# THE EFFECT OF INCOME AND UNEMPLOYMENT SHOCKS ON POLITICAL PREFERENCES

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Individuals' political preferences are the result of a combination of self-interest and beliefs about how the world works. While it is broadly accepted that expectations about social mobility in the long-run can affect political preferences today, much less is known about how voters update their preferences when reality does not match expectations. The goal of this paper is to understand the dynamics of political preferences over redistribution as new information about individual voters' economic circumstances and experiences arrives in the form of unanticipated shocks to two key determinants of individual welfare: employment and income. We elicit and validate subjective probabilistic expectations over future employment and incomes in the short term and construct measures of anticipated and unanticipated shocks comparing expectations with realized outcomes, measured from third party reports, in a large Danish panel. Our main result, based on fixed effects specifications allowing for interpersonal differences in expectations formation and ability, is that unanticipated economic shocks affect preferences, while anticipated shocks do not. In particular, unanticipated unemployment shocks increase support for unemployment benefits and for voting against incumbent parties, while realizing expected unemployment has no effects. Unanticipated negative income shocks cause voters to diverge, with pro-market voters moving further to the right as a consequence of negative shocks, while anticipated changes have no effect.

# INTRODUCTION

How much redistribution do voters want? How do the answers change as their economic circumstances change? The scale and scope of government is a fundamental dimension of politics in advanced industrial societies. People have beliefs about how society and government work, and they have preferences over what government should do, and what they want from it. Our goal is to examine the dynamics of political preferences over redistribution and social insurance as individual voters receive new information about their economic circumstances and experiences in the form of unanticipated shocks to two key determinants of individual welfare: employment and income. We adopt the political economy perspective that current and future economic circumstances – in combination with beliefs about fairness and the functioning of the economy – affect preferences over redistribution and combine this with a dynamic perspective of the permanent income/life cycle model from the economics of savings and consumption.

We show that unanticipated shocks to employment and income at the individual level affect preferences for redistribution and social insurance, while anticipated changes have no effect, throughout controlling for individual fixed effects. In particular, experiencing unemployment leads voters to support more unemployment insurance, but only if their unemployment spell was unexpected. The same kind of unanticipated unemployment also leads to voting against the incumbent government. In contrast, voters who anticipate experiencing unemployment report higher support for unemployment insurance *ex ante*, but actually experiencing the expected unemployment does not change their preferences. Negative, unanticipated income shocks cause voters who see effort as being relatively more important for success in life to prefer less redistribution and to vote for centre-right parties, blaming government involvement for their economic situation. At the same time, such negative shocks leave voters who see luck as being equally or more important than effort for success unaffected, with political divergence (Bullock, 2009) resulting.

In contemporary political economy, individual preferences over redistribution reflect people's contemporaneous economic conditions like income (Meltzer and Richard 1981), employment status or labor market risk (Iversen and Soskice 2001), and wealth (Ansell 2014), as well as their beliefs about fairness and the extent to which success reflects effort (Alesina, Glaeser and Sacerdote, 2001).<sup>1</sup> A recent, focused literature shows how beliefs about income mobility across life (Piketty, 1995; Benabou and Ok 2001; Alesina and La Ferrara, 2005) or across generations (Alesina et al. 2017) affect political preferences. The key insight of this perspective is that people expecting to move up the income distribution prefer less redistribution, even if their current economic situation would predict support for more redistribution. In both cases, individual preferences – beliefs over future income mobility – have a forward-looking component. In contrast, little work speaks to whether and how voters *change* their views on redistribution and social

<sup>&</sup>lt;sup>1</sup> See Alesina and Giuliano (2010) for a comprehensive survey of the literature on preferences for redistribution.

insurance over time and what drives such (lack of) change. What happens if expectations over income and future employment are not met – or, in contrast, are borne out entirely? What are the consequences if beliefs about the link between effort and success are challenged by adverse experiences?

To structure our inquiry of the dynamics of political preferences, we apply the logic of the permanent income/life cycle model, which relates known and new information about current and future economic circumstances to current consumption and savings choices. One key implication of this modeling framework is that all known information about future economic circumstances and events is incorporated into and, thus, reflected in current decisions. As a result, only new information –called economic shocks – should lead individuals to change their decisions. Indeed, a large literature on the economics of consumption and savings argues that unanticipated income and wealth shocks have causal consequences for consumption and individual welfare (e.g., Campbell and Mankiw, 1989; Mian et al. 2013). We argue that such unanticipated changes in voters' individual economic situation, in addition to having economic effects, constitute new information to voters about their position and potential vulnerability in the economy, leading voters to reconsider both their political preferences over redistribution and, potentially, for whom to vote. These economic surprises are exogenous in the sense that they were unexpected and as such not 'capitalized' into current economic preferences and, therefore, provide the basis for a causal estimate of the effect of unanticipated economic shocks on political preferences.

Our empirical approach is based on combining a probabilistic expectations elicitation approach (Dominitz and Manski, 1997; Manski 2004) with administrative data on actual subsequent outcomes. For economic expectations over risk of unemployment and income, political preferences and political beliefs we employ a large-scale Danish panel survey collected 2010-2014. We combine this with third party reported information from Danish administrative registry data on realized individual-level economic outcomes and socio-economic background variables to construct novel measures of unanticipated and anticipated employment and income shocks at the individual level. From this, we define *unanticipated shocks* as changes in employment status or income that are inconsistent with voters' previously formed expectations, while *anticipated shocks* are consistent with prior expectations. The panel structure of the data allows us to follow the development of individuals' preferences over time, and to validate our expectations measures with respect to their predictive power and internal consistency; we estimate individual fixed effects specifications to handle persistent differences in modes of expectations formation (Dominitz and Manski, 2011), predictive ability (Alt et al. 2016), and optimism (Puri and Robinson, 2007) across voters, resulting in observed effects reflecting within-individual variation.

We contend that these measures of unexpected shocks provide new information to individuals about how the economy works and about their own relative position in income and risk distributions. Not only are our results not due to individual differences in modes of expectation formation or ability, but they also do not result from endogeneity in expectations formation arising from motivated reasoning or perceptual screens. In particular, partisanship, measured as past support for the current incumbent, is not predictive of economic optimism and, in turn, of experiencing an unanticipated shock.<sup>2</sup> As a result, the new information induced by unanticipated shocks has a causal effect on political preference formation.

This result provides a new perspective on voting. Employing a change from centre-right to centre-left government in the middle of the panel, we show that unanticipated shocks affect voting intentions while anticipated shocks do not. In particular, unanticipated unemployment shocks generate "economic voting"; they negatively affect the propensity to vote for the incumbent, regardless of political color. In contrast, negative income shocks cause voters to engage in partisan voting, supporting center-right political parties, but do not affect economic voting. In sum, accountability for different economic conditions appears to work through different channels. We also show that our results are robust to changes in how we construct unanticipated and anticipated shock measures, and that (voluntary in Denmark) membership in unemployment insurance reduces the impact of an unexpected income shock. In additional analyses, we analyze a placebo, show that beliefs are more resistant to shocks than are attitudes, and show that the effect of unanticipated income and unemployment shocks generally does not persist beyond one period.

We proceed as follows. The next section provides connections to relevant economic and political economy literature, section three details how we define and elicit shocks using a combination of survey and administrative data, validates these measures, and presents additional data. Section 4 presents our empirical specifications and discusses identification issues. Results and robustness, and concluding remarks, follow.

# EXPECTATIONS, UNANTICIPATED SHOCKS, AND POLITICAL PREFERENCES

The life cycle/permanent income hypothesis is a cornerstone of economic thinking on individual consumption and savings decisions. The basic theoretical setting relates – in a dynamic setting – income streams, wealth and consumption across the life cycle, and extensions allowing for borrowing constraints (Zeldes, 1989) and uncertainty (Deaton, 1991; Carroll, 1997) have provided an organizing workhorse framework for understanding households' economic decisions.

