non-British ones. Moreover, the paper is unable to say how long-standing the patterns in the data have been; it is known that in the 1950s both British and American females were more right-wing than they are today, and it is not easy to speculate on any role for child gender during that era.

In this data set, which spans the years 1991 to 2004, we examine the voting intentions of adults. There are 66,628 observations on political-party preferences. These are longitudinal data (this is an unbalanced panel), and there is much stability, year-on-year, in a person's political views. Approximately two-thirds of people in this sample express a preference for the Left, in our terminology, which we take as synonymous with either Labour or Liberal Democrat. In the raw data, the split between men (63% left-leaning) and women (64% left-leaning) is similar. The means and standard deviations of the raw data are provided in Appendix A. As can be seen, the mean number of children is 0.84 with a standard deviation of 1.05. Approximately 3% of the sample are unemployed; 8% are self-employed; 9% look after the home; 23% are retired; 45% are males; 68% are married; 9% are widowed; 8% have as their highest qualification a university bachelors degree, while 2% have a masters or doctorate; mean age is 49 years old. These personal characteristics are viewed here as additional influences beyond the simple gender effect studied in the earlier section's formal model.

As suggested by the theoretical framework, it is now natural to ask whether the gender of a person's children makes a difference to that individual's political preferences. A useful aspect of this is that, because the sex of babies is random, the gender mix of the family might potentially be viewed as exogenous. Such an argument, however, is not quite complete. Family size itself, of course, is endogenous; it is chosen. Moreover, some families will for personal and cultural reasons have different 'stopping rules' (perhaps go-on-until-a-boy-is-born-and-then-stop, and so on). But the individual gender of a

child is largely out of a parent's control. One feasible exception is that in principle some babies might be aborted because of their sex, measured by ultra-scan in the womb. This is, nevertheless, against the law in Great Britain. Abortion is legal only where the mother's physical or mental health is at stake.

The paper's emphasis is on the correlation between the gender composition of offspring and the voting preferences of parents. In the formal analysis, we combine natural children and any step-children of the head of the household (that is, other step-children are omitted). Figure 1 gives a first flavour of the key result in the paper. It is only a cross-section pattern but is indicative of some form of link between individuals having daughters and being left-leaning. For all those with 2 children, the mean number of daughters among Left voters exceeds the mean number of sons. The same is true for people with 3 children. The equivalent is found among those with 4 children. To be clear: Figure 1 includes children who are on the household roster (so those children who are dependents aged 0-15 and children who are over 15 but still remain at home). It does not count children who have left home.

When the sample is restricted to daughters aged under 16, which is done in Figure 2, the same pattern emerges. Because size of family is endogenous, and is likely to be correlated with people's characteristics and innate preferences, the comparisons here are deliberately across groups with equal numbers of offspring. Figure 2's result should nonetheless be treated cautiously. Once the standard errors are adjusted for clustering, it is not possible to reject the null hypothesis that, for any number of children c, the number of daughters equals the number of sons for supporters of each political wing. Even so, such a test throws away some statistical information, because it does not pool the findings from all six columns in, for example, Figure 2. We return later to other tests of statistical significance.

Figure 3 is perhaps stronger evidence. It switches to a graph in which political preference is on the y-axis. Here daughters are once more correlated with the parent being left-leaning. Again, the Figure is meant only as an illustration. The comparison in this case is between people with only 3 sons

and those with only 3 daughters. Of those with sons, 67% vote for the Labour Party and the Liberal Democrat Party. Among those with daughters, 77% vote Labour or Liberal Democrat. This raw difference is not, however, statistically significant at normal confidence levels.

By turning to longitudinal information, the strength of the relationship can be checked more persuasively. As people have their daughters and sons, we can follow what happens. Figure 4 begins to do so. It looks at the 'switchers', namely, those who report alterations in their political affiliations. Person fixed-effects are thereby effectively differenced out. In the first column, the change in the number of daughters is plotted among those who moved from supporting the Left to supporting the Right (there are 539 such people). The mean change is approximately 1.7%. In the second column, the change in the number of daughters is plotted for those switching to the Left (there are 802). The mean of this, at approximately 3%, is almost double. After adjusting the standard errors for clustering, this difference in the number of daughters is statistically significant at the 0.001 level. Figure 4 uses the whole sample and thus picks up year-by-year political changes. Another test is to use long changes in the data. Figure 5 sets out the result of comparing the political affiliations of people at the start and end of the whole panel. Although the effective sample is tiny, because most people do not change over the period, signs of the same general pattern are found.

Arguably the best 'experiment' is the impact of the gender of the first-born child. In principle, this is least subject to a possible bias from family stopping-rules. First-born children are studied in Figures 6 and 7. These plots reveal that, once again, having a daughter is associated with people turning left, and having a son with parents tilting to the right. The size of the statistical effect is approximately the same size as earlier.

To control for confounding influences, a more formal test is set out in Table 1. This estimates the most elementary regression equation in which the dependent variable is a binary variable to capture voting Left. It uses a random-effects specification. The key independent variable is the number of

daughters. As a control, the total number of children is also included. This follows the empirical strategy outlined in the work of Ebonya Washington (2004). Such a specification allows the effect of pure family size to be held constant. Controlling for the number of children, the coefficient on the number of daughters tells us about the influence of the gender composition of the offspring. In this table, elementary exogenous regressors are included: age, age squared, and gender of the voter. The effect of daughters is positive and statistically well-determined. Its coefficient in the full sample in Table 1 is 0.011 with a standard error of 0.004. The correlation is found for both male and female parents, although for men the coefficient is not quite statistically significantly different from zero at the 5% level. As is known in Great Britain, regional dummies have strong effects. The north of the country, in particular, is more supportive of left-wing parties. 'Wave dummies' here are year-dummies for each wave of the BHPS surveys.

Table 2 includes a list of extra controls. These are for income, education, employment type, marital status, and other personal characteristics. As before, there remains a positive link between having daughters and voting for the Labour and Liberal Democrats. Although the size of coefficient on number-of-daughters is similar in the second and third columns of Table 2, its standard error in the male equation is a little worse. Consistent with the theoretical model in the earlier part of the paper, the results suggest that males and high-income people intrinsically lean rightwards, ceteris paribus. Highly educated people tend to be left-wing; self-employed individuals tend to be right-wing; there are noticeably large effects from regional dummies. As would be expected, many other independent variables enter the political-preference equations (Alesina and La Ferrara, 2005, discuss the micro-determinants of taste for redistribution), but the paper does not explore these in detail.

To this point, person fixed-effects have not been allowed for in the estimation. For well-understood reasons, there may be omitted variables that are correlated both with voting preferences and the nature of people's families. Hence there is a case for using an estimator that differences out the

unobservable personal characteristics. Although the usual criticisms of non-fixed-effects estimation are possibly less powerful in this setting (because the gender mix of the children is somewhat difficult for the parents to control), it is still natural to explore the structure of a fixed-effects voting equation. The tenor of the findings is as before.

Similar substantive results, with a variety of estimators, including OLS with fixed effects, and logit equations with random effects, are provided in Tables 3 and 4. Moving from random-effects to fixed-effects alters the size of the coefficient on the number-of-daughters variable only marginally. In Table 3 its coefficient is now 0.014, with a standard error less than one third of that.

A logit with fixed effects is presented in Table 5. The specifications continue to have reasonably well-determined coefficients on the number-of-daughters variable. Perhaps unsurprisingly, however, in these differenced-structures some of the individual personal variables work more erratically.

The test of the case of first-borns can also be done. Table 6 demonstrates -- though the size of the effective sample is inevitably greatly reduced -- that approximately the same results are found for parents of first-born children. In the third and fourth columns of Table 6, the results are less well-defined than in some earlier equations, but the difference between daughters and sons is significant at the 5% level.

The emphasis so far has been on whether the null hypothesis of zero can be rejected. How large are the effects from child gender on to parental voting?

The most persuasive estimates are arguably likely to be those in the logit with random effects, the OLS with fixed-effects, and, especially, the logit with fixed-effects. For the logit estimates, it is necessary to calculate the size of the effect explicitly; in the case of the OLS and GLS estimators, the size can be read from the tables' coefficients.

For each daughter (holding family size constant), a parent is approximately 2 percentage points more likely to vote left:

The calculated size of the effect from each extra daughter (the percentage increase in the likelihood of voting left):

Logit with random effects: 1.8 percentage probability points
OLS with fixed effects: 1.4 percentage probability points
Logit with fixed effects: 2.7 percentage probability points

The numbers in the case of first-born children, as in Table 6's equations, are similar in size, at slightly more than 2 percentage points per daughter.

It is interesting to go a little further. In the spirit of the research literature described earlier, and especially Washington (2004), we can ask empirically whether other attitudes are altered by having daughters rather than sons. Table 7 is an attempt, very briefly, to shed light on this. It uses answers to various attitudinal questions from the panel; these are coded on a five-point scale, so that cardinality is assumed. Each of the four columns in Table 7 is a GLS regression equation, with a different dependent variable each time. The number of daughters enters positively in a 'Cohabitation is all right' equation; negatively in a 'Homosexuality is wrong' equation, although in this instance the standard error is not well-determined; negatively in a 'Husband should earn while the wife stays at home' equation; and negatively in a 'Children need father as much as mother' equation'. Following the questions discussed in Johnston and Pattie (2000), it would be possible to pursue attitudinal issues still more, but we have not done so in this paper.

There are no questions in the British Household Panel survey on the area of life covered particularly by the work of Washington (2004), namely, that of people's attitudes to women's issues such as abortion, but, like her, we find here that the gender mix of children is correlated with parents' social attitudes to family matters.

A number of robustness checks -- many suggested by seminar participants in earlier presentations of the paper -- were undertaken.

By using a set of dummy variables, Appendix B shows that the influence of the number of daughters seems to be monotonic up to around 5 children (where, because of the rarity in modern data of large families, the size of sample becomes small). This issue seems important, but demands a larger data set if it is to be examined truly persuasively.

Appendix C, also as a simple exploration of robustness, estimates an equation for the most recent year of the sample, 2004. Here the size of the effect of daughters rises to 3 percentage points per child. On this more limited sample, the t-statistic on number of daughters is fractionally greater than 2.

Appendix D splits the number-of-daughters variable into two age-classes. The coefficient on the older age-group, those living at home but who are above age 16, is smaller than on younger daughters, and it is not statistically well-determined. Both variables enter with the predicted positive sign. Once again, it seems likely that a larger data set would be needed if the aim is to find out whether it is young children, rather than older children, who are disproportionately responsible for the shaping of political attitudes.

