Using Wage Council Data to Identify the Effect of Recessions on the Impact of the Minimum Wage

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EXECUTIVE SUMMARY

Up until now the National Minimum Wage (NMW) introduced in April 1999 appears to have been a policy success. So far there has been little evidence of a negative effect on employment. However, to date, the NMW has largely been operating in a period of prolonged economic expansion. Since the spring of 2008 the UK economy has experienced a downturn of significant proportions. In this report we examine the impact of the UK minimum wages in force during the 1980s and 1990s recessions when a system of Wages Councils was in operation.

Wages Councils set (different) minimum rates of pay in a range of low-paying industries. However there were still a large number of low-wage industries not covered by the legislation. This project analyses the impact of the two previous recessions on employment and wages in Wages Council sectors relative to other similar but uncovered low-wage industries using data from the New Earnings Survey and Workforce in Employment Survey form the panel.

The findings are informative about the likely consequences of the NMW in the current recession. We can find no significant detrimental impact on employment from the Wages Councils. We do find some evidence of negative hours effects from the Wages Councils, although we cannot find any further detrimental impacts through the recessions of the 1980s or 1990s. In addition, our individual level results are consistent with higher turnover in the Wages Councils sectors. We do find some evidence of a slowdown in turnover through the recessions, and some evidence that hiring increased in the 1990s recession in these low wage sectors.

None of the results here indicate that the National Minimum Wage will have any more detrimental impacts on employment through the recent Credit Crunch recession. However, one must be mindful of the fact that recessions can be very different. Our individual results suggest this. So the recent recession that the UK has experienced may play out differently across different sectors than have recessions of the past.

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1. INTRODUCTION

The introduction of the National Minimum Wage (NMW) in April 1999 appears to have been a policy success. Research suggests that it has raised the pay of many low wage workers leading to a significant compression of the bottom of the pay distribution. Furthermore, despite the potential for negative employment effects from such an effective minimum wage, there is no clear evidence that the rising NMW has caused any significant loss of employment. However, one must recognise that the NMW has largely been operating in a period of prolonged economic expansion. Since the spring of 2008 the UK economy has experienced a downturn of significant proportions. This has resulted in significant job loss in some low wage sectors. As a consequence, the impact of the NMW on labour market outcomes may have changed with a greater potential for employment loss. In contrast - previous LPC reports have suggested that the low paid are less affected by any downturns in the economy. The reality is that there is little clear evidence on how the recession affects the impact of the NMW and the low paid. In this project we will seek to further that knowledge by examining the impact of the UK minimum wages in force during the 1980s and 1990s recessions.

From 1909 until 1993 a system of Wages Councils were in operation in the UK. A key feature of the Wages Council systems is that they set (different) minimum rates of pay in a range of low paying industries. However, a large number of low wage industries were not covered by the legislation. In this report we provide an analysis of the impact of these recessions upon employment and wages in these sectors relative to other similar low wage industries.

Our key priorities are:

- To understand whether the existence of a minimum wage results in a differential impact of a recession on employment and wages in low wage sectors.
- To be informative about the likely consequences of the NMW in the current recession.

- To examine different measures of employment at the industry level – derived from the Workforce in Employment Survey data and the New Earnings Survey to examine whether the results are robust to different sources of employment data.
- To use both industry level and individual level econometric analysis from the Workforce in Employment survey and NES panel respectively to examine the effect of minimum wages on employment.

2. WAGE COUNCILS AND A LITERATURE REVIEW

The Wages Councils were established by Winston Churchill in 1909 in order to protect workers in the so-called sweated trades from low pay. They set minimum wage rates in a number of different industries. Initially, Wages Councils existed in small manufacturing industries. Coverage grew to a peak of about 60 covered sectors in the early 1960s and included the growing service sector industries; catering, retail, etc. The details of which industries have Wage Councils and when they were introduced and then disbanded are complicated and set out in a small literature. Good accounts of the history of these Wages Councils are provided in Guillebaud (1958) and Bayliss (1962). By the time all but one[1] of them was abolished in 1993 the 26 remaining Wages Councils set minimum wages for approximately 2.5 million workers in low-paid sectors (mostly in hotels and catering, retail, clothing manufacture, and hairdressing but also in a number of very small industries such as Ostrich and Fancy Feather, Rope Twine and Net manufacture).

Each Wages Council had a similar structure to the current Low Pay Commission, with an equal number of employer and worker representatives, plus a maximum of three independent members (nominated by the government of the day). Until the 1986 Wages Act, the councils generally set a myriad of minimum wages differentiated by age, occupa tion, and region but since 1986 set only a single rate.

Given the unusual structure of minimum rates in the UK over the period from 1909 to 1993 there is an under-researched natural experiment on the use of the Minimum Wage. This experiment relates to the introduction of industry level minimum wages in particular 'sweated labour' industries over the whole period from 1909 to 1993. There has been

[1] The Agricultural Wages Board wasn't abolished and won't be until 2012.

relatively little analysis of the effect of these Wage Councils (see Dickens et al (1999)) but no analysis does what has been done in this report. Its contribution is threefold:

1. To introduce the idea of matched covered industries which are in the same 2 digit level SIC to exploit a Differences-in-Differences analysis.
2. To use both industry level analysis and individual level analysis of the same problem to identify the effects.
3. And finally to identify if the effects of the Minimum Wage are sensitive to the timing of macroeconomic shocks and more specifically to the whole downturn of the economy in a recession.

We compare the evolution of labour market outcomes, comparing sectors covered by the Wages Councils with uncovered sectors. Our emphasis will be on performance through the recessions of the 1980s and 1990s. At the outset we will provide a descriptive analysis of employment and wage change in the different sectors looking at both average and distributional changes. We then investigate the differential changes econometrically using panel estimation techniques. Given that we have covered and uncovered sectors this analysis will be akin to differences in differences estimation.

Within the Wages Council industries the relative "bite" of the minimum wage varied. We therefore investigate the scope to which the intensity of the minimum wage affected the evolution of labour market outcomes through the recessions. Furthermore, the "bite" of the minimum wage varied for young and adult workers, and in 1986 those under 21 years of age became ineligible for the minimum wage.

We supplement the sectoral level analysis with an individual level analysis of job retention. Using the NES panel we can examine job retention rates over the year and compare those workers covered by the Wages Councils with workers in similar but uncovered sectors. Our econometric model tests for differential transitions through the 1980s and 1990s recessions using a difference in differences methodology. As we have many years of data we can also test for common trends in employment transition in years where the UK was not in recession.

3. **DEFINING A RECESSION**

Since the theme of this report is to use the Wages Councils' data to study the effect of recessions on the impact of the Minimum Wage we need to be clear exactly what we mean by a recession. The formal accepted definition of a recession is 2 quarters of consecutive negative GDP growth. This definition is clear and unambiguous in the context of quarterly data but leaves us with a difficulty when we work with annual data. We explored three possible definitions of a recession for yearly data:

i) The year contains at least 2 consecutive quarters of negative GDP growth. (This would give the years 1980, 1990, 1991 as recessionary years.)

ii) The year contains any 2 two quarters (not necessarily consecutive) of negative growth. (This would give the years 1979, 1980, 1991, as recessionary years.)

iii) The year has negative growth on average over all 4 quarters. (This would give the years 1980, 1981, 1991 as recessionary years.)

We explored the use of GDP growth directly, both instead of the recessionary indicators defined above and in conjunction with them.

Finally we explored the possibility that characterising a recession by any of the three above methods was unnecessary in the sense that it was easier to simply characterise a 'year' effect for each year that was categorised as a recession. This involved just including a separate dummy variable for all the years in our data, interacted with the relevant Wages Council variable.

We found that the different possible definitions of a 'recession' as a discrete variable was unimportant and did not change the nature of our conclusions – hence the results we report look only at the effect of a recession defined as per definition ii) above. However we did estimate separate models for each outcome using this recessionary variable alone, GDP growth alone, and a specification with both variables included.

4. DATA

We construct a sectoral level panel that includes both the covered Wages Council sectors and comparison industrial sectors that are not covered by the minimum wage. This panel covered the time period from 1975 to 1993 and consequently encompassed the recessions of the 1980s and 1990s. We additionally constructed an individual level panel in order to examine job transitions of covered and uncovered workers.