This framework has provided a setting in which to study how economic behavior is affected by new information about the life-cycle paths of income or wealth. In these models, known forecasts of both the consumer's individual economic situation (and of the macro economy) are incorporated into the formation of expectations and affect, through this, current economic decision of consumption and savings. As such, consumers revise their plans and actions only when new information arrives, while "everything known about future changes in policy is already incorporated in present consumption" (Hall, 1978, p. 973). An extensive literature, beginning with Hall, has sought to clarify and be precise about the conditions under which consumers react to new information, including when they are prevented from doing so by borrowing constraints

 $<sup>^{2}</sup>$  Similarly, Alt et al. (2016) find no evidence of motivated reasoning among Danish voters processing new information about the working of the macro-economy.

(e.g. Zeldes, 1989), and when different decision-making processes are in play (Campbell and Mankiw, 1989; Laibson, 1997). Our paper contributes to, if from a different angle, recent work to this the literature, where the focus is on the effect of income and wealth shocks on economic decision-making. In the economics literature, the Great Recession sparked a great deal of interest in explaining consumption and savings responses to shocks to income and wealth (Mian et al. 2013, Pailla and Pistaferri forthcoming, Andersen and Leth-Petersen 2016); in this paper, we apply a similar kind of reasoning based on unanticipated shocks, but focus on political preferences, rather than decisions about consumption and saving.

#### BELIEFS AND NEW INFORMATION IN POLITICAL ECONOMY

Individuals' political preferences are - broadly - the result of a combination of self-interest (Meltzer and Richard, 1981), and beliefs about how the world works (Gilens, 1999; Alesina et al. 2001) and what is fair (Alesina and La Ferrara, 2005). Standard models of political economy feature voters who form political preferences based, in part, on their present (e.g., Meltzer and Richard, 1981) and long-run future economic circumstances, including prospects of upward social mobility, the so-called POUM-hypothesis (Benabou and Ok, 2001; Rainer and Siedler, 2007). Consistent with this logic, future economic circumstances also in the medium term, including job prospects and possible income growth or uncertainty, can affect individuals' political preferences in the present through expectations (Alesina and Angeletos, 2005). At the same time, research on how beliefs about individual effort and the possible role of government map onto political preferences often focuses on fairness (Alesina and Angeletos, 2005; Alesina and Giuliano, 2010) and deservingness (e.g. Gilens, 1999; van Oorschot, 2000), suggesting that these two closely related, but not identical, concepts, are critical determinants of preferences for redistribution. However, work on fairness and deservingness rarely, if ever, investigates how personal experiences like the unanticipated income and employment shocks that we study affect political preferences.<sup>3</sup> This is surprising, since personal experiences should have high salience for both political preferences and one's view of the world.

We build on the POUM-literature to show whether and how voters adjust their preferences

<sup>&</sup>lt;sup>3</sup> One, mainly US-centered exception to this is the literature on "belief in a just world" (Lerner, 1982; Benabou and Tirole, 2006), originating from cognitive dissonance (Festinger, 1957; Jackman, 1971). Here, people are assumed to "feel a strong need to believe that they live in a world that is just, in the sense that people generally get what they deserve, and deserve what they get" (Benabou and Tirole, p. 700) and react to conflicting data by trying to ignore or reinterpret it, resulting in preferences remaining unchanged. However, that literature is exclusively based on people's views on what happens to others, not themselves. Recent work on deservingness focuses on separating welfare or fairness preferences from deservingness; of particular interest for the present study, Aarøe and Petersen (2014) show that Danes and Americans are strikingly similar in welfare preferences once differences in perceived deservingness are accounted for. As far as we know, no work on deservingness and fairness deals with (trying to (re-)interpret) one's own experiences, and only (to our knowledge) Granberg and Nanneman (1986) consider attitude change following unmet expectations, but do so in the context of support for American presidential candidates.

over redistribution and social insurance in response to whether events such as unemployment or income loss were unanticipated ("surprises") or anticipated at the individual level. By the logic of the basic economic life cycle/permanent income-hypothesis, changes in employment status or income should be reflected in political preferences when new information about the probability of such events arrive. In some cases, changes in employment status or income may be completely anticipated *ex ante* and this should, thus, have no effect on future (i.e., t + 1) political preferences. For example, an individual who believes a spell of unemployment in the coming year is very likely, having already received notice of a future termination or perhaps, earlier, seen news of future layoffs, would include this in his or her optimization problem when deriving present political preferences. This, in turn, increases the relative desirability of social insurance and income maintenance programs (e.g. Iversen and Soskice, 2001), support for job creation efforts, or even taxes and spending more generally (Meltzer and Richard 1981, Persson and Tabellini 2000). However, a subsequent realization of unemployment would provide no new information and thus not, for forward looking voters, lead to further changes in political preferences and attitudes. In contrast, the realization of unexpected changes or shocks - that by construction arrive as new information - affects political preferences and beliefs when (or after) they happen, can further alter individual voters' views on the relative attractiveness of public programs.

However, as above, this effect on political preferences can be conditional on existing beliefs about how the economy and society work and what is fair or appropriate. In Piketty (1995), voters share distributive goals but "may develop conflicting views about redistribution [...] because through their various mobility experiences they (rationally) happen to learn and to believe different things concerning the incentive costs of redistributive taxation for society as a whole" (p. 553).<sup>4</sup> If voters disagree on the interpretation of new information – say, whether adverse economic events reflect too little or too much government involvement in the economy – changes in political preferences, or the absence thereof, can reflect motivated correcting (Skitka et al. 2002) or motivated beliefs (Taber and Lodge, 2006; Benabou and Tirole, 2015). Indeed, recent work in political economy (e.g., Alesina and Angeletos, 2005; Dixit and Weibull, 2007) shows how differing interpretations of the same data can lead to divergence and/or polarization of political preferences and beliefs, and we find this too. However, experiences, both positive and negative, could lead people to change these broader beliefs as well. We do not find this: rather, we find that the occurrence of shocks is not endogeneous with respect to beliefs and that preferences over policy change more than beliefs about the causes of success in response to unanticipated economic shocks.

IMPLICATIONS FOR STUDIES OF ECONOMIC CHANGE, EXPECTATIONS, AND POLITICAL PREFERENCES

It is well known that macroeconomic news is important for economic voting and consumer sentiment on average (Mackuen et al. 1992; Alt et al. 2016; Eggers and Fouirnaies 2016). Some

<sup>&</sup>lt;sup>4</sup> In Piketty, social origin, construed as parental income, constitutes a first experience which will differ between individuals; Giuliano and Spilimbergo (2014) show how beliefs can differ between cohorts exposed to different economic circumstances in early adulthood.

recent papers consider how various sources of information about the economy affect preferences for redistribution and social insurance: Kuziemko et al. (2015) find that informing American survey respondents about inequality affects views on inequality, but affects preferences over tax and transfer policy much less, possibly owing to a lack of political trust among US voters. Karadja et al. (2017) combine a survey experiment with individually tailored information and show that rightwing voters in Sweden generally underestimate their rank in the income distribution and when told their true placement, based on information from administrative data, move further rightwards. Alt et al. (2017) show that information about peers' unemployment through networks affects individuals' own perceptions of economic risk and their political preferences. With respect to individual-level economic changes and political preferences, Margalit (2013) shows that US voters faced with negative income shocks temporarily support additional government redistribution during the Great Recession; in contrast, Rodon and Wiertz (2017) find no effect of economic shocks on left-right placement in a panel of Dutch voters, and Hall et al. (2017) find no effect of foreclosures on incumbent support in a US context.

While these disparate results could reflect differences across countries, polities or economic shocks, our study suggests that such conflicting findings, both between and within literatures, could result from not accounting for whether changes in economic circumstances were anticipated at the time of preference elicitation and, subsequently, not addressing whether such expectations were in fact borne out.<sup>5</sup> Researchers cannot conclude that an observed transition from employment to unemployment constitutes new information without knowing expectations *ex ante*. In the example above, if a respondent knows for certain that he will experience unemployment in the coming year, this will be capitalized into political preferences. Based on our findings, we recommend that studies of dynamic effects of economic shocks elicit expectations and political preferences concurrently and, in follow up rounds, establish the extent to which such expectations were met.

