# Societal preferences for minimum wage reform: a choice experiment*

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## 1 Introduction

The question of the minimum wage–how much it should be and how it should be implemented–has been a topic of policy interest since its adoption in the United Kingdom (U.K.) in 1999. While minimum wage policy is used to address low wages due to either monopsony or an out-of-equilibrium labour market, as a remedial policy it has its own costs. These costs–potentially including unemployment, price pass-through, increased taxes, reduced job amenities, or altered job matching rate–can be thought of in terms of trade-offs. The intensity of each proposed minimum wage change will affect the intensity of each trade-off, and ultimately the level of public support for the new minimum wage. Policymakers might consider how their constituents perceive and rank these trade-offs, particularly as the U.K. struggles with inflation, the cost of living crisis, and public sector pay issues. This paper presents survey research on how taxpayers perceive and rank trade-offs (unemployment, price pass-through, and tax increases) associated with an increase in the U.K.'s minimum wage, as well as how the public's trust and policy perceptions may be influenced by unveiling these trade-offs. It provides novel data on how public support for the minimum wage changes based on how it is financed and who it affects. It can be a basis for further study on how policy instruments can be structured in the most acceptable way.

The goal of this research is to understand policy preferences for societal redistribution via a minimum wage increase through three main lines of inquiry. The first is to understand how taxpayers view the trade-offs that may be associated with an increase in the minimum wage. The focus will be on three trade-offs, including unemployment, price pass-through, and taxes; while these were the final options chosen due to survey length, several other trade-offs are explored in the literature (job amenities, job matching rate, firm owner compensation, etc.). The second is to precisely estimate how support varies based on the intensity of the minimum wage increase and associated trade-offs. The final goal, given that support for policies may vary by levels of political trust and awareness, is to see whether exposing taxpayers to these trade-offs changed their level of trust in government and their perceptions about optimal minimum wage policy.

A robust literature base has explored the impacts of minimum wage policies, particularly regarding employment. Traditional economic theory suggests that setting a minimum wage above the equilibrium wage level may lead to unemployment as firms may cut back on hiring or substitute labour with capital (Neumark and W. Wascher 2007). Empirical evidence on the employment effects of minimum wage increases has been mixed. After Card and A. B. Krueger 1994 found no impacts of a rising minimum wage on employment, a wave of papers followed drawing similar conclusions (see Baker et al. 1999; Neumark and W. L. Wascher 2010; Chetty et al. 2011; CBO

*This work was supported by the Christ Church College at the University of Oxford (June 2023). We are grateful to Patricia Rice for detailed feedback on this work, and participants in seminars at Oxford Economics, and the Workshop on Subjective Expectations. This study received IRB approval from the Economics Ethics Committee at the University of Oxford, approval number ECONCIA23-24-01. It is registered in the AEA registry under trial number AEARCTR-0012013.

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2014; Sorkin 2015; S. Allegretto et al. 2017; Cengiz et al. 2019). Several meta-analyses have largely concluded that the employment effects of a moderately-sized increase in the minimum wage are zero or very close to zero (for example see Belman and P. J. Wolfson 2014; Linde Leonard et al. 2014; Dube 2019).

Nevertheless, some studies have found that very large and sudden increases in the minimum wage can lead to job losses, particularly in sectors where price pass-through is limited (Harasztosi and Lindner 2019). Negative employment effects have also been documented among specific groups, such as teenagers (Brown 1999; Neumark and W. Wascher 2007; P. Wolfson and Belman 2019). In contrast, S. A. Allegretto et al. 2011 argue that previous findings of negative employment effects may be due to failure to account for long-term economic growth disparities among U.S. states. Card and A. Krueger 1995 and Doucouliagos and Stanley 2009 find that they may also be due to an existence of publication bias in the early years of this literature. Overall, the literature suggests that the employment effects of moderate minimum wage increases are small or negligible, but large increases can have adverse effects in certain sectors.

Moreover, economists have increasingly explored non-employment outcomes such as price pass-through. Price pass-through theoretically should depend on the elasticity of demand for the firm's output: firms producing non-tradable goods (e.g., restaurants) are more likely to raise prices without losing customers, while firms producing tradable goods face greater constraints (Clemens 2021). Early empirical studies found mixed evidence—some finding small price pass-through economy-wide and at the sectoral level, while many found no significant effects (Lemos 2008). More recent studies, however, have identified small but significant price increases in sectors that employ a large share of minimum wage workers such as restaurants or grocery stores (Aaronson 2001, Leung 2021), that have more non-tradeable goods (MacDonald and Aaronson 2000), or following a particularly large and sudden increase in the minimum wage (Harasztosi and Lindner 2019). On the other hand, other researchers have found no price pass-through effect while examining similar sectors—for example restaurants (Katz and A. Krueger 1992) or the residential care sector (Machin et al. 2003). Effects, if they occur, largely appear immediately after a policy change (Renkin et al. 2022).

Another widely studied challenge is governments' ability to finance wage increases for public sector workers, particularly in countries where a significant proportion of employees earn the minimum wage. In the U.K., the social care sector is heavily reliant on government funding, but budget allocations have not kept pace with rising wage costs (Sanderson et al. 2023). Many providers of social care met this shortfall in funding by charging a premium to its users; however, in 2021 the Government announced a lifetime cap of the total amount each person would need to pay for care (Health and Social Care 2021). Despite calls for a sector-specific minimum wage, England has not implemented one (Sanderson et al. 2023; MAC 2022), largely due to the additional increase in funding it would require (the current shortfall in funding is estimated to be around £1 billion per year (Sanderson et al. 2023)). One solution is to raise taxes to cover the increased costs of public sector wages, but this presents its own trade-offs. Research has shown that progressive tax increases, when paired with minimum wage hikes, can reduce income inequality and improve social welfare (Atkinson et al. 2017). Households with minimum wage earners tend to fall in the lower end of the income distribution, meaning that progressive tax increases are unlikely to significantly burden these households (Lee and Saez 2012).

The research base is very active in examining the effects of increases in the minimum wage on employment and, increasingly, on non-employment outcomes (such as price-passthrough) and the means to finance public spending on wages (such as tax increases). The literature base has not deeply explored, however, societal preferences among these outcomes and trade-offs. This should be an important component of the debate on policy implementation of changes to the minimum wage. Rather than promoting ready-made solutions, discourse would benefit from understanding how residents value each potential trade-off. In this way, societal agreement may be reached on

how democratic policy implementation should happen.

One way to elicit societal preferences is using a stated choice analysis framework, a widely used method to elicit respondents' relative value of various attributes that comprise a certain issue (Train 2009). Stated choice analysis has been used predominantly in labour economics to understand worker preferences for job characteristics, including flexibility, stability, earnings growth, amenities, etc. (for example, see Wiswall and Zafar 2018; Datta 2019; Maestas et al. 2023). While there's been no prior research on preferences for an increase in the minimum wage, the literature base does lay the foundation to do so, particularly through studies that have examined preferences for social policy change with choice experiments, including income redistribution (not including the minimum wage) (Pfarr et al. 2018), climate change mitigation (Shoyama et al. 2013; Chen et al. 2017), public funding for research and development (López-Bastida et al. 2019), and healthcare policy (Skedgel 2013). The closest study to ours is Kuziemko et al. 2015, which examined how support for redistribution changes when respondents are provided with information about income inequality. However, it asks for overall approval of the minimum wage rather than going into the specific trade-offs associated with minimum wage policies. By using a choice experiment to explore societal preferences for wage-related trade-offs, this study adds to the growing literature on public preferences for societal redistribution.

To fill this gap in the literature, this research conducted an online survey with a representative sample of residents in the U.K.. Utilising vignettes in a choice experiment framework, the study collected information on repercussions of trade-offs and found that respondents have a nuanced stance on changes to the minimum wage and the associated trade-offs. On average, respondents support a sizeable increase in the minimum wage, but show sensitivity to the intensity of trade-offs. While considering the unemployment trade-off, respondents prefer a moderately sized increase in the minimum wage, that balances the intensity of the increase by mitigating unemployment effects. Respondents generally favour a substantial wage hike regardless of price pass-through. Views on taxation exhibit heterogeneity. While there is a general consensus for taxing the highest earners when the minimum wage increase is substantial, views diverge when the minimum wage increase is smaller. It may be that some respondents view incremental policy change as a shared public responsibility, while one-off sizeable policy changes comprise a responsibility that the most well-off in society should bear. Overall, respondents favour a sizeable minimum wage increase, with the burden of taxation shifting towards the wealthiest, while emphasising minimal taxation for the lowest tax bracket.

These results can be applied in a policy-relevant context to evaluate whether the 2024 U.K. increase in the minimum wage (from £10.42 to £11.44) is acceptable to the average person. The level of perceived benefits for society outweighs the perceived costs by a substantial margin when respondents consider unemployment and pass-through rate as trade-offs. This indicates that, if effect sizes that have been posited in the literature were, in fact, observed in the economy after the 2024 increase, the median person would be in favour of the new minimum wage. The results on tax changes are less clear, as there is a large degree of heterogeneity in preferences. If the government were to finance an increase in the minimum wage for its public-sector employees, society would likely not accept for the tax burden to be shared equally amongst all taxpayers; society may accept a graduated increase according to income, however more research is needed.

An important component of how much residents support an increase in the minimum wage is how much they trust policymaking institutions to do the right thing. In the age of growing disinformation where trust in democratic institutions is at an all-time low, research on increasing trust in government has become increasingly necessary. Several studies have explored how political trust is affected in countries with welfare state institutions (Kumlin and Haugsgjerd 2016; Kumlin, Stadelmann-Steffen, et al. 2017; Zhang et al. 2022; Kumlin, Nemčok, et al. 2024). Other studies have used in-survey experiments to explore how political trust can be affected; Alesina et al. 2018

use an in-survey treatment designed to make respondents feel more pessimistic about mobility to examine the effects on political trust. Albertazzi et al. 2021 use a survey experiment to see how societal trust is affected by perceptions of relative social and economic position. However, much of policymaking is done by niche government institutions, which may seem like a "black box" to the average resident, but have received little attention in the literature. By unveiling the policymaking process of such institutions and thus the complexities of forming policy, citizens may change their levels of trust. Thus, this paper explores the relationship between trust in government and public policy preferences by examining whether trust in the Low Pay Commission–the independent body advising the U.K. Government about the the minimum wage–can be increased by an in-survey treatment.

This line of enquiry was explored through a second experiment, which randomised participants to answer a series of questions either before or after they had completed the choice experiment. This second experiment measures whether participation in the choice experiment–and hence exposure to trade-offs through the policy making process–affect levels of trust and perceptions about policy changes to the minimum wage. Results show that, while there is already a high degree of trust for the Low Pay Commission among the sample, respondents in the treatment group gain an even higher level of trust. Furthermore, treatment is associated with more realistic views for a new minimum wage. The control group shows an inclination for a large minimum wage hike without considering ramifications, while the treatment group brings their minimum wage prediction to a reasonable level while balancing trade-offs in the wider economy. Thus, governments can affect how residents trust and view the policymaking process by making a concerted effort to unveil the processes they undertake to decide on policy through public relations and communication campaigns.

Having the ability to estimate precisely what society is willing to accept, and how their acceptance changes between policy options, could be a useful tool for policymakers when choosing democratically acceptable policies on worker pay. In this case, this research shows how residents view the trade-offs associated with an increase in the minimum wage, the size of wage increase needed for the median person to approve of a new minimum wage, and how trust and policy perceptions can be influenced. The structure is as follows: Section 2 presents the empirical methods, the structure of the two experiments in this study, and finally the survey instrument itself. Section 3 discusses the results, including summary statistics and an in-depth analysis of each experiment conducted. Finally, Section 4 concludes.

# 2 Empirical methods

## 2.1 Research questions

This study seeks to understand policy preferences for societal redistribution via a minimum wage increase. Accordingly, the primary research questions are:

1. How do residents perceive trade-offs that may be associated with an increase in the minimum wage?

2. What is the compensating variation (the amount of welfare needed for an agent to reach their original utility following a change in attribute) of each trade-off? How does this vary between attributes?

3. How does trust in institutions vary with exposure to trade-offs that are associated with the minimum wage?

4. How do perceptions about minimum wage policy vary with the this exposure?

We attempt to answer these questions through two experiments within one survey. The first is a choice experiment that presents respondents with a series of minimum wage increases and various trade-offs. The second experiment randomised half of the respondents into treatment and the other half into control, where treatment was participation in the choice experiment before answering questions about political trust and minimum wage policy preferences. The control group answered trust questions before participating in the experiment.

## 2.2 Experiments

### 2.2.1 Methods for experiment 1: choice experiment

The first experiment in this study employed a choice experiment to understand societal preferences for changes to the minimum wage. The choice experiment varied four attributes–the minimum wage, unemployment, price pass-through, and taxes. To facilitate understanding of the task, vignettes visualised each decision required of respondents. Respondents were presented with two vignettes at a time that varied experimentally by different levels of intensity and asked their preference between the two. Respondents were asked to put themselves in the shoes of the Low Pay Commission and allocate 10 votes between the two options. This is interpreted as the probability of choosing one option over the other (e.g. how likely they are to prefer Policy I over Policy II) (see Section **??** for background on choice experiments). As respondents allocated 10 votes rather than 100, choice probabilities are essentially rounded to the nearest 10%, which is accounted for in the analysis (see discussion in Section 3.2). They were encouraged to give a neutral answer (50% for both policies) if they were indifferent between two options, or believed the policies would result in the same outcome for society. Asking them to picture themselves as part of the Low Pay Commission was intended to reduce hypothetical bias and increase engagement with the experiment by making the decisions seem more salient.

Attributes and levels were determined by examining effect sizes determined in the literature. Specific to unemployment, although the literature base has largely concluded that effects of raising the minimum wage on employment are near zero, there is some research indicating that, for sectors employing a larger share of minimum wage workers, employing a large share of teenagers, or under the presence of a large increase in the minimum wage, job losses may be around 0.5%, or 10% *of minimum wage workers* if the increase in the minimum wage is very large (Harasztosi and Lindner 2019). As 5% of all workers earn the minimum wage (Sanderson et al. 2023), approximately 0.5 job losses per 100 workers could be observed for an increase in the minimum wage of £1. This serves as a benchmark around which severity levels were determined–although, as a rule, severity was higher to make trade-offs feel more salient to respondents.

An additional segment of the literature base has examined whether firms offset the cost of raising the minimum wage by passing prices through to consumers. Research has found that–particularly in sectors that employ a large share of minimum wage workers–price pass-through may be around 1% for a £1 increase in the minimum wage (Wilson 2020). In the choice experiment, the trade-off is exemplified by an increase in average meal prices. The average price of a restaurant meal in the U.K., for one adult including a meal and a drink, is approximately £20 (Nicholls 2021). As such, meal prices could see a 20p increase associated with a £1 increase in the minimum wage. As before, this serves as a benchmark around which severity levels were determined.

Finally, a highly-publicised shortcoming of the Government's implementation of steady minimum wage increases has been the shortfall of funding to the social care sector, which is largely financed by the state (see Section **??** for more details). Estimates suggest that the Government would require around £1 billion in additional funding (Sanderson et al. 2023) to account for the previous minimum wage increase of 92p (from 2021 to 2022). In this study there are three attributes varied for tax increases; the first where those in the higher rate (currently paying 40% tax) and

those in the additional rate (currently paying 45% tax) share the burden, the second where only those in the additional rate pay for the shortfall, and third where all (basic rate at 20%, higher rate at 40%, and additional rate at 45%) share the tax burden equally. The amount needed to account for a £1 billion in shortfall is calculated for each group and serves as the benchmark around which the severity levels were calculated.