Following on from the analysis of Dickens, Machin and Manning (1999) we utilised data from both the New Earnings Survey (NES)[2] and the Workforce in Employment Survey to construct the sectoral level panel data. With the NES micro data there are two possible ways in which to identify whether an individual is covered by a Wages Council. Firstly, the questionnaire asks directly whether the employee is covered by a Wages Council and if so which one. However, this may contain a degree of measurement error as the individual who responds (the employer) may not always know if the employee is covered or not. A second method is to use the detailed industry and occupational information in the survey along with information in the Wages Orders to determine who is covered by each Wages Council. This latter methodology was used by Dickens et al (1999) as their preferred measure. The NES contains a wealth of detailed information on wages that allowed us to construct both average wages and measures of the distribution of wages. Since the NES is a 1% random sample of employees in employment, the cell sizes provide a measure of employment in each sector. The NES also contains information on sex, age, region, detailed hours information plus a number of other job and employer characteristics. This will allow us to examine differential changes across these groups of workers.

An alternative measure of employment in the Wages Council sectors can be obtained from the Workforce in Employment figures published in various issues of the Employment Gazette. These provide a detailed industry level breakdown of employees in employment.

In constructing the Wages Council data we follow Dickens et al (1999). We construct this data again from scratch using the micro NES and the Employment Gazette. In addition, we construct data on comparison industries. This is crucial to enable us to compare labour market performance of covered and uncovered sectors. In order to make meaningful

[2] It should be noted that the NES data is data provided by employers based on Personnel and PAYE records.

comparisons we require our uncovered sectors to be similar to the covered sectors. Given that Wages Councils only existed in a range of low paid industries we are able to identify low paid sectors that are not covered. i.e. Retail Distribution was covered by a Wages Council, whereas Wholesale Distribution was not covered.

Table 1 details the matched Wages Councils and comparison industries. The Data Appendix provides more detail on the Industry codes used to construct these industries.

The NES micro data is used to construct an individual level panel since the same 1% of employees are surveyed each year[3]. We then use this to examine job retention rates of both covered and uncovered employees as we observe employment status in each year. More details of the data construction and potential problems are discussed below in Section 7.

[3] The NES can be used to form a panel dataset to the extent that the individuals remain in employment. The sample therefore changes to reflect retirement, death, school leaving, migration and other forms of non-reporting.

Table 1: Matched Wages Councils and Comparison Industries

Wages Council	Comparison Industry
Agriculture	Forestry & Fishing
Aerated Waters	Brewing and Malting
Clothing	Footwear
Hairdressing	Sports and Recreation
Laundry	Dry Cleaning
Licensed Non-Residential	Canteens and Messes
Licensed Residential	Canteens and Messes
Unlicensed Place of Refreshment	Canteens and Messes
Retail Food	Wholesale Food
Retail Non-Food	Wholesale Non-Food
Toy Manufacture	Rubber Manufacture

5. ECONOMETRIC METHODOLOGY

The central idea of this paper is to use the period from 1975 – 1993 when the Wages Councils were in existence to compare outcomes across "covered" industries with those in "uncovered" industries as detailed in Table 1.

A further analysis which will be done in subsequent research will exploit the fact that there are further regimes when the Wages Councils were abolished (1993–1999) and a third regime in which a 'National MW' operated from 1999 to the present.

5.1 Industry Analysis.

Our first approach to the analysis is to replicate the work of Dickens, Machin and Manning (1999) DMM, by re-examining the period of the Wages Councils. In this context we denote the industry (detailed in the Appendix) by j and the time period by t. We seek to explain the variations in employment by industry over time:

$$\log(L_{jt}) = f_j + \delta_1 \log(Kaitz_{jt}) + Year_t + u_{jt}$$

Where L_{jt} is employment in Wages council *j* in year t. f_j is an industry fixed effect. Here the Kaitz index is defined as the ratio of the Minimum Rate in Wages Council j to the industry average wage.

$$Kaitz_{jt} = \frac{min_{jt}}{wage_{jt}}$$

$Year_t$ are a set of year dummies. This estimation equation is the same as in DMM. We estimate this model in levels and in first differences. We also estimate a version of this model whereby we interact the Kaitz index with our recession dummy variables defined above.

$$\log(L_{jt}) = f_j + \delta_1 \log(Kaitz_{jt}) + \delta_2 \log(Kaitz_{jt}) * Recession_t + Year_t + u_{jt}$$

5.2 Differences-in Differences Industry Analysis using control groups.

Our second approach to the analysis is to consider a Differences-in-Differences analysis of each industry j from a comparator industry in the same sector, but which was not under the jurisdiction of a Wage Council. See the Data Appendix for exact details. We seek to explain the variations in the differences in employment by industry compared to its control comparator over time:

So now we estimate the model on the full set of industries in Table 1; including the Wages Councils and their comparison industries. We include a Sector fixed effect that links together Wages Councils with their comparison industry in each row of Table 1.

$$\log(L_{jt}) = \ + \gamma\ Sector_{\ jt} \ + \ \delta_1 \log(Kaitz_{jt}\ )$$
$$+ \delta_1 \log(Kaitz_{jt}\ ) * WC_j \ + \ \delta_3 \log(Kaitz_{jt}\ ) * Recession_t \ + \ Year_t + \ u_{jt}$$

Now the Kaitz index is defined for all industries but then interacted with a dummy WC_j which signifies if the industry is a covered Wages Council or not. This requires that we define a Kaitz index for the uncovered sectors. We use the prevailing minimum rate in the corresponding Wages Council.

5.3 Relative Industry Analysis using control groups.

We also estimate a model of relative employment; between Wages Councils and their comparison industry.

$$\log(L_{jt}/L_{ct}) = \ + \gamma\ Sector_{\ jt} \ + \ \delta_1 \log(Kaitz_{jt}\ )$$
$$+ \log(Kaitz_{jt}\ ) * Recession_t \ + \ Year_t + \ u_{jt}$$

Where L_{jt} and L_{ct} are employment in Wages Council j and comparison industry c respectively. Now we just define the Kaitz index for the Wages Council industries.

6. INDUSTRY LEVEL ANALYSIS.

We construct data on *covered* Wages Council sectors and *uncovered* comparison industries in order to compare the evolution of employment through recessions. We use both NES micro data to construct an industry-year panel on employment and wages for the time period 1975-1993. In addition, we also match in employment data published in the Employment Gazette (from the Workforce in Employment Survey). Each Wages Council industry is matched up with a comparable non-covered industry (e.g. Retail Food is matched with the uncovered Wholesale Food).

Before we present our employment results, Figure 1 presents the average Kaitz Index for each year: 1976-1993. Here we see significant variation in the relative "bite" of the minimum wage over time, with some significant increases in the late 1970s that are probably a result of incomes policies at the time[4], some of which favoured lower-paid employees. From the early 1980s through to abolition in 1993 the relative value of the minimum wage was declining. Let us now turn to our employment results.

The results in Table 1 are run in levels for the Wages Council industries only. Here we see that the Kaitz index is insignificantly different from zero for all of the employment results. This suggests that the 'bite' of the minimum wage has no clear effect on the level of employment in the Wages Council industries. Table 1 also shows how the minimum wage had a clear negative effect on the working hours in the industry. In Table 1 the recessionary effect is unclear as the 1980s recession is significantly negative in the employment equation but insignificant for the 1990s recession. Likewise, there is an ambiguous effect of the recession on working hours, as the column (6) of Table 1 indicates that the 1990s recession has a positive effect on working hours – whereas the 1980s recession has no effect. In summary the effect on hours is clearly negative but it doesn't get worse (or better) in recession.

Moving to our analysis of the effects of the Wages Councils in terms of the first differences in employment and the first differences in working hours, we present our results in Table 2. Here we see that the change in the log of the Kaitz index has a clear positive effect on the

[4] Some of these Incomes Policies gave cash lump sums to workers which may affect his ratio.

change in the level of employment. Columns (5) and (6) also show clearly that the change in the log of the Kaitz index has no significant effect on the change in the level of working hours. This table also shows that we can find no differential impact through either the recessions of the early 1980s or 1990s. Hence our results suggest that overall the Wages Councils had a positive impact on employment growth – which is support for the results found in Dickens, Machin and Manning, (1999).