Appendix E is some further evidence, using information on the whole birth order, for the accumulation of children's gender upon their parents' politics. Ideally for the model in the paper, exact monotonicity would be found; but it is not. However, the standard errors are large and make precise statements difficult.

Finally, as a check on reverse causality, we tested in Appendix F for signs of the so-called Trivers-Willard hypothesis (1973). This is the idea that causality might flow from parental characteristics or the environment on to the gender of babies being born: "In species with a long period of parental investment after birth of young, one might expect biases in parental behavior toward

offspring of different sex, according to the parental condition; parents in better condition would be expected to show a bias toward male offspring." p.90. This is related to Bateman's principle (1948) that females invest more in offspring and therefore become the scarce resource that are competed over by males. In interesting work, Kanazawa and Vandermassen (2005) have recently proposed a generalized version of the Trivers-Willard hypothesis, which they call gTWH. Nevertheless, as the GLS equation in Appendix F reveals, in these data a person's voting colour in time t does not seem to be predictive of their new child's gender in t+1. In so far as we can tell, causality in our data is running from the gender of the child, not towards it.

Appendix G, as a further check, switches to the German Socioeconomic Panel. It suggests a similar pattern. Using longitudinal data from 1985 to 2002, which provides a sample of approximately 75,000 recorded political preferences, the paper finds fairly strong corroborative evidence for the earlier result on British data. We measure left-wing political preferences here as expressed support for the Social Democratic Party rather than the Christian Union Party or Christian Social Democrats. Further discussion of the German case, and associated regression equations, is available from the authors on request.

4. Conclusion

This paper explores a question that seems to be rarely addressed. Why are some people right-wing while others are left-wing? Using longitudinal data, the paper finds that having daughters makes people more left-wing. Having sons, by contrast, makes them more right-wing. Parents, politicians and voters are probably not aware of this phenomenon -- nor are social scientists. Ceteris paribus, every extra daughter makes a person approximately 2 percentage points more likely to vote Left. Our data come principally from Great Britain, but the basic result can be replicated on German micro data.

A long-standing idea in western society is that parents influence the behaviour and psychology of their offspring. This paper might be viewed as attempting

to reverse that habit of thinking. It suggests that children shape their parents. The paper, which could be seen as a study of endogenous preferences, also sets out a formal theoretical framework with an economic flavour.

Our model describes a stylized world in which, because of wage discrimination and different female preferences over public goods, rational parents tilt to the left if they have daughters. A male voter who has a daughter becomes subconsciously sympathetic to the 'female' preference for the policies advocated by left-wing parties. This conceptual framework gives correct predictions; whether it is the right explanation for the patterns in the data seems an important topic for continued research.

We conclude with a tentative conjecture. It is that *left-wing individuals are people who come from extended families where, over recent past generations, many females have been born*. The theoretical ideas behind the conjecture are two-fold. The first is the one described in the paper: daughters make parents more left-wing. The second idea, which seems plausible, but for which we have not provided evidence, is that parents' political views rub off at least a little upon their offspring. Putting these two together, the prediction of the conjecture emerges. Having many daughters pushes parents to the left; by the time the children are old enough to acquire a political sense, their parents have passed on some of those left-wing opinions to their sons and daughters; if those children then go on to have daughters themselves, those left-wing views, inherited from their parents, become strengthened among the sons and daughters of the next generation. In this way, strings of daughters through the generations might lead to left-wing families today. Strings of sons would have the opposite effect. Whether there is empirical support for this unusual notion remains to be established.

Acknowledgements

The Economic and Social Research Council (ESRC) provided research support. The usual disclaimer applies. The British Household Panel Survey data were made available through the UK Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex, now incorporated within the Institute for Social and Economic Research. Neither the original collectors of the data nor the Archive bears responsibility for the analyses or interpretations presented here.

References

Alesina, A. & La Ferrara, E. (2005) Preferences for redistribution in the land of opportunities, *Journal of Public Economics*, 89, 897-931.

Angrist, J.D. & Evans, W.N. (1998) Children and their parents' labor supply: Evidence from exogenous variation in family size, *American Economic Review*, 88, 450-477.

Bateman, A.J. (1948) Intra-sexual selection in Drosophila, *Heredity*, 2, 349-368.

Benabou, R. & Tirole, J. (2003) Intrinsic and extrinsic motivation, *Review of Economic Studies*, 70, 489-520.

Ben-Porath, Y. & Welch, F. (1976) Do sex preferences really matter?, *Quarterly Journal of Economics*, 90, 285-307.

Bird, K. (2005) Does it really matter if men dominate politics? Working paper, University of Essex.

Bowles, S. (1998) Endogenous preferences: The cultural consequences of markets and other economic institutions, *Journal of Economic Literature*, 36, 75-111.

Box-Steffensmeier, J.M., De Boef, S. & Lin, T.M. (2004) The dynamics of the partisan gender gap, *American Political Science Review*, 98, 515-528.

Butcher, K.F. & Case, A. (1994) The effect of sibling sex composition on women's education and earnings, *Quarterly Journal of Economics*, 109, 531-563.

Campbell, R. (2004) Gender, ideology and issue preference: Is there such a thing as a political women's interest in Britain? *British Journal of Politics and International Relations*, 6, 20-46.

Chattopadhyay, R. & Duflo, E. (2004) Women as policy makers: Evidence from a randomized policy experiment in India, *Econometrica*, 72, 1409-1443.

Di Tella, R. & MacCulloch, R. (2005) Partisan social happiness, *Review of Economic Studies*, 72, 367-393.

Edlund, L. (1999) Son preference, sex ratios, and marriage patterns, *Journal of Political Economy*, 107, 1275-1304.

Edlund, L. & Pande, R. (2002) Why have women become more left-wing? The political gender gap and the decline in marriage, *Quarterly Journal of Economics*, 117, 917-961.

Inglehart, R. & Norris, P. (1999) The developmental theory of the gender gap: women and men's voting behavior in global perspective. Working paper, JF Kennedy School of Government, Harvard University.

Greenberg, A. (1998) Deconstructing the gender gap. Working paper, Harvard University, presented at the Midwest Political Science Association Annual Meeting, April 1998.

Johnston, R. & Pattie, C. (2000) Inconsistent individual attitudes within consistent attitudinal structures: Comments on an important issue raised by John Bartle's paper on causal modelling of voting in Britain, *British Journal of Political Science*, 30, 361-374.

Johnston, R., Sarker, R., Jones, K., Bolster, A., Propper, C. & Burgess, S. (2005). Egocentric economic voting and changes in party choice:

Great Britain 1992-2001. *Journal of Elections, Public Opinion and Parties*, 15, 129-144.

Johnston, R., Jones, K., Propper, C. Sarker, R. Burgess, S. & Bolster, A. (2005) A missing level in the analyses of British voting behaviour: the household as context as shown by analyses of a 1992-1997 longitudinal survey. *Electoral Studies*, 24, 201-225.

Kamo, Y. & Warner, R.L. (1997) The effect of children's sex on parents' gender-role attitudes: An extension using Japanese data, *Journal of Comparative Family Studies*, 28, 204-210.

Kanazawa, S. & Vandermassen, G. (2005) Engineers have more sons, Nurses have more daughters: An evolutionary psychological extension of Baron-Cohen's extreme male brain theory of autism and its empirical implications, *Journal of Theoretical Biology*, 233, 589-599.

Kohler, H.P., Behrman, J.R. & Skytthe, A. (2005) Partner plus children equals happiness? The effects of partnerships and fertility on well-being, *Population and Development Review*, 31, 407-422.

Lundberg, S. & Rose, E. (2002) The effects of sons and daughters on men's labour supply and wages, *Review of Economics and Statistics*, 84, 251-268.

Lundberg, S. (2005) Sons, daughters and parental behaviour. Working paper, University of Washington, Seattle.

Morgan, S.P., Lye, D.N. & Condran, G.A. (1988) Sons, daughters, and the risk of marital disruption, *American Journal of Sociology*, 94, 110-129.

Norris, P. (2002) Gender and contemporary British politics, in *British Politics Today*, pp. 38-59, edited by C. Hay, Cambridge: Polity Press.

Norris, P. (2004) *Electoral engineering: Voting rules and political behaviour*, New York: Cambridge University Press.

Peresie, J.L. (2005) Female judges matter: Gender and collegial decision-making in the federal appellate courts, *Yale Law Journal*, 114, 1759.

Sanders, D. & Brynin, M. (1999) The dynamics of party preference change in Britain, 1991-1996, *Political Studies*, 47, 219-239.

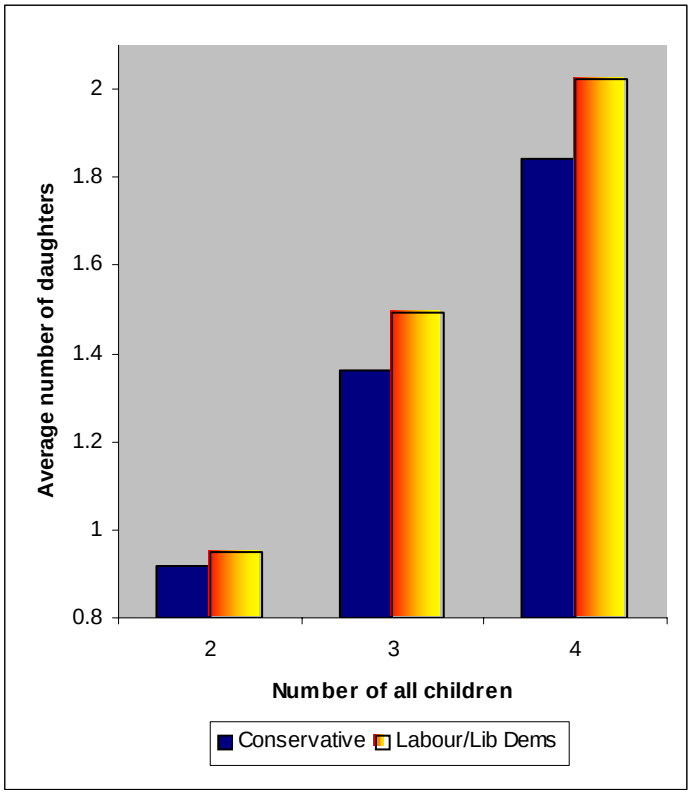
Taylor, M. F., Brice, J., Buck, N. & Prentice-Lane, E. (2002) *British Household Panel Survey User Manual*. Colchester: University of Essex.

Trivers, R.L & Willard, D.E. (1973) Natural selection of parental ability to vary the sex ratio of offspring, *Science*, 179, 90-92.

Warner, R.L. (1991) Does the sex of your children matter? Support for feminism among women and men in the United States and Canada, *Journal of the Marriage and Family*, 53, 1051-1056.