The attributes (minimum wage, additional unemployment, pass-through rate, and tax increases) and their levels that were randomised to appear in the vignettes included in the choice experiment are:

Table 1: Attributes and levels

| **Attribute** | **Status quo** | **Levels** |
|---|---|---|
| **Min wage** | £10.42 | 0.25, 0.5, 0.75, 1 |
| **Unemployment** | 4 | 0, 0.5, 1, 2 |
| **Pass-through** | £20 | 0.25, 0.5, 0.75, 1 |
| **Tax: rich & richest** | £2,000 | 10, 20, 40, 50, 60 |
| **Tax increases: richest** | £5,000 | 100, 200, 300, 400 |
| **Tax increases: all** | per group | 1, 2, 4, 5 |

There are 6 attributes, each with four levels of severity with the exception of the first tax attribute, which has five. The full factorial design matrix would have $4^5 \times 5 = 5,120$, which can be combined into $\frac{5,120!}{(5,120-2)!} = 26,209,280$ pairs. It is clearly not feasible to present all of these pairs to a sample of any reasonable size. It is common in unlabelled[1] experiments to only include the attributes in a choice set that are specifically being investigated by the parameter of interest at that time (Bliemer and Rose 2024), which primarily serves to reduce cognitive burden on respondents (Que et al. 2023). It can also avoid raising error variance unnecessarily, as prior research has found that there is a direct relationship between the number of attributes displayed at once and the error variance of models estimated from choice experiments (DeShazo and Fermo 2002; Arentze et al. 2003; Caussade et al. 2005).

As such, the design is blocked into five smaller parts as follows:

Table 2: Blocks of choice sets

| No. | Block name | No. attributes | Attributes included |
|---|---|---|---|
| 1 | Unemployment | 2 | Minimum wage, Unemployment |
| 2 | Pass-through | 2 | Minimum wage, pass-through |
| 3 | Tax Q1 | 3 | Minimum wage, Tax: rich & richest, Tax: everyone |
| 4 | Tax Q2 | 3 | Minimum wage, Tax: richest, Tax: everyone |
| 5 | Tax Q3 | 3 | Minimum wage, Tax: rich & richest, Tax: everyone |

Block 1 only presents vignettes that vary experimentally by two attributes: minimum wage and unemployment. Similarly, block 2 only presents vignettes varying by the minimum wage and pass-through (see Figures 2 and 4). The next two blocks present vignettes that vary experimentally on three attributes, which attempt to understand preference for redistribution by which tax group bears the brunt of the burden. Block 3 (see Figure 6) shows respondents either where the top two groups pay for the increase or where everyone pays for the increase. However, the larger increase in minimum wage is always displayed with all groups paying for the minimum wage, while the smaller increase is with the top two groups paying. This is because the opposite would not be a true trade-off (a large increase in minimum wage with only the top groups paying for it). Block 4 (see Figure 8) shows either the richest group paying for the funding shortfall, or everyone sharing the burden. Again, the larger minimum wage increase always appears alongside the option where all groups pay, to facilitate a more realistic trade-off. Block 5 (see Figure 10) presents the same

[1] unlabelled experiments are those that choose between two generic alternatives (such as Policy I and Policy II)

change in the minimum wage but with different financing–either by everyone or by the top two groups.

In total, each respondent was presented with 9 choice sets. At the beginning of each block, respondents were shown the status quo relevant to that particular block. They were also instructed to only consider changes they saw in the vignettes, and to assume that nothing else would change. To reduce confusion, block 1 (unemployment) was presented first, followed by 2 (pass-through), and then the order was randomised between blocks 3, 4 and 5 (each of the tax questions). Blocks 1, 2, 3, 4 each have four choice sets, with block 5 having five choice sets (see tables 11, 12, and 13). In blocks 1 and 2 (unemployment and pass-through), all respondents received the first two choice sets (in a random order) and were randomised to answer one of the final two choice sets. Respondents were randomised to see one choice set from block 3, one from block 4, and one from block 5. The order of these questions were randomised, as well as the order of the policies within each choice set. In-depth details on how the choice sets were determined are in Appendix A.

The final portion of the choice experiment employed a ranking method (more background on this method is in Section **??**), wherein respondents were asked to rank all trade-offs that they were shown in order of preference, which established ordinal preference of the alternatives. Also after completion of the choice experiment, respondents were invited to choose a level of minimum wage with all the choice attributes (unemployment, price pass-through, and tax) incorporated as trade-offs, which varied at the same time and with randomised levels of severity (see Appendix D).

### 2.2.2 Methods for experiment 2: exposure to trade-offs

At the beginning of the survey, respondents were randomised into either the treatment or the control group. The treatment group participated in the choice experiment before answering a block of questions, while the control group participated in the choice experiment after having answered these questions. Essentially, treatment is exposure to trade-offs through participation in the choice experiment. The block of questions consisted of two sections, the first that asked respondents' level of trust for the Low Pay Commission (LPC) and the degree to which the LPC should be independent from the Government in determining future minimum wage targets. The second section of questions asked respondents' choice of future minimum wage policy. Specifically, respondents were asked what they think the minimum wage should be next year (as an increase from £10.42 in 2023), and what they would expect as the trade-offs (including change in unemployment rate, change in food prices, and change in tax rates). Analysing how responses to this section differ based on whether respondents had participated in the choice experiment can inform whether exposure to trade-offs (by participating in the choice experiment) changes trust in institutions as well as views on minimum wage policy.

## 2.3 Survey instrument

The survey instrument included four main sections: societal views on social policy and redistribution, level of trust in institutions and views on minimum wage policy, choice experiment and follow-up, and demographics (see the full survey outline in Appendix B. The survey took around 25 minutes to complete, and participants were paid £4.27 (scaled from the hourly minimum wage rate) if they completed it. Anyone under the age of 18 or not a resident of the U.K. was excluded from taking the survey, as are those who failed the two attention checks.

In the choice experiment section of the survey, vignettes were used to assist respondents in understanding the trade-offs, understanding the magnitude of the trade-offs, and in picturing the trade-offs more realistically. Examples of each vignette are shown in sections 3.1.2, 3.1.3, and 3.1.4.

There were three videos included in this survey. The first video was an explanation video of the Low Pay Commission, including history of their advisory role of updating the minimum wage, roles and composition, level of independence from the Government, and how independence has changed over time. The second video was an explanation of how to participate in the choice experiment, including what the trade-offs meant, who they applied to, how to express the choice probability (answers to Policy I and Policy II must sum to 100% or 10 votes), and how different levels of certainty translated to numbers of votes. The third video was an explanation of the tax vignettes, specifically what is income tax, who are the 'typical' taxpayers in each group, and why the amounts for each group are different. Example professions from each tax group feature a mix of male and female, and include at least one example of a job in public service and one in corporate professions. This was intended to reduce bias that could be caused by priming respondents with particular types of professions. Videos were created using iMovie.

There are two types of checks in this survey: attention checks and comprehension checks. The two attention checks were Instructional Manipulation Checks, which directed respondents to reply in a particular way (for example, one question directed them to choose *both* "Tony Blair" and "Liz Truss" as their favourite former prime minister). If a respondent failed both attention checks, they were prevented from finishing the survey, not included in the sample, and not paid. Their prior responses were deleted. Respondents were notified of this policy during the informed consent process. The comprehension checks were within the choice experiment, where respondents were shown the exact same policy twice. If they did not choose to allocate 5 votes to each, they were given an error that made them re-try the question and asked them to pay attention. Participants had been informed that comprehension checks were also included. Participants were not removed if they failed comprehension checks, as too much time had already passed in the survey; however respondents were excluded from analysis if they failed both (only 9 observations).

A pilot study was carried out in December 2023 with 15 observations. These observations were excluded from participation in the full study. Results from the pilot were used to update priors used in the D-efficient design (see Appendix A), as well as to assess the quality and functioning of the Qualtrics survey programming and the Prolific platform. Adjustments were made accordingly, and data collection for the full study took place in December 2023 - January 2024.

Vignettes displaying each choice set were created using Python. The survey software was Qualtrics, and randomisation was done within-survey. JavaScript was used to customise the survey and implement additional data quality checks. The randomisation unit is individual and there is no clustering of respondents. All respondents were required to read a detailed informed consent script and were provided a more detailed version upon request. Any respondents who did not consent to participate in the study were removed from the survey and had their survey details deleted. The survey did not collect or store IP addresses.

# 3 Results

## 3.1 Data

### 3.1.1 Sample characteristics

The sample was recruited from Prolific, a platform which facilitates nationally representative survey data collection. The sample was 887 participants which are nationally representative of U.K. adults. The sample characteristics are shown in Table 3. Overall, the sample is middle-aged, white, collected-educated, and middle class. The average working hours per week are 24, and most people have worked at the minimum wage in the past. The vast majority of the respondents voted in the last election and are either moderate or liberal. Most respondents voted more moderately

despite many of them self-describing to be left or right wing—showing that they might be more moderate in their behaviour than in their self-assessment. Most people think that the richest members of society should pay more in tax, and that they are rich due to privilege rather than hard work. Furthermore, they are more in favour of government spending on items related to the social safety net (excluding social welfare) than on defence. Most people feel that rising cost of living and income inequality comprise large problems. This collectively paints a picture of a middle-class, highly educated group of individuals who are in favour of societal redistribution. For a more in-depth exploration of sample characteristics, see Appendix C.

The pool of respondents were subject to two experiments–the first being a choice experiment and the second being a trust experiment. Those in the control group for the second experiment are those who were shown information on the Low Pay Commission and asked to answer questions on trust in institutions and their opinions on the optimal minimum wage before having participated in the choice experiment. That is, they were not exposed to the complexities of the policymaking process before giving their opinions on trust and optimal policy. It is important to understand their results before delving into the sample as a whole. The control group did not significantly differ in any of their observable characteristics from the treatment group (see Table **??**). On average, before receiving any informational treatment, the average person predicts a high increase in the minimum wage (£1.37), no effect on unemployment, a much higher-than-inflationary pass-through rate (about a 12% increase, from £20 to £22.47 for an average meal), and reduction in taxes for the middle two income groups (from 20% to 18% for the basic bracket, and from 40% to 37% for the higher bracket) with a raise in taxes for the lowest and highest groups (from 0% to 2% for the savers bracket and from 45% to 52% for the additional bracket). Overall, this paints a picture of a sample that favours redistribution, is concerned about rising prices, prefers tax cuts for the middle classes, supports tax rises for the highest earners, and requires the poorest in society to contribute slightly more.

To visualise these characteristics, see Figure 1, where the control group is split between those who are greater than or equal to the mean and those who are below, in response to a question regarding their prediction of the new minimum wage. The mean respondent predicted an increase in £1.37 of the minimum wage, which is £0.25 higher than the actual rise from 2024 to 2025. It is clear that those who are below the average in their prediction are clustered around an increase of £1, with some groups of respondents favouring a £0.50 or a £0 increase. Interestingly, those at the lower end of the distribution give negative values to this question–which would be a reduction in the minimum wage from one year to the next. There is considerable heterogeneity among those who are more optimistic (at or above the mean), where there is clustering around a £1.6 rise, a £3.5 rise, and a £4.5 rise. These results show us that the average resident, before receiving any treatment, favours a sizeable increase in the minimum wage, but there are pockets of society favouring a much lower or a much higher increase.

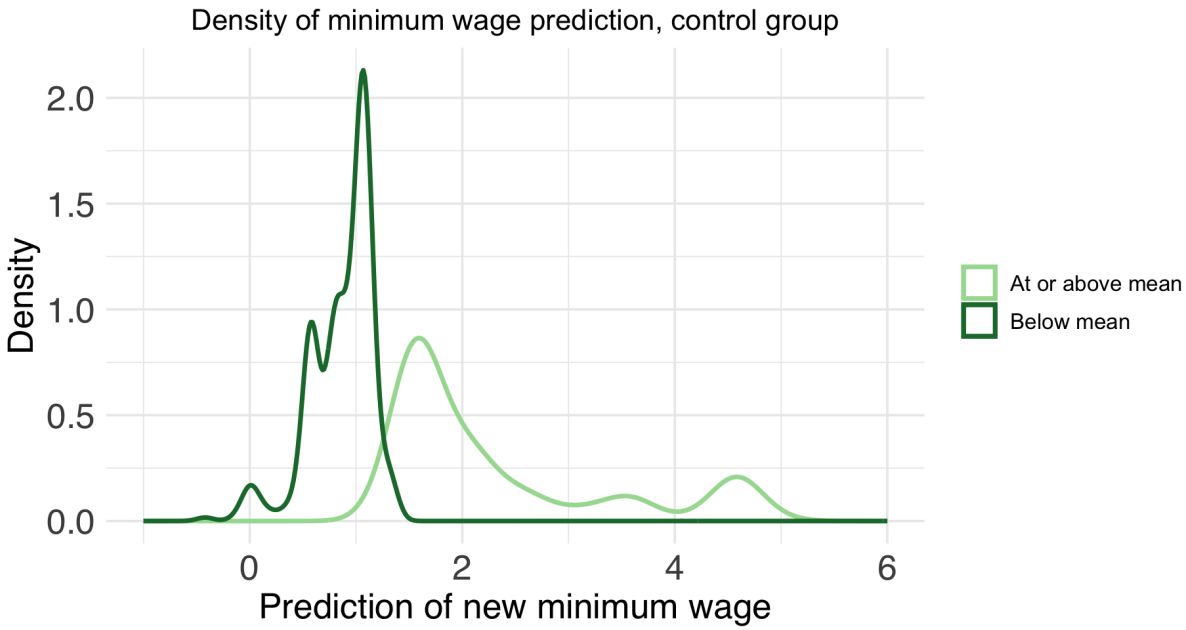



Figure 1: Density choice for optimal minimum wage, control group

To show how respondents answered overall in the choice experiment, Table 4 shows the average probability for each choice set. See Figures 2, 4, 6, 8, 10 to see the pool of vignettes that were shown, and Appendix A for more information on the randomisation producedure within each pool. Results from the Kolmogorov-Smirnov tests for overlap between each of the different empirical CDFs (6 tests in total) are shown below each plot, where the null hypothesis in each case is that the two samples are from the same continuous distribution (full results are in Appendix E). Note that in the actual survey the order in which policies appeared within each choice set was randomised. Note that support for Policy 2 in Table 4 is 1 minus the mean of Policy 1. In the figures below, support for Policy 2 is the reflection of each distribution across 0.50.