Tables 1 and 2 provide evidence on the relationship between minimum wages and employment and working hours based on one level of differencing using consecutive time periods. Our next analysis exploits another level of differencing. Specifically we have carefully constructed matching uncovered industries for each Wages Council in our analysis based on a closely related industry at the same 2 digit level of SIC coding – but which is not covered by a Wages Council agreement. Full details are in the Data Appendix.

Table 3 reports our panel analysis of the whole set of covered and uncovered Wages Council industries in terms of levels of employment and working hours. This table suggests that there is no relationship between the level of employment and the bite of the minimum wage. The interaction term with Wages Council coverage is positive in all specifications but not statistically different from zero. Columns (5) and (6) indicate that there is a negative relationship between the level of working hours and the bite of the Kaitz index. Again the interaction term with Wages Council is insignificant. However, we do find a positive and significant interaction with the 1980s recession, which suggests hours may have increased in these industries.

Table 4 reports our panel analysis of the whole set of covered and uncovered Wages Council industries in terms of first differences of the levels of employment and working hours. Hence in some sense this analysis is a Diff-in-Diff-in-Diff where the first level of differencing comes at the level of distinguishing between covered and uncovered industries and the second level of differencing comes by considering consecutive time periods. The unobserved heterogeneity associated with industries (and to some extent over different economic circumstances at different points in time) has been netted out by the differencing procedure and this should give us some confidence that the results reveal more about the 'true' underlying relationship between the minimum wage and its 'bite' and the labour market outcomes of employment levels and working hours.

The main result which is of interest in Table 4 relates to the interaction (Diff-in-Diff) coefficient on the product of the Kaitz and the control dummy for the covered sector. This coefficient is clearly significant and positive for both definitions of employment for both equation specifications. This is good evidence that the differential effect of the bite of the minimum wage between the covered and uncovered sectors has a clear positive employment effect. This same interaction effect is not statistically significant in relation to working hours – although the raw impact of the Kaitz bite on working hours (un-interacted with the covered/uncovered dummy) is negatively significant again. Again we find little sign of any differential impact in recessions, except for some evidence that the 1990s recession had a positive impact (Column (2)).

In Table 5 we estimate the relative employment model. Here we estimate everything in first differences. So our dependent variable is the change in relative employment between the Wages Councils and their corresponding comparison industry. Here we find no significant impacts from the change in the Kaitz index, or any effects from the interactions with the recession dummies.

In conclusion our results suggest that overall the Wages Councils had a positive impact on employment growth (as in Dickens, Machin and Manning, 1999). We can find no differential impact through either the recessions of the early 1980s or 1990s. Increases in the minimum rates in the covered industries, had no impact on the relative employment between the Wages Councils and the uncovered industries. Furthermore, we find no relative employment change through either of the recessions. Our results are robust to two different measures of employment and these effects are consistent with earlier papers and also robust to two levels of difference-in-difference analysis. We do find a negative hours effect in the levels specifications. This disappears when we take first differences. This is not dissimilar to the results of Stewart (2008) in looking at the impact of the National Minimum Wage. However, these results should be treated with caution since they are not robust to the different dynamic specifications.

7. INDIVIDUAL LEVEL ANALYSIS

In this section we turn to the analysis of individual transitions to examine the role of the Wages Councils in determining employment outcomes, again with a focus on periods of recession. We utilise the micro level NES panel for the period 1975 – 1993. Our approach is to examine both employment retention and employment inflows. As in the industry level analysis, we compare outcomes of those in Wages Council industries with those in the comparison industries outlined above.

We define job retention (Ret_{it}) for those observed in employment (or in the NES panel) at time period t-1 as:

$$Ret_{it} = \begin{cases} 0 & if \quad E_{it} = 0 \mid E_{it-1} = 1 \\ 1 & if \quad E_{it} = 1 \mid E_{it-1} = 1 \end{cases}$$

Where E_{it} = 1 if an individual i is employed and zero otherwise. We are thus measuring the probability of an individual who is employed at t-1 remaining in employment at period t. The NES is a sample of employees in employment. If an individual leaves employment they will drop out of the panel. We therefore use this as our measure in determining employment retention.

Similarly, we define inflows (Inf_{it}) on the population of those in employment at time period t as:

$$Inf_{it} = \begin{cases} 1 & if \quad E_{it-1} = 0 \mid E_{it} = 1 \\ 0 & if \quad E_{it-1} = 1 \mid E_{it} = 1 \end{cases}$$

Here we measure the probability that an individual who is employed in period t was not employed at period t-1. One potential problem here is that individuals may disappear from the NES panel for a number of reasons other than employment exit. First, if individuals exit to self employment they will not appear in the NES, unless they still hold an employee position. Second, the NES under-samples those with low pay (below the National Insurance threshold) and those who are in the process of changing jobs. The sample frame for the NES is drawn from Pay-As-You-Earn (PAYE) tax records. All those employees with an NI number that ends in two particular digits are drawn from those tax records. The ONS then sends the survey form to the individual's current employer. As such, if an individual is not earning above the NI threshold they will not necessarily be picked up when sample is drawn up. Furthermore, if an individual moves jobs in the period between the sample frame being

drawn from the tax records and the survey week they are likely to drop out of the survey. Increasingly, firms download those employees, whose NI number ends in the relevant digits, directly from their payroll records. This helps to solve some of the under-reporting problems but this method of obtaining records was much less commonplace in the period we are analysing.

Our methodology treats any individual that drops out of the panel as having left employment. This is likely to overstate the degree of turnover, or understate job retention. Given the lack of information in the NES for reasons for exit there is ultimately little we can do about this problem. Our methodology compares individuals in Wages Councils with those in our comparison industries. Given this we will only bias our results to the extent that the under-reporting of flows out of the NES differs across these Wages Councils and their comparison industries.

We then estimate the following model from job retention using a probit regression on a sample of those in employment at time t-1:

$$Prob(E_{it} \,|E_{it-1} = 1) \;= \propto \; + \delta_1 \, WC_{it-1} + \; \delta_2 \, WC_{it-1} \times Recession_{it-1}$$
$$+ \gamma \; Sector_{\;it-1} + \; \beta X_{it-1} + Year_t + \; u_{it}$$

Where WC_{it-1} is a dummy variable signifying whether the individual was in a job covered by a Wages Council in period t-1. We also report results using the Kaitz index. This is then interacted with a dummy variable that indicates periods of recession. We also experiment here with a less restrictive version that interacts the Wages Council dummy with a full set of year dummies. $Sector_{it-1}$ is a set of dummy variables that indicate the industry sector of the individuals. This variable matches Wages Council industries with the comparison industries given in Table 6. X_{it-1} is a set of control variables including; a quartic in age, regional dummies, occupational dummies, a quadratic in the (log) hourly wage. Finally, we also include a set of year dummies; $Year_{it}$.

Similarly, we estimate a probit model for inflows into employment. This captures whether those currently in employment were employed a year previously.

$$Prob(E_{it-1}\,|E_{it}=1) = \propto + \delta_1 WC_{it} + \delta_2 WC_{it} \times Recession_{it} + \gamma\, Sector_{it} + \beta X_{it} + Year_t + u_{it}$$

7.1 Individual level descriptive analysis

We begin by showing some descriptive statistics on job retention and inflow rates. Figures 2-4 present the retention rates for full time men and women and part time women respectively. Take Figure 2 for full time males. The most obvious pattern that stands out from this figure is that retention rates are generally lower in the Wages Council industries than in their comparison industries. This may be just a feature of the type of workers or jobs that exist in these industries. In the regression analysis below we will control for observable characteristics of the workers that may explain some of these differences in retention. But in the NES individual characteristics are limited. It may well be the case that the sort of workers attracted to Wages Council jobs (e.g. Food Retail which is a sector more likely to employ women and who are not in a union) are different in an unobservable way from their comparison industries (e.g. Food Wholesale which is sector more likely to employ men who are in a union). The second point to note is that retention rates are increasing over time in both sectors. This may well be a feature of NES data collection, whereby more workers are traced directly through computerised payroll systems.