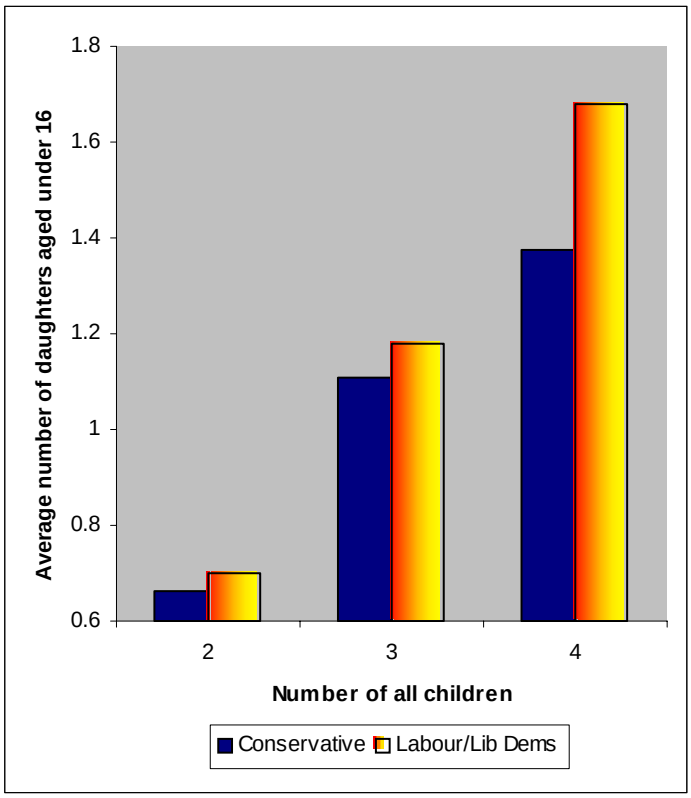
Washington, E. (2004) Family matters: How daughters affect their legislator fathers' voting on women's issues. Working paper, Yale University.

Figure 1: Proportion of Daughters and Voting Preferences in Great Britain (1991-2004)



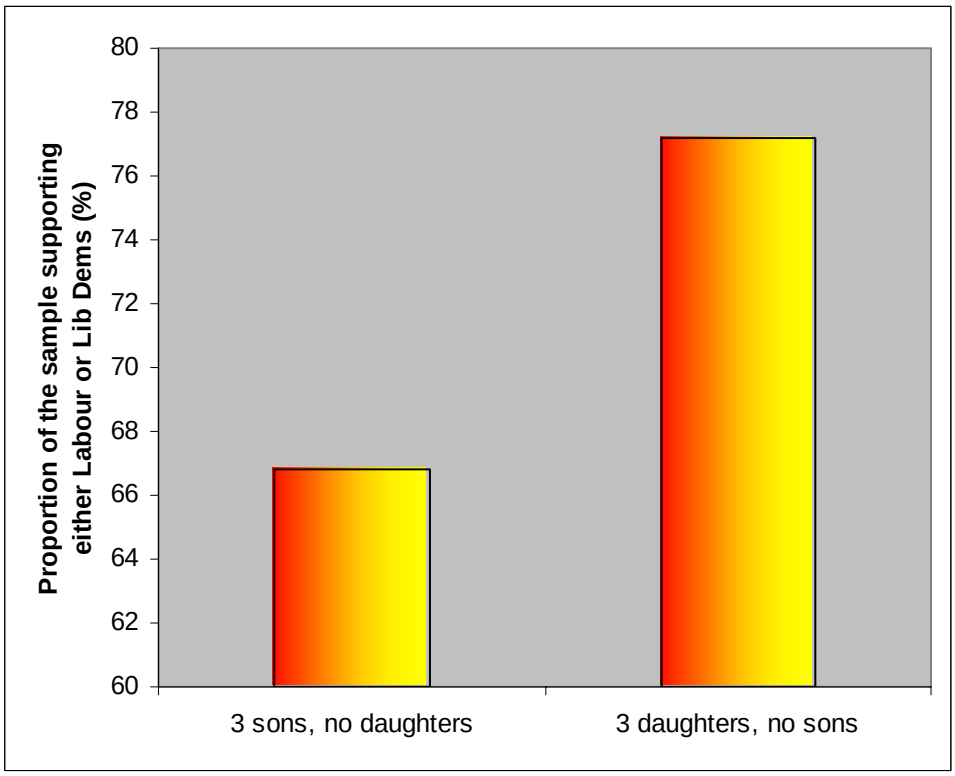
Note: There were 3,859 (7,453) observations preferring Conservative (Labour/Lib Dems) over other parties with 2 children; 1,171 (2,534) observations preferring Conservatives (Labour/Lib Dems) with 3 children; and 217 (601) observations preferring Conservatives (Labour/Lib Dems) with 4 children. The *t*-test statistics [p-value] of whether the mean number of daughters between the two groups is equal are -2.535 [0.000] (*N* of children = 2), -3.999 [0.000] (*N* of children = 3), and -2.577 [0.000] (*N* of children = 4). The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the mean number of daughters between the two groups is equal are -0.822 [0.411] (*N* of children = 2), -1.354 [0.176] (*N* of children = 3), and -0.844 [0.377] (*N* of children = 4).

Figure 2: Proportion of Daughters (Aged Under 16) and Voting Preferences in Great Britain (1991-2004)



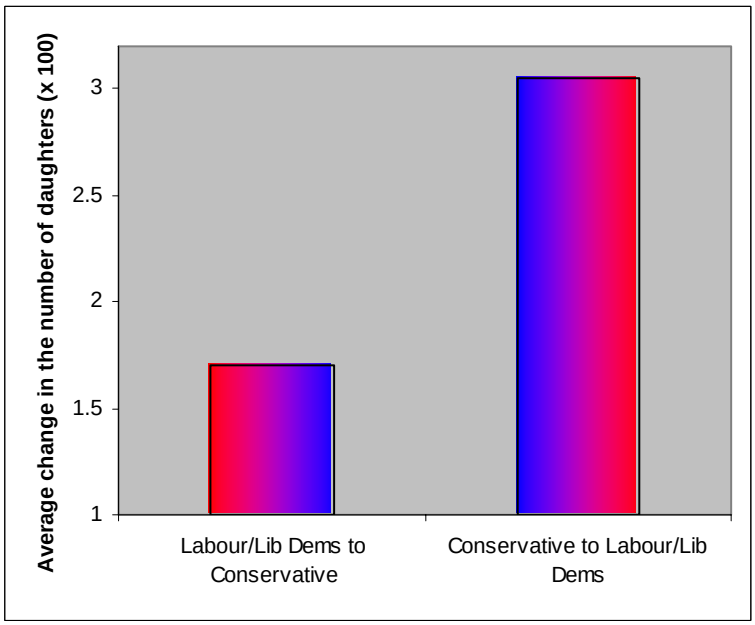
Note: There were 2,581 (5,233) observations preferring Conservative (Labour/Lib Dems) over other parties with 2 children aged under 16; 778 (1,682) observations preferring Conservatives (Labour/Lib Dems) with 3 children aged under 16; and 115 (376) observations preferring Conservatives (Labour/Lib Dems) with 4 children aged under 16. The *t*-test statistics [p-value] of whether the mean number of daughters aged under 16 between the two groups is equal are -2.199 [0.000] (*N* of children = 2), -1.914 [0.056] (*N* of children = 3), and -3.293 [0.000] (*N* of children = 4). The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the mean number of daughters between the two groups is equal are -0.980 [0.164] (*N* of children = 2), -0.924 [0.356] (*N* of children = 3), and -1.687 [0.097] (*N* of children = 4).

Figure 3: Proportion of People Supporting Either Labour or Liberal Democrats by the Gender of their Children



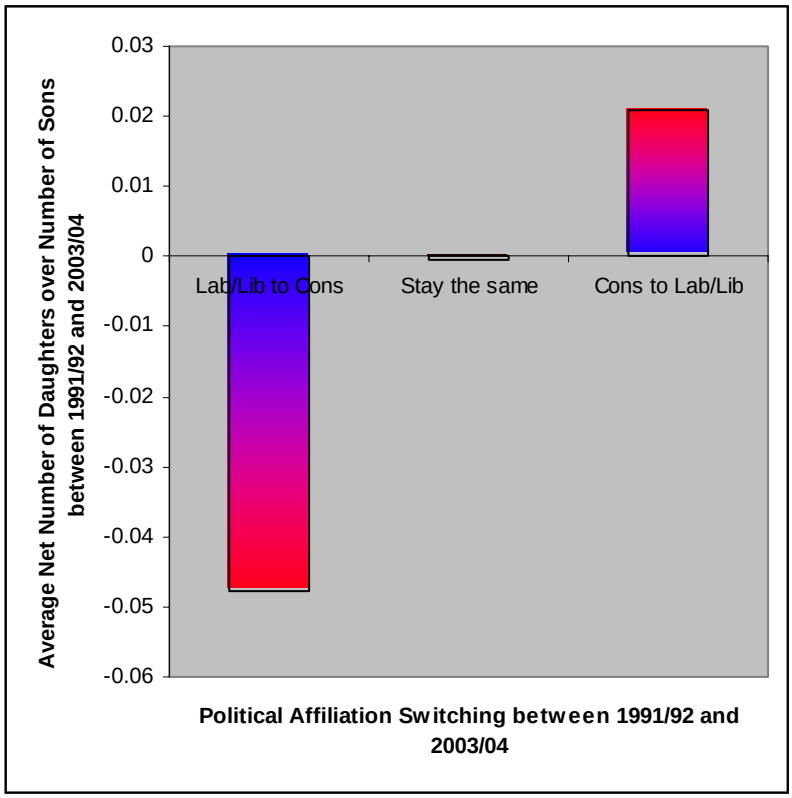
Note: There were 1,050 observations with 3 sons and no daughters, and 947 observations with 3 daughters and 3 sons. The *t*-test statistics [p-value] of whether the proportion of people supporting either Labour or Liberal Democrats between the two groups is equal is -3.035 [0.002]. The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the proportion of people supporting either Labour or Liberal Democrats between the two groups is equal is -1.531 [0.127].