Table 3: Summary Statistics

| Variable | N | Mean | SD |
|---|---|---|---|
| Age | 887 | 45.96 | 15.55 |
| Ethnicity (nested) | 887 | | |
| ... White | 773 | 0.87 | |
| ... Asian | 61 | 0.07 | |
| ... Black | 30 | 0.03 | |
| ... Any other ethnic group | 23 | 0.03 | |
| Sex | 887 | | |
| ... Female | 471 | 0.53 | |
| ... Male | 411 | 0.46 | |
| ... Prefer not to say | 5 | 0.01 | |
| Martial Status (nested) | 887 | | |
| ... Married / civil partnership | 399 | 0.45 | |
| ... Never married / civil partnership | 381 | 0.43 | |
| ... Other | 107 | 0.12 | |
| Student | 887 | 0.09 | |
| Parents Born UK | 887 | 0.74 | |
| Education (nested) | 887 | | |
| ... Up to secondary | 171 | 0.19 | |
| ... Up to university bachelor's degree | 551 | 0.62 | |
| ... Above bachelor's degree | 165 | 0.19 | |
| Income Group | 887 | | |
| ... 0% savers rate | 248 | 0.28 | |
| ... 20% basic rate | 557 | 0.63 | |
| ... 40% higher rate | 75 | 0.08 | |
| ... 45% additional rate | 7 | 0.01 | |
| Working Hours per Week | 887 | 25.24 | 16.68 |
| Ever Worked | 887 | | |
| ... Yes, in the last 12 months | 672 | 0.76 | |
| ... Yes, but not in the last 12 months | 205 | 0.23 | |
| ... No, have never worked | 10 | 0.01 | |
| Looking for Work | 887 | 0.23 | |
| Ever Worked at Min Wage | 887 | 0.62 | |
| Currently Work at Min Wage | 887 | 0.22 | |
| HH Member Work at Min Wage | 887 | 0.15 | |
| Self-Assessed Political Views | 887 | | |
| ... Very conservative | 14 | 0.02 | |
| ... Conservative | 139 | 0.16 | |
| ... Moderate | 332 | 0.37 | |
| ... Liberal | 320 | 0.36 | |
| ... Very liberal | 82 | 0.09 | |
| Voted in Last Election | 887 | 0.82 | |
| Spent on Essential Food (Last Week, in GBP) | 887 | 96.16 | 73.15 |
| Spent on Non-essential Food (Last Week, in GBP) | 887 | 40.4 | 53.6 |

Table 4: Average choice probabilities by choice set [INCLUDE significance level of difference]

| Description (Policy 1) | Mean (Policy 1) | Description (Policy 2) | Mean (Policy 2) | N |
|---|---|---|---|---|
| Trade-off between rise in minimum wage and rise in unemployment | | | | |
| £1 & 1pp unempl | 0.541 | £0.25 & no unempl | 0.459 | 887 |
| £1 & 2pp unempl | 0.418 | £0.25 & no unempl | 0.582 | 887 |
| £1 & 2pp unempl | 0.334 | £0.75 & 1pp unempl | 0.666 | 443 |
| £1 & 2pp unempl | 0.333 | £0.50 & 0.5pp unempl | 0.667 | 444 |
| Trade-off between rise in minimum wage and rise in price pass-through | | | | |
| £1 & 3.75% price pass | 0.733 | £0.25 & 0% price pass | 0.267 | 887 |
| £1 & 5% price pass | 0.680 | £0.25 & 0% price pass | 0.320 | 887 |
| £1 & 5% price pass | 0.535 | £0.75 & 2.5% price pass | 0.465 | 460 |
| £1 & 5% price pass | 0.620 | £0.50 & 1.25% price pass | 0.380 | 427 |
| Trade-off between rise in minimum wage and rise in taxes | | | | |
| £1 & £4 all grps | 0.462 | £0.25 & £10 top two grps | 0.538 | 214 |
| £1 & £5 all grps | 0.536 | £0.25 & £20 top two grps | 0.464 | 211 |
| £1 & £5 all grps | 0.517 | £0.75 & £50 top two grps | 0.483 | 226 |
| £1 & £5 all grps | 0.452 | £0.50 & £40 top two grps | 0.548 | 236 |
| £1 & £4 all grps | 0.442 | £0.25 & £100 top grp | 0.558 | 232 |
| £1 & £5 all grps | 0.464 | £0.25 & £200 top grp | 0.536 | 188 |
| £1 & £5 all grps | 0.385 | £0.75 & £400 top grp | 0.615 | 229 |
| £1 & £5 all grps | 0.420 | £0.50 & £300 top grp | 0.580 | 238 |
| £1 & £60 top two grps | 0.569 | £1 & £5 all grps | 0.431 | 145 |
| £0.75 & £50 top two grps | 0.570 | £0.75 & £4 all grps | 0.430 | 181 |
| £0.50 & £40 top two grps | 0.517 | £0.50 & £2 all grps | 0.483 | 202 |
| £0.25 & £20 top two grps | 0.474 | £0.25 & £1 all grps | 0.526 | 189 |
| £0.25 & £10 top two grps | 0.588 | £0.25 & £1 all grps | 0.412 | 170 |

Note: Average of elicited choice probabilities between two policy options depicted in vignettes (columns 2 and 4) and the descriptions for each (columns 1 and 3). The support for 'Policy II' is given by subtracting the choice probability for 'Policy I' from 1.

### 3.1.2 Unemployment

As specified in Table 4, participants were presented with three choice sets (all respondents answered the first and second unemployment choice sets, while one of the third or fourth unemployment choice sets were randomly assigned to participants), which served to examine what level of minimum wage increase was more favourable to respondents. Figure 2 shows the four choice sets. Examine the distribution of choice probabilities; that is, the probability that each respondent gave for the likelihood that they would vote for an increase in the minimum wage of £1 (Policy I in Table 4).

We take the choice between a high raise (£1) with moderately severe consequence (+1pp unemployment) and a low raise (£0.25) with no consequence as our baseline. In this baseline, the average of votes is 54.1% for a high raise, against 45.9% for a low raise, thus a small majority for the former. Looking at the density (Figure 3) reveals that the distribution is fairly spread, except for a mode around 7 votes in favour of a high raise. Thus, a high raise at the cost of some unemployment seems to be acceptable for the majority of the population.

By contrast, support falters as soon as the consequences of a high raise intensify. The second set proposes the choice between a high raise (£1) with severe consequences (+2pp unemployment) and a low raise (£0.25) with no consequence as in the baseline. The average support drops to 41.8% of the votes. The decrease in support is uniform over the population as [x%] decrease their support by at least one vote, and [y%] by at least 2 votes.

The support for the high raise-severe consequence (£1 & 1pp) policy drops even further if respondents are presented with an intermediate policy of moderate rise (£0.50, resp. £0.75) and less severe, but still detrimental effects on unemployment (+0.5pp, resp 1pp). In this case, two third of the votes are allocated to the moderate policies, and [x%] attributes 7 or more of their




Figure 2: Choice sets: unemployment

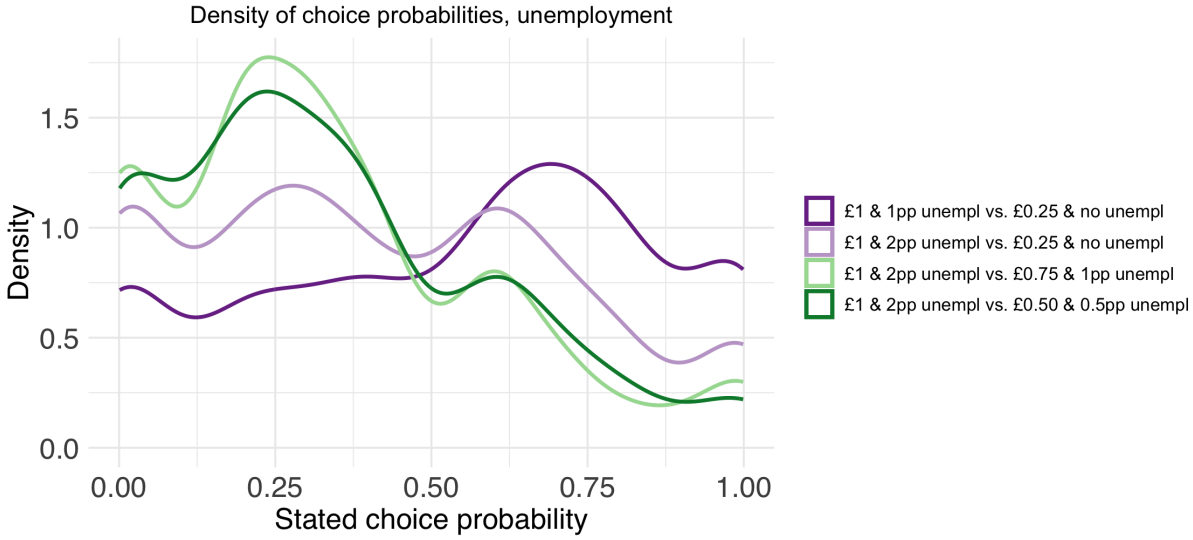



Figure 3: Density of choice probabilities, unemployment
*Kolmogorov-Smirnov test for overlap yield rejection of the null hypothesis for all cases except one (see full results in Appendix E).*

votes to these policies.

In summary, respondents prefer a larger increase in the minimum wage but also wish to mitigate the unemployment trade-off. On the whole, they seem to prefer a moderately sized increase of £0.50 or £0.75 with a lesser penalty than either extreme (large increase with large penalty, or small increase with no penalty).

### 3.1.3 Pass-through

Next, examine the average responses to the choice sets that presented trade-offs with respect to price pass-through. Note that the choice sets show pass-through in monetary units, but for clarity they are referred to here as percent increases. Figure 4 shows the four choice sets and Figure 5 shows the distribution of stated choice probabilities.




Figure 4: Choice sets: pass-through

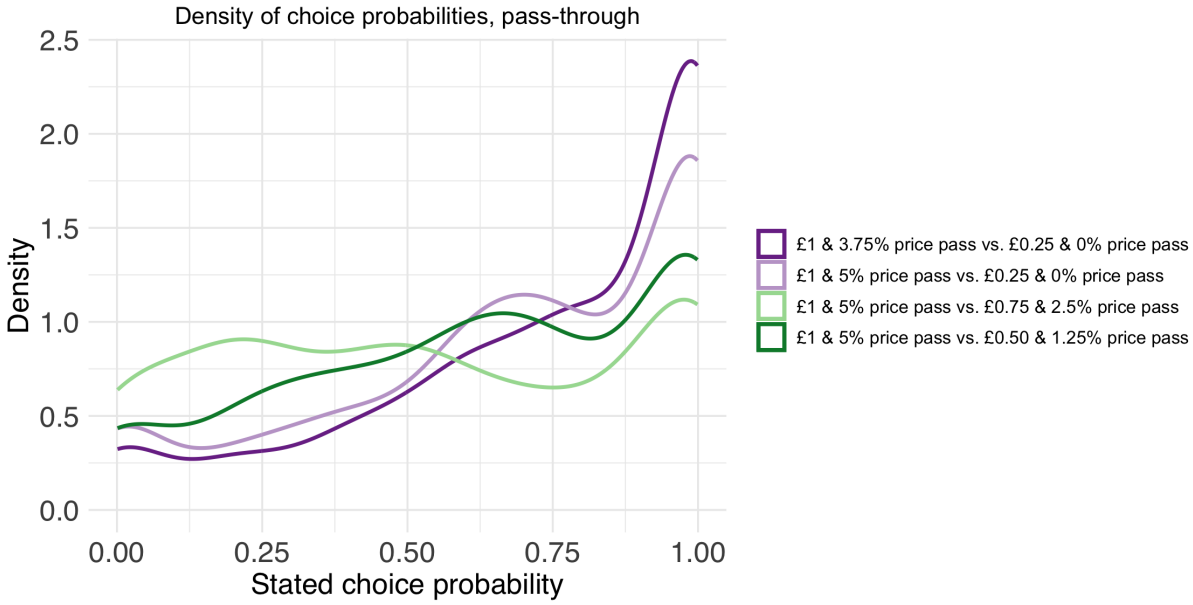



Figure 5: Density of choice probabilities, pass-through
*Kolmogorov-Smirnov tests for overlap yield rejection of the null hypothesis for all cases (see full results in Appendix E).*

The pictures looks different when it comes to the pass-though. As before, we take the choice between a high raise (£1) with moderately severe consequence (+3.75% price pass) and a low raise (£0.25) with no consequence as our baseline. In this baseline, the average of votes is 73.3% for a high raise, thus a strong majority for a high raise. Looking at the density (Figure 3) reveals that the distribution is skewed with a large proportion of respondents [x%] giving all their votes to a high raise. Thus, there is support for a high raise at the cost of some inflation in prices of restaurants.

The support remains strong even if the consequences of a high raise intensify. The second set proposes the choice between a high raise (£1) with severe consequences (+5% price pass) and a low raise (£0.25) with no consequence as in the baseline. The average support drops only slightly to 68% of the votes, with a decrease that comes from respondent moving from absolute certainty (casting all votes in favour) to mild certainty (casting 6 to 7 votes).

Proposing an intermediate policy of moderate rise (£0.75) and less severe price pass (+2.5%) splits seems to split opinions with only a short majority for a high raise (53.5%) driven by a still important proportion of individuals casting all their votes for a high raise. The other intermediate policy (£0.50 & +1.25% price-pass) does not achieve the same result, as a majority of respondent still perceive the minimum wage increase to be too low.

On the whole, respondents strictly prefer an increase in the minimum wage of £1 no matter what the alternative is, and regardless of whether the price pass-through rate is severe or not. In other words, respondents would prefer a large increase in the minimum wage compared to no increase in the minimum wage, even if consumers need to pay more for restaurant meals. As in the examples of unemployment, respondents show more uncertainty when the alternative is almost as large of an increase in the minimum wage but paired with a lower trade-off (i.e. £0.75 increase with 2.5% pass-through).

### 3.1.4 Tax

Respondents were asked to vote for various scenarios that express the trade-off from a change in the minimum wage through a tax increase. There are four tax rates in England, Northern Ireland and Wales, described in Table 5:

As the bottom tax group pays 0%, and it would not be realistic to present trade-offs where this group is taxed more, so they are left out of the visualisations to reduce cognitive burden. The remaining three tax groups were presented with realistic professions (mix of public service and private sector jobs, and mix of male and female workers) as examples for the types of people whose tax rates would go up.

The first two task question pertains to the choice between policies with a high minimum wage paid by taxes supported by all three groups, against policies with a small or moderate increase in minimum wage that is paid by one or two groups. The amount paid by each group is lower if it is shared on a larger basis, and higher for a higher minimum wage increase.

The last tax question pertains more directly to the choice of who should bear the cost of a minimum wage increase. It asks the respondents to choose between two policies with the same minimum wage, but different tax bases.

**3.1.4.1 Tax Question 1.** The first question compares a £1 increase in the minimum wage where the burden is shared by all three groups, to a smaller increase (£0.25, £0.50, £0.75) where the burden is shared by the top two taxpaying groups (the "Higher" and "Additional" rate groups). The purpose of this section was to see whether respondents prefer a large increase where everyone shares the tax burden, or a smaller increase where just the top two richest groups pay. The choice sets and densities are shown in Figures 6 and 7.

Following from Table 4, mean responses to all sets appear close to indifference. However, in examining the densities, it is clear that, while responses might be close to 0.5 on average, there is substantial heterogeneity. The only choice set showing less disagreement on is the final choice set, which shows a stronger support for the option where the top two groups pay for a £0.50 increase in the minimum wage (rather than all groups paying for a £1 increase). While there is disagreement, it does seem that respondents can agree, to an extent, that they would rather have a moderate increase in the minimum wage financed by the two richest groups rather than a larger increase in the minimum wage that everyone pays for.

**3.1.4.2 Tax Question 2.** The second tax question compares scenarios where there is a £1 increase paid for by all three groups compared to a smaller increase (£0.25, £0.50, £0.75) paid for by the **top** group ("Additional" tax rate). The purpose is to see whether respondents prefer a large increase where everyone shares the tax burden, or a smaller increase where just the *richest* group pays. The choice sets and corresponding densities are shown in Figures 8 and 9.