Figure 3 presents the same for full time female workers. Again we see that retention rates are higher in the comparison industries. However, the gap is closer than for males and there is some evidence that the gap in retention rates closes in the recessions of the 1980s and 1990s. Figure 4 presents retention rates among part time women (we do not report results for part time men as sample numbers are very low). These figures are more volatile for the comparison groups (probably due to small samples) but again we see a pattern of retention rates rising faster in the Wages Councils during the recessions. There appears to be some

evidence here that these low wage, largely service, sectors are afforded some protection through recessionary periods.

Let us now turn to the figures for inflows. Note here that inflows are not defined in the standard way; in terms of number of new hires as a proportion of those out of work. They are defined in terms of the stock of current employees. Figure 5 presents the inflow rate for full time male employees. These rates appear to be high; some 30-40% of those in Wages Council jobs were not in employment a year previous. Note that inflow rates are higher in the Wages Councils than in the comparison groups. This fact, coupled with lower retention rates suggest that Wages Council jobs are higher turnover jobs than the comparison sectors, i.e. workers cycle in and out of these jobs to a greater degree. There is also some evidence that inflows are declining over time; which is consistent with the NES becoming more effective in tracing individuals within the sample frame. Figures 6 and 7 present inflow rates for full and part time women. Inflow rates are even higher among women, particularly part time women. There does appear to be a decline over time but otherwise there are not any clearly obvious patterns through the recession. In addition there doesn't seem to be much difference between the sectors for women, especially part-time women.

Overall the results here are indicative of a Wages Council sector with higher turnover rates; reflected in lower job retention and higher inflows. However, we need to control for the observable characteristics that we have. For example, age differences may explain some of the turnover differences between sectors. Let us now turn to the estimation of the retention and inflow equations presented above.

7.2 Individual level parametric results

Table 6 presents the job retention results for all males and females. The first two columns present results based on a Wages Council dummy for the minimum wage variable. Columns 3 and 4 present results using the Kaitz index, which is set to zero for the comparison sectors. Each regression includes a set of controls as detailed in the table. The results confirm the patterns seen in the figures above. Retention rates are indeed lower, conditional on observable characteristics. For males, the coefficient on the Wages Council dummy is -0.017 and is statistically significant at the 5% level. This suggests that on average retention rates among males in Wages Council jobs are 1.7% points lower than their counterparts in the

comparison industries. Also, reported are the interaction terms for the 1980s and 1990s recessions. Here we find that during the 1980s recession, retention rates increased in the Wages Council sectors, compared to the comparison sectors, to the extent that retention rates became larger in the Wages Councils. We find no such effect for the 1990s recession.

The results for all females in column 2 are similar in spirit to these. Retention rates are 2.6% points lower among women in the Wages Councils. However, during the early 1980s recession retention rates increased rapidly so they became 1.6% points higher in the Wages Council sector for this period. The results using the Kaitz in columns 3 and 4 index confirm this pattern.

Table 7 presents results for full time workers and Table 8 for part time workers. The results for full time males are almost identical to those in Table 6. Job retention is lower except during the 1980s recession. For full time female workers, we find no significant difference in retention rates but there is some evidence that retention increases in the 1980s recession. The results for part time women in Table 8 are interesting. Here we find that retention is 5% points lower in the Wages Council industries. Note that we are comparing part time women in Wages Councils with part time women in the comparison industries. However, we now find that retention increased in both the 1980s and 1990s recessions among part time workers. The results for part time male workers are reported but small sample sizes mean that none of the key variables of interest are statistically significant.

The retention results are suggestive of a Wages Council sector that has high turnover rates but these tend to slow down through recessionary periods. Let us now turn to the results on inflows.

Table 9 presents the inflow results for all males and females. Here we find that inflow rates are higher in the Wages Council sectors, which is consistent with the story that job turnover is higher in these sectors, even once we control for observable characteristics. However, a different pattern emerges through the recessions of the 1980s and 1990s. Inflow rates decline in the 1980s recession for both males and females. This is indicative of a slowdown in hiring rates during that recession, as retention rates increased, leading to more stable employment. In contrast, the 1990s recession was characterised by an increase in inflows among the Wages Councils for both males and females. The result for females is significant at the 10% level. This is possibly indicative of individuals moving into low wage work during the recession. There doesn't appear to be any evidence that the presence of a minimum

wage in these sectors had any detrimental effect on hiring during the recession. However, it must be noted that by the early 1990s the level of minimum wages had eroded somewhat compared to the 1980s recession.

Tables 10 and 11 present the inflow rates for full and part time workers. A similar pattern emerges as outlined above. Among part time women workers, inflows are significantly higher in the Wages Council sectors; 3% points. But here we find no evidence of increases in the 1990s recession.

7.3 Individual level propensity score estimation results

In this section we re-estimate the model above but rather than using a parametric specification for the regression model we utilise non-parametric propensity score estimation. The advantages of this are that it is less restrictive in terms of the functional form imposed on the variables influencing job retention and inflows. In addition, because we match on "similar" individuals that have a common support our estimates are based on comparing outcomes among those individuals in a Wages Council industry or comparison industry who are similar in all other observable ways. This is in contrast to the regression approach, that compares outcomes across Wages Council sectors and comparison industries, conditional on observable characteristics where this conditioning can only impact on retention in a restrictive way. Thus propensity score matching is more flexible.

Table 12 presents the matching results for retention for males. Reported are the differences in retention among the Wages Council (Treated) and comparison (Control) industries. We report results for the whole sample and for the 1980s and 1990s recessions. Each set of results reports the unmatched (raw) differences and the matched differences. We find a large raw difference in retention rates of 0.05 with a t-stat of 21.89. However, once we compare mean retention rates across similar individuals this difference falls to 0.014 but remains a significant difference. This result is similar to the regression results in Table 6. The results for the two recessions show a significant unmatched difference in retention rates. However, when we condition on characteristics this difference disappears.

Table 13 presents the retention results for women. Here we find significantly lower retention in the Wages Councils but once we match, this difference becomes insignificant.

Again we find no significant differences during the recessions. Tables 14 and 15 present the inflow results for men and women respectively. As with the regression based results above we find higher inflow rates in the unmatched samples. However, when we match on similar individuals we do not find any significant difference in inflows. Interestingly, the results for women show a lower inflow rate of about 1% point once we have matched. Again we can find no recessionary effects.

The propensity score matching results are somewhat different from the results reported above in the parametric section. There we found larger differences between Wages Councils and comparison industries, with some reversal during recessionary periods. Here, our results find fewer overall differences between sectors and no differences during recessions. The less restrictive matching techniques used in this section appear to allow observable characteristics to better explain differences in retention and inflows between the two groups.

8 SUMMARY AND CONCLUSIONS

This project investigated how recessions affect the low paid and looks at the impact of minimum wages. It examined the impact of the UK minimum wages in force during the 1980s and 1990s recessions when a system of Wages Councils was in operation. Wages Councils set (different) minimum rates of pay in a range of low-paying industries. However there were still a large number of low-wage industries not covered by the legislation. The project analysed the impact of the two previous recessions on employment and wages in Wages Council sectors relative to other similar but uncovered low-wage industries.

We investigate the differential changes econometrically using panel estimation techniques. As sectors will have been covered and uncovered, the analysis will be akin to differences-in-differences estimation. Data from the New Earnings Survey and Workforce in Employment Survey form the panel.

The findings are informative about the likely consequences of the NMW in the current recession. We can find no significant detrimental impact on employment from the Wages Councils. The industry level analysis is suggestive of positive employment effects, as reported in Dickens et al (1999). We do find some evidence of a negative hours effects from the Wages Council, although we cannot find any further detrimental impacts through the recessions of the 1980s or 1990s.

In addition, the individual level results reported here are consistent with higher turnover in the Wages Councils sectors. This itself is not evidence of any detrimental employment effects from the minimum wage; individuals in these sectors are more likely to move in and out of employment. We do find some evidence of a slowdown in turnover through the recessions, and some evidence that hiring increased in the 1990s recession in these low wage sectors.

None of the results here indicate that the National Minimum Wage will have any more detrimental impacts on employment through the recent Credit Crunch recession. However, one must be mindful of the fact that recessions can be very different. Our individual results suggest this. So the recent recession that the UK has experienced may play out differently across different sectors than have recessions of the past.