# Data and Descriptive Statistics

Our main data innovation is to combine individuals' economic expectations and political attitudes with uniquely detailed data on actual outcomes as measured from administrative records. Information on economic expectations and political attitudes come from the Danish Panel Study of Income and Asset Expectations (Kreiner, Lassen, and Leth-Petersen 2013), a rolling panel survey of approximately 6,000 individuals beginning in 2010.

Participants in the survey are randomly sampled from individuals in the Danish Central Person Register (CPR) who had any measure of labor market attachment over a ten-year period prior to the survey. Each survey lasts on average 10-12 minutes, and is carried out by Epinion A/S who also conduct the official Danish labor force surveys. Average attrition was 31 percent, and new respondents were again sampled randomly from the CPR. Our empirical design requires that we

<sup>&</sup>lt;sup>5</sup> An additional complication is that responses may differ depending on whether shocks are seen as systemic or economy-wide or whether they are seen as reflecting individual behaviors.

observe individuals in two consecutive surveys, and the effective sample after attrition thus consists of approximately 15,000 individual-year observations for 2010-13.

We use survey data to measure respondents' political attitudes and economic expectations over the calendar year. We use respondents' attitudes toward welfare policy and vote intention as outcome variables. We capture preferences over welfare policy using two questions. The first asks respondents about their preferred level of unemployment benefits, the second their attitudes toward redistribution from the rich to poor. We recode both variables so higher values imply higher demand for government intervention. Both questions closely match similar questions found in well-known studies such as the General Social Survey. In addition to these measures, we use a question that asks about respondents' perceptions of the underlying sources of success in life as an indicator for attitudes towards the fairness of market outcomes (Alesina and Angeletos 2005; Piketty 1995). Exact wordings of all survey items are presented in Appendix 2.

We show the distribution of the main attitudinal variables in Figure 1. Preferences regarding redistribution from rich to poor are measured on a five-point Likert scale. The figure reveals that most individuals prefer the middle category, and that more respondents think it is the job of government to redistribute from the rich to the poor than think government should stay out. Demand for unemployment insurance is measured on a three-point scale. Most respondents think benefits should remain at their current level, but a substantial number of respondents would prefer benefits to be increased. Few respondents prefer lowering benefits from their current level. Beliefs about the underlying sources of success are measured on a three-point scale. Most respondents believe that the predominant source of success is effort, and a considerable fraction believe that effort and luck are equally important. Only a few respondents think luck is the primary source of success in life. The correlation between unemployment benefits and redistribution preferences is about 0.5, while the correlation between beliefs about effort and redistribution preferences is about 0.4. There is no three-way interaction between beliefs and the two measures of preferences.



Figure 1: Frequency distributions of attitudinal variables

We merge these survey data with administrative data from Statistics Denmark through the CPR number. In the resulting data set, we thus observe each survey participant's income and unemployment expectations, described in detail below, as well as their current political attitudes, detailed third-party reported information on income and unemployment for all years for which we have measures of expectations, and comprehensive individual-level background information created from administrative data. We remove self-employed individuals from the empirical analysis, as income and unemployment information for this group is often self-reported, introducing possible non-random measurement error in our key variables (Kleven et al. 2011). See Appendix 3 for details.

From the survey, we collect economic expectations every January from 2011-14. The timing is chosen to match the timing of the administrative data, which summarizes flow variables such as income or unemployment at the end of the calendar year. This implies that our subjective data match the timing of the outcomes almost perfectly. For example, we can compare expectations of unemployment for the calendar year 2010, elicited in January 2010, with information about actual unemployment measured from administrative data on December 31, 2010. The intuition behind our empirical strategy is as follows: We construct novel measures of income and unemployment shocks using a combination of economic expectations about year t and actual outcomes for that calendar year. We then relate these shock measures to political attitudes and voting intentions measured in January of year t + 1, that is, after the shock has occurred. Our data collection strategy allows us relate unemployment and income shocks to political attitudes for four consecutive years. All four years were years of real income growth (slower in the latter two) and declining unemployment. We summarize the timeline of our data collection in Table 1.

	2010	2011	2012	2013	2014	Source	
Expectation							
Income	$Y_{2010}^{e}$	$Y_{2011}^{e}$	$Y_{2012}^{e}$	$Y_{2013}^{e}$		Survey (Jan.)	
Unemployment	$U_{2010}^{e}$	$U_{2011}^{e}$	U <sup>e</sup> <sub>2012</sub>	$U_{2013}^{e}$		Survey (Jan.)	
Outcome							
Income	Y <sub>2010</sub>	Y <sub>2011</sub>	Y <sub>2012</sub>	Y <sub>2013</sub>		Register (31 Dec.)	
Unemployment	U <sub>2010</sub>	U <sub>2011</sub>	U <sub>2012</sub>	U <sub>2013</sub>		Register (31 Dec.)	
Attitude							
Redistribution	$R_{2010}$	R <sub>2011</sub>	$R_{2012}$	R <sub>2013</sub>	R <sub>2014</sub>	Survey (Jan.)	
Unemployment benefits	UI <sub>2010</sub>	UI <sub>2011</sub>	UI <sub>2012</sub>	UI <sub>2013</sub>	UI <sub>2014</sub>	Survey (Jan.)	
Vote intention	$V_{2010}$	$V_{2011}$	V <sub>2012</sub>	$V_{2013}$	$V_{2014}$	Survey (Jan.)	

# Table 1: Data collection timeline

#### MEASURING SUBJECTIVE EXPECTATIONS AND ECONOMIC SHOCKS

We measure respondents' expectations using probabilistic survey questions which asks respondents to report a set of probabilities that some event will occur. This approach has been found to outperform qualitative approaches in which expectations are elicited using ordinal scales (Hurd 2009; Manski 2004).

We elicit unemployment expectations by asking respondents to provide the best estimate of the probability that they will experience unemployment during the calendar year. We denote the subjective probability of becoming unemployed  $U^e$ . Several recent papers provide evidence that individuals have substantial knowledge of future job losses. Using U.S data, Stephens (2004) finds that subjective unemployment expectations predict subsequent job loss; in a recent paper, Hendren (2017) finds that individuals who estimate that they are likely to lose their job have spouses who enter the labor market to a greater extent.

For expected income, we ask respondents to report the minimum and maximum amount they expect to earn during the calendar year. Afterwards, respondents are asked to report the probability that their yearly income will be less than the midpoint between these two numbers. We denote this probability *p*. Taken together, these answers provide bounds on the support of each individual's probability distribution function, and on the probability mass below the midpoint, but they do not identify these distributions. To proceed we need to impose additional structure on the cumulative distribution function. In this paper, we assume that the distribution function is piecewise uniform (Attanasio and Augsburg 2016; Attanasio and Kaufmann 2009).

Given this assumption, respondents' expected income can be thought of as a distribution that is the result of mixing two conditional uniform distributions. The first, A, is the "low income" distribution between the minimum and the midpoint, and the second, B, is the "high income" distribution between the midpoint and the maximum. We can calculate (see Appendix 4) expected income for a given calendar year as:

$$Y^{e} = E[Y] = \mu_{A} + (1 - p) \times w, \tag{1}$$

where  $\mu_A$  is the expected value of sampling from the "low income" distribution, and w is the difference in means between the two distributions:  $w = \mu_B - \mu_A$ .

The unconditional variance of Y can be computed as

$$V[Y] = \sigma^{2} + p(1-p) \times w^{2},$$
(2)

where the first term,  $\sigma^2$ , is the conditional variance of the two conditional distributions. Because the *B* distribution is just the *A* distribution shifted to the right with a factor *w*, the variance of the two distributions are identical.

We define economic shocks as follows. We create our unemployment shock measure by comparing expectations of unemployment  $(U^e)$  during the calendar year with actual unemployment (U). Below, a "positive unemployment shock" indicates moving to a larger share of the year *employed*; that is, it is a *positive* event. A "negative unemployment shock" is a negative event with respect to employment: a larger share of the year unemployed. Respondents' unemployment expectations measure the probability respondents assign to a binary outcome (employed/

unemployed). However, unemployment experiences can be markedly different between individuals over a given year. Some are unemployed the entire year while others are unemployed only for a couple of days. Our detailed administrative data allow us to capture this important aspect of unemployment.