Table 5: Income Tax Rates for England, Northern Ireland and Wales

| Band | Rate | Income |
|---|---|---|
| Savers rate | 0% | Up to £5,000 |
| Basic rate | 20% | £5,001 to £37,000 |
| Higher rate | 40% | £37,701 to £125,140 |
| Additional rate | 45% | Over £125,141 |

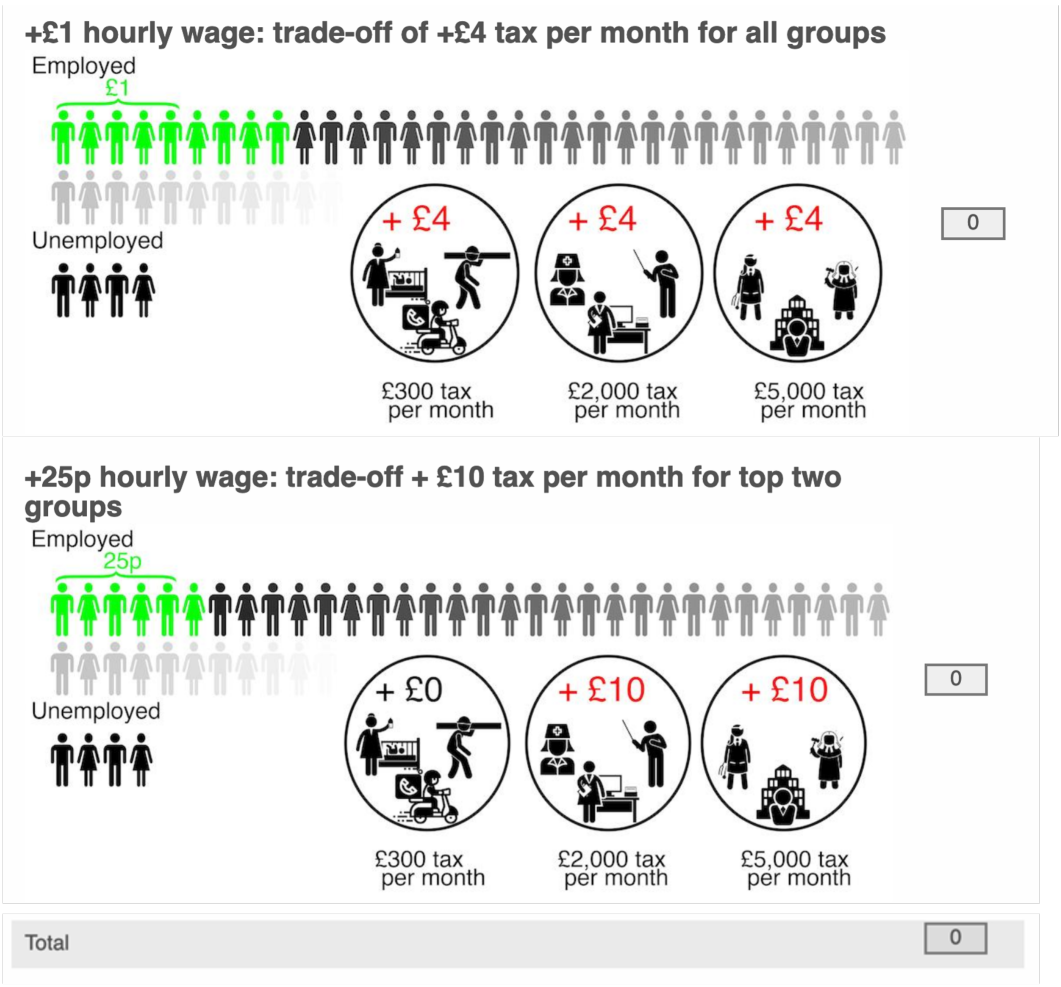



Figure 6: Choice sets: tax 1

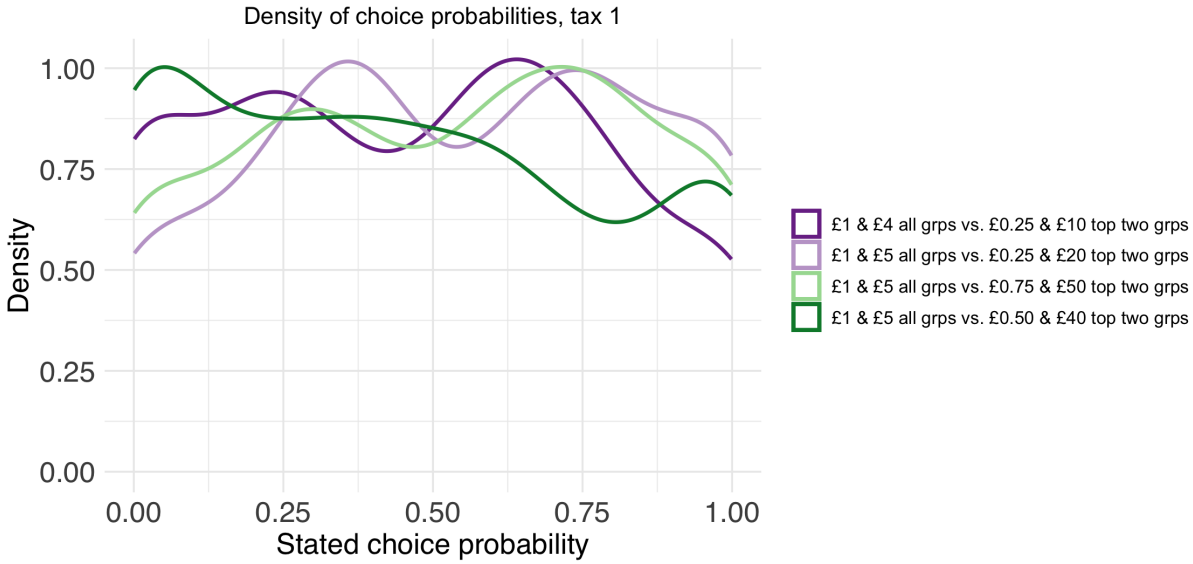



Figure 7: Density of choice probabilities, tax 1
*Kolmogorov-Smirnov tests for overlap yield rejection of the null hypothesis in all cases (see full results in Appendix E).*

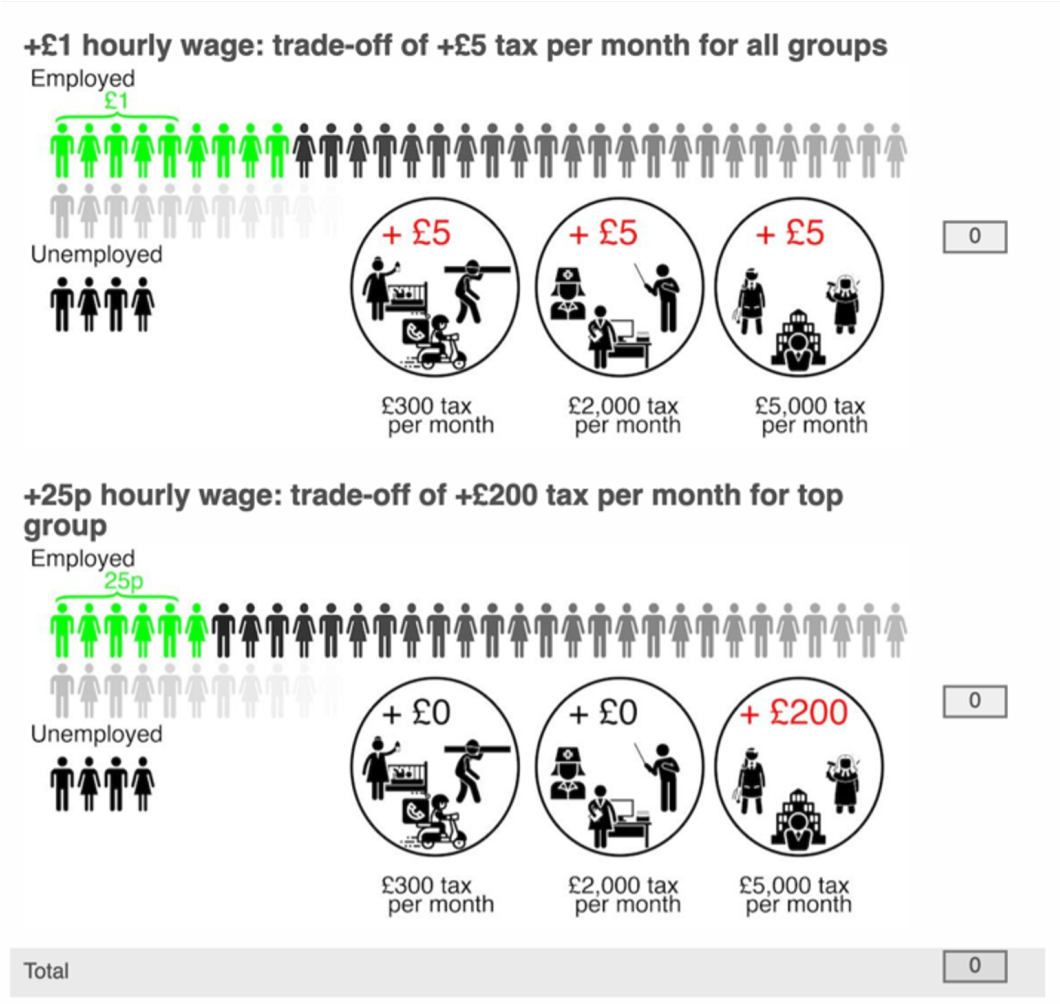



Figure 8: Choice sets: tax 2

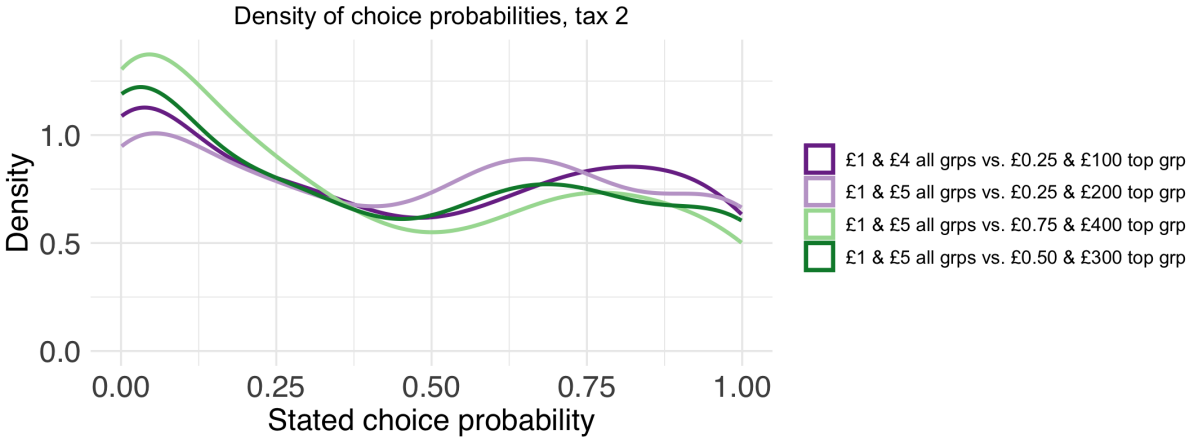



Figure 9: Density of choice probabilities, tax 2
*Kolmogorov-Smirnov tests for overlap yield rejection of the null hypothesis in three cases (see full results in Appendix E).*

As for the previous tax question, the average preference seems to be tilted toward a moderate increase in the minimum wage that is paid for by the richest tax bracket would be the most preferred. However, there seems to be some degree of disagreement in the population as the distribution of votes is very spread, with two modes on both sides of the indifference point. Preference for the richest supporting the burden even at the cost of a lower increase of the minimum wage

grows stronger as the gap between the minimum wage in the two policies start to wane.

**3.1.4.3 Tax Question 3.** The final tax question asked respondents to compare a situation where the minimum wage increase is the *same*, but the policies differ based on which group picks up the tab–either the top two richest groups or everyone. The choice sets and corresponding densities of stated choice probabilities are shown in Figures 10 and 11.

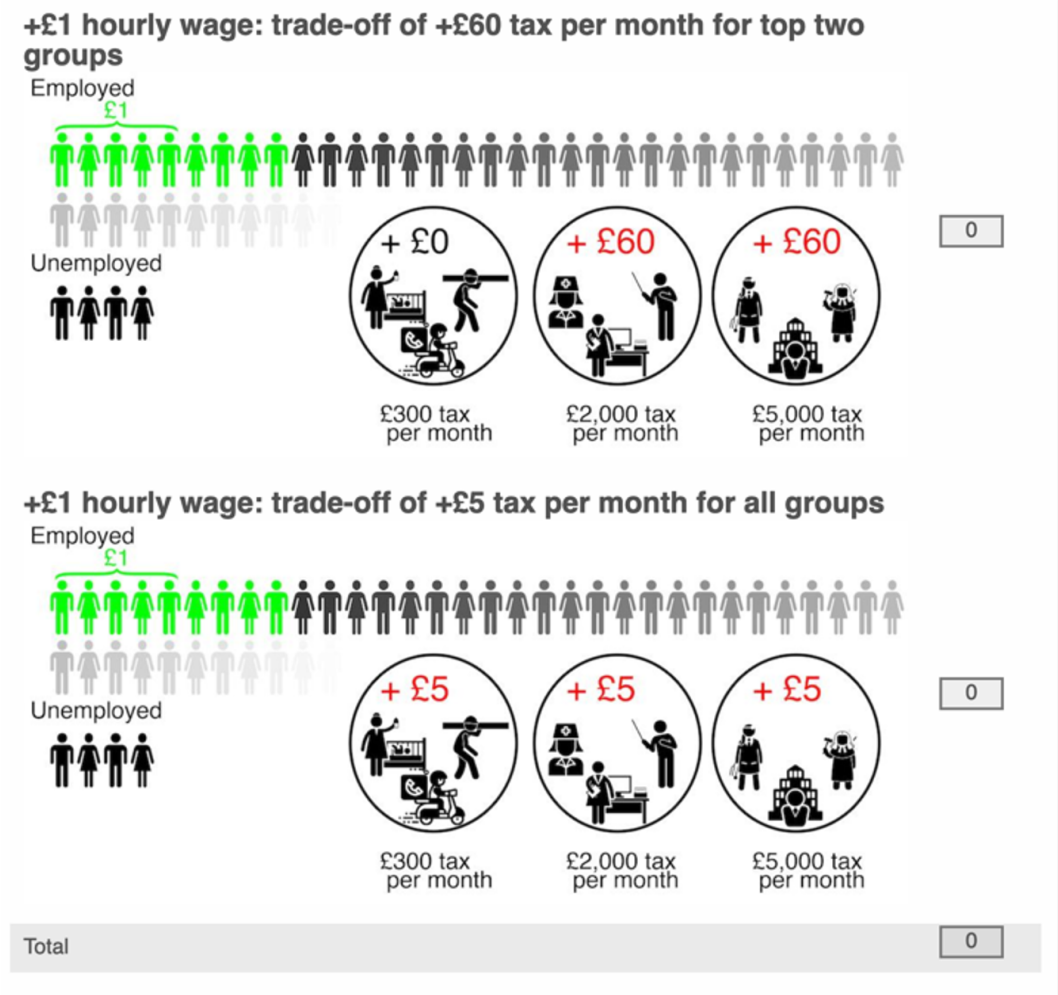



Figure 10: Choice sets: tax 3

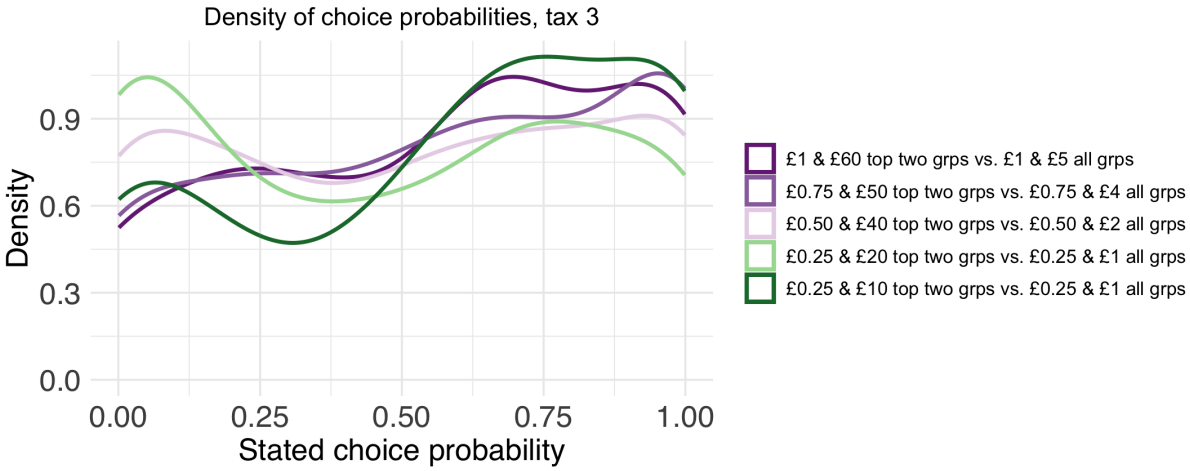



Figure 11: Density of choice probabilities, tax 3
*Kolmogorov-Smirnov tests for overlap yield rejection of the null hypothesis in four cases (see full results in Appendix E).*