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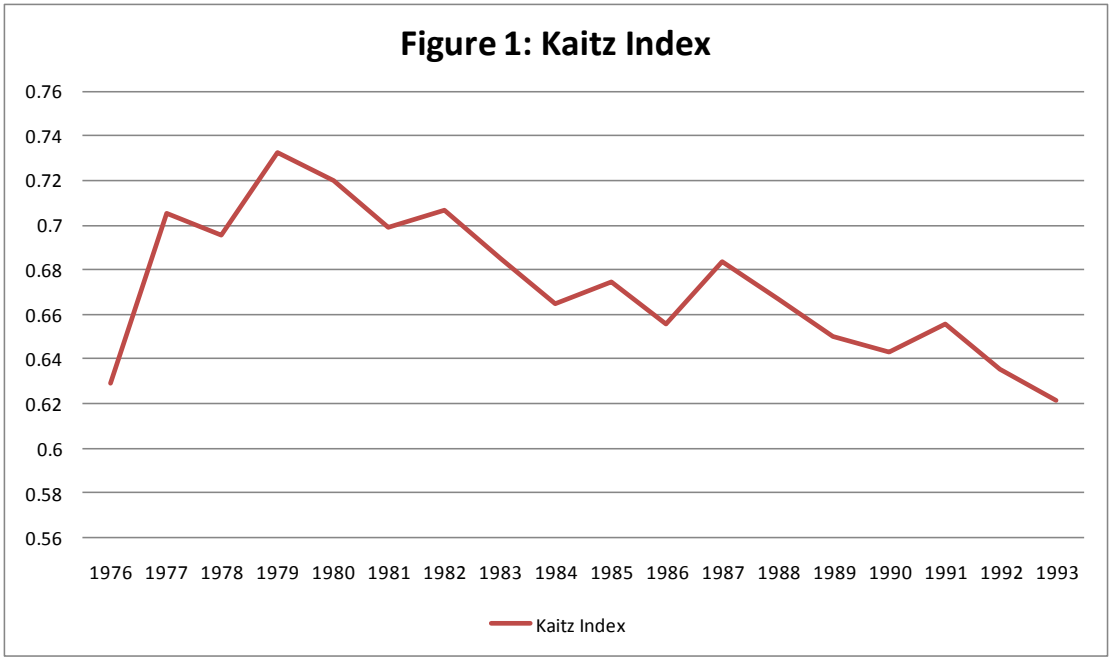
Figure 1: Kaitz Index
0.76
0.74
0.72
0.7
0.68
0.66
0.64
0.62
0.6
0.58
0.56
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Kaitz Index

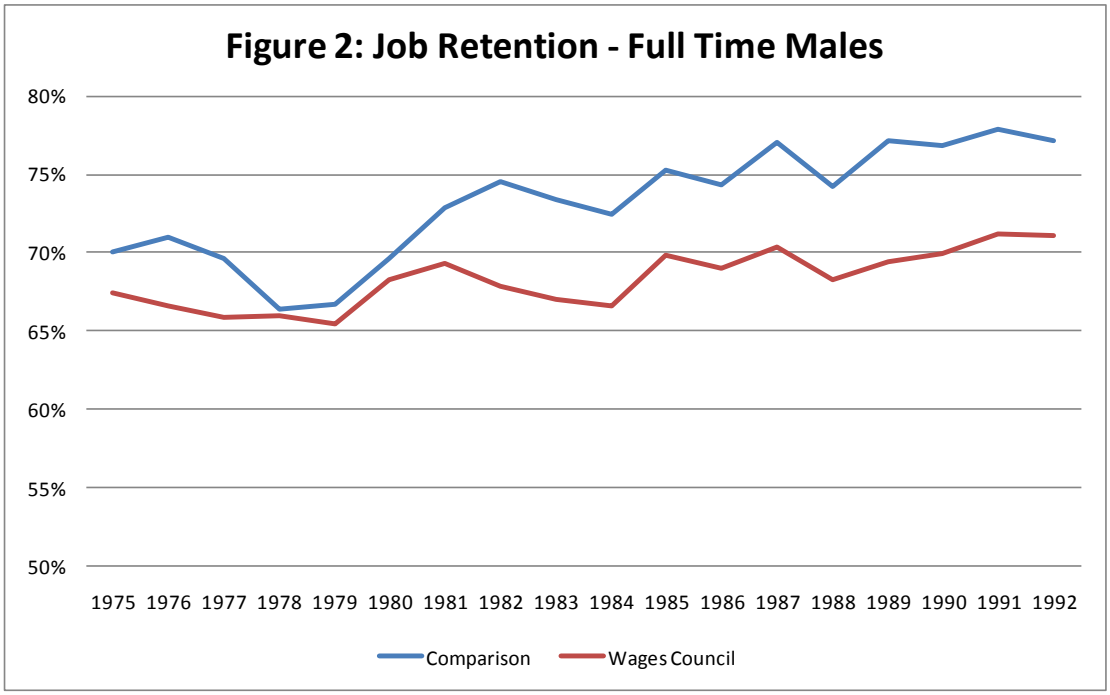
Figure 2: Job Retention - Full Time Males
80%
75%
70%
65%
60%
55%
50%
1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992
Comparison
Wages Council

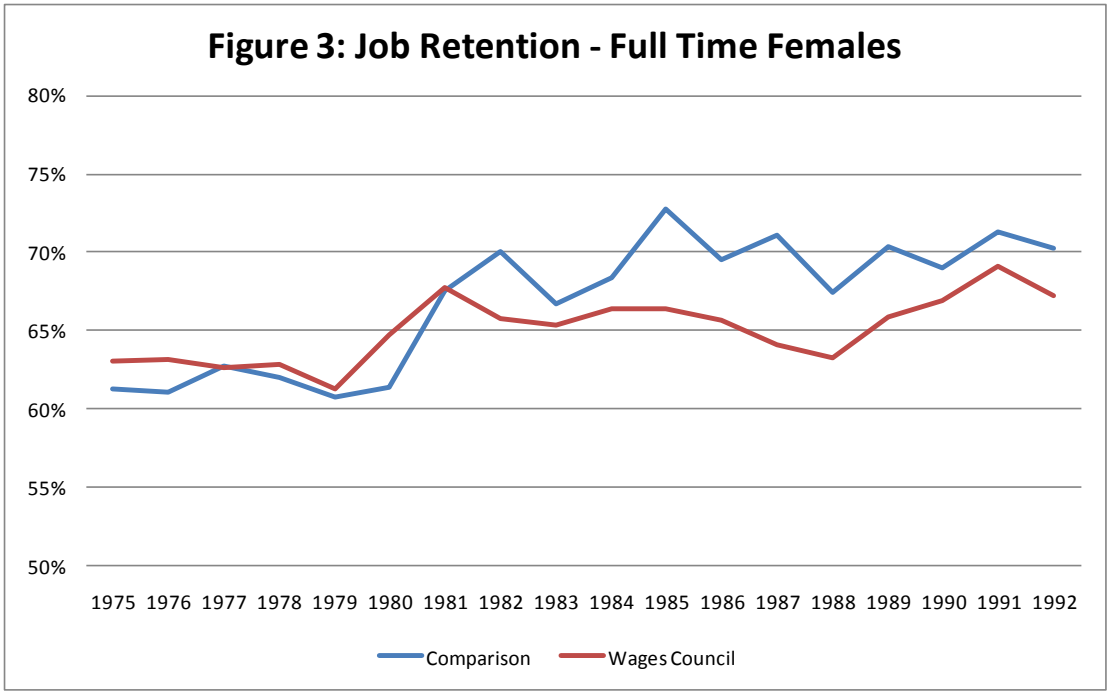
Figure 3: Job Retention - Full Time Females
80%
75%
70%
65%
60%
55%
50%
1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992
Comparison
Wages Council