Instead of defining an arbitrary threshold for unemployment, we calculate the change in the fraction of time in the labor force an individual has spent unemployed:  $\Delta U = U - lag(U)$ . Figure 2 shows a histogram of this variable (log scale). See Appendix 5 for annual distributions. The plot shows that a disproportionate fraction of our respondents experiences no change in their unemployment status. This is unsurprising as unemployment is a relatively rare event. However, the plot also reveals striking differences among individuals whose unemployment status changed, with some individuals increasing the fraction of the year spent unemployed with more than 50 percent, while others experienced only small changes. The variation around zero suggests that we will be able to estimate differential effects of positive (i.e. moving into employment) and negative (i.e. moving into unemployment) shocks.



Figure 2: Yearly change in proportion of time in labor force spent unemployed (counts log scaled)

Our measure of an unemployment shock groups individuals based on whether  $\Delta U$  is positive (i.e. more time spent unemployed), negative (i.e. less time spent unemployed), or zero (no change), and then interacts these indicator variables of changes in time spent unemployed during the calendar year with the expectation of unemployment measured at the beginning of the year. This setup allows us to differentiate between positive and negative changes in unemployment, and, importantly, to differentiate between anticipated and unanticipated changes.

For income shocks, we first calculate the difference between gross income obtained in a given calendar year, Y, and expected income measured in January of that year:  $\theta = Y - Y^e$ , where  $Y^e$  is computed from (1). We then define an income shock measure using both the expected value and the variance of the expected income distribution. Our main definition of an income shock is defined as follows:

$$S = \begin{cases} S^{N} & if\theta < -\sigma^{Y}, \\ S^{P} & if\theta > \sigma^{Y}, \end{cases}$$
(3)

where  $\sigma^{Y} = V[Y]^{1/2}$ . Intuitively, our shock measure defines an income shock as unanticipated income that exceeds the standard deviation of the expected income distribution. This corresponds to unanticipated income that falls outside the individual's 70 percent confidence interval, but our results do not depend on this exact choice of threshold.

Our income shock measure has the advantage of explicitly accounting for the uncertainty around respondents' expected income estimates. To see this, consider two individuals who both have p = 0.5, but where  $(y_{min}^e, y_{max}^e) = (200,800)$  for individual one and  $(y_{min}^e, y_{max}^e) = (400,600)$  for individual two. Both individuals have  $Y^e = 500$ , but individual one is much more uncertain about her income than individual two. Our shock measure captures the fact that deviations from expected income are more surprising for individual two than one, precisely because individual two was more certain of her future income. For example, if both individuals earned unanticipated income of 100, only individual two would be classified as having experienced a (positive) income shock. We censor the data by the 2nd and 98th percentile of the income expectations distribution. That is, we exclude individuals who expect to earn for example 0 DKK (the minimum) and individuals who expect to earn 400 million (the maximum).

In Figure 3, we show the distribution of unanticipated income normalized by the standard deviation of the expected income distribution. The coloring indicates whether individuals were classified as having experienced a negative (light grey) or positive (dark grey) income shock according to (3), or no shock at all (white). Again, see Appendix 5 for annual figures. The figure shows that most individuals do not experience short term income shocks, and among those who do, more respondents experience small compared to large shocks. We observe considerable variation around zero, which again indicates that we will be able to estimate differential effects of negative and positive income shocks on political attitudes.



Figure 3: Distribution of income shocks

Elicitation of subjective probabilistic expectations can place strong demands on respondents. We validate the survey expectations measures by showing that subjective expectations over both income and employment have predictive power for actual, realized income and employment, controlling for past experiences and fixed effects. At the same time, we show that expectations measures are internally consistent. People expecting to experience unemployment also expect lower income to a significant extent, controlling for individual and year fixed effects. Moreover, unexpected unemployment shocks are accompanied by unexpected income shocks, with consequences for the variance of unanticipated income. See Appendix 6 for further evidence about validation.

# EMPIRICAL STRATEGY AND IDENTIFICATION

We estimate the effect of an unemployment shock on attitudes toward social policy using the following empirical model

$$a_{it+1} = \gamma \Delta U_{it}^{j} + \omega U_{it}^{e} + \eta \Delta U_{it}^{j} \times U_{it}^{e} + \beta X_{it} + \gamma_t + \mu_i + \epsilon_{it}, j \in N, P.$$
(4)

Here, *a* is individual *i*'s attitude to redistribution or unemployment benefits at time t + 1. *X* is a vector of control variables created from administrative data. We only include control variables that are pre-determined at the time expectations are elicited to avoid post-treatment bias. We capture the effect of an unemployment shock of type *j* (either *N*: negative, i.e. increasing unemployment, or *P*: positive, i.e. more employment) by interacting  $\Delta U^j$  with  $U^e$ , the respondent's expectation of unemployment at the beginning of the year. We estimate the effects of positive and negative shocks separately. The shock is *unanticipated* to the extent that  $\gamma$  is significant and  $\omega$  and  $\eta$  offset each other: when  $\omega = -\eta$ , the effect of the shock ( $\gamma$ ) is wholly unanticipated. The baseline is a respondent who expects with certainty to be employed over the year ( $U^e = 0$ ).  $\gamma_t$  capture year or panel fixed effects, and  $\mu_i$  captures individual fixed effects, comprising predictive ability, mode of expectations formation and persistent differences in optimism. The model is estimated using ordinary least squares with robust standard errors clustered at the individual level. In the case of the effect of an income shock on political attitudes, we estimate the following empirical model:

$$a_{it+1} = \kappa S_{it}^{j} + \beta X_{it} + \gamma_t + \mu_i + \epsilon_{it}, j \in (N, P)$$
(5)

where *S* is an income shock of type *j* as defined in eq. 3. Importantly, we also control for expected income changes, which we calculate as expected income in January of a given year less realized income in the year before. We again estimate the model using ordinary least squares, clustering all standard errors at the individual level.

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Do these models estimate causal effects of economic shocks on political attitudes? We consider the following threats to identification: First, unobserved individual-level characteristics relating to expectations formation, including optimism or predictive abilities, might introduce omitted variable bias if such characteristics also correlate with political attitudes. Second, the incidence of economic shocks might be non-random, raising concerns that our estimates fail to

generalize to other parts of the population. Third, economic expectations could be endogenous to political attitudes and party attachment due to motivated reasoning and partisan perceptual screens. We discuss the first two threats in detail below, and defer the discussion of endogeneity due to partisan screens to the robustness section, noting that we find no evidence of such endogeneity.

Dominitz and Manski (2011) document differences in expectations formation of equityreturns. They conclude that expectation formation is interpersonally heterogeneous but intrapersonally stable, that is, the population consists of different expectations types, with each type updating expectations in a different, but stable way (see also Manski 2017). If such differences, whether arising from interpersonal heterogeneity in assigning probability to outcomes – including generalized optimism or pessimism – or in learning, are correlated with political preferences, our estimates could reflect such correlations rather than a causal effect. We account for such differences through controlling for individual fixed effects. This assures that results do not stem from different people forming expectations and forecasting in different (unobservable) ways.

Political economy theories of redistribution like Meltzer and Richard (1981) emphasize the importance of individuals' relative placement in the income distribution. If income shocks are located non-randomly across the income distribution, for whatever reason, observed correlations between economic shocks and political preferences could reflect standard accounts of redistributive politics, rather than the causal effect of shocks. In Figure 4, we show the relationship between a respondent's mean income shock, standardized by the standard deviation of the expected income distribution, and his or her mean 1998-2008 income. The figure shows the result of running a local smoother through the raw data (without showing each individual point due to confidentiality restrictions).<sup>6</sup> We overlay the figure with the mean standardized income shock for each income percentile. The figure shows that the lowest part of the 1998-2008 income distribution experience



Figure 4: Mean normalized income shocks by income percentiles

<sup>&</sup>lt;sup>6</sup> As part of their comprehensive security precautions, Statistics Denmark do not allow plotting of individual level data.

on average slightly larger income shocks, but except for the bottom and maybe the top decile of the income distribution, income shocks seem to be relatively equally distributed across the different income groups. In the main regressions, we control for individual positions in the income distribution. In the robustness section, we show that omitting the top and bottom ten percent of the income distribution does not matter for our results.