Figure 4: Proportion of People Switching Political Party Affiliation and Change in the Number of Daughters from *T* to *T+1*



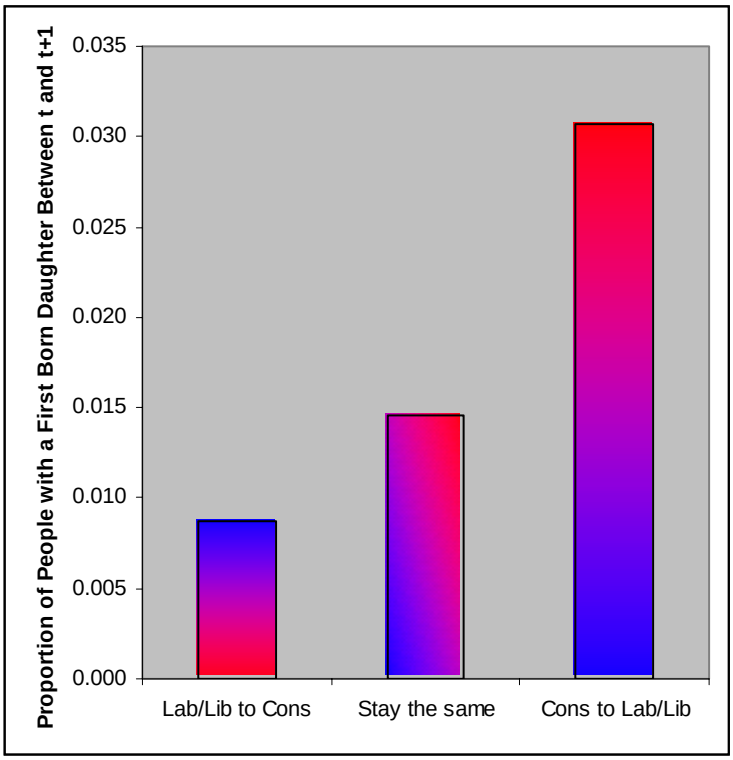
Note: There were 539 switches from Labour/Lib Dems to Conservative, and 802 from Conservative to Labour/Lib Dems. The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups is equal is -3.131 [0.000].

Figure 5: Political Party Affiliation Switching and Average Net Change in the Number of Daughters over the Number of Sons Between 1991/92 and 2003/04



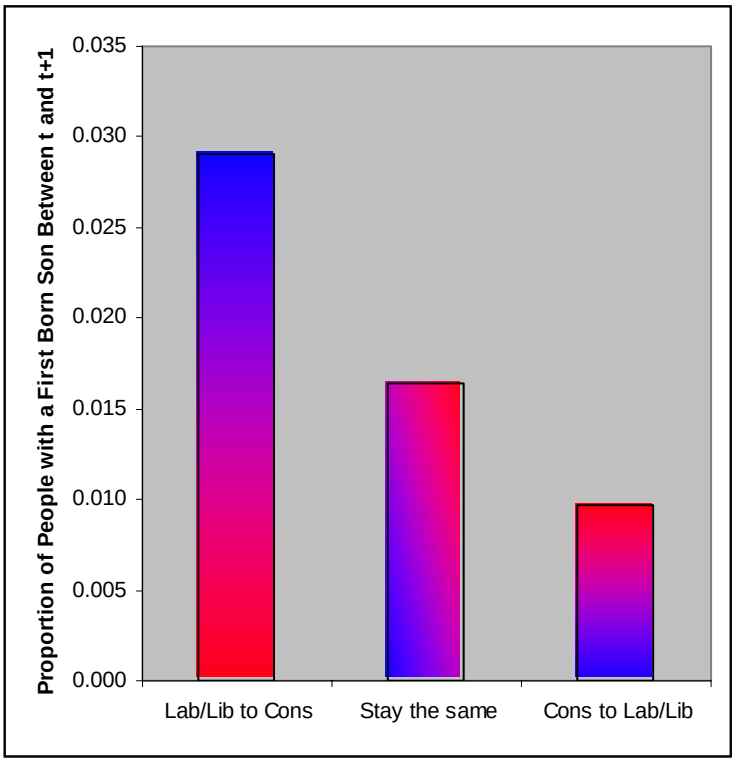
Note: There were 42 switches from Labour/Lib Dems to Conservative, and 191 from Conservative to Labour/Lib Dems. There were 1,987 people who stayed the same with their political affiliation. The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups of switchers is equal is -0.4867 [0.6269].

Figure 6: Political Party Affiliation Switching and the Proportion of People with a First Born Daughter Between *T* and *T+1*



Note: The sample is restricted to those with no previous records of having daughters or sons in the household. The only change is the first born daughter in the household. There were 344 switches from Labour/Lib Dems to Conservative, and 521 from Conservative to Labour/Lib Dems. There were 28,445 observations that stayed the same. The adjusted t-test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups of switchers is equal is -1.981 [0.0479].

Figure 7: Political Party Affiliation Switching and the Proportion of People with a First Born Son Between *T* and *T+1*



Note: The sample is restricted to those with no previous records of having daughters or sons in the household. The only change is the first born son in the household. There were 344 switches from Labour/Lib Dems to Conservative, and 515 from Conservative to Labour/Lib Dems. There were 28,171 observations that stayed the same. The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups of switchers is equal is 2.349 [0.0191].

Table 1: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party: Exogenous Variables (GLS with Random Effects)

	All		Men		Women	
Number of daughters	0.011	(0.004)	0.009	(0.005)	0.013	(0.005)
Number of children						
1	-0.003	(0.004)	-0.005	(0.005)	-0.002	(0.005)
2	-0.008	(0.005)	-0.017	(0.007)	-0.001	(0.007)
3	-0.002	(0.008)	-0.013	(0.012)	0.006	(0.011)
4	0.012	(0.014)	0.026	(0.019)	-0.001	(0.019)
5	0.011	(0.026)	0.066	(0.038)	-0.044	(0.037)
6	-0.013	(0.038)	-0.114	(0.057)	0.083	(0.052)
7	0.106	(0.090)	0.247	(0.144)	0.022	(0.115)
8	-0.059	(0.103)	-0.744	(0.461)	0.030	(0.112)
9	0.043	(0.244)	0.182	(0.261)		
Socio-demographic status						
Men	-0.013	(0.007)				
Age	0.002	(0.001)	0.003	(0.001)	0.001	(0.001)
Age-squared/100	-0.004	(0.001)	-0.003	(0.001)	-0.004	(0.001)
Regional dummies						
Outer London	-0.048	(0.014)	-0.038	(0.019)	-0.059	(0.020)
R. of South East	-0.043	(0.013)	-0.061	(0.018)	-0.027	(0.018)
South West	-0.058	(0.014)	-0.078	(0.020)	-0.041	(0.020)
East Anglia	-0.008	(0.016)	-0.043	(0.022)	0.028	(0.023)
East Midlands	-0.016	(0.015)	-0.016	(0.021)	-0.019	(0.021)
West Midlands Conurbation	-0.021	(0.019)	-0.054	(0.029)	0.000	(0.025)
R. of West Midlands	-0.010	(0.016)	-0.038	(0.023)	0.018	(0.024)
Greater Manchester	0.056	(0.018)	0.050	(0.026)	0.063	(0.025)
Merseyside	0.059	(0.024)	0.061	(0.034)	0.056	(0.033)
R. of North West	0.010	(0.017)	0.007	(0.025)	0.013	(0.025)
South Yorkshire	0.071	(0.022)	0.099	(0.031)	0.049	(0.030)
West Yorkshire	0.026	(0.019)	0.021	(0.028)	0.032	(0.027)
R. of Yorks & Humberside	-0.036	(0.018)	-0.037	(0.026)	-0.037	(0.026)
Tyne & Wear	0.067	(0.022)	0.038	(0.031)	0.092	(0.030)
R. of North	0.050	(0.019)	0.043	(0.028)	0.056	(0.025)
Wales	0.089	(0.015)	0.075	(0.021)	0.102	(0.021)
Scotland	0.076	(0.014)	0.070	(0.021)	0.080	(0.020)
Northern Ireland	-0.240	(0.085)	-0.258	(0.122)	-0.222	(0.120)
Other	0.052	(0.018)	0.072	(0.024)	0.029	(0.026)
Constant	0.582	(0.021)	0.545	(0.030)	0.600	(0.028)
Wave dummies	Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes	
N	66,628		31,170		35,458	
R-squared	0.069		0.023		0.029	

Note: Standard errors are in parentheses. Reference groups are i) women and ii) Inner London.

Table 2: The Effects of Daughters on the Probability of Being Affiliated with a Left-Wing Party (GLS with Random Effects)

	All		Men		Women	
Number of daughters	0.012	(0.004)	0.011	(0.006)	0.014	(0.005)
Number of children						
1	-0.004	(0.004)	-0.007	(0.006)	-0.003	(0.005)
2	-0.011	(0.006)	-0.023	(0.008)	-0.003	(0.008)
3	-0.008	(0.009)	-0.020	(0.012)	0.000	(0.012)
4	0.002	(0.014)	0.004	(0.021)	-0.001	(0.020)
5	0.007	(0.027)	0.031	(0.040)	-0.021	(0.038)
6	-0.026	(0.039)	-0.138	(0.058)	0.083	(0.053)
7	0.092	(0.090)	0.222	(0.150)	0.026	(0.113)
8	-0.059	(0.104)	-0.776	(0.451)	0.043	(0.113)
Socio-demographic status						
Men	-0.015	(0.008)				
Age	0.001	(0.001)	0.003	(0.001)	-0.000	(0.001)
Age-squared/100	-0.003	(0.001)	-0.003	(0.001)	-0.003	(0.001)
Real household income per capita (in £1,000)	-0.004	(0.001)	-0.004	(0.002)	-0.004	(0.001)
First degree	0.023	(0.009)	0.010	(0.013)	0.035	(0.011)
Higher degree	0.036	(0.014)	0.029	(0.020)	0.041	(0.021)
Self-employed	-0.021	(0.005)	-0.027	(0.006)	-0.010	(0.008)
Unemployed	0.004	(0.006)	0.001	(0.008)	0.008	(0.009)
Retired	-0.005	(0.004)	-0.007	(0.006)	-0.005	(0.005)
Maternity leave	-0.005	(0.013)	0.048	(0.221)	-0.006	(0.013)
Housewives/looking after home	0.000	(0.004)	0.009	(0.020)	0.001	(0.005)
Student	0.019	(0.010)	0.027	(0.016)	0.014	(0.013)
Disabled	0.001	(0.006)	0.001	(0.009)	-0.000	(0.009)
Government training scheme	-0.008	(0.028)	-0.045	(0.037)	0.043	(0.043)
Other	0.008	(0.015)	-0.021	(0.025)	0.026	(0.020)
Married	0.003	(0.007)	0.007	(0.010)	0.000	(0.010)
Cohabiting with a partner	-0.004	(0.007)	-0.006	(0.010)	0.001	(0.011)
Widowed	0.016	(0.009)	0.048	(0.015)	0.006	(0.012)
Divorced	0.021	(0.009)	0.018	(0.014)	0.020	(0.012)
Separated	0.017	(0.011)	0.024	(0.016)	0.008	(0.014)
Regional dummies						
Outer London	-0.043	(0.015)	-0.050	(0.020)	-0.038	(0.021)
R. of South East	-0.047	(0.013)	-0.074	(0.019)	-0.020	(0.019)
South West	-0.057	(0.015)	-0.088	(0.022)	-0.028	(0.021)
East Anglia	-0.012	(0.017)	-0.057	(0.023)	0.031	(0.024)
East Midlands	-0.022	(0.016)	-0.026	(0.022)	-0.020	(0.022)
West Midlands Conurbation	-0.038	(0.020)	-0.088	(0.031)	-0.004	(0.026)
R. of West Midlands	-0.017	(0.017)	-0.055	(0.024)	0.019	(0.024)
Greater Manchester	0.041	(0.019)	0.021	(0.028)	0.062	(0.026)
Merseyside	0.062	(0.025)	0.071	(0.036)	0.055	(0.034)
R. of North West	0.009	(0.018)	0.002	(0.026)	0.014	(0.026)
South Yorkshire	0.063	(0.023)	0.058	(0.033)	0.066	(0.032)
West Yorkshire	0.025	(0.020)	0.003	(0.029)	0.044	(0.027)
R. of Yorks & Humberside	-0.035	(0.019)	-0.046	(0.027)	-0.025	(0.027)
Tyne & Wear	0.067	(0.022)	0.047	(0.032)	0.085	(0.031)
R. of North	0.056	(0.019)	0.041	(0.029)	0.071	(0.026)
Wales	0.086	(0.015)	0.067	(0.022)	0.104	(0.021)
Scotland	0.084	(0.015)	0.077	(0.022)	0.091	(0.021)
Northern Ireland	-0.244	(0.084)	-0.274	(0.119)	-0.217	(0.118)
Other	0.046	(0.018)	0.058	(0.025)	0.028	(0.026)
Constant	0.620	(0.033)	0.624	(0.033)	0.704	(0.031)
Wave dummies	Yes		Yes		Yes	
N	61,041		28,490		32,511	
Overall R-squared	0.063		0.064		0.070	