A small but consistent majority of votes favours policies where the burden is supported by the two richest groups only, irrespective of the level of the minimum wage. According to Figure 11, there appears to be generally two groups of respondents, each supporting one policy other the other.

Zooming out briefly to discuss all tax questions, the majority's view is that the most well off should bear the tax burden of an increase in the minimum wage. This is particularly true when the richest group ('additional' tax bracket) is considered, they are expected to bear the burden even if it is at the cost of having a lower rise of the minimum wage. However, respondents show more nuance when the upper-middle class tax bracket ('higher' tax bracket) is concerned.

## 3.2 Experiment 1: Choice experiment

### 3.2.1 Random utility model framework

The prior section used summary statistics to begin to explore respondents' preferences for changes in the minimum wage alongside associated trade-offs. This can be done more formally via an analysis of utility. The literature bases its analysis of utility in a stated preference framework on random utility models, which allows the response to a choice experiment to be quantified by calculating the probability that an individual will choose a given alternative (McFadden 1973). This study asks respondents to state a choice probability, allowing respondents to express resolvable uncertainty (Juster 1966; Manski 1999; Blass et al. 2010), which is uncertainty about components of utility that the respondent may face in the stated choice setting but would not face in the actual choice setting (see section **??** for a more in-depth discussion).

Following from Blass et al. 2010, assume that the utility of alternative $j$ for respondent $i$ is of the form:

$$U_{ij} = x_{ij}\beta_i + \epsilon_{ij}, \tag{1}$$

where $x_{ij} = x(v_{ij}, s_i)$ is a function of the random vector of observed alternative characteristics $v_{ij}$ and the random vector of personal attributes $s_i$ of each respondent $i$. $\epsilon_{ij}$ is the portion of utility known to the respondent but not known to the researcher. Respondents will only choose alternative $j$ if $U_{ij} > U_{ik}$. Define the subjective probability $q_{ij}$ as the probability that the respondent $i$ chooses option $j$ in an actual choice setting, after having formed a subjective distribution for $\epsilon_{ij}$. Define

$Q_i$ as the continuous subjective distribution that individual $i$ places on $\epsilon_i$. Then, the subjective choice probability for alternative $j$ is:

$$q_{ij} = Q_i[x_{ij}\beta_i + \epsilon_{ij} > x_{ij}\beta_i + \epsilon_{ij}] \qquad \forall k \neq j \tag{2}$$

where $Q_i$ represents resolvable uncertainty. Assume that respondents maximise subjective expected utility to deal with unresolvable uncertainty. Assume that each $\epsilon_{ij}$ is independently and identically distributed with a Type I Extreme Value Distribution. Obtain the subjective choice probabilities of the multinomial logit form:

$$q_{ij} = \frac{\exp(x_{ij}\beta_i)}{\sum_{k=1}^{J}\exp(x_{ik}\beta_i)} \tag{3}$$

Applying a log-odds transformation to 3, setting $\beta_i = b + \eta_i$, $u_{ij} = (x_{ij} - x_{i1})\eta_i$, assuming that the cross-sectional distribution of $\beta$ is independent of $x$, and normalising $\mathbb{E}(\eta) = 0$ such that $b = \mathbb{E}(\beta)$ and $\mathbb{E}(u|x) = 0$. Estimating via the least absolute deviation (LAD) for the linear median regression model using a quantile regression method:

$$M[\ln\left(\frac{q_{iA}}{q_{iB}}\right)|x] = (x_{ij} - x_{i1})b \tag{4}$$

which is not sensitive to changes in value that do not result in re-ordering; hence, it is more robust to rounding of elicited choice probabilities.

Our primary interest is calculating the compensating variation for each trade-off, with compensating variation being defined as the amount of welfare (a function of the minimum wage increase and the number of people affected) that would need to be generated in order for an agent to reach the same level of utility following a change in attribute. This paper defines welfare as $w_{ij} = \Delta\text{minwage} * \text{num.affected}$, or the size of the minimum wage increase multiplied by the number of people who are affected by the change (for example, £1 affecting 9 people has a welfare value of 9). This definition of welfare is useful in that it both captures the magnitude of the increase but also the reach in society; however, its shortfall is that it does not encapsulate more traditional measures of welfare.

Assume a multivariate context where two attributes are presented to respondents at once, such that they consider both when choosing one alternative over another. Let $X$ and $Z$ be two attributes, where $x \in X$ and $z \in Z$. Adapting 4, and changing notation:

$$M[\ln\left(\frac{q_{iA}}{q_{iB}}\right)|x, z] = (x_{ij} - x_{i1})\gamma + (z_{ij} - z_{i1})\phi \tag{5}$$

In order to estimate the relative measure, or how much respondent $i$ is willing to give up of attribute $Z$ in lieu of attribute $X$ to make them indifferent, the following can be estimated:

$$\text{cv}_{\gamma\phi} = -\frac{\gamma}{\phi} \tag{6}$$

Which is referred to as the compensating variation, or the amount of additional welfare an agent would need to reach their initial utility following a change in attribute, where $\gamma$ is the coefficient for attribute $X$ while $\phi$ is the coefficient for attribute $Z$ (Louviere et al. 2000). This expression

can be interpreted in welfare units, but if $Z$ is a monetary attribute, the result can be interpreted as the marginal willingness-to-pay.

### 3.2.2 Empirical results

This section will present estimates generated from quantile regressions to estimate how respondents' preferences for one alternative over another vary by the level of welfare (a function of the minimum wage increase and the number of workers affected), unemployment, price pass-through, and taxes that were depicted through vignettes in the choice experiment. Continuing from equation 5 above, adapt notation to show each regression estimated by least absolute derivation (LAD). As the attributes unemployment, pass-through and tax were each presented separately alongside welfare, separate regressions are estimated for each. All analysis was conducted in R (R Core Team 2021), using package *quantreg* (Koenker 2023).

Unemployment and pass-through were estimated as follows:

$$M[\ln\left(\frac{q_{ij}}{q_{ik}}\right)|x,w] = (x_{ij} - x_{ik})\beta_{unem,i} + (w_{ij} - w_{ik})\beta_{welfare,i} \tag{7}$$

$$M[\ln\left(\frac{q_{ij}}{q_{ik}}\right)|g,w] = (g_{ij} - g_{ik})\beta_{pass,i} + (w_{ij} - w_{ik})\beta_{welfare,i} \tag{8}$$

where $x_{ij} - x_{ik}$ is the difference between unemployment attribute levels for alternative $j$ and alternative $k$ for respondent $i$, similarly for $g_{ij} - g_{ik}$ for pass-through attribute levels.

Tax was estimated with the following equation:

$$M[\ln\left(\frac{q_{ij}}{q_{ik}}\right)|r,c,h,w] = (r_{ijt} - r_{ik})\beta_{basic,i} + (c_{ij} - c_{ik})\beta_{higher,i} + (h_{ij} - h_{ik})\beta_{additional,i} + (w_{ij} - w_{ik})\beta_{welfare,i} \tag{9}$$

Where $(r_{ijt} - r_{ikt})$ is the difference between tax (basic rate) attribute level for alternative $j$ and alternative $k$ for respondent $i$. Similarly, $c_{ij} - c_{ik}$ and $h_{ij} - h_{ik}$ are for tax for the group at the higher rate and at the additional rate, respectively.

Table 6: LAD estimates of utility function parameters

| Specification | Coefficient | Estimate | Std. error | |
|---|---|---|---|---|
| Unemployment | Welfare | 0.221 | 0.012 | *** |
| | Unemployment | -1.253 | 0.092 | *** |
| Pass-through | Welfare | 0.400 | 0.067 | *** |
| | Pass-through | -2.156 | 0.566 | *** |
| Tax | Welfare | 0.142 | 0.068 | ** |
| | Tax, basic | -0.257 | 0.140 | * |
| | Tax, higher | -0.013 | 0.010 | |
| | Tax, add'l | 0.000 | 0.001 | |

($\tau = 0.50$), estimated without intercept, clustered on respondent id, bootstrapped standard errors on 250 replications.

Estimates are presented in Table 6. The coefficient on the measure of minimum wage worker's welfare is both positive and significant in all three separate specifications. This result is to be expected, as respondents are more likely to choose alternative $j$ over alternative $k$ if welfare is higher for alternative $j$. Coefficients on unemployment, pass-through and tax (basic) are negative and significant, indicating that these variables have negative and significant effects on the choice

of policy option. That is, respondents are more likely to choose alternative $j$ over alternative $k$ if the unemployment, pass-through, and tax (basic) trade-offs are lower for alternative $j$. Again, this is as expected–respondents have a lower level of utility if trade-offs are higher.

The coefficients on Tax, higher and Tax, additional are insignificant and close to zero, suggesting that this value might be positive for some and negative for others, or, these variables have no effect on the choice of policy option. The former interpretation, however is supported by earlier discussion in Section 3.1.4. It seems there may be less consensus among the sample regarding the trade-offs of tax when it comes to higher and additional rate hikes.

The compensating variation for each significant trade-off with respect to the welfare was calculated according to equation 6 and is shown in Table 7.

Table 7: Compensating variation for each significant trade-off with respect to welfare

| Variable | CV |
|---|---|
| Unemployment | 5.667 |
| Pass-through | 5.384 |
| Tax, basic | 1.815 |

See first the results on unemployment, yielding a compensating variation of 5.667, indicating that in order to offset a one-unit (units being percentage points) increase in unemployment, society would need to compensate with 5.667 units of welfare. To put this finding into context, the following attempts a back-of-the-envelope calculation to see how much welfare would need to be generated to compensate for any potential disemployment effects from the 2024 increase in the U.K. minimum wage. The increase from 2023 to 2024 was from £10.42 to £11.44, which is an increase of about 10%. Putting this in terms of welfare (as defined in this research), this new minimum wage increase would generate around 9 units of welfare per 100 people[2].

Although the empirical literature base has largely concluded that there is no dis-employment effects from a rise in the minimum wage, some have found that there are small effects in sectors employing a disproportionate amount of teenagers or dealing in non-tradable goods (see Section 1). P. Wolfson and Belman 2019 find that the disemployment effects for sectors employing a high proportion of teenagers may be around 1% following an increase in the minimum wage of 10%[3] (the size of the 2024 minimum wage increase). Taking into account the proportion of the employed population comprised of teenagers, the overall unemployment rate could increase from 3.90% to 3.93%, or by 0.03 percentage points[4]. As these findings show that society would need to compensate with 5.67 units of welfare for every 1 percentage point increase in the unemployment rate, observe that $0.03 \times 5.67 = 0.17$. Thus, in the 2024 context, in order to offset an increase of 0.03 percentage point increase in unemployment, society would need to compensate with 0.17 units of welfare per person out of 100. As mentioned above, the new minimum wage generates 9 units of welfare per person out of 100, which is over 53 times more acceptable (than necessary for indifference) to the average person.

The compensating variation for the pass-through rate is 5.38, indicating that in order to offset a £1 increase in pass-through price, society would need to compensate with 5.38 units of welfare. Next, a similar back-of-the-envelope calculation attempts to put this finding into context. Taking an example effect size from the literature (Renkin et al. 2022), if the minimum wage saw an increase of 10% (as it did from 2023 to 2024), prices may have increased by around 0.36%. Using this paper's

[2] as this is a £1 increase that would affect around 9% of workers (LPC 2019), observe $welfare = 1 \times 9 = 9$

[3] P. Wolfson and Belman 2019 finds that effects may be between 0.13% and 0.07% for a 1% increase, so take the average of the effect sizes which is 0.10% for a 1% increase, and multiply both by 10

[4] As there are 3.66 million youth who are employed and the 0.5 million who are unemployed (Francis-Devine 2024), the new unemployment rate for youth would rise from 12.1% to 12.2%. Arrive at this number by taking into account the overall workforce (of which 11% of the employed persons are teenagers)

example of a £20.00 meal at a restaurant (average price as of 2023 Nicholls 2021), the price would increase to $20 \times 1.0036 = 20.07$, or an increase of 7 pence (0.07 of £1). As these findings show that society would need to compensate with 5.384 units of welfare for every £1 increase in price pass-through, observe that $0.07 \times 5.384 = 0.38$. Therefore, in the 2024 context following a 10% increase in the minimum wage, society would need to compensate with 0.38 units of welfare per person out of 100. As the new minimum wage generates 9 units of welfare per person out of 100, the new minimum wage is over 24 times more acceptable (than necessary for indifference) to the average person.

As for compensating variation for tax rates, the findings for 'Tax, basic' indicates that in order to offset a £1 increase in taxes for those in the basic tax group, society would need to compensate with 1.85 units of welfare. The shortfall in funding that is required by the Government to meet the current minimum wage is about £1 billion (Sanderson et al. 2023), and if this were evenly spread over the 31.5 million people paying taxes in the U.K. it would result in about £5 more in tax for everyone. Using this paper's findings on compensating variation that 1.85 units of welfare would be needed to offset a £1 increase in taxes levied on all groups (including the 'basic' group), a similar back-of-the-envelope calculation shows that to compensate for the increase in taxes felt by the basic tax group, society would need to compensate with $5 \times 1.85 = 9.25$ units of welfare per person out of 100. As the units of welfare that will be generated by the minimum wage increase is only 9, there would not be enough units of welfare generated to make the average person indifferent to an increase of this size, if taxes were levied on all to fill the funding shortfall in the social care sector. This finding is substantiated by findings in Section 3.1.4 indicating that respondents prefer that a large increase in the minimum wage to be paid for those most well-off in society, and not by everyone. As these results are not significant for the next two highest tax groups, it is not possible to comment on whether society would find it acceptable if the funding shortfall for the social care sector in implementing the new minimum wage would be acceptable if paid for by the richest groups in society.