# RESULTS: THE EFFECT OF ECONOMIC SHOCKS ON POLITICAL PREFERENCES

The effects of unemployment and income shocks on political preferences can be unconditional, i.e. implicitly assumed to be identical across individuals, or they can be contingent on ideological or partisan predispositions, allowing for voters with different views of the world to interpret shocks differently and to transform such interpretations into political preferences in heterogeneous ways. This section reports the unconditional results. In the section that follows, we allow the effects of shocks to differ by beliefs.

### UNEMPLOYMENT SHOCKS

Table 2 presents our estimates of the effect of unexpected unemployment shocks on political attitudes toward redistribution and unemployment insurance. Columns 1 estimates a cross-sectional effect, while columns 2 and 3 show results with individual fixed effects. Column includes demographic controls (age and its square, gender, foreign origin, homeowner, marital status, children, whether in labor force, and education) and economic controls (observed income and share of time unemployed at the time expectations were elicited, along with the 1998-2008 means of their income and unemployment experiences. Coefficients of variables not shown here are presented in Appendix 7, with some further specifications. Column 2 shows the raw associations from estimating with individual fixed effects, so the results do not stem from different people forming expectations in different, unobservable ways. Finally, Column 3 adds time-varying economic controls and year fixed effects (with individual fixed effects, none of the demographic controls are time-varying). To facilitate comparing the effects of income and unemployment shocks, the sample is censored for extreme expected incomes (as described above) and removes individuals who are outside the labor force (who clearly cannot suffer unemployment shocks).

Key to our argument, the demand for higher unemployment benefits reveals the strong effect of negative unemployment shocks (a larger share of the year unemployed) that varies according to respondents' expectations. The *more* the respondent anticipates being unemployed, the smaller is the estimated effect of subsequent actual unemployment on the demand for unemployment benefits. Using the coefficients in Column 3 as an example (the baseline is individuals whose share of time in unemployment changed less than one percentage point), a higher share of time spent unemployed increases demand for unemployment benefits *among respondents who did not anticipate becoming unemployed*: for them the effect is .092, much larger than the effect when unemployment was *expected*, which is (.092 + .034 - .113) equal to +.013. Signs are the same in other specifications, which control for economic circumstances at the time expectations were elicited, though magnitudes vary. Positive shocks (less unemployment than before, whether a

	A: Unemployment benefits				
	(1)	(2)	(3)		
$U^P$	0.019	0.055	0.058		
	(0.034)	(0.036)	(0.035)		
$U^N$	$0.138^{***}$	0.099**	$0.092^{**}$		
	(0.039)	(0.045)	(0.046)		
$U^{e}$	$0.083^{***}$	0.028	0.034		
	(0.027)	(0.032)	(0.031)		
$U^P \times U^e$	0.008	-0.014	-0.009		
	(0.060)	(0.066)	(0.065)		
$U^N \times U^e$	$-0.124^{**}$	$-0.116^{*}$	$-0.113^{*}$		
	(0.059)	(0.066)	(0.066)		
Observations	12,711	12,508	12,508		
	B: ]	Redistributi	on		
	(1)	(2)	(3)		
$U^P$	-0.027	0.096	0.093		
	(0.060)	(0.062)	(0.062)		
$U^N$	-0.006	0.034	0.020		
	(0.068)	(0.077)	(0.079)		
$U^e$	0.071	0.084	0.095*		
	(0.046)	(0.054)	(0.054)		
$U^P \times U^e$	0.131	-0.006	0.017		
	(0.105)	(0.115)	(0.114)		
$U^N \times U^e$	0.007	-0.004	0.016		
	(0.104)	(0.114)	(0.114)		
Observations	12,898	12,898	12,898		
Demographic Controls	Yes	No	No		
Economic Controls	Yes	No	Yes		
Year FE	Yes	No	Yes		
Model	OLS	$\mathbf{FE}$	$\mathbf{FE}$		

Table 2: Unemployment shocks and expectations: Effects on political attitudes

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). The controls in the fixed effects regressions are gross income as well as time and individual fixed effects. All models include a constant term (not reported). Robust standard errors clustered at the individual level are provided in parenthesis. \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

spell of unemployment was anticipated or not) have effects that are generally smaller and almost always statistically insignificant: it is the "bad news" to which people react.

We find no significant effect of negative or positive unemployment shocks on redistribution preferences. The estimated coefficients are close to zero and change sign depending on the choice of controls. Those feeling more likely to be unemployed in the next year are more likely to favor more redistribution, mirroring results in Barfort (2017). but this effect varies across specifications.

Figure 5 illustrates these results: it plots the marginal effect of experiencing an increase in unemployment, estimated from column 1 in the table, at different values of  $U^e$ . The figure reveals an additional insight: increases in unemployment are only significantly related to demand for unemployment benefits among respondents for whom unemployment was unanticipated. When respondents have strong enough expectations of unemployment ( $U^e > 50$ ), the effect is no longer significantly distinguishable from zero. The figure also confirms the overall negligible marginal effect of an unemployment increase on attitudes to redistribution, more or less regardless of the level of expected unemployment.



*Figure 5: Unemployment expectations moderate relationship between experienced unemployment and political preferences* 

#### UNEMPLOYMENT INSURANCE MEMBERSHIP AND THE EFFECT OF SHOCKS

In Denmark, a key revealed preference measure of individuals' unemployment concerns is membership of an unemployment insurance fund. The Danish system is known as *flexicurity*, combining weak employment protection (flexibility) with a UI system considered generous by international standards (security). The UI system is financed through the progressive tax system and provides 100 % income replacement until a cap at approximately 3000 USD per month, with a maximum duration of two years. The vast majority of Danes in the labor market (about 85 per cent) belong to the UI system. People in the labor force but not in the UI system, either by choice or because benefits have run out, receive cash welfare.

Table 3 shows results<sup>7</sup> splitting the sample by UI membership. On the one hand, the effect of expected unemployment on support for additional UI benefits is always positive and sometimes significant across both insured and non-insured individuals. The positive coefficient is consistent with adverse selection in the sense that people expecting to become unemployed would on average favor "initiatives" like more, or more generous, coverage at given prices. However, the effect of experiencing increasing unemployment differs substantially across groups. Results for the insured

	Inst	s nsured		
	(1)	(2)	(3)	(4)
$U^P$	0.006	0.052	-0.035	0.394
	(0.034)	(0.037)	(0.280)	(0.293)
$U^N$	0.118***	0.078	0.374**	0.640**
	(0.039)	(0.049)	(0.147)	(0.269)
$U^e$	0.089***	0.030	0.097*	0.090
	(0.031)	(0.036)	(0.056)	(0.083)
$U^P \times U^e$	-0.013	-0.010	0.680*	0.333
	(0.062)	(0.069)	(0.352)	(1.002)
$U^N \times U^e$	$-0.126^{**}$	-0.088**	-0.440	$-1.070^{***}$
	(0.061)	(0.071)	(0.203)	(0.387)
Demographic Controls	Yes	No	Yes	No
Economic Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Model	OLS	$\mathbf{FE}$	OLS	$\mathbf{FE}$
Observations	11,060	10,882	$1,\!683$	$1,\!654$

Table 3: The effect of unemployment shocks by insurance category

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). The controls in the fixed effects regressions are gross income as well as time and individual fixed effects. All models include a constant term (not reported). Robust standard errors clustered at the individual level are provided in parenthesis. \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

in column 1 (87 per cent of the respondents in Table 2) resemble those in the previous Table, though they are slightly smaller, even more so in column 2. A possible reason for the smaller

<sup>&</sup>lt;sup>7</sup> Appendix 8 presents full results in Table A8.1. This table also echoes the result from Table [2] that there is no effect of unemployment shocks on preferences over redistribution, among either insured or uninsured.

response among the insured is that having insurance removes the effect of reduced income on preferences, as we describe below. To reduce the impact of a negative shock is, after all, a reason to have insurance.