Note: Standard errors are in parentheses. Additional reference groups are i) no formal education to secondary school qualifications, ii) employed full-time, and iii) never been married.

Table 3: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party (OLS with Fixed Effects)

	All		Men		Women	
Number of daughters	0.014	(0.004)	0.011	(0.006)	0.017	(0.006)
Number of children						
1	-0.007	(0.004)	-0.007	(0.006)	-0.008	(0.006)
2	-0.014	(0.006)	-0.021	(0.009)	-0.010	(0.008)
3	-0.013	(0.009)	-0.018	(0.013)	-0.009	(0.013)
4	-0.007	(0.015)	-0.003	(0.022)	-0.013	(0.022)
5	0.001	(0.029)	0.030	(0.042)	-0.034	(0.040)
6	-0.029	(0.041)	-0.133	(0.061)	0.071	(0.056)
7	0.105	(0.093)	0.231	(0.153)	0.028	(0.119)
8	-0.043	(0.111)			0.017	(0.118)
Socio-demographic status						
Age-squared/100	-0.003	(0.001)	-0.003	(0.001)	-0.004	(0.001)
Real household income per capita (in £1,000)	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
First degree	-0.006	(0.011)	-0.015	(0.018)	0.000	(0.015)
Higher degree	-0.013	(0.018)	-0.009	(0.026)	-0.022	(0.025)
Self-employed	-0.003	(0.005)	-0.009	(0.006)	0.007	(0.009)
Unemployed	-0.007	(0.006)	-0.015	(0.008)	0.003	(0.010)
Retired	-0.011	(0.004)	-0.013	(0.007)	-0.009	(0.006)
Maternity leave	-0.007	(0.013)	-0.004	(0.227)	-0.007	(0.013)
Housew ives/looking after home	-0.005	(0.004)	-0.009	(0.020)	-0.003	(0.005)
Student	0.012	(0.011)	0.021	(0.018)	0.004	(0.014)
Disabled	-0.018	(0.006)	-0.021	(0.009)	-0.015	(0.009)
Government training scheme	-0.017	(0.028)	-0.062	(0.037)	0.048	(0.044)
Other	0.011	(0.016)	-0.015	(0.025)	0.026	(0.020)
Married	0.014	(0.009)	0.019	(0.012)	0.014	(0.012)
Cohabiting w ith a partner	-0.002	(0.008)	-0.003	(0.011)	0.002	(0.012)
Widow ed	0.017	(0.010)	0.048	(0.016)	0.005	(0.014)
Divorced	0.018	(0.010)	0.015	(0.015)	0.019	(0.014)
Separated	0.017	(0.011)	0.024	(0.017)	0.011	(0.016)
Regional dummies						
Outer London	0.002	(0.017)	-0.017	(0.023)	0.022	(0.025)
R. of South East	0.017	(0.016)	-0.033	(0.022)	0.068	(0.022)
South West	-0.020	(0.018)	-0.078	(0.026)	0.035	(0.026)
East Anglia	0.054	(0.020)	-0.013	(0.027)	0.128	(0.029)
East Midlands	0.020	(0.020)	-0.004	(0.028)	0.043	(0.029)
West Midlands Conurbation	-0.011	(0.026)	-0.101	(0.042)	0.057	(0.034)
R. of West Midlands	0.023	(0.022)	-0.048	(0.030)	0.101	(0.032)
Greater Manchester	0.057	(0.025)	0.032	(0.036)	0.086	(0.035)
Merseyside	-0.018	(0.036)	0.005	(0.053)	-0.027	(0.049)
R. of North West	0.050	(0.024)	0.037	(0.033)	0.060	(0.035)
South Yorkshire	-0.004	(0.032)	0.002	(0.045)	-0.008	(0.045)
West Yorkshire	-0.039	(0.026)	-0.073	(0.038)	-0.005	(0.037)
R. of Yorks & Humberside	-0.057	(0.025)	-0.084	(0.034)	-0.029	(0.036)
Tyne & Wear	-0.050	(0.031)	-0.103	(0.045)	0.002	(0.045)
R. of North	-0.020	(0.028)	-0.059	(0.042)	0.019	(0.038)
Wales	0.034	(0.022)	0.003	(0.031)	0.067	(0.033)
Scotland	-0.013	(0.023)	-0.033	(0.033)	0.004	(0.032)
Other	0.047	(0.020)	0.052	(0.028)	0.036	(0.029)
Constant	0.752	(0.033)	0.668	(0.037)	0.615	(0.036)
Wave dummies	Yes		Yes		Yes	
N of observations	61,041		28,490		32,551	
N of groups	13,257		6,156		7,101	
Within R-squared	0.021		0.023		0.024	

Note: Standard errors are in parentheses.

Table 4: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party (Logit with Random Effects)

	All		Men		Women	
Number of daughters	0.155	(0.063)	0.193	(0.094)	0.137	(0.087)
Number of children						
1	0.044	(0.073)	-0.107	(0.110)	0.129	(0.100)
2	-0.095	(0.100)	-0.383	(0.150)	0.081	(0.135)
3	-0.049	(0.150)	-0.308	(0.224)	0.081	(0.202)
4	0.270	(0.265)	0.284	(0.389)	0.188	(0.371)
5	0.059	(0.531)	0.287	(0.783)	-0.343	(0.737)
6	-0.458	(0.734)	-2.314	(1.055)	1.360	(1.193)
7	0.340	(1.924)				
Socio-demographic status						
Men	0.003	(0.064)				
Age	0.027	(0.011)	0.060	(0.016)	0.003	(0.014)
Age-squared/100	-0.048	(0.010)	-0.066	(0.016)	-0.036	(0.014)
Real household income per capita (in £1,000)	-0.037	(0.003)	-0.041	(0.005)	-0.036	(0.005)
First degree	0.677	(0.105)	0.452	(0.147)	0.941	(0.153)
Higher degree	1.231	(0.197)	0.966	(0.257)	1.551	(0.336)
Self-employed	-1.042	(0.095)	-1.077	(0.116)	-0.975	(0.169)
Unemployed	0.434	(0.135)	0.586	(0.176)	0.234	(0.211)
Retired	0.035	(0.086)	-0.062	(0.137)	0.036	(0.113)
Maternity leave	0.101	(0.297)			-0.044	(0.300)
Housew ives/looking after home	0.093	(0.088)	1.099	(0.520)	0.031	(0.096)
Student	0.168	(0.184)	0.282	(0.281)	0.055	(0.246)
Disabled	0.716	(0.136)	0.792	(0.187)	0.529	(0.195)
Government training scheme	0.147	(0.615)	-0.104	(0.745)	0.722	(1.120)
Other	0.020	(0.359)	-0.783	(0.572)	0.522	(0.473)
Married	-0.093	(0.107)	-0.118	(0.156)	-0.065	(0.152)
Cohabiting w ith a partner	0.017	(0.127)	-0.046	(0.175)	0.145	(0.188)
Widow ed	0.258	(0.140)	0.679	(0.244)	0.329	(0.183)
Divorced	0.551	(0.148)	0.395	(0.228)	0.634	(0.198)
Separated	0.317	(0.197)	0.400	(0.295)	0.199	(0.267)
Regional dummies						
Outer London	-1.430	(0.214)	-1.303	(0.310)	-1.521	(0.298)
R. of South East	-1.669	(0.190)	-1.729	(0.276)	-1.582	(0.265)
South West	-1.537	(0.204)	-1.525	(0.296)	-1.532	(0.285)
East Anglia	-1.438	(0.232)	-1.630	(0.334)	-1.272	(0.322)
East Midlands	-1.404	(0.207)	-1.216	(0.300)	-1.577	(0.290)
West Midlands Conurbation	-1.428	(0.244)	-1.519	(0.365)	-1.347	(0.331)
R. of West Midlands	-1.151	(0.224)	-1.271	(0.327)	-1.023	(0.311)
Greater Manchester	-0.271	(0.237)	-0.367	(0.345)	-0.159	(0.327)
Merseyside	0.468	(0.282)	0.583	(0.412)	0.254	(0.401)
R. of North West	-1.078	(0.226)	-0.965	(0.329)	-1.156	(0.313)
South Yorkshire	0.471	(0.278)	0.507	(0.414)	0.454	(0.369)
West Yorkshire	0.208	(0.254)	0.184	(0.373)	0.224	(0.360)
R. of Yorks & Humberside	-1.189	(0.242)	-0.835	(0.360)	-1.402	(0.336)
Tyne & Wear	0.720	(0.288)	1.061	(0.416)	0.522	(0.386)
R. of North	-0.023	(0.242)	-0.034	(0.344)	-0.012	(0.334)
Wales	0.310	(0.197)	0.370	(0.285)	0.293	(0.275)
Scotland	0.222	(0.194)	0.380	(0.284)	0.123	(0.270)
Northern Ireland	-3.449	(0.742)	-3.654	(1.035)	-3.087	(1.064)
Other	-0.532	(0.313)	-0.443	(0.426)	-0.598	(0.471)
Constant	2.305	(0.313)	1.483	(0.466)	3.093	(0.424)
Wave dummies	Yes		Yes		Yes	
N of observations	61,041		28,490		32,551	
N of groups	13,257		6,156		7,101	
Sigma_u	3.054		3.065		3.043	
Rho	0.739		0.741		0.738	

Note: Standard errors are in parentheses. Dependent variable = a binary variable: 1 = Labour or Lib Dems, 0 = Conservative. Reference groups: women, employed full-time, never married, and Inner London.