## 3.3 Experiment 2: Exposure to trade-offs

As specified in Section 2.2.2, respondents were randomised into two groups: one that answered a block of questions on trust and minimum wage policy before the choice experiment, and another that answered this block after the choice experiment (see survey outline in Appendix B). Allocation into treatment was randomised in-survey by Qualtrics, the balance results are presented in Table 8. Balance is calculated for the most important demographic variables using a t-test, where the null hypothesis is that the calculated t-statistic is drawn from a t-distribution with n - K degrees of freedom. There is a failure to reject all null hypotheses at the 5% (and 10%) significance levels, suggesting that randomisation was not correlated with these observable characteristics.

Table 8: Balance table by treatment status

| Variable | Mean (Treated) | Mean (Untreated) | Difference | t-value | p-value |
|---|---|---|---|---|---|
| Age | 46.596 | 45.399 | 1.197 | 1.141 | 0.254 |
| Sex Assigned at Birth | 1.500 | 1.452 | 0.048 | 1.392 | 0.164 |
| Married | 0.428 | 0.439 | -0.012 | -0.348 | 0.728 |
| Number of Children | 1.188 | 1.117 | 0.071 | 0.826 | 0.409 |
| Residency Length | 43.607 | 42.921 | 0.686 | 0.566 | 0.572 |
| Parents Born UK | 1.425 | 1.482 | -0.056 | -1.053 | 0.293 |
| Up to secondary | 0.197 | 0.189 | 0.008 | 0.307 | 0.759 |
| Up to university degree | 0.618 | 0.624 | -0.006 | -0.196 | 0.844 |
| Advanced degree | 0.185 | 0.187 | -0.002 | -0.066 | 0.947 |
| Savers bracket | 0.281 | 0.278 | 0.003 | 0.103 | 0.918 |
| Basic bracket | 0.630 | 0.626 | 0.003 | 0.107 | 0.915 |
| Higher and additional brackets | 0.089 | 0.096 | -0.007 | -0.339 | 0.735 |

### 3.3.1 Outcome: trust in institutions

This section analyses respondents' answers to the first group of outcomes–trust in policymaking institutions. The first question examining trust in the LPC asked:

*'Up until 2015, the Low Pay Commission was working independently; however, in 2015 the Government set a target for the Low Pay Commission to reach a minimum wage of £8.70 by 2020. When they reached that target, the Government set a new target for the Low Pay Commission to reach £11.20 by 2024, which they are now working towards. Do you agree with the government setting targets for the minimum wage to the Low Pay Commission (LPC), as it has done in the recent past?'*

Responses were given on a Likert scale, which were re-coded to an index ranging from 1-5, where 1 represents a strong agreement for the government setting strict targets for the LPC, while 5 represents a strong disagreement (the opinion that the LPC should be completely independent).

Next, respondents were shown a graph of the yearly changes of the minimum wage since the LPC began their advisory role to the Government. Respondents were asked:

*'To what extent do you trust the Low Pay Commission to do what is best in setting the minimum wage rates?'.*

Responses were again given on a Likert scale, and re-coded to an index ranging 1-5, where 1 represents a high level of mistrust and 5 represents a high level of trust.

To examine whether or not treatment is associated with a difference in mean value between the group that was treated compared to the group that was not treated, a univariate OLS regression was run for each of six outcome variables. Outcomes include an index of the preferred level of independence, and binary indicators for whether the respondent expressed a moderate or high (i.e. 4 or 5) or high (5) preference. The same three outcome types are included for the case of the trust questions. Results are shown in Table 9.

Table 9: Trust by treatment status

| Dependent variable | Treatment | Standard Error | p-value | Confidence Interval | |
|---|---|---|---|---|---|
| Indep. index (continuous) | 0.038 | 0.080 | 0.632 | (-0.118, 0.1942) | |
| Indep. (Mod / High) (binary) | 0.004 | 0.031 | 0.888 | (-0.0567, 0.0654) | |
| Indep. (High) (binary) | 0.021 | 0.020 | 0.294 | (-0.0181, 0.0598) | |
| Trust index (continuous) | 0.137 | 0.061 | 0.026 | (0.0164, 0.2567) | ** |
| Trust (Mod / High) (binary) | 0.044 | 0.032 | 0.167 | (-0.0186, 0.1073) | |
| Trust (High) (binary) | -0.008 | 0.033 | 0.815 | (-0.0732, 0.0576) | |

Estimates are from six separate OLS regressions, obtained by estimating the impact of treatment on each dependent variable. Robust standard errors are used. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Beginning with independence, responses for preferences of the level of independence on average were 2.82 on the likert scale for the treated group and 2.78 for the untreated group, showing mean preference close to indifference (coded as 3) for the degree to which the Government should set strict targets for the LPC (compared to being completely independent). 30% of respondents expressed a moderate or high preference for LPC independence, while just 10% expressed a high preference. The coefficients on all dependent variables measuring preferences for independence of the LPC are insignificant. These findings suggest that, based on the sample data, the treatment did not meaningfully influence the level of independence that respondents feel the LPC should have. This may be reflective of underlying views of government oversight and political views; alternatively, although the survey included education videos on the role of the LPC, the Commission may be too buried within the Government for respondents to exhibit a strong preference.

Regarding the results for levels of trust (the final three rows in Table 9), on average the level of trust for the LPC in setting the best future minimum wage rate was 3.61 in the treated group and 3.47 in the untreated group. 67% of respondents have a moderate or high level of trust in the LPC, and 57% of respondents have a high level of trust. While over 50% of the sample trusts the LPC to do what is best in setting minimum wage targets, treatment did not significantly increase the number of people who chose a 'moderate' or 'high' level of trust. Despite this finding, treatment is associated with a statistically significant 0.137 unit increase in the trust index. Given that there was not a significant increase in the number of people choosing a 'moderate' or 'high' level of trust (the final two outcome variables), the increase in the trust index may be being driven by those with the least amount of trust (on the lower-end of the distribution of the index parameter).

Thus, this experiment shows that participating in the choice experiment (and thus being exposed to trade-offs in the policymaking setting) is not associated with a change in preference for the level of independence of the Low Pay Commission (LPC), which may be driven by political opinions or support of the current government. On the other hand, it is associated with an increase in the level of trust for the LPC. Thus, respondents may be more willing to trust policymaking institutions if they are exposed to the trade-offs that experts have to account for when setting policy.

### 3.3.2 Outcome: minimum wage policy choices

This section analyses respondents' answers to the second group of outcomes examined in relation to treatment, which are minimum wage policy perceptions. As all respondents answered these questions after they completed the questions on trust and independence (see Section 3.3.1), the treatment groups are the same. Specifically, respondents were asked what they think the minimum wage should be next year (as an increase from £10.42 in 2023), and what they think the likely consequences would be of their choice (including change in unemployment rate, change in food prices, and change in tax rates). Analysing how responses to this section differ based on whether respondents had participated in the choice experiment can inform whether exposing respondents to trade-offs (and hence making the policy process more salient) changes their perception about the consequences of minimum wage increases.

As above, OLS regressions were run to estimate the impact of treatment on minimum wage policy opinions, the results of which are presented in Table 10. The 13 dependent variables are respondents' predictions for the new increase in the minimum wage, and the perceived change in six trade-off parameters relative to the status quo of each (unemployment, pass-through, and tax for all four groups). The final six variables are binary indicators for whether respondents chose each respective trade-off as a consequence that they thought would result from their choice of new minimum wage. Results show that treatment had a positive and significant impact on the prediction of the new minimum wage, consequence (unemployment and pass-through), and the binary indicator for having chosen pass-through and all four tax groups as consequences of the new minimum wage.

Table 10: Policy choices by treatment status

| Dependent variable | Treatment | Standard Error | p-value | Confidence Interval | |
|---|---|---|---|---|---|
| New min wage | -0.158 | 0.073 | 0.031 | (-0.3011, -0.0143) | ** |
| Consequence (unemployment) | 0.988 | 0.332 | 0.003 | (0.3349, 1.6413) | *** |
| Consequence (pass-through) | -1.254 | 0.313 | 0.000 | (-1.8681, -0.6392) | *** |
| Consequence (tax, savers) | -0.693 | 0.955 | 0.469 | (-2.5709, 1.1857) | |
| Consequence (tax, basic) | 0.020 | 1.829 | 0.991 | (-3.578, 3.6173) | |
| Consequence (tax, higher) | -1.907 | 2.419 | 0.431 | (-6.6648, 2.8504) | |
| Consequence (tax, add'l) | 0.688 | 2.632 | 0.794 | (-4.4846, 5.8612) | |
| Chose unemployment | 0.025 | 0.033 | 0.452 | (-0.0404, 0.0908) | |
| Chose pass-through | 0.159 | 0.033 | 0.000 | (0.0937, 0.2235) | *** |
| Chose tax, savers | 0.225 | 0.032 | 0.000 | (0.1629, 0.2868) | *** |
| Chose tax, basic | 0.237 | 0.032 | 0.000 | (0.1744, 0.2996) | *** |
| Chose tax, higher | 0.279 | 0.032 | 0.000 | (0.2159, 0.3418) | *** |
| Chose tax, add'l | 0.262 | 0.032 | 0.000 | (0.1977, 0.3253) | *** |

Estimates are from 13 separate OLS regressions, obtained by estimating the impact of treatment on each dependent variable. Robust standard errors are used. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Interestingly, respondents who participated in the choice experiment chose a *lower* new minimum wage (a £0.16 reduction), with the mean of the treated group being £1.21. For unemployment,

treatment is associated with an increase from 0 (untreated mean) to 0.99 (treated mean) in the guess of the new unemployment rate following a new minimum wage. Treatment is also associated with a £1.25 reduction in respondents' guess of the pass-through-rate as a consequence of the new minimum wage (the mean of the treated group is £1.22). Finally, treatment is also associated with an increased likelihood that respondents think certain consequences will be realised as a result of the rising minimum wage–pass-through (16% more likely), and taxes (all three groups, between 23 to 28% more likely). The findings on the binary indicator for choosing unemployment were insignificant, but this is likely because the mean of the untreated group is already very high (0.42; for reference the untreated mean for pass-through was 0.36). This could reflect unemployment being the most widely spoken-about trade-off in public discourse.

The results of this section indicate that the optimal choice of minimum wage (and the consequences in the economy) is affected by being exposed to treatment (the choice experiment). One mechanism through which this exposition works is by exposing the sample to trade-offs that policymakers must consider while implementing a new minimum wage. Another mechanism is by modifying the perception about the consequences of a minimum wage increase. Viewing the results through the lens of these consequences seems to imply that treated respondents may have been more *realistic* in their responses. The mean of the treated groups for the new minimum wage and new levels of unemployment and pass-through are much closer to what respondents were shown during the choice experiment. For example, the average anticipated increase of the minimum wage among the treated group was £1.21 (or an increase from £10.42 to £11.63), while in the untreated group it was £1.37. The maximum increase in the minimum wage that was shown to respondents during the choice experiment was £1, so it may be that respondents perceptions were modified by the choice experiment and shrank closer to the level they were shown. The mean responses of the treated groups to the anticipated level of unemployment and pass-through imply similar conclusions.

These responses could be subject to two types of bias–the first could be social desirability bias, where respondents want to be seen as getting the "correct" answers, and so answer in-line with what they have been previously exposed to. Secondly, responses are likely biased based on the study parameters themselves–for example, if respondents were shown a maximum increase of £2, their prediction may have been closer to £2 rather than £1. Nonetheless, the results from this section could represent the effect of being exposed to trade-offs in general, as well as the specific trade-offs included in this experiment. The treatment could have trained respondents to be more realistic in their policy predictions.

# 4 Conclusion

This study sheds light on nuanced perspectives regarding minimum wage increases and associated trade-offs of unemployment, price pass-through, and taxes. While there is a clear preference for a substantial increase in the minimum wage in the U.K., respondents exhibit sensitivity to the magnitude of trade-offs. With respect to unemployment, findings indicate a preference for a moderate increase in the minimum wage–one that is a compromise bestween a larger increase in minimum wage and mitigated unemployment effects. As for price pass-through, on the whole, respondents strictly prefer a large increase in the minimum wage no matter what the alternative is, and regardless of the severity of price pass-through.

Furthermore, this analysis reveals varying degrees of preference among respondents concerning tax implications. There appears to be greater consensus to impose higher taxes on affluent groups for a large minimum wage increase, suggesting a preference–under large, one-off policy changes–for shifting the tax burden to the wealthiest members of society. However, opinions diverge when the minimum wage increase is small, indicating that some individuals perceive incremental policy change as a shared societal responsibility. Despite this heterogeneity in views, respondents still prefer a large increase in the minimum wage compared to a small increase when only the richest group pays. Additionally, respondents largely agree that the tax burden on the lowest income group should be minimal.

Formal utility analysis corroborates these findings, with compensating variation indicating varying degrees of tolerance for different trade-offs. Unemployment emerges as the trade-off that respondents find least tolerable, with respondents demonstrating the highest compensating variation of the unemployment trade-off with respect to welfare (our measure of welfare being a function of the minimum wage increase and the number of workers affected). Pass-through rate had the next highest compensating variation (although estimates are close to those for unemployment). Findings for the lowest tax group were much lower. Estimates were not significant for the top two richest groups–coupling this with analysis of underlying heterogeneity, the results suggest that there is less consensus on division of taxes, especially when considering the size of the change in minimum wage.

These findings, coupled with the average effect sizes found in the literature, indicate that if there were to be unemployment effects in the U.K. following the 2024 minimum wage increase, the amount of benefit that it generates for society is over 53 times that is required. Similarly, if price pass-through were to be observed, the increase in minimum wage would compensate for it by over 24 times what would be necessary. However, if the government were to fill the funding shortfall to implement the minimum wage increase in the social care sector by levying an equal tax to all groups, the amount of welfare that the minimum wage increase would generate would not compensate for the perceived costs. Given other analysis of underlying preferences, it may be

that society would accept a graduated increase according to income, or an increase for just those who are more well-off in society. Given insignificant results on these estimates, more research is required.

Moreover, this study reveals the impact of being exposed to policy trade-offs on respondents' perceptions and expectations. This exposure was in the form of participation in a choice experiment, where respondents were both educated on and asked to balance policy trade-offs associated with increasing the minimum wage. This not only educated respondents on these trade-offs but also unveiled the complexities of policymaking. Treatment is associated with a significant increase in the level of trust for policymaking institutions. Furthermore, the treated group exhibits more realistic predictions for the minimum wage increase that balances trade-offs that may be observed in the wider economy. This underscores the potential influence of policy communication and scenario-framing on public perceptions and preferences.

These findings highlight the complexity of minimum wage policy decisions and the need for policymakers to carefully weigh trade-offs and consider public preferences. By understanding the nuanced perspectives of individuals and the factors influencing their decision-making, policymakers can devise more effective and socially responsive minimum wage policies that balance the objectives of economic equity and labour market stability.