Uninsured individuals also support initiatives for the unemployed significantly more following increased unemployment, but for them this effect is between three and four times larger than for the insured. That is, the uninsured appear to react more to unexpected negative shocks: the difference is statistically significant, particularly when we estimate with individual fixed effects. One possible reason for this is that individuals choosing not to be a member of the UI system have a lower estimate of unemployment risk than do members and, hence, are on average more surprised when unemployment in fact hits. As Appendix 8, Figure A8.1 shows, this is only partly correct: the uninsured consists of largely of two groups, one which is more likely to predict no unemployment for themselves, suggesting adverse selection out of insurance, and one which is more certain of becoming unemployed, for whom non-membership may be a consequence of liquidity constraints and the cost of insurance. The latter group cannot be negatively surprised and, thus, unexpected unemployment for the uninsured is driven by the group more likely to predict no unemployment. All in all, combining the similar effects of expected unemployment and the differing effects of experiencing more unemployment, we see that for both the insured and the uninsured, surprise unemployment affects preferences more, sometimes much more, than realizing expected unemployment.

#### **INCOME SHOCKS**

Parallel results for positive and negative income shocks are presented in Table 4. First, observe that anticipated income changes are uncorrelated with political preferences, consistent with the evidence that such expected changes are reflected in preferences already formed at the time of elicitation. For unemployment benefits, more unemployment than expected increased support for more initiatives for the unemployed. Here, on the other hand, the cross-sectional result in Column 1 is that less income than expected has the opposite effect, reducing support for the unemployed, but this does not hold up with individual fixed effects (Columns 2 and 3). Negative income shocks can result from unemployment, but as we saw, when people are insured, their unemployment on unemployment benefit attitudes is much larger, but the number of those uninsured with surprise unemployment is dwarfed by the much larger, heterogeneous population of those with negative income shocks, most of whom see no personal stake in increased unemployment benefits.

Individuals who experience a negative income shock also support lower redistribution and here the result holds even when we control for individual fixed effects. A possible interpretation is that voters hit by negative income shocks also do not see themselves as beneficiaries of redistributive programs. The increase in redistribution support that comes with a positive income surprise might also be consistent with this, but there are no other results for positive income shocks, and these are not robust to controlling for individual fixed effects. The effect of negative income shocks may also be conditional on the costs and benefits, but unlike the question of unemployment benefits, also on whether voters believe the recipients of redistribution are deserving.

	A: Unemployment benefits				
	(1)	(2)	(3)		
$\overline{S^N}$	-0.038**	0.010	0.014		
	(0.013)	(0.014)	(0.014)		
$S^P$	0.016	0.003	-0.001		
	(0.011)	(0.012)	(0.012)		
Expected income change	-0.0001	-0.0001	-0.0001		
	(0.0001)	(0.0001)	(0.0001)		
Observations	$13,\!445$	$13,\!495$	$13,\!495$		
	B: Redistribution				
	(1)	(2)	(3)		
$S^N$	$-0.084^{***}$	$-0.052^{**}$	$-0.046^{***}$		
	(0.024)	(0.025)	(0.025)		
$S^P$	0.053**	-0.029	-0.032		
	(0.021)	(0.022)	(0.022)		
Expected income change	-0.0002	-0.0002	-0.0002		
	(0.0001)	(0.0002)	(0.0002)		
Observations	13,640	13,690	13,690		
Demographic Controls	Yes	No	No		
Economic Controls	Yes	No	Yes		
Year FE	Yes	No	Yes		
Model	OLS	$\mathbf{FE}$	FE		

Table 4: The effect of income shocks on political attitudes

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). The controls in the fixed effects regressions are gross income as well as time and individual fixed effects. All models include a constant term (not reported). Robust standard errors clustered at the individual level are provided in parenthesis. \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

# CONDITIONAL ON BELIEFS: EFFECTS OF SHOCKS ON PREFERENCES

Beliefs potentially guide how people interpret events such as unemployment or income loss and their political response to such events. Would one hold a different opinion about unemployment benefits if one felt unlucky rather than deserving of the unemployment shock? As Appendix 9

Figure A9.1 shows, the answer to this is "apparently not really": the difference between the groups defined by beliefs about whether success is mostly a matter of luck or effort is not statistically significant. This is consistent with a self-interest argument: you benefit yourself in the case of unemployment benefits, particularly if you are uninsured, and having insurance was a matter of choice, not bad luck. Redistribution preferences are different: there is a tax cost to consider if redistribution spending increases, eligibility for benefit is not the same as with unemployment insurance, and the causes of negative income shocks are heterogeneous, or at least not restricted to those with unemployment shocks. We investigate the conditional effect of shocks on attitudes *a* by beliefs *B* using the following regression model:

$$a_{it+1} = \kappa S_{it}^{j} + \gamma B_{it} + \zeta S_{it}^{j} \times B_{it} + \beta X_{it} + \gamma_t + \mu_i + \epsilon_{it}, j \in (N, P), (6)$$

where *B* is an indicator value that takes the value one if the individual thinks that luck is at least as important as effort for success in life, and zero otherwise. Effects are unconditional when  $\gamma = -\zeta$ . Note that beliefs are measured at the same time as we elicit expectations to avoid introducing posttreatment bias. We again cluster standard errors at the individual level and include control variables and fixed effects as before. We show the full results of the regression model in Table 5 and summarize the marginal effects in Figure 6.



Figure 6: Divergence by issue type and beliefs: Income shocks

Figure 6 graphs the marginal effects of a negative income shock and its interaction with beliefs on unemployment benefits and redistribution preferences from Table [5]. It is obvious that there are no significant differences in unemployment benefit attitudes according to belief: the pooled negative cross-section effect and zero effect with individual fixed effects are unaffected. The

	A: Unemployment benefits				
	(1)	(2)	(3)		
$\overline{S^N}$	-0.093***	-0.012	-0.010		
	(0.021)	(0.023)	(0.023)		
$S^P$	0.025	0.009	0.004		
	(0.018)	(0.019)	(0.019)		
Luck [B]	0.144***	-0.001	-0.006		
	(0.013)	(0.015)	(0.015)		
Expected income change	-0.000	-0.000	-0.000		
	(0.000)	(0.000)	(0.000)		
$S^N \times \text{Luck} [B]$	0.042	0.002	0.011		
	(0.029)	(0.031)	(0.031)		
$S^P \times \text{Luck} [B]$	-0.017	-0.035	-0.028		
	(0.024)	(0.025)	(0.025)		
Observations	$13,\!445$	$13,\!495$	13,495		
	B: Redistribution				
	(1)	(2)	(3)		
$\overline{S^N}$	$-0.146^{***}$	$-0.091^{**}$	$-0.82^{**}$		
	(0.038)	(0.041)	(0.041)		
$S^P$	0.048	0.045	0.033		
	(0.032)	(0.033)	(0.033)		
Luck $[B]$	0.291***	-0.036	-0.032		
	(0.023)	(0.027)	(0.027)		
Expected income change	-0.000	-0.000	-0.000		
	(0.000)	(0.000)	(0.000)		
$S^N \times \text{Luck} [B]$	0.122**	0.136**	0.144***		
	(0.050)	(0.054)	(0.053)		
$S^P \times \text{Luck} [B]$	-0.007	0.002	0.008		
	(0.041)	(0.043)	(0.043)		
Observations	13,262	13,690	13,690		
Demographic Controls	Yes	No	No		
Economic Controls	Yes	No	Yes		
Year FE	Yes	No	Yes		
Model	OLS	$\mathbf{FE}$	$\mathbf{FE}$		

Table 5: Income shocks, beliefs and divergence

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). The controls in the fixed effects regressions are gross income as well as time and individual fixed effects. All models include a constant term (not reported). Robust standard errors clustered at the individual level are provided in parenthesis. \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

second panel plots the effects on redistribution preferences. It is immediate that with respect to general redistribution, there is a persistent gap between those who believe that effort is what counts and those who do not, regardless of which variables and fixed effects are controlled. Those who believe in effort always want significantly less redistribution when they suffer a negative income shock, and those who do not believe in effort generally do not want significantly less redistribution. This is a difference in marginal effects, with individual fixed effects the interaction of unanticipated income shocks and beliefs leads people in opposite directions when it comes to redistribution.