Table 5: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party (Logit with Individual Fixed-Effects)

	All		Men		Women	
Number of daughters	0.519	(0.176)	0.506	(0.258)	0.466	(0.256)
Number of children						
1	-0.450	(0.178)	-0.399	(0.274)	-0.420	(0.243)
2	-0.799	(0.261)	-1.030	(0.417)	-0.518	(0.350)
3	-0.619	(0.392)	-0.688	(0.593)	-0.414	(0.552)
4	-0.650	(0.681)	-1.048	(1.004)	-0.016	(0.989)
5	-1.283	(1.086)	-0.283	(1.667)	-2.782	(1.932)
6	-2.496	(1.442)	-18.666	(1309.631)	13.591	(1798.658)
Socio-demographic status						
Age-squared/100	-0.046	(0.031)	-0.016	(0.050)	-0.058	(0.041)
Real household income per capita (in £1,000)	0.007	(0.006)	0.013	(0.010)	0.002	(0.008)
First degree	-0.839	(0.405)	-1.427	(0.760)	-0.524	(0.517)
Higher degree	-0.460	(0.685)	-0.201	(0.932)	-1.124	(1.089)
Self-employed	-0.164	(0.201)	-0.354	(0.248)	0.034	(0.368)
Unemployed	-0.315	(0.273)	-0.640	(0.398)	0.012	(0.399)
Retired	-0.358	(0.172)	-0.738	(0.266)	-0.052	(0.235)
Maternity leave	-0.287	(0.485)			-0.329	(0.510)
Housew ives/looking after home	-0.073	(0.174)	0.296	(1.181)	0.034	(0.192)
Student	0.130	(0.419)	-0.196	(0.703)	-0.271	(0.570)
Disabled	-0.605	(0.297)	-0.742	(0.424)	-0.797	(0.441)
Government training scheme	-0.374	(0.944)	-1.092	(1.013)	16.013	(1496.965)
Other	0.223	(0.669)	-1.424	(1.243)	1.037	(0.930)
Married	0.637	(0.353)	0.916	(0.489)	0.524	(0.617)
Cohabiting w ith a partner	0.250	(0.340)	0.358	(0.454)	0.213	(0.621)
Widow ed	0.860	(0.438)	1.617	(0.672)	0.393	(0.697)
Divorced	0.908	(0.407)	0.640	(0.585)	1.002	(0.672)
Separated	0.572	(0.449)	0.783	(0.626)	0.355	(0.733)
Regional dummies						
Outer London	-0.051	(0.727)	-1.182	(1.018)	1.056	(1.247)
R. of South East	0.338	(0.683)	-1.930	(1.067)	3.327	(1.400)
South West	-0.812	(0.787)	-3.610	(1.180)	2.923	(1.510)
East Anglia	1.263	(0.833)	-1.047	(1.148)	6.041	(1.864)
East Midlands	0.830	(0.824)	-1.033	(1.143)	4.276	(1.626)
West Midlands Conurbation	-0.185	(1.173)	-15.652	(1022.803)	3.402	(1.869)
R. of West Midlands	1.141	(0.929)	-1.503	(1.333)	5.615	(1.932)
Greater Manchester	1.848	(1.084)	0.176	(1.505)	4.379	(1.981)
Merseyside	-15.314	(1168.307)			-13.856	(2009.046)
R. of North West	1.771	(1.015)	1.142	(1.349)	4.010	(2.001)
South Yorkshire	0.667	(1.163)	0.311	(1.570)	2.273	(2.073)
West Yorkshire	-0.982	(1.146)	-4.028	(1.754)	1.314	(2.156)
R. of Yorks & Humberside	-0.269	(0.985)	-1.800	(1.365)	3.475	(1.805)
Tyne & Wear	-15.762	(743.150)	-26.565	(1356.603)	-26.040	(1894.956)
R. of North	-0.303	(1.310)	-14.307	(961.128)	3.220	(1.909)
Wales	1.513	(1.029)	-0.575	(1.710)	4.760	(1.943)
Scotland	-1.097	(0.897)	-17.236	(1001.559)	1.764	(1.507)
Other	1.082	(0.855)	-0.215	(1.303)	2.504	(1.592)
Wave dummies	Yes		Yes		Yes	
N of observations	7,224		3,194		4,030	
N of groups	1,224		545		679	
Psuedo R-squared	0.161		0.176		0.175	

Note: Standard errors are in parentheses.

Table 6:Political Party Switching and New Born Children (Individual Fixed Effects Equations)

	OLS with Fixed Effects				Logit with Fixed Effects			
	(1)		(2)		(3)		(4)	
New born daughter	0.021	(0.008)			0.573	(0.360)		
New born son			-0.004	(0.007)			-0.141	(0.297)
Socio-demographic status								
Age-squared/100	-0.002	(0.001)	-0.002	(0.001)	-0.021	(0.041)	0.019	(0.039)
Real household income per capita (in £1,000)	0.000	(0.000)	0.000	(0.000)	0.007	(0.007)	0.007	(0.007)
First degree	-0.016	(0.015)	-0.022	(0.015)	-1.158	(0.573)	-1.100	(0.577)
Higher degree	-0.047	(0.024)	-0.050	(0.025)	-1.859	(1.193)	-2.171	(1.154)
Self-employed	-0.006	(0.006)	-0.004	(0.007)	-0.175	(0.277)	-0.094	(0.279)
Unemployed	-0.005	(0.008)	-0.004	(0.008)	-0.240	(0.386)	-0.124	(0.366)
Retired	-0.010	(0.005)	-0.011	(0.005)	-0.355	(0.202)	-0.357	(0.200)
Maternity leave	-0.055	(0.021)	-0.006	(0.022)	-1.384	(0.739)	-0.487	(0.773)
Housewives/looking after home	0.001	(0.006)	-0.005	(0.006)	-0.003	(0.273)	-0.220	(0.255)
Student	-0.005	(0.014)	-0.000	(0.014)	-0.446	(0.607)	-0.428	(0.607)
Disabled	-0.021	(0.008)	-0.021	(0.008)	-0.762	(0.375)	-0.725	(0.359)
Government training scheme	0.039	(0.038)	0.069	(0.037)	1.591	(1.392)	1.596	(1.343)
Other	0.007	(0.020)	0.015	(0.020)	-0.191	(0.874)	-0.030	(0.807)
Married	0.011	(0.010)	0.010	(0.010)	0.559	(0.392)	0.469	(0.396)
Cohabiting with a partner	-0.004	(0.009)	-0.007	(0.009)	0.183	(0.363)	0.022	(0.370)
Widowed	0.013	(0.011)	0.013	(0.011)	0.741	(0.477)	0.652	(0.482)
Divorced	0.011	(0.012)	0.006	(0.012)	0.479	(0.481)	0.316	(0.471)
Separated	-0.003	(0.014)	0.010	(0.014)	0.069	(0.624)	0.543	(0.595)
Regional dummies								
Outer London	-0.010	(0.019)	0.002	(0.019)	-0.567	(0.791)	-0.320	(0.774)
R. of South East	0.023	(0.018)	0.031	(0.018)	0.338	(0.770)	0.296	(0.760)
South West	-0.016	(0.022)	-0.020	(0.021)	-0.695	(0.892)	-0.970	(0.909)
East Anglia	0.049	(0.024)	0.060	(0.023)	0.914	(0.992)	1.214	(0.909)
East Midlands	0.008	(0.024)	0.030	(0.024)	0.221	(0.947)	0.351	(0.948)
West Midlands Conurbation	0.013	(0.031)	0.015	(0.032)	0.382	(1.391)	0.619	(1.380)
R. of West Midlands	0.014	(0.026)	0.026	(0.026)	0.857	(1.067)	1.263	(1.100)
Greater Manchester	0.044	(0.028)	0.053	(0.029)	1.156	(1.159)	1.363	(1.140)
Merseyside	-0.081	(0.049)	-0.089	(0.050)	-14.625	(771.569)	-13.801	(499.850)
R. of North West	0.038	(0.029)	0.057	(0.030)	1.083	(1.178)	1.238	(1.140)
South Yorkshire	0.002	(0.039)	0.061	(0.039)	0.484	(1.288)	1.984	(1.436)
West Yorkshire	-0.058	(0.031)	-0.089	(0.033)	-1.443	(1.268)	-2.328	(1.395)
R. of Yorks & Humberside	-0.070	(0.030)	-0.064	(0.030)	-0.659	(1.141)	-0.319	(1.122)
Tyne & Wear	-0.069	(0.038)	-0.067	(0.039)	-14.992	(508.855)	-14.931	(443.172)
R. of North	-0.050	(0.035)	-0.058	(0.034)	-1.139	(1.625)	-1.406	(1.471)
Wales	0.024	(0.028)	0.027	(0.028)	1.331	(1.296)	1.764	(1.346)
Scotland	-0.058	(0.027)	-0.019	(0.029)	-2.659	(1.176)	-1.845	(1.113)
Other	0.068	(0.024)	0.083	(0.024)	1.322	(0.995)	2.463	(1.166)
Constant	0.742	(0.046)	0.711	(0.046)				
Wave dummies	Yes		Yes		Yes		Yes	
N of observations	41,829		4,502		41,577		4,540	
N of groups	10,168		811		10,058		808	
Within R-squared	0.021				0.020			
Psuedo R-squared			0.164				0.156	

Note: The samples are restricted to those with no changes or a change from 0 to 1 in the 'new born child' variable with no previous record of daughters or sons (either in the 0-15 or 16+ age-groups) before and after the new born. Other controls are as in Table 4. Standard errors are in parentheses. The coefficient on real income is insignificantly different from zero in these regressions.