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# Appendix A Determination of Choice Sets

To begin with how choice sets were determined for "Block 1: Unemployment", the full factorial design has 240 choice sets, as unemployment has four levels of severity and the minimum wage has four ($4 \times 4 = 16$ and $\frac{16!}{(16-2)!} = 240$). 228 options were excluded that violated assumptions of monotonicity and strictly dominated alternatives, as well as feasibility constraints and duplicates. Among the remaining 12 options, four choice sets were chosen that made the most sense given the research questions at-hand. To compare choices to a benchmark, the Fedrov algorithm was carried out for a D-efficient design in STATA using the dcreate package. This procedure minimises the D-error and presents an efficient design with the goal of capturing a large amount of Fisher information (or equivalently, minimise the volume of the variance-covariance matrix $\Omega$ of the parameter estimates) (Bliemer and Rose 2024; Skedgel 2013; Wiswall and Zafar 2018). The priors used were calculated from the pilot study.

The chosen choice sets were very close to the D-efficient design, so we proceeded with the chosen choice sets. Each respondent was presented with 3 choice sets from Block 1 (all answered the first two, and one additional set randomly chosen from three and four).

Table 11: Choice sets for block 1 (unemployment)

| Policy I | | Policy II | |
|---|---|---|---|
| Wage | Unemployment | Wage | Unemployment |
| £1 (9 people) | 1 person | £0.25 (6 people) | 0 people |
| £1 (9 people) | 2 people | £0.25 (6 people) | 0 people |
| £1 (9 people) | 2 people | £0.75 (8 people) | 1 people |
| £1 (9 people) | 2 people | £0.50 (7 people) | 0.5 people |

The process for determining the choice sets for the pass-through rates was identical to the process for determining unemployment rate. Respondents were presented with 3 choice sets from Block 2 (all answered the first two, and one additional set randomly chosen from three and four). The choice sets were as follows:

Table 12: Choice sets for block 2 (pass-through)

| Policy I | | Policy II | |
|---|---|---|---|
| Wage | Pass-through | Wage | Pass-through |
| £1 (9 people) | £0.75 | £0.25 (6 people) | £0 |
| £1 (9 people) | £1 | £0.25 (6 people) | £0 |
| £1 (9 people) | £1 | £0.75 (8 people) | £0.50 |
| £1 (9 people) | £1 | £0.50 (7 people) | £0.25 |

The process for determining the choice sets for the tax blocks was identical to the process for determining unemployment rate, except that assumptions and calculations were updated to reflect the four parameters of interest.

Respondents were presented with 3 choice sets, which were a random subset one from block 3, one from block 4, and one from block 5. The order that blocks 3 - 5 were presented was also randomised. The choice sets were as follows:

Table 13: Choice sets for blocks 3-5 (tax)

| Block | Policy I | | | | Policy II | | | |
|---|---|---|---|---|---|---|---|---|
| | Wage | Tax 1 | Tax 2 | Tax 3 | Wage | Tax 1 | Tax 2 | Tax 3 |
| 3 | £1 (9 people) | £4 | £4 | £4 | £0.25 (6 people) | £0 | £10 | £10 |
| 3 | £1 (9 people) | £5 | £5 | £5 | £0.25 (6 people) | £0 | £20 | £20 |
| 3 | £1 (9 people) | £5 | £5 | £5 | £0.75 (8 people) | £0 | £50 | £50 |
| 3 | £1 (9 people) | £5 | £5 | £5 | £0.50 (7 people) | £0 | £40 | £40 |
| 4 | £1 (9 people) | £4 | £4 | £4 | £0.25 (6 people) | £0 | £0 | £100 |
| 4 | £1 (9 people) | £5 | £5 | £5 | £0.25 (6 people) | £0 | £0 | £200 |
| 4 | £1 (9 people) | £5 | £5 | £5 | £0.75 (8 people) | £0 | £0 | £400 |
| 4 | £1 (9 people) | £5 | £5 | £5 | £0.50 (7 people) | £0 | £0 | £300 |
| 5 | £1 (9 people) | £0 | £60 | £60 | £1 (9 people) | £5 | £5 | £5 |
| 5 | £0.75 (8 people) | £0 | £50 | £50 | £0.75 (8 people) | £4 | £4 | £4 |
| 5 | £0.50 (7 people) | £0 | £40 | £40 | £0.50 (7 people) | £2 | £2 | £2 |
| 5 | £0.25 (6 people) | £0 | £20 | £20 | £0.25 (6 people) | £1 | £1 | £1 |
| 5 | £0.25 (6 people) | £0 | £10 | £10 | £0.25 (6 people) | £1 | £1 | £1 |

Note: Tax 1 corresponds to the 'basic' tax group (bottom group displayed in vignettes), Tax 2 corresponds to the 'higher' tax group (middle group displayed in vignettes), and Tax 3 corresponds to the 'additional' tax group (top group displayed in vignettes).

Note that these tables refer to the wage and how many people it affects. In the estimation strategy, 'welfare' will be used as one of the parameters in the structural base model. Welfare is calculated by multiplying the wage by the number of people it affects.

# Appendix B Survey Outline

The survey was structured as follows:

1. Societal views: This section will first seek to understand the respondent's current views on social policy and redistribution. It includes questions on:
   (a) Views on redistribution
   (b) Views on the economy and labour market
   (c) Social and political views
   (d) Informational video on the Low Pay Commission
   (e) Attention checks (woven into the above)
2. Trust and intended policy changes to the minimum wage: Respondents are randomised to participate in this block either directly before or directly after the choice experiment.
   (a) Level of trust for institutions making minimum wage policy decisions
   (b) Choice of future minimum wage rates, indication of perceived consequence of the choice of minimum wage
3. Choice experiment and follow-up questions: Respondents will participate in the choice experiment as described in Section 2.2.1
   (a) Educational video on how to complete the choice experiment
   (b) Choice experiment, includes an informational video before the tax policy section
   (c) Comprehension checks (woven into the choice experiment)
   (d) Slider questions, including all choices (see Section 2.2.1)
   (e) Rank question where respondents indicate a rank-choice of all trade-offs for a minimum wage increase
4. Demographics
   (a) Basic demographics: age, birthplace, household size, etc.
   (b) Income-generating activity: occupation, sector, income, hours, etc.
   (c) Minimum wage experience: prior experience working at the minimum wage, household members working at the minimum wage, etc.
   (d) Household expenditure: average spending on essential and non-essential food and beverages

# Appendix C In-depth description of sample

This section explores sample characteristics in more depth. The average age is 47 years old, with the vast majority of English, Welsh, Scottish, Northern Irish or British ethnicity. The education group with the largest share of the sample are those with a university bachelor's degree. The majority of the sample are in the 20% basic rate tax group, earning up to £37,000 a year. In terms of employment, most of the sample was either working as an employee (50%), freelancing (18%), looking after home or family (17%), or retired (16%) (note respondents could tick more than one category). The average working hours per week were 24 hours, 61% have worked at the minimum wage in the past, while 22% currently work at the minimum wage. Just 16% of the sample have a household member (not including themselves) working at the minimum wage. Finally, the two most represented political leanings (self-assessed) were moderate (37%) and liberal (36%), and the vast majority voted in the prior election (81%).

By examining the sector that each respondent works in, education is the most highly represented sector, followed by human health and social work, information and communication, arts, and professional activities.

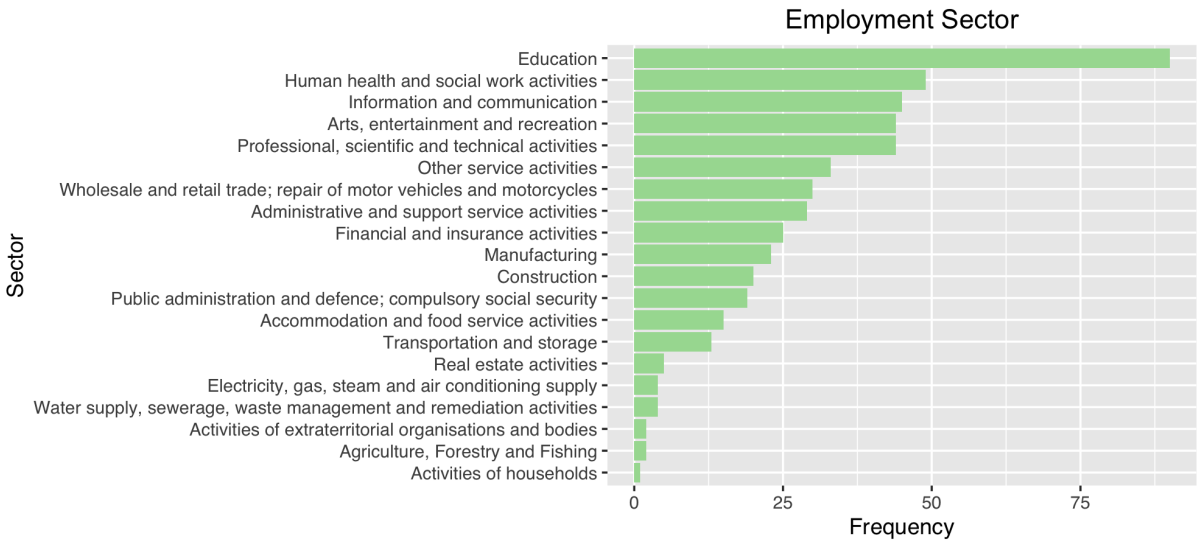



Figure 12: Employment sector

We will next examine how income groups are spread across political parties, to see how (or whether) any income group is over-represented in a particular political party. See in Figure C that the share of those in the 40% or 45% income tax group is higher among respondents who self-identify as either 'conservative' and 'very conservative', as compared to the other groups. The share of 20% income tax group is roughly the same across groups, except for slightly less in the 'conservative' group. Finally, it seems that the 0% tax group is somewhat moderate–their share is about equal for 'liberal', 'moderate', and 'conservative', however it is slightly less for 'very liberal', and not at all for 'very conservative'.

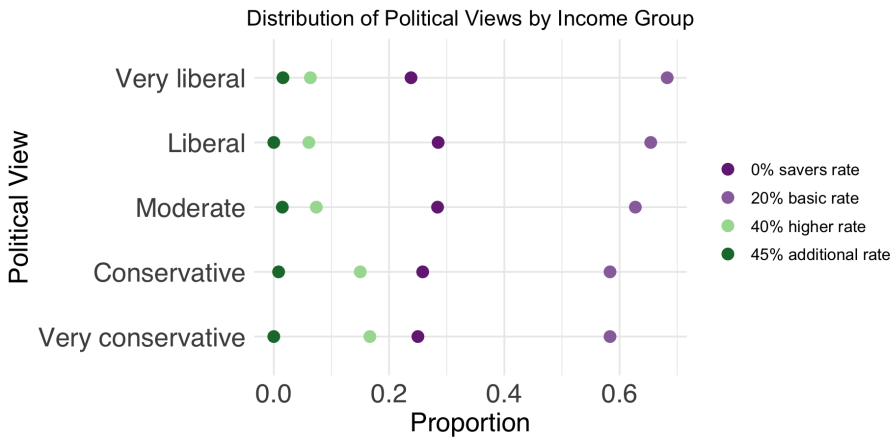



Figure 13: Political views by income group

Moving onto Figure 14, examine whether respondents' voting behaviour in the last general election in 2019, partly to see whether respondents appear very flexible in their voting behaviour but also get an idea for whether they self-assess correctly. All parties that were voted for (14 in total) were categorised as right-wing, centre-right, centre, centre-left, or left-wing. Just to note that the two most-voted for parties in the U.K., the Conservative Party and the Labour Party, were categorised as 'centre-right' and 'centre-left', respectively. Respondents do appear to vote according to their self-assessed political views (in terms of general 'left' or 'right'), however voters who self-assessed as 'very liberal' or 'very conservative' had a small proportion who voted for their 'wing' parties. This suggests that respondents might be more moderate in their behaviour than in their own self-assessment.

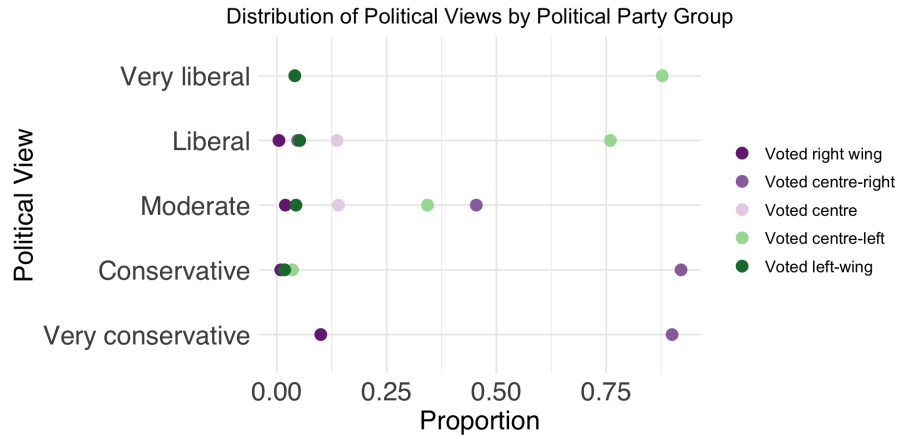



Figure 14: Political views by voting behaviour

Next, explore how the sample views how different groups are taxed. The majority of respondents feel as though the bottom three groups pay the right amount of tax, however the vast majority (74%) feel that the top group should pay more tax. Consistently about 33%-37% of people feel that the bottom three groups should pay less tax.

Table 14: Support for current tax policy

| Group | Should pay less tax | Pay the right amount of tax | Should pay more tax |
|---|---|---|---|
| 0% Savers | 36.87% | 60.88% | 2.25% |
| 20% Basic | 38.11% | 58.29% | 3.61% |
| 40% Higher | 33.93% | 54% | 12.06% |
| 45% Additional | 4.4% | 21.76% | 73.84% |

In examining how respondents feel about the current level of spending, they were first shown the level of government spending on each of H.M. Government's 10 Classification of the Functions of Government (COFOG) categories. They were then asked whether they think the government should spend less, more, or the same. The results are in Table 15. There is no category where the majority of respondents felt that the government should spend less. However, looking at column 1, the top category that respondents feel that the government should spend less on in defence, followed by recreation, culture and religion, and social welfare. There are several categories where the majority of respondents feel that the government should spend more: health, education, housing and community amenities, and environment protection (barely, at 52%).

Table 15: Support for current government spending policy

| Category | Should spend less | Spending is right | Should spend more |
|---|---|---|---|
| Social welfare | 27.4% | 39.68% | 32.92% |
| Health | 2.93% | 20.52% | 76.55% |
| General public services | 15.45% | 43.07% | 41.49% |
| Education | 2.37% | 32.69% | 64.94% |
| Economic affairs | 27.17% | 61.1% | 11.72% |
| Defence | 34.84% | 41.26% | 23.9% |
| Public order and safety | 5.3% | 49.83% | 44.87% |
| Housing and community amenities | 5.52% | 33.6% | 60.88% |
| Environment protection | 8.68% | 39.01% | 52.31% |
| Recreation, culture and religion | 28.3% | 54.45% | 17.25% |

Next, respondents were presented with four questions related to their views on the economy and labour market, including:

1. Do you think income differences between rich and poor people are...
2. Think about your cost of living in the last month—that is, how much it costs for you to pay for basic expenses such as housing, utility bills, groceries, transportation, healthcare expenses, etc. Do you think rising cost of living is a problem in the U.K.?
3. Do you think a mismatched job market is a problem in the U.K., that is, that there are many jobs available but unemployed people are not willing to take them? *Explanation of mismatched job market precedes this question.*
4. Think about a rich person living in the U.K.. What do you think has more to do with why they are rich?