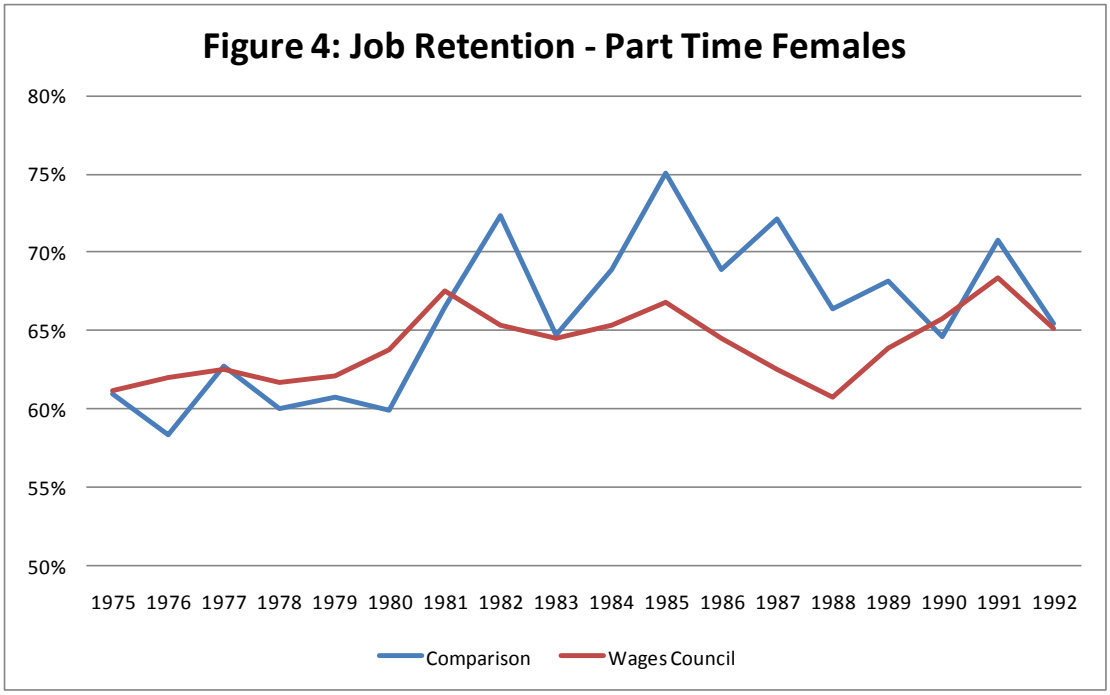
Figure 4: Job Retention - Part Time Females
80%
75%
70%
65%
60%
55%
50%
1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992
Comparison
Wages Council

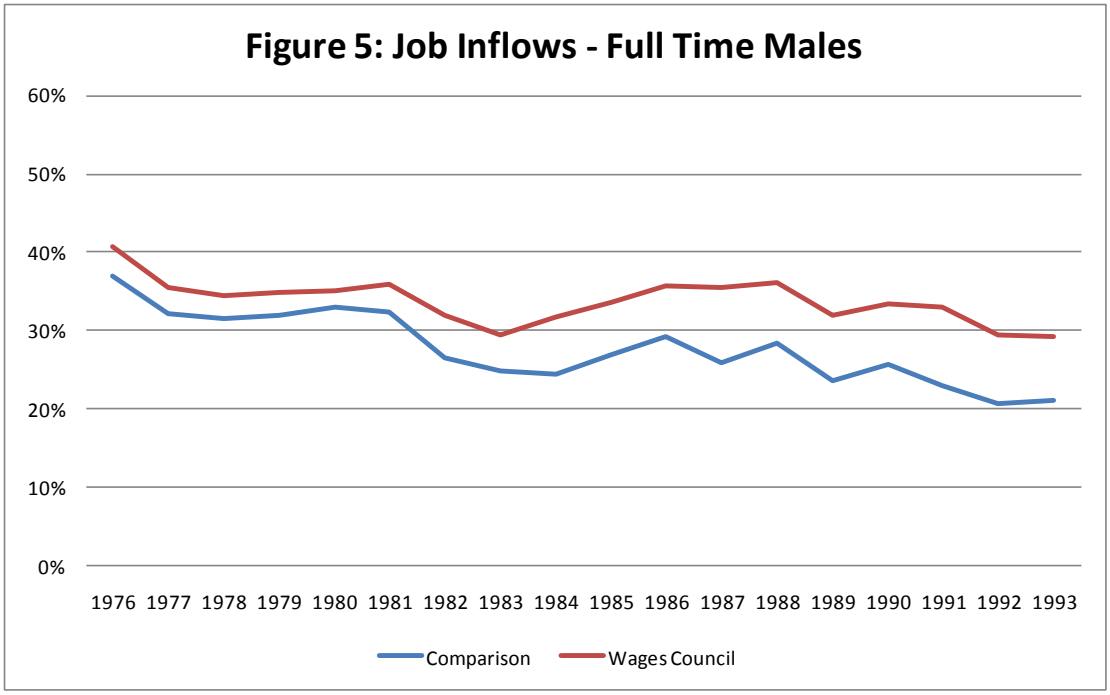
Figure 5: Job Inflows - Full Time Males
60%
50%
40%
30%
20%
10%
0%
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Comparison
Wages Council

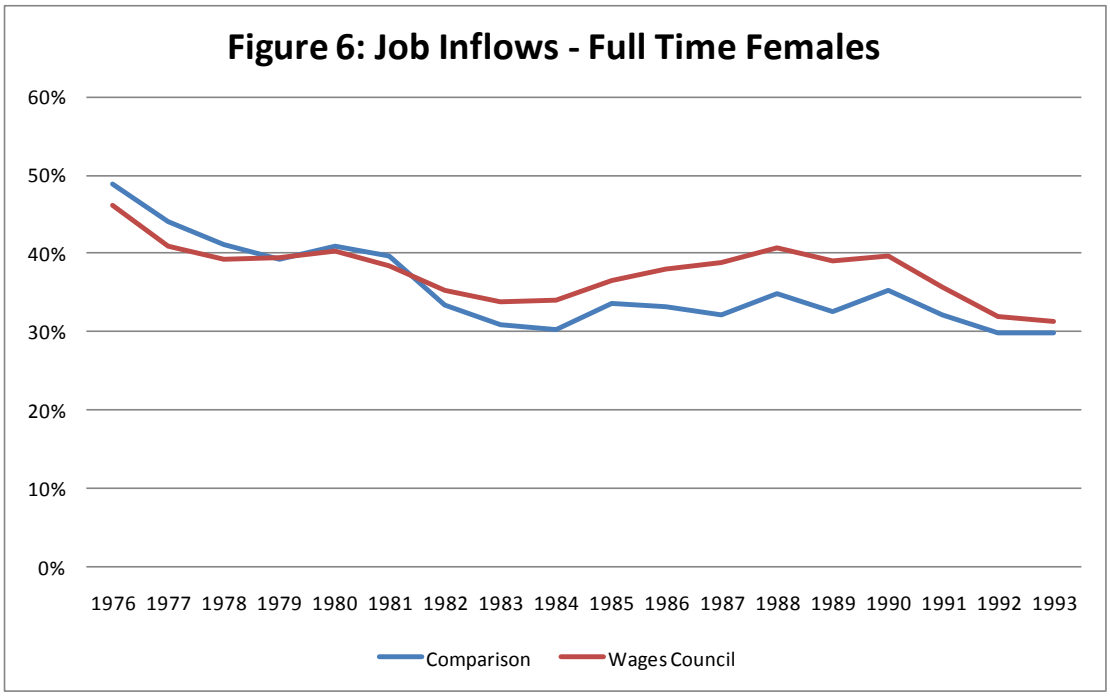
Figure 6: Job Inflows - Full Time Females
60%
50%
40%
30%
20%
10%
0%
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Comparison
Wages Council