Table 7: The Effect of Daughters on Attitudes Variables (GLS with Random Effects Equations)

	Cohabitation is all right		Homosexuality is wrong		Husband should earn, wife should stay at home		Children need father as much as mother	
Number of daughters	0.035	(0.011)	-0.023	(0.016)	-0.026	(0.012)	-0.024	(0.009)
Number of children								
1	-0.020	(0.013)	0.038	(0.019)	0.045	(0.014)	-0.052	(0.011)
2	-0.053	(0.018)	0.056	(0.026)	0.083	(0.018)	-0.044	(0.015)
3	-0.154	(0.026)	0.074	(0.038)	0.133	(0.027)	-0.024	(0.022)
4	-0.234	(0.044)	0.100	(0.066)	0.222	(0.045)	-0.050	(0.037)
5	-0.225	(0.080)	0.120	(0.116)	0.392	(0.082)	0.089	(0.068)
6	-0.637	(0.125)	0.610	(0.187)	0.677	(0.119)	0.223	(0.101)
7	-0.431	(0.264)	0.846	(0.378)	1.033	(0.314)	0.518	(0.255)
Socio-demographic status								
Men	-0.027	(0.013)	-0.426	(0.016)	-0.284	(0.013)	-0.139	(0.010)
Age	-0.027	(0.002)	0.004	(0.003)	0.007	(0.002)	-0.013	(0.002)
Age-squared/100	0.002	(0.002)	0.015	(0.003)	0.019	(0.002)	0.015	(0.002)
Real household income per capita (in £1,000)	0.028	(0.006)	-0.036	(0.008)	-0.031	(0.006)	0.003	(0.005)
First degree	0.080	(0.020)	-0.458	(0.027)	-0.301	(0.020)	0.063	(0.016)
Higher degree	0.097	(0.037)	-0.572	(0.049)	-0.434	(0.037)	0.115	(0.030)
Self-employed	-0.034	(0.017)	0.040	(0.026)	0.088	(0.018)	-0.019	(0.015)
Unemployed	-0.057	(0.022)	0.074	(0.034)	0.178	(0.023)	0.002	(0.020)
Retired	-0.073	(0.016)	0.061	(0.025)	0.141	(0.017)	0.021	(0.015)
Maternity leave	0.024	(0.054)	-0.034	(0.075)	0.117	(0.057)	0.114	(0.050)
Housewives/looking after home	-0.031	(0.015)	0.101	(0.023)	0.345	(0.016)	-0.018	(0.014)
Student	-0.025	(0.034)	-0.336	(0.052)	-0.301	(0.036)	0.070	(0.030)
Disabled	-0.103	(0.022)	0.146	(0.030)	0.266	(0.022)	0.008	(0.019)
Government training scheme	-0.252	(0.110)	0.325	(0.230)	0.049	(0.125)	0.017	(0.109)
Other	-0.184	(0.067)	-0.072	(0.080)	0.136	(0.067)	-0.075	(0.058)
Married	-0.164	(0.020)	0.128	(0.027)	-0.078	(0.020)	0.216	(0.016)
Cohabiting with a partner	0.232	(0.022)	-0.035	(0.032)	-0.073	(0.023)	0.122	(0.019)
Widowed	-0.036	(0.027)	0.080	(0.038)	-0.054	(0.028)	0.170	(0.022)
Divorced	0.111	(0.026)	0.029	(0.037)	-0.054	(0.027)	-0.047	(0.022)
Separated	0.001	(0.033)	0.004	(0.047)	-0.125	(0.034)	-0.041	(0.029)
Constant	1.561	(0.071)	2.767	(0.092)	2.198	(0.064)	2.198	(0.064)
Wave dummies	Yes		Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes		Yes	
N	54,065		32,281		48,350		48,539	
Overall R-squared	0.232		0.179		0.256		0.045	

Note: Standard errors are in parentheses. Responses are recoded so that 1 = strongly disagree, 5 = strongly agree.

Appendix A: Data Description and Summary

Varibles	Descriptions	All			Father			Mother		
		Mean	BW	WT	Mean	BW	WT	Mean	BW	WT
Vote left w ing parties	political party affiliation; 0 = Conservatives (British right-w ing party) 1 = Labour/Liberal Democrats (British left-w ing parties)	0.64	(0.45)	(0.15)	0.63	(0.46)	(0.15)	0.64	(0.45)	(0.15)
Number of daughters	number of natural daughters	0.40	(0.66)	(0.26)	0.38	(0.65)	(0.26)	0.41	(0.68)	(0.25)
Number of children	number of natural children	0.84	(1.05)	(0.40)	0.80	(1.03)	(0.42)	0.88	(1.07)	(0.39)
Unemployed	employment status, unemployed = 1	0.03	(0.15)	(0.13)	0.04	(0.18)	(0.15)	0.02	(0.12)	(0.12)
Self-employed	employment status, self-employed = 1	0.08	(0.23)	(0.14)	0.13	(0.29)	(0.17)	0.04	(0.15)	(0.11)
Housew ife/looking after home	employment status, housew ife/looking after home = 1	0.09	(0.23)	(0.18)	0.01	(0.06)	(0.06)	0.16	(0.29)	(0.24)
Student	employment status, student = 1	0.01	(0.15)	(0.08)	0.01	(0.15)	(0.08)	0.02	(0.14)	(0.08)
Retired	employment status, retired = 1	0.23	(0.39)	(0.18)	0.22	(0.39)	(0.17)	0.25	(0.39)	(0.20)
Maternity leave	employment status, maternity leave = 1	0.01	(0.09)	(0.10)	0.00	(0.01)	(0.02)	0.02	(0.11)	(0.13)
Government training scheme	employment status, government training scheme = 1	0.00	(0.02)	(0.03)	0.00	(0.02)	(0.03)	0.00	(0.02)	(0.02)
Other employment	employment status, other employment = 1	0.00	(0.04)	(0.04)	0.00	(0.04)	(0.04)	0.00	(0.05)	(0.05)
Men	gender (male = 1)	0.45	(0.50)	-	-	-	-	-	-	-
Age	age	49.27	(17.69)	(3.00)	49.01	(17.11)	(2.98)	49.50	(18.16)	(3.02)
Age^2/100	age-sqauared/100	27.12	(18.35)	(3.14)	26.68	(17.55)	(3.11)	27.49	(18.99)	(3.18)
Real household income (*1,000)	annual household income per capita, adjusted to CPI index (in £1,000)	9.30	(6.66)	(4.95)	9.90	(6.96)	(5.22)	8.81	(6.36)	(4.71)
Married	marital status, married = 1	0.68	(0.46)	(0.18)	0.73	(0.45)	(0.18)	0.63	(0.47)	(0.18)
Living as a couple	marital status, living w ith a partner = 1	0.06	(0.25)	(0.14)	0.08	(0.28)	(0.14)	0.05	(0.22)	(0.13)
Separated	marital status, separated = 1	0.02	(0.12)	(0.10)	0.01	(0.09)	(0.08)	0.02	(0.13)	(0.10)
Divorced	marital status, divorced = 1	0.06	(0.21)	(0.11)	0.04	(0.18)	(0.10)	0.07	(0.23)	(0.12)
Widow ed	marital status, w idow ed = 1	0.09	(0.28)	(0.10)	0.04	(0.19)	(0.08)	0.13	(0.33)	(0.11)
Education: First degree	first degree education, i.e. undergraduate levels	0.08	(0.26)	(0.07)	0.09	(0.27)	(0.07)	0.07	(0.25)	(0.08)
Education: Higher degree	higher degree education, i.e. postgraduate levels	0.02	(0.14)	(0.04)	0.03	(0.15)	(0.05)	0.02	(0.12)	(0.04)
Attitude questions										
Cohabitation is alright	Cohabitation is alright; 1 = strongly disagree, 5 = strongly agree	3.37	(1.79)	(1.10)	3.32	(2.01)	(1.16)	3.41	(1.60)	(1.05)
Homosexuality is w rong	Homosexuality is w rong; 1 = strongly disagree, 5 = strongly agree	2.92	(1.12)	(0.48)	3.14	(1.16)	(0.48)	2.75	(1.06)	(0.47)
Husband should earn, w ife should stay at home	Husband should earn, w ife should stay at home; 1 = strongly disagree, 5 = strongly disagree	2.64	(1.03)	(0.54)	2.76	(1.03)	(0.53)	2.55	(1.02)	(0.55)
Children need father as much as mother	Children need father as much as mother; 1 = strongly disagree, 5 = strongly agree	4.15	(0.78)	(0.49)	4.23	(0.59)	(0.44)	4.09	(0.73)	(0.52)
Total number of observation			66,628			31,170			35,458	

Note: Standard deviations are in parentheses. BW = between standard deviation. WT = within standard deviation.

Appendix B: The Effect of Number of Daughters on the Probability on Being Affiliated with a Left-Wing Party (GLS with Random Effects)

	All	
Number of daughters		
1	0.010	(0.005)
2	0.024	(0.009)
3	0.043	(0.016)
4	0.103	(0.036)
5	0.057	(0.118)
6	-0.491	(0.310)
7	-0.150	(0.335)
Number of children		
1	-0.003	(0.004)
2	-0.010	(0.006)
3	-0.008	(0.009)
4	-0.003	(0.015)
5	0.003	(0.028)
6	-0.040	(0.042)
7	0.095	(0.093)
8	-0.044	(0.111)
Socio-demographic status		
Men	-0.015	(0.008)
Age	0.001	(0.001)
Age-squared/100	-0.003	(0.001)
Real household income per capita (in £1,000)	-0.004	(0.001)
First degree	0.023	(0.009)
Higher degree	0.036	(0.014)
Self-employed	-0.021	(0.005)
Unemployed	0.004	(0.006)
Retired	-0.005	(0.004)
Maternity leave	-0.005	(0.013)
Housewives/looking after home	0.000	(0.004)
Student	0.019	(0.010)
Disabled	0.001	(0.006)
Government training scheme	-0.008	(0.028)
Other	0.008	(0.015)
Married	0.003	(0.007)
Cohabiting with a partner	-0.004	(0.007)
Widowed	0.016	(0.009)
Divorced	0.021	(0.009)
Separated	0.017	(0.011)
Constant	0.673	(0.023)
Regional dummies	Yes	
Wave dummies	Yes	
N	61,041	
Overall R-squared	0.063	

Note: Standard errors are in parentheses.