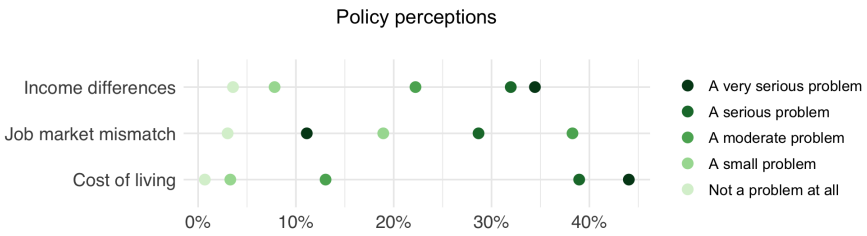



Figure 15: Perceptions on economy

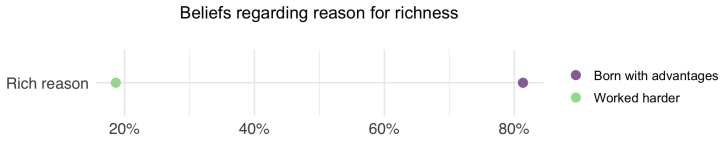



Figure 16: Beliefs of reason for richness

The results from the first three questions are displayed in C. Just over 83% of the sample feel that a rising cost of living is a serious or very serious problem, similarly for 70% of the sample regarding income differences between rich and poor people. On the other hand, only 40% feel that a mismatched job market is a problem. There is a lot of consensus among the sample about the reason why an individual might be rich–over 80% of the sample believe that the reason why someone is rich is because they were born with more advantages, rather than solely because they worked hard.

# Appendix D Ranking

This choice experiment utilised common two forms of stated choice elicitation, one which elicited choice probabilities (Section 3.2) and the other which utilised ranking (this section). After participating in the choice experiment, respondents were shown questions containing a slider, where they could choose their optimal choice of the minimum wage. They were also asked to rank all the trade-offs shown in order of preference. As specified in Table 16, respondents received a random subset of two of 12 total options. Options vary by which group pays, and which trade-off is 'severe'. This results in the total of 12 variations:

Table 16: Variations for slider questions

| Question no. | Tax group paying | Severe |
|---|---|---|
| 1 | higher and additional brackets | None |
| 2 | additional bracket | None |
| 3 | basic, higher, and additional bracket | None |
| 4 | higher and additional brackets | Tax |
| 5 | additional bracket | Tax |
| 6 | basic, higher, and additional bracket | Tax |
| 7 | higher and additional brackets | pass-through |
| 8 | additional bracket | pass-through |
| 9 | basic, higher, and additional bracket | pass-through |
| 10 | higher and additional brackets | Unemployment |
| 11 | additional bracket | Unemployment |
| 12 | basic, higher, and additional bracket | Unemployment |

An example slider question (slider 11, where the additional tax bracket pays for the increase, and where unemployment is the severe trade-off) is shown in Figure 17:

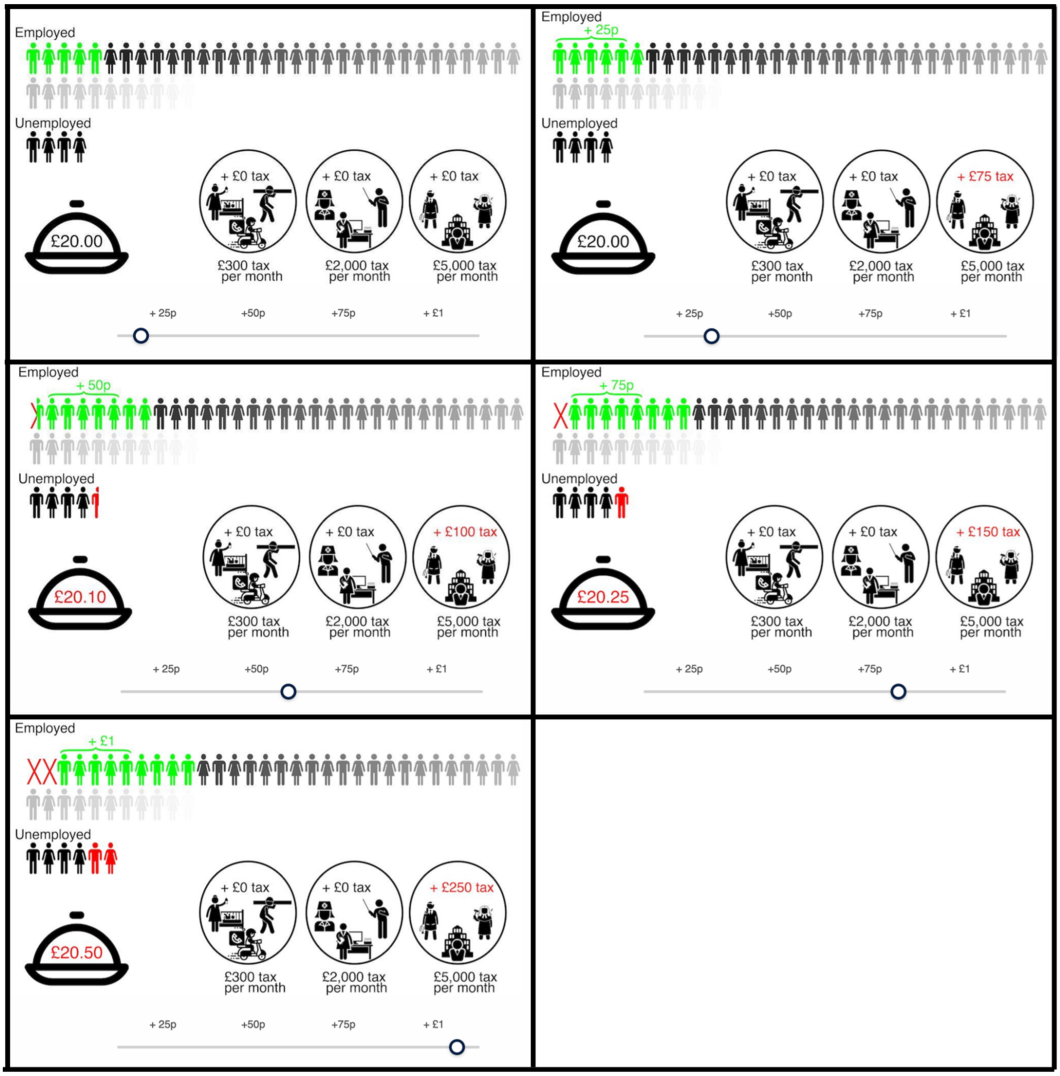



Figure 17: Slider: all options

The overall average choice of new minimum wage was an increase of £0.58. However, to analyse this average conditional on the tax groups and severity indicators, the following equation was run:

$$wage_i = \beta_0 \left( \sum_{b \in \text{Brackets}} \mathbb{I}(\text{Bracket}_i = b) \right) \gamma_{ib} + \left( \sum_{s \in \text{Severe}} \mathbb{I}(\text{Severe}_i = s) \right) \phi_{is} \tag{10}$$

Where $wage_i$ is individual $i$'s choice of minimum wage, $\mathbb{I}(\text{Bracket}_i = b)$ is the indicator function for which tax group was paying for the increase. The reference group is the binary indicator for all groups paying for the increase. $\mathbb{I}(\text{Severe}_i = s)$ is the indicator function for which severity category was included. The reference group is the binary indicator for no trade-off being severe. Cluster-robust standard errors were used in the OLS estimation, where clustering was done on individual id.

Table 17: OLS estimates: all trade-offs

| Variable | Estimate | Std. Error | p-value | |
|---|---|---|---|---|
| (Intercept) | 0.588 | 0.016 | 0.000 | *** |
| Severe: unemployment | -0.082 | 0.016 | 0.000 | *** |
| Severe: pass-through | 0.011 | 0.017 | 0.512 | |
| Severe: tax | 0.003 | 0.016 | 0.864 | |
| Bracket: higher and add'l | 0.010 | 0.015 | 0.498 | |
| Bracket: add'l | 0.024 | 0.015 | 0.123 | |

Note: The result from one OLS estimate. The reference group for the 'severe' binary variables is the binary indicator for no trade-off being severe. The reference group for the tax 'bracket' binary indicators is the binary indicator for all groups paying for the increase. Cluster-robust standard errors were used with clustering on individual id.

From these results, the average desired increase in the minimum wage is £0.59 when all groups pay for the increase and when no trade-off is severe. The only other variable that is significant in this estimation is the severe indicator for unemployment, showing that the impact of having the unemployment trade-off be severe (when all groups pay) is associated with a reduction in £0.08 in the desired minimum wage as compared to no trade-offs being severe when all groups pay for the increase.

This finding reinforces the results from the base model as well as summary statistics, where individuals seem to prefer *an* increase in the minimum wage, although one that is moderate considering the trade-offs present. It is also in-line with other findings to see that the severity for unemployment is the only significant covariate. From the base results, the compensating variation is the highest for unemployment–indicating that individuals would require the largest increase in welfare for a one-unit change in unemployment in order to be indifferent as compared to any other trade-off. Put differently, there is consensus among the sample that an increase in unemployment results in the largest reduction in welfare compared to pass-through and tax. It is unsurprising, in this case, that there is a significant reduction in the desired minimum wage when the unemployment trade-off is severe as compared to no severity. Thus, the sample seems to have consensus that there should be a smaller increase of the minimum wage if unemployment were to change.

Next, see Table 18 for how respondents ranked their order of preference for each trade-off. The order of ranking (from most preferred to least preferred) was: tax (additional bracket), tax (higher and additional bracket), pass-through, tax (all brackets), and unemployment. This is in-line with the results from the base model as well as analysis on the slider questions–particularly that unemployment is ranked on average 1.38, which is very close to the lowest possible ranking.

Table 18: Ranking of all options

| Trade-off | Mean | SD |
|---|---|---|
| Unemployment | 1.38 | 0.815 |
| pass-through | 3.206 | 0.935 |
| Tax: Higher and add'l | 3.637 | 0.749 |
| Tax: Add'l | 4.585 | 0.852 |
| Tax: All | 2.192 | 0.969 |

Note: Ranking is on a scale from 1 to 5, with 1 being least preferred and 5 being most preferred

# Appendix E Kolmogorov-Smirnov tests

Results from the Kolmogorov-Smirnov tests for overlap between each of the different empirical CDFs are shown in Table 19, with the key for the choice set number in Table 20. The null hypothesis in each case is that the two samples are from the same continuous distribution.

Table 19: Kolmogorov-Smirnov tests

| Test | D | p-value |
|---|---|---|
| Unemployment: 1 and 2 | 0.195 | 0.000 |
| Unemployment: 2 and 3 | 0.176 | 0.000 |
| Unemployment: 2 and 4 | 0.172 | 0.000 |
| Unemployment: 1 and 3 | 0.353 | 0.000 |
| Unemployment: 1 and 4 | 0.349 | 0.000 |
| Unemployment: 3 and 4 | 0.015 | 1.000 |
| Price pass-through: 1 and 2 | 0.098 | 0.000 |
| Price pass-through: 2 and 3 | 0.250 | 0.000 |
| Price pass-through: 2 and 4 | 0.099 | 0.007 |
| Price pass-through: 1 and 3 | 0.298 | 0.000 |
| Price pass-through: 1 and 4 | 0.189 | 0.000 |
| Price pass-through: 3 and 4 | 0.151 | 0.000 |
| Tax Question 1: 1 and 2 | 0.109 | 0.159 |
| Tax Question 1: 2 and 3 | 0.041 | 0.993 |
| Tax Question 1: 2 and 4 | 0.134 | 0.037 |
| Tax Question 1: 1 and 3 | 0.077 | 0.539 |
| Tax Question 1: 1 and 4 | 0.056 | 0.873 |
| Tax Question 1: 3 and 4 | 0.102 | 0.182 |
| Tax Question 2: 1 and 2 | 0.246 | 0.000 |
| Tax Question 2: 2 and 3 | 0.119 | 0.110 |
| Tax Question 2: 2 and 4 | 0.070 | 0.684 |
| Tax Question 2: 1 and 3 | 0.246 | 0.000 |
| Tax Question 2: 1 and 4 | 0.246 | 0.000 |
| Tax Question 2: 3 and 4 | 0.060 | 0.797 |
| Tax Question 3: 1 and 2 | 0.110 | 0.279 |
| Tax Question 3: 2 and 3 | 0.163 | 0.013 |
| Tax Question 3: 2 and 4 | 0.216 | 0.000 |
| Tax Question 3: 1 and 3 | 0.086 | 0.557 |
| Tax Question 3: 1 and 4 | 0.155 | 0.039 |
| Tax Question 3: 3 and 4 | 0.078 | 0.596 |
| Tax Question 3: 1 and 5 | 0.062 | 0.927 |
| Tax Question 3: 2 and 5 | 0.110 | 0.235 |
| Tax Question 3: 3 and 5 | 0.118 | 0.155 |
| Tax Question 3: 4 and 5 | 0.159 | 0.022 |

Table 20: Choice set number key

| Choice set | | Description |
|---|---|---|
| Unemployment | | |
| | 1 | £1 & 1pp unempl vs. £0.25 & no unempl |
| | 2 | £1 & 2pp unempl vs. £0.25 & no unempl |
| | 3 | £1 & 2pp unempl vs. £0.75 & 1pp unempl |
| | 4 | £1 & 2pp unempl vs. £0.50 & 0.5pp unempl |
| Passthrough | | |
| | 1 | £1 & 3.75% price pass vs. £0.25 & 0% price pass |
| | 2 | £1 & 5% price pass vs. £0.25 & 0% price pass |
| | 3 | £1 & 5% price pass vs. £0.75 & 2.5% price pass |
| | 4 | £1 & 5% price pass vs. £0.50 & 1.25% price pass |
| Tax Question 1 | | |
| | 1 | £1 & £4 all grps vs. £0.25 & £10 top two grps |
| | 2 | £1 & £5 all grps vs. £0.25 & £20 top two grps |
| | 3 | £1 & £5 all grps vs. £0.75 & £50 top two grps |
| | 4 | £1 & £5 all grps vs. £0.50 & £40 top two grps |
| Tax Question 2 | | |
| | 1 | £1 & £4 all grps vs. £0.25 & £100 top grp |
| | 2 | £1 & £5 all grps vs. £0.25 & £200 top grp |
| | 3 | £1 & £5 all grps vs. £0.75 & £400 top grp |
| | 4 | £1 & £5 all grps vs. £0.50 & £300 top grp |
| Tax Question 2 | | |
| | 1 | £1 & £60 top two grps vs. £1 & £5 all grps |
| | 2 | £0.75 & £50 top two grps vs. £0.75 & £4 all grps |
| | 3 | £0.50 & £40 top two grps vs. £0.50 & £2 all grps |
| | 4 | £0.25 & £20 top two grps vs. £0.25 & £1 all grps |
| | 5 | £0.25 & £10 top two grps vs. £0.25 & £1 all grps |