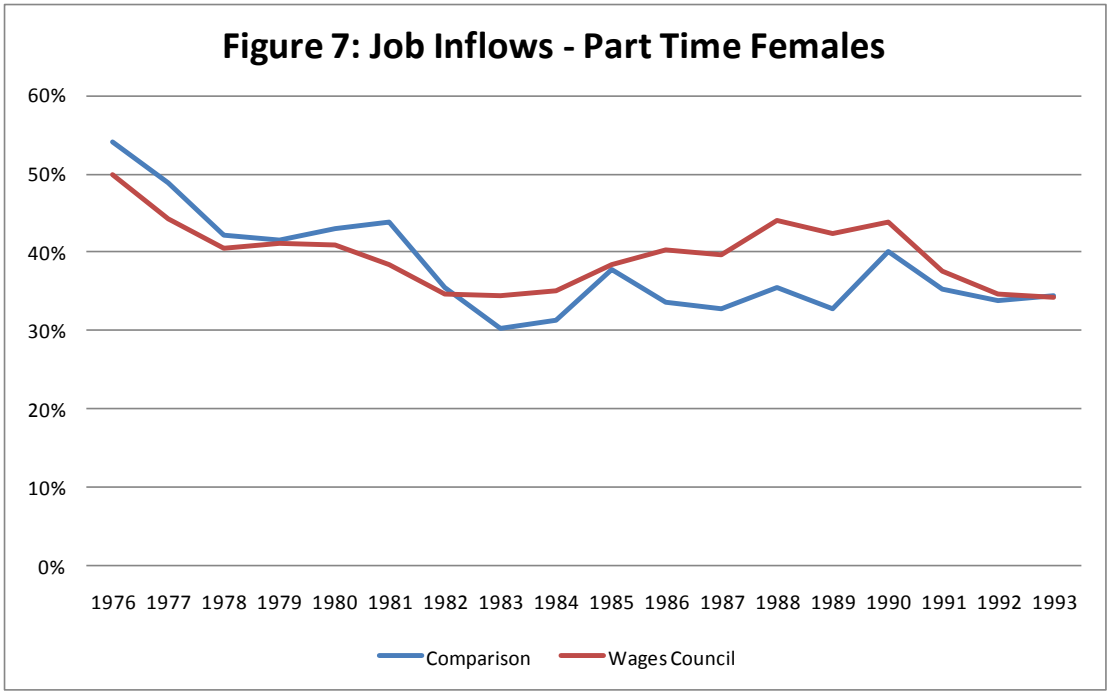
Figure 7: Job Inflows - Part Time Females
60%
50%
40%
30%
20%
10%
0%
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Comparison
Wages Council

Table 1: Industry Panel Wages Council Only: Levels

Variable	(1) log(Emp)	(2) log(Emp)	(3) log(Emp NES)	(4) log(Emp NES)	(5) log(hrs)	(6) log(hrs)
Log(kaitz)	0.188	0.188	-0.040	-0.033	-0.090***	-0.095***
	(0.126)	(0.127)	(0.149)	(0.150)	(0.023)	(0.023)
80s recession*lkaitz		0.013		-0.239*		0.010
		(0.079)		(0.132)		(0.021)
90s recession*lkaitz		-0.065		0.069		0.052*
		(0.140)		(0.174)		(0.027)
Constant	5.687***	5.688***	7.052***	7.055***	3.826***	3.825***
	(0.072)	(0.072)	(0.123)	(0.123)	(0.019)	(0.019)
Year Dummies	Y	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y	Y
Obs	330	330	398	398	398	398
R-Squared	0.989	0.989	0.974	0.974	0.960	0.961

Table 2: Industry Panel Wages Council Only: First Diffs

Variable	(1) Δlog(Emp)	(2) Δlog(Emp)	(3) Δlog(Emp NES)	(4) Δlog(Emp NES)	(5) Δlog(hrs)	(6) Δlog(hrs)
ΔLog(kaitz)	0.257*	0.286**	0.266**	0.340**	-0.014	-0.014
	(0.136)	(0.145)	(0.129)	(0.135)	(0.021)	(0.022)
80s recession*Δlkaitz		-0.256		-0.793		0.045
		(0.465)		(0.538)		(0.088)
90s recession*Δlkaitz		-0.297		-0.726		-0.058
		(1.036)		(0.687)		(0.112)
Constant	0.508***	0.495***	-0.241*	-0.274**	-0.237***	-0.236***
	(0.120)	(0.123)	(0.136)	(0.137)	(0.022)	(0.022)
Year Dummies	Y	Y	Y	Y	Y	Y
Obs	308	308	378	378	378	378
R-Squared	0.178	0.179	0.075	0.083	0.322	0.323

Table 3: Industry Panel Diff in Diff: Levels

Variable	(1) log(Emp)	(2) log(Emp)	(3) log(Emp NES)	(4) log(Emp NES)	(5) log(hrs)	(6) log(hrs)
Log(kaitz)	-0.009	-0.008	0.308	0.317*	-0.125***	-0.130***
	(0.093)	(0.093)	(0.190)	(0.191)	(0.031)	(0.031)
WC coverage*Log(kaitz)	0.145	0.144	0.077	0.078	0.025	0.023
	(0.119)	(0.119)	(0.241)	(0.241)	(0.039)	(0.039)
80s recession*lkaitz		-0.012		-0.105		0.053***
		(0.052)		(0.122)		(0.020)
90s recession*lkaitz		-0.050		0.023		0.035
		(0.099)		(0.172)		(0.028)
Constant	5.635***	5.636***	7.030***	7.032***	3.827***	3.825***
	(0.054)	(0.054)	(0.130)	(0.130)	(0.021)	(0.021)
Year Dummies	Y	Y	Y	Y	Y	Y
Industry Dummies	Y	Y	Y	Y	Y	Y
Obs	648	648	796	796	796	796
R-Squared	0.991	0.991	0.945	0.945	0.920	0.921

Table 4: Industry Panel: First Diffs

Variable	(1) Δlog(Emp)	(2) Δlog(Emp)	(3) Δlog(Emp NES)	(4) Δlog(Emp NES)	(5) Δlog(hrs)	(6) Δlog(hrs)
ΔLog(kaitz)	-0.242**	-0.251**	-0.015	-0.027	-0.072***	-0.066***
	(0.097)	(0.103)	(0.112)	(0.118)	(0.021)	(0.022)
WC coverage*ΔLog(kaitz)	0.766***	0.767***	0.372***	0.372***	0.035	0.035
	(0.129)	(0.129)	(0.142)	(0.143)	(0.027)	(0.027)
80s recession*Δlkaitz		-0.142		-0.086		-0.005
		(0.279)		(0.349)		(0.066)
90s recession*Δlkaitz		1.026*		0.390		-0.123
		(0.570)		(0.447)		(0.084)
Constant	-0.323***	-0.318***	-0.564***	-0.559***	-0.180***	-0.183***
	(0.093)	(0.095)	(0.102)	(0.103)	(0.019)	(0.019)
Year Dummies	Y	Y	Y	Y	Y	Y
Obs	606	606	756	756	756	756
R-Squared	0.107	0.113	0.113	0.114	0.218	0.221

Table 5: Relative Industry Panel: First Diffs

Variable	(1) Δlog(Emp)	(2) Δlog(Emp)	(3) Δlog(Emp NES)	(4) Δlog(Emp NES)	(5) Δlog(hrs)	(6) Δlog(hrs)
ΔLog(kaitz)	0.057	0.044	-0.080	-0.054	-0.019	-0.013
	(0.117)	(0.124)	(0.148)	(0.156)	(0.034)	(0.036)
80s recession*Δlkaitz		0.196		-0.583		0.023
		(0.394)		(0.619)		(0.142)
90s recession*Δlkaitz		-0.362		0.259		-0.202
		(0.952)		(0.790)		(0.182)
Constant	0.154***	0.154***	0.021	0.017	0.018	0.017
	(0.039)	(0.039)	(0.050)	(0.050)	(0.011)	(0.012)
Year Dummies	Y	Y	Y	Y	Y	Y
Obs	285	285	376	376	376	376
R-Squared	0.148	0.149	0.112	0.115	0.078	0.081

Table 6: Individual Retention

VARIABLES	(1) Male	(2) Female	(3) Male	(4) Female
Wages Councile coverage	-0.017***	-0.026***		
	(0.003)	(0.003)		
80s recession*WC	0.029***	0.042***		
	(0.007)	(0.008)		
90s recession*WC	-0.007	0.011		
	(0.007)	(0.008)		
kaitz			-0.053***	-0.059***
			(0.005)	(0.004)
80s recession*kaitz			0.035***	0.050***
			(0.010)	(0.008)
90s recession*kaitz			-0.017	0.009
			(0.011)	(0.009)
Constant	-0.528**	1.266***	-0.509***	1.265***
	(0.219)	(0.398)	(0.173)	(0.223)
Observations	143799	171597	153571	176543
R-squared	0.029	0.029	0.026	0.026

Controls include age polynomial, sector dummies, region dummies, year dummies, occupation dummies, log(wage) polynomial