The table reveals an important asymmetric effect of income shocks on both indicators of welfare policy preferences, as well as revealing important differences between the two indicators. Individuals who believe that effort determines success in life are less likely to support redistribution than are those who believe luck and effort are at least equally important, but in this case a negative income shocks polarizes voters in terms of beliefs: a negative income shock leads those believing in effort versus luck as sources of economic success in opposite directions. This polarization helps explain the zero pooled slope for unemployment shocks and redistribution that we observed in Figure 4. No such polarization – in fact, no change of preference at all – appears on average with respect to unemployment benefits though the effects of unanticipated unemployment are important, especially for the uninsured, but this is not a matter of differing beliefs about the sources of economic success. Finally, note that these results do not depend on the precise choice of threshold for defining income shocks (see Appendix 9, Table A9.3).

# ECONOMIC SHOCKS AND VOTE INTENTIONS

Next, we re-estimate equations 4 and 5 using respondents' stated vote intention as outcome variable. We investigate the effect of economic shocks on two distinct outcomes: whether respondents support the incumbent bloc and whether they support the center-right or center-left coalition of parties in Denmark, noting that results are robust to various definitions of such coalitions.<sup>8</sup> Both outcomes are binary and all models are estimated with a linear probability model with robust standard errors. Table 6 presents results for unemployment shocks (upper panel) and income shocks (lower panel). The first two columns report results for incumbency support and the last two report results for center-right support, with the second column of each pair adding year fixed effects. Unsurprisingly, given the large economic voting literature, we observe a strong effect of a negative unemployment shock on incumbent support. However, consistent with the results for unemployment insurance in Table , the effect is reduced and finally becomes non-existent as individuals increasingly expected that experiencing unemployment was more probable. This is, we believe, a new result in the literature on political accountability for economic outcomes.

<sup>&</sup>lt;sup>8</sup> Denmark held a national election in September of 2011 that saw the incumbent center-right led government coalition replaced with a center-left coalition. This change in incumbency allows us to distinguish incumbency effects from general left-right effects.

	Incumbent bloc		Centre	e-right
	(1)	(2)	(3)	(4)
$U^P$	-0.006	0.014	0.059*	0.025
	(0.032)	(0.032)	(0.032)	(0.031)
$U^N$	$-0.094^{**}$	-0.077**	0.017	-0.006
	(0.039)	(0.038)	(0.038)	(0.036)
$U^e$	0.037*	0.036*	-0.013	-0.010
	(0.020)	(0.020)	(0.020)	(0.019)
$U^P \times U^e$	0.112**	0.085	$-0.114^{**}$	-0.077
	(0.053)	(0.052)	(0.052)	(0.050)
$U^N  imes U^e$	0.116**	0.106*	-0.040	-0.025
	(0.056)	(0.055)	(0.056)	(0.053)
Observations	11,851	11,804	11,851	11,804
	Incumb	ent bloc	Centre	e-right
	(1)	(2)	(3)	(4)
$S^N$	-0.026	-0.023	0.071***	0.057***
	(0.018)	(0.018)	(0.018)	(0.016)
$S^P$	0.026	0.020	$-0.037^{**}$	-0.016
	(0.017)	(0.016)	(0.016)	(0.015)
Luck $[B]$	0.111***	0.061***	$-0.159^{***}$	$-0.089^{***}$
	(0.018)	(0.018)	(0.017)	(0.016)
Expected income change	-0.0001	-0.0001	0.0001	0.00004
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$S^N \times \text{Luck} [B]$	0.011	0.013	$-0.040^{*}$	$-0.042^{*}$
_	(0.025)	(0.024)	(0.023)	(0.022)
$S^P \times \text{Luck} [B]$	-0.013	-0.008	0.008	0.001
	(0.022)	(0.021)	(0.021)	(0.019)
Observations	11,851	11,804	11,851	11,804
Demographia Controla	Voc	Voc	Vog	Vog
Economia Controls	res	res	res Vac	I es Vez
Year FE	No	Yes	No	Yes
Model	LPM	LPM	LPM	LPM

# Table 6: Shocks and vote intentions

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). All models include a constant term (not reported). \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Malhotra and Margalit (2014) show, using survey experiments, that voters take incumbents' stated expectations into account when assessing incumbents' performance, and do so only in domains where incumbents are thought to have some influence over outcomes. Lowry et al. (1998) show that political parties delivering public finance outcomes opposite of what is implied by their political color (e.g., in the U.S., Republicans increasing the size of the public sector) are punished by voters. However, these results are sociotropic in nature, relating to politicians' explicit or implicit promises and macro-outcomes. Our result, in contrast, suggests that individual disappointment in the form of surprise job loss matters, but at the same time provides a microfoundation for the argument that governments should manage expectations: if incumbents can convince voters that the employment outlook is bad, and individual voters take this into account when assessing their subjective unemployment risk, increasing unemployment may not have a detrimental effect on political support. Turning attention to columns three and four, we find no evidence that negative unemployment shocks affect support for center-right parties as opposed to incumbents. We detect some evidence of a positive effect of positive shocks to unemployment, but the effect is insignificant once we add year fixed effects.

Results for income shocks are presented in the lower panel of Table 6. We find little evidence that income shocks affect incumbent support. However, turning attention to support for the center-right, we find a strong effect of negative income shocks conditional on beliefs, similar to those reported in Table 5 for redistribution preferences. Negative income shocks make respondents who hold pro-market ideologies more likely to support the center-right, whereas we find no effect for individuals who believe market outcomes are at least partly due to luck. The estimates are relatively consistent across specifications and suggests that an unanticipated negative income shock increases center-right support among pro-market individuals by approximately five percentage points, or about 10 percent.

In sum, incumbents, regardless of political color, are punished for unemployment, since this is not really seen as an ideological topic (nor were preferences affected by beliefs), with politicians of both Left and Right wanting to provide more jobs, but this is only the case if unemployment was unexpected at the individual level. On the other hand, negative income shocks affect preferences for redistribution of resources in society, which is about political ideology and beliefs rather than the economic stewardship associated with job creation.

# FURTHER RESULTS

# Endogeneity and motivated reasoning

Our key hypothesis that economic shocks affect political preferences could be challenged if, for example, right-wing voters hold more optimistic income or unemployment expectations under a center-right government (see Gerber and Huber 2009). This would make our shock measures endogenous to respondents' party preferences and thus invalidate our identification strategy. We find no such endogeneity in the data.

In Table 7, we investigate in detail the potential endogeneity of our income shock measure to respondents' party attachment. In columns one and two, we predict the absolute size of the income shock by whether or not the respondent intended to vote for the incumbent at. the time his

	abs(0)		$P[abs(\theta) > \sigma]$		$P[S^{N} = 1]$		$P[S^{P} = 1]$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Support incumbent bloc	0.003 (0.003)	0.002 (0.003)	0.009 (0.008)	0.003 (0.008)	0.001 (0.008)	-0.003 (0.008)	0.008 (0.009)	0.006 (0.009)
Demographic Controls Economic Controls	No No	Yes Yes	No No	Yes Yes	No No	Yes Yes	No No	Yes Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	11,920	11,854	11,920	11,854	11,920	11,854	11,920	11,854

# Table 7: Non-endogeneity of income shocks with respect to past vote

Demographic controls are constructed from administrative data and include age, age<sup>2</sup>, female (dummy), foreign background (dummy), homeowner (dummy), children (dummy), single (dummy), outside the labor force (dummy), education (vocational), education (bachelor's degree), education (master's degree or PhD). Baseline is high school education or less. Economic controls, constructed from administrative data, include time in labor force spent unemployed, gross income, average time in labor force spent unemployed (1998-2008) and mean gross income (1998-2008). All models include a constant term (not reported). \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

or her expectations were elicited. In columns three and four, we predict whether or not the respondent is classified as having experienced an income shock. If incumbent supporters form (unreasonable, politically inspired) expectations then we would expect to observe a correlation between shocks and incumbent support. As the first four columns make clear, we find no evidence of such a relationship. However, this could be because pro-incumbent supporters are very optimistic, and therefore more likely to get negative shocks, and anti-incumbent supporters very pessimistic, and therefore more likely to get positive shocks. In columns five through eight, we focus on whether respondents get positive or negative income shocks and, again, find no evidence that incumbent support is predictive of either.