Appendix C: The Effect of Daughters on the Probability of Being Affiliated with a Left-Wing Party (Last Available Wave Only - Year 2004) - OLS Equation

	Wave 13	
Number of daughters	0.031	(0.015)
Number of children		
1	-0.020	(0.020)
2	-0.024	(0.025)
3	-0.041	(0.038)
4	-0.094	(0.070)
5	-0.296	(0.209)
6	0.085	(0.189)
Socio-demographic status		
Men	0.004	(0.013)
Age	0.001	(0.003)
Age-squared/100	-0.003	(0.003)
Real household income per capita (in £1,000)	-0.058	(0.010)
First degree	0.101	(0.019)
Higher degree	0.113	(0.034)
Self-employed	-0.132	(0.027)
Unemployed	0.006	(0.046)
Retired	-0.021	(0.025)
Maternity leave	0.037	(0.070)
Housewives/looking after home	-0.019	(0.028)
Student	-0.015	(0.062)
Disabled	0.084	(0.029)
Government training scheme	-0.385	(0.284)
Other	-0.007	(0.090)
Married	-0.029	(0.025)
Cohabiting with a partner	0.011	(0.032)
Widowed	0.031	(0.033)
Divorced	0.038	(0.034)
Separated	0.012	(0.058)
Regional dummies		
Outer London	-0.119	(0.057)
R. of South East	-0.196	(0.049)
South West	-0.194	(0.053)
East Anglia	-0.151	(0.059)
East Midlands	-0.157	(0.053)
West Midlands Conurbation	-0.222	(0.066)
R. of West Midlands	-0.124	(0.057)
Greater Manchester	-0.030	(0.058)
Merseyside	0.055	(0.060)
R. of North West	-0.129	(0.058)
South Yorkshire	0.061	(0.061)
West Yorkshire	0.058	(0.060)
R. of Yorks & Humberside	-0.086	(0.061)
Tyne & Wear	0.058	(0.065)
R. of North	0.035	(0.057)
Wales	0.065	(0.047)
Scotland	0.028	(0.048)
Northern Ireland	-	
Other	-0.102	(0.065)
Constant	0.859	(0.084)
N	5,361	
Psuedo R-squared	0.088	

Note: Standard errors are in parentheses.

Appendix D: Further Voting Preference Equations (GLS with Random Effects)

	All		Men		Women	
Number of daughters aged (0-15)	0.018	(0.004)	0.016	(0.006)	0.023	(0.006)
Number of daughters aged (16 and over)	0.004	(0.005)	0.004	(0.007)	0.004	(0.007)
Number of children aged (0-15)						
1	-0.008	(0.004)	-0.012	(0.006)	-0.006	(0.006)
2	-0.012	(0.006)	-0.022	(0.009)	-0.005	(0.009)
3	-0.017	(0.010)	-0.027	(0.014)	-0.010	(0.014)
4	-0.008	(0.016)	0.012	(0.023)	-0.029	(0.023)
5	0.034	(0.033)	0.071	(0.051)	0.002	(0.044)
6	-0.060	(0.042)	-0.092	(0.064)	-0.026	(0.057)
7	0.056	(0.095)	0.263	(0.152)	-0.069	(0.123)
8	-0.118	(0.155)	-0.814	(0.451)	-0.048	(0.169)
Number of children aged (16 and over)						
1	-0.004	(0.004)	-0.806	(0.451)	-0.090	(0.085)
2	0.000	(0.007)	-0.004	(0.015)	-0.161	(0.169)
3	-0.025	(0.013)	-0.012	(0.030)	-0.285	(0.254)
4	0.050	(0.043)	-0.022	(0.046)	-0.245	(0.343)
Socio-demographic status						
Men	-0.015	(0.008)				
Age	0.001	(0.001)	0.003	(0.001)	0.000	(0.001)
Age-squared/100	-0.003	(0.001)	-0.003	(0.001)	-0.003	(0.001)
Real household income per capita (in £1,000)	-0.000	(0.000)	-0.004	(0.002)	-0.000	(0.000)
First degree	0.023	(0.009)	0.010	(0.013)	0.035	(0.011)
Higher degree	0.034	(0.014)	0.029	(0.020)	0.039	(0.021)
Self-employed	-0.021	(0.005)	-0.027	(0.006)	-0.010	(0.008)
Unemployed	0.004	(0.006)	0.000	(0.008)	0.008	(0.009)
Retired	-0.006	(0.004)	-0.007	(0.006)	-0.005	(0.005)
Maternity leave	-0.005	(0.013)	0.048	(0.221)	-0.007	(0.013)
Housewives/looking after home	0.000	(0.004)	0.006	(0.020)	0.000	(0.005)
Student	0.019	(0.010)	0.027	(0.016)	0.015	(0.013)
Disabled	0.001	(0.006)	0.001	(0.009)	-0.000	(0.009)
Government training scheme	-0.009	(0.028)	-0.050	(0.037)	0.043	(0.043)
Other	0.008	(0.015)	-0.020	(0.025)	0.026	(0.020)
Married	0.002	(0.007)	0.007	(0.011)	-0.000	(0.010)
Cohabiting with a partner	-0.005	(0.007)	-0.006	(0.010)	0.000	(0.011)
Widowed	0.016	(0.009)	0.048	(0.015)	0.005	(0.012)
Divorced	0.021	(0.009)	0.018	(0.014)	0.020	(0.012)
Separated	0.016	(0.011)	0.024	(0.016)	0.007	(0.014)
Constant	0.671	(0.023)	0.624	(0.033)	0.694	(0.031)
Wave dummies	Yes		Yes		Yes	
Regional dummies	Yes		Yes		Yes	
N	61,041		28,490		32,511	
Overall R-squared	0.063		0.064		0.070	

Note: Standard errors are in parentheses. The coefficient on real income is insignificantly different from zero in columns 1 and 3.

Appendix E:Political Party Switching and Birth Order of the Child (Logit with Fixed Effects Equation)

	All	
Birth order of the child		
First born is daughter	0.132	(0.270)
Second born is daughter	0.553	(0.295)
Third born is daughter	1.346	(0.450)
Fourth born is daughter	-0.456	(0.899)
First born is son	-0.086	(0.282)
Second born is son	-0.345	(0.284)
Third born is son	0.026	(0.529)
Fourth born is son	0.135	(0.975)
Socio-demographic status		
Age-squared/100	-0.031	(0.033)
Real household income per capita (in £1,000)	0.006	(0.006)
First degree	-0.838	(0.452)
Higher degree	-1.284	(0.774)
Self-employed	-0.111	(0.231)
Unemployed	-0.502	(0.304)
Retired	-0.450	(0.188)
Maternity leave	-0.342	(0.504)
Housew ives/looking after home	-0.235	(0.194)
Student	0.303	(0.486)
Disabled	-0.630	(0.328)
Government training scheme	-0.585	(0.976)
Other	0.350	(0.780)
Married	0.753	(0.366)
Cohabiting w ith a partner	0.266	(0.346)
Widow ed	1.289	(0.480)
Divorced	1.094	(0.433)
Separated	0.947	(0.495)
Regional dummies	Yes	
Wave dummies	Yes	
N of observations	5,776	
N of groups	1,038	
Psuedo R-squared	0.171	

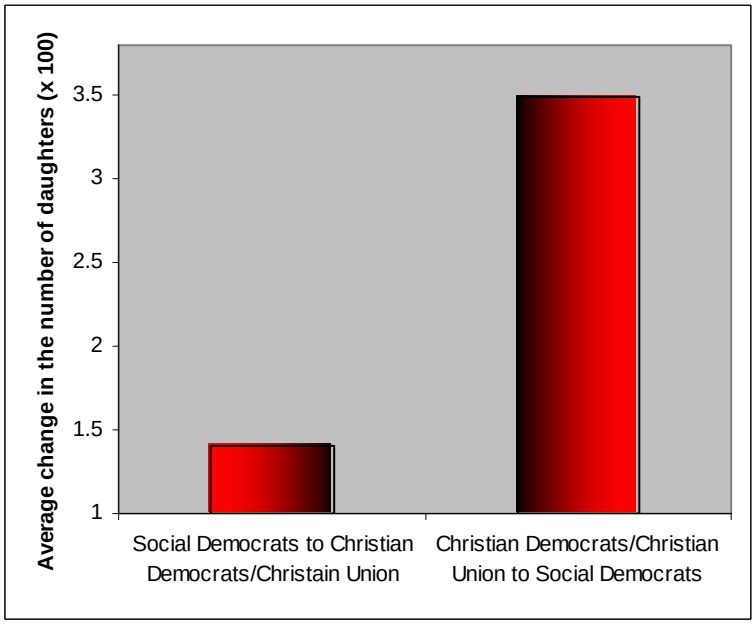
Note: The samples are restricted to those with no previous record of daughters or sons in the 16+ age-groups. Standard errors are in parentheses.

Appendix F: Checking for an Effect of Left-Wing Voting on the Probability of Having Daughters at t+1 (GLS with Individual Fixed Effects Equation)

	All	
Left-wing voter (Labour/Lib Dems = 1)	0.003	(0.006)
Number of daughters aged under 16	0.609	(0.005)
Number of sons aged under 16	0.046	(0.005)
Socio-demographic status		
Age	0.009	(0.004)
Age-squared/100	-0.004	(0.001)
Real household income per capita (in £1,000)	-0.001	(0.000)
First degree	-0.016	(0.016)
Higher degree	0.029	(0.024)
Self-employed	0.022	(0.007)
Unemployed	0.025	(0.008)
Retired	0.021	(0.006)
Maternity leave	0.019	(0.015)
Housewives/looking after home	0.034	(0.006)
Student	-0.027	(0.014)
Disabled	0.018	(0.010)
Government training scheme	0.024	(0.036)
Other	0.009	(0.022)
Married	0.133	(0.011)
Cohabiting with a partner	0.069	(0.010)
Widowed	0.133	(0.013)
Divorced	0.093	(0.013)
Separated	0.119	(0.015)
Constant	-0.476	(0.245)
Wave dummies	Yes	
Regional dummies	Yes	
N	42,142	
Overall R-squared	0.382	

Note: The dependent variable is the number of daughters aged under 16 at t+1; all of the independent variables are measured at period t. The samples are restricted to those with no previous record of daughters or sons (either in the 0-15 or 16+ age-groups) in all of the waves. Standard errors are in parentheses.

Appendix G: Proportion of People Switching Political Party Affiliation and Change in the Number of Daughters from *T* to *T+1:* German Socio-Economic Panel Data (1985-2002)



Note: There were 638 switches from Social Democrats to Christian Democrats/Christian Union, and 660 from Christian Democrats/Christian Union to Social Democrats between *T* and *T+1*. The adjusted *t*-test statistics [p-value] for clustering by personal identification of whether the change in the number of daughters between the two groups is equal is -2.125 [0.034].