Table 7: Individual Retention - Full Time Workers

	(1)	(2)	(3)	(4)
VARIABLES	Male	Female	Male	Female
Wages Councile coverage	-0.017***	-0.005		
	(0.003)	(0.004)		
80s recession*WC	0.029***	0.021**		
	(0.007)	(0.010)		
90s recession*WC	-0.007	-0.007		
	(0.007)	(0.010)		
kaitz			-0.054***	-0.045***
			(0.005)	(0.005)
80s recession*kaitz			0.037***	0.033***
			(0.010)	(0.011)
90s recession*kaitz			-0.018	-0.016
			(0.011)	(0.012)
Constant	-0.307*	0.813***	-0.481***	0.528*
	(0.180)	(0.285)	(0.175)	(0.283)
Observations	140243	95787	149352	97608
R-squared	0.026	0.031	0.022	0.027

Controls include age polynomial, sector dummies, region dummies, year dummies, occupation dummies, log(wage) polynomial

Table 8: Individual Retention - Part Time Workers

VARIABLES	(1) Male	(2) Female	(3) Male	(4) Female
Wages Councile coverage	-0.026	-0.050***		
	(0.028)	(0.006)		
80s recession*WC	-0.061	0.058***		
	(0.058)	(0.014)		
90s recession*WC	-0.037	0.036***		
	(0.050)	(0.012)		
Kaitz			-0.039	-0.067***
			(0.028)	(0.006)
80s recession*kaitz			-0.077	0.049***
			(0.056)	(0.013)
90s recession*kaitz			-0.035	0.036***
			(0.051)	(0.013)
Constant	-2.329**	-0.012	-1.675	-0.089
	(1.185)	(0.410)	(1.050)	(0.403)
Observations	3556	75810	4219	78935
R-squared	0.064	0.033	0.054	0.031

Controls include age polynomial, sector dummies, region dummies, year dummies, occupation dummies, log(wage) polynomial

Table 10: Individual Inflows - Full time Workers

VARIABLES	(1) Male	(2) Female	(3) Male	(4) Female
Wages Councile coverage	0.007**	-0.012***		
	(0.003)	(0.004)		
80s recession*WC	-0.027***	-0.009		
	(0.007)	(0.010)		
90s recession*WC	0.016**	0.023**		
	(0.007)	(0.010)		
kaitz			0.045***	0.032***
			(0.005)	(0.005)
80s recession*kaitz			-0.031***	-0.014
			(0.010)	(0.011)
90s recession*kaitz			0.027**	0.039***
			(0.011)	(0.012)
Constant	8.939***	16.122***	8.805***	16.187***
	(0.201)	(0.410)	(0.198)	(0.410)
Observations	143269	98323	152248	100153
R-squared	0.084	0.112	0.078	0.106

Controls include age polynomial, sector dummies, region dummies, year dummies, occupation dummies, log(wage) polynomial

Table 11: Individual Inflows - Part Time Workers

VARIABLES	(1) Male	(2) Female	(3) Male	(4) Female
Wages Councile coverage	0.007	0.036***		
	(0.025)	(0.005)		
80s recession*WC	0.076	-0.039***		
	(0.054)	(0.013)		
90s recession*WC	0.064	-0.001		
	(0.046)	(0.012)		
kaitz			0.046*	0.064***
			(0.025)	(0.006)
80s recession*kaitz			0.025	-0.047***
			(0.052)	(0.013)
90s recession*kaitz			0.066	-0.014
			(0.047)	(0.012)
Constant	7.683***	3.417***	7.475***	3.341***
	(1.027)	(0.598)	(0.910)	(0.595)
Observations	4086	79678	4746	82772
R-squared	0.120	0.071	0.108	0.068

Controls include age polynomial, sector dummies, region dummies, year dummies, occupation dummies, log(wage) polynomial

Table 12: Matching Results Retention – Males

	Wages Council	Comparison	Difference	S.E	T-stat
All Years					
Unmatched	0.693	0.744	-0.050	0.002	-21.890
ATT	0.693	0.708	-0.014	0.004	-3.600
1980s Recession					
Unmatched	0.683	0.701	-0.018	0.006	-2.800
ATT	0.683	0.676	0.007	0.011	0.640
1990s Recession					
Unmatched	0.717	0.776	-0.059	0.007	-9.030
ATT	0.717	0.731	-0.015	0.011	-1.280

Controls as in Table 6

Table 13: Matching Results Retention – Females

	Wages Council	Comparison	Difference	S.E	T-stat
All Years					
Unmatched	0.663	0.686	-0.023	0.003	-9.040
ATT	0.663	0.663	0.000	0.005	-0.080
1980s Recession					
Unmatched	0.650	0.636	0.015	0.008	1.970
ATT	0.650	0.639	0.011	0.012	0.910
1990s Recession					
Unmatched	0.688	0.706	-0.018	0.007	-2.660
ATT	0.688	0.694	-0.007	0.014	-0.460

Controls as in Table 6

Table 14: Matching Results Inflows – Males

	Wages Council	Comparison	Difference	S.E	T-stat
All Years					
Unmatched	0.365	0.293	0.073	0.002	30.380
ATT	0.365	0.363	0.002	0.004	0.500
1980s Recession					
Unmatched	0.350	0.321	0.029	0.006	4.490
ATT	0.349	0.369	-0.019	0.011	-1.730
1990s Recession					
Unmatched	0.320	0.238	0.083	0.007	12.280
ATT	0.320	0.308	0.012	0.012	1.040

Controls as in Table 6

Table 15: Matching Results Inflows – Females

	Wages Council	Comparison	Difference	S.E	T-stat
All Years					
Unmatched	0.395	0.357	0.038	0.003	14.490
ATT	0.395	0.405	-0.010	0.005	-2.130
1980s Recession					
Unmatched	0.389	0.394	-0.005	0.008	-0.690
ATT	0.389	0.397	-0.009	0.012	-0.710
1990s Recession					
Unmatched	0.365	0.325	0.041	0.007	5.700
ATT	0.365	0.354	0.011	0.015	0.740

Controls as in Table 6

Data Appendix: Industry codes for the Wages Councils and Comparison Industries

Wages Council	MLH (SIC68)	SIC 80	Notes for WC	Comparison Industry	MLH (SIC68)	SIC 80
Agricultural	1	01		0-01 Agriculture excluding Forestry and fishing.	1 minus 001	0 minus 01
Aerated Waters Wages Council	232	428 And separately 424-429	Can't get figures in late 80s early 90s 428 (4283) stops in 1985	Brewing and Malting Food manufacture	231	426, 427 and separately 411-423
Clothing Manufacturing	441 442 443 444 445 446 449	453, 456		Footwear	450	451
Hairdressing Undertakings	889	9820	Not available in late 80s & 90s	Sports and recreation	882	979
Laundry	892	9811	Not available in late 80s & 90s	Dry cleaning, dying	893	981 minus 9811 or 9812
Licensed non-residential	886, 887	662, 663	Pubs and nightclubs	Canteens and messes	888?	664
Licensed residential	884	665		Canteens and messes	888	664

Wages Council	MLH (SIC68)	SIC 80	Notes for WC	Comparison Industry	MLH (SIC68)	SIC 80
Unlicensed place of refreshment	885	661	SICs include all restaurants some of which will be licensed	Canteens and messes	888	664
Retail Food	820	641	Check confectioners	617 Wholesale dist of food	810	6170
Retail Non-Food	821	642 643 645 646 647 648 653 654 656	Check sic68 here	Other wholesale	811, 812	61 minus 6170
Toy manufacture	494	494	Not available later (late 80s, 90s)	48 rubber and plastics	491	48 rubber and plastics

Baking abolished in 1971

Corset, Dressmaking, Ready made garment, Rubber proofed outerwear, Shirt making, Wholesale Mantle all merged into Clothing manufacture in July 1981. Hat, cap and millinery is separate but here we have to merge it with clothing because cannot get separate employment numbers in SIC80.

Retail bread, flour and confectionary, Retail food, Retail newsagents and tobacco merged into Retail Food and Allied Trades in July 1979

Retail Bookselling, Retail outfitting and drapery, Retail Furnishing merged into Retail Non-Food in July 1979