# Placebo

We estimate the individual fixed effect models from Tables 2 and 5, but substituting preferences from the *previous* year as dependent variable. In that way, the actual conditions in, for example, December 2012 are used to "retrodict" preferences in January 2011. A summary of the main effects appears in Table 8. (See Appendix 11 for the full results.) Essentially, all the previously significant estimated effects of negative unemployment shocks on unemployment benefits and (conditionally) of negative income shocks on redistribution preferences disappear in these models.<sup>9</sup>

<sup>&</sup>lt;sup>9</sup> Significant coefficients for "Luck" in Table 8 reflect a correlation between beliefs (e.g., success is a matter of luck" and average preferences (favoring expanded unemployment insurance or more redistribution).

Unemployment shocks			Income shocks		
	Redistribution	Unemployment benefits	R	edistribution	Unemployment benefits
U <sup>p</sup>	-0.081	-0.036	S <sup>N</sup>	-0.027	0.025 (0.044)
иN	0.017	-0.027	S <sup>p</sup>	-0.004	0.056
u <sup>e</sup>	(0.086) 0.003	(0.049) 0.037	Luck [B]	0.053***	0.082***
U <sup>р</sup> × U <sup>e</sup>	(0.059) 0.075	(0.034) 0.091	Expected income chang	e -0.000	-0.000
11N ~ 11e	(0.126)	(0.071)	$S^N \times Luck [B]$	-0.037	-0.052
u <sup>re</sup> ×u <sup>s</sup>	(0.125)	(0.072)	$S^{p} \times Luck [B]$	0.010	-0.045
Observations	9,328	9,172	Observations	8,895	8,738

# Table 8: Placebo: Temporal reversal of shocks and expectations

Note: Controls include gross income, share of time unemployed, year and individual fixed effects. "Luck [B]" is coded one for "luck" or "both". All models include a constant term (not reported). Robust standard errors clustered at the individual level are provided in parenthesis. p < 0.1; p < 0.05; p < 0.01.

### Robustness to extreme values and selective non-participation

The results on belief divergence that we report are not driven by discrepant behavior among the very poor or very rich. We make sure that our income shock results are not driven by individuals located at the extremes of the income distribution by omitting the top and bottom percentile of individuals based on their mean 1998-2008 income. We then re-estimate Table [5] with this censored sample. The result appears in Appendix 12, Tables A12.1. It shows clearly that the overall pattern of results in Table [5] remain: all signs of significant coefficients in Table [5] are unchanged, though the standard errors, reflecting a smaller sample size, are larger.

We correct for selective nonparticipation with inverse probability weighting. Appendix 12, Tables A12.2 and A12.3 reveal no evidence that systematic non-response or dropout affects the main findings of this paper: throughout, the point estimates are close to those of the unweighted regressions presented in Tables 2 and 5.

# Persistence of shock effects

Our identification and estimation strategy combined the prediction in January and outcome by December of year one into a "shock" to estimate its effect on preferences for unemployment benefits and redistribution in January of year two. But does the shock in year one have any residual effect on preferences in January of year 3? Or year 4? A key result is that both the main effects we report, of unemployment shocks on unemployment insurance preferences and of income shocks (conditional on beliefs) on redistribution preferences, are one-period effects as presented above. Both these main effects of shocks on preferences damp out after one period. There is no further delay at which these shocks have significant effects. All the details are in Appendix 13.

Also important is that neither sort of shock that affected preferences had any parallel significant effect on beliefs about luck and effort in any specification, at any delay. This holds for

the pooled sample as well as holding conditional on beliefs. We are convinced that what we have called beliefs are more resistant to shocks than what we have preferences, which justifies our conditioning of income shocks on beliefs when explaining redistribution preferences.

# CONCLUSION

We have examined the dynamics of political preferences in the short run. By linking expectations and actual experiences at the individual level, we demonstrate the importance of distinguishing between the impact of anticipated and unanticipated economic events on preferences. We focus on two central individual economic outcomes of key importance for welfare and frequently studied in political economy: employment status and income. First and foremost, we find that unanticipated shocks to employment and income affect political preferences for social insurance and redistribution, while anticipated shocks and changes do not. This provides a political economy perspective on the workhorse model of economics, the life-cycle/permanent income model, in which all available information, including expectations about future outcomes, affects current preferences over consumption and savings. In that model, changes in consumption plans are observed only when new information arrives. In our case, expectations likewise affect current attitudes about redistributive issues, and only new information, in the form of unexpected realizations of employment and income, appears to affect these preferences. A natural next step is for future research to consider how unanticipated and anticipated wealth shocks, a frequently studied topic in the aftermath of the financial crisis (e.g. Mian et al. 2013), as well as employment and income shocks, affect political preferences.

We show that the distinction between anticipated and unanticipated shocks carries over from political preferences to voting intentions: in particular, unanticipated unemployment induces economic voting, i.e. voting against the incumbent of any political stripe, while anticipated unemployment does not move votes. This raises the issue of how voters perceive and trust new information about job creation efforts and national unemployment (Alt et al. 2016) and translates this into expectations at the individual level (Alt et al. 2017) and, at the same time, reinforces the idea that the benefits of incumbents' political optimism, which may be capitalized into current preferences, should be seen against the costs of not delivering and, through unanticipated shocks, disappointing voters.

Our results also add to the accumulating literature on how either partisan political or deeper ideological cleavages like beliefs about fairness or desert condition responses of preferences to economic conditions. Nevertheless, we also argue that constructing measures of shocks from subjective expectations and combining these with administrative data *ex post* makes it possible to estimate causal effects of unanticipated shocks. In our case, the threat to our argument comes from reverse causality due to motivated reasoning, which could occur if voters feel relatively more optimistic or pessimistic depending on the partisan identity of the office holder. We detect no evidence of such partisan expectation formation: the unanticipated shocks we observe are uncorrelated with political and ideological differences. However, this need not hold across all political settings (Gerber and Huber 2009) and needs to be carefully considered on a case by case basis.

Our analysis, furthermore, emphasizes that events affecting voters' personal economic situation (for instance, loss of a job or reduction of income) need not affect political preferences at all – if they were expected. That has implications for studies of how retrospectively observed changes in prices, wages, assets and employment prospects affect political preferences and choice. As an example, actual job loss is sometimes the result of a long process. As we show, it can have an effect on incumbent or partisan support and issue preferences, but from the point of view of an individual, when does it actually "happen"? Perhaps, when it becomes a fact. But that comes after when it becomes "certain", which comes after when it becomes "likely", which comes after when it becomes "possible", and so on. Changes in preferences, even withdrawal of incumbent support, could come at any time and from multiple sources.<sup>10</sup> To avoid misspecification when estimating the effect of experiencing unemployment, like any (partly) foreseeable shock including income changes, transitions from employment to unemployment or the other way around, or even wealth shocks such as foreclosure or house price bubbles bursting, one needs to elicit expectations of such outcomes jointly with political preferences, and to study the outcomes in a dynamic setting.

Finally, our results raise an issue for empirical research on "preferences for redistribution". That literature (not pointing a finger at anyone in particular) has treated the general redistribution question (whether government should reduce inequality) and the question of whether unemployment benefits should be increased as more or less parallel indicators of support for redistribution, perhaps because both questions appear from time to time in major data collections like the European Social Survey. Our extensive, detailed data show that these two questions are not simply alternative measures of a general left-right disposition, but actually function differently. Unemployment benefits preferences respond to unemployment shocks while the redistribution question elicits responses to income shocks, and the conditionality of the latter income effects on beliefs, emphasizes how voters differentiate these two questions.

<sup>&</sup>lt;sup>10</sup> Alt et al. (2017) shows that unemployment concerns travelling through weak-link networks can alter unemployment expectations and political preferences.

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