Evaluating the Impact of a National Minimum Wage:
Evidence from a New Survey of Firms in Ireland.[1]

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September 2002

Abstract

In April 2000 the Irish government introduced a national minimum wage of £4.40 an hour. We use data from a specially designed survey of firms to estimate the employment effects of this change. Employment growth among firms with low-wage workers prior to the legislation was no different to that of firms not affected by the legislation. A more refined measure of the minimum wage, however, suggests that the legislation may have had a negative effect on employment for the small number of firms most severely affected by the legislation. However the size of these effects are still relatively modest.

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1. *Introduction.*

In the last 10 years a number of studies have re-examined the labour market effects of minimum wage legislation. Much of this renewed interest has been generated by recent findings which seem to indicate that the employment effects of minimum wages are small and in some cases may even be positive (Card and Krueger (1995), Dickens, Machin and Manning (1999)). This is in contrast to the predictions of competitive textbook models of the labour market, where minimum wages reduce employment due to higher wage costs (Allen (1938), Hicks (1963)). This paper provides additional empirical evidence on the labour market effects of minimum wage legislation by examining the consequences of the national minimum wage (NMW) introduced in Ireland in April 2000. Prior to April 2000, minimum wages in Ireland were set by Joint Labour Committees (JLC). However the wages specified in these agreements were often quite low and covered less than ¼ of the workforce. Furthermore the level of enforcement was quite weak. On April 1st 2000, the Irish government introduced a national minimum wage of £4.40 per hour for all adult workers aged 18 years or older. The national minimum wage corresponded to approximately 2/3 the median wage at the time it was proposed and was estimated that it would *directly* affect about 15% of the workforce.

In this paper we evaluate the impact of the legislation on wages and employment using data collected from a new survey of firms carried out before and after the introduction of the NMW. The panel survey contains detailed information on the employment structures and work practices of firms, as well as subjective questions relating to the company's attitude towards minimum wage laws. In designing the survey we tried to carefully address some of the criticisms aimed at earlier `before-after' studies on the US minimum wage.

Our analysis suggests that the minimum wage legislation had little effect on the probability of firms closing down. Furthermore comparisons of employment growth of surviving firms with and without minimum wage workers suggest that the introduction of the minimum wage had little effect on employment over this period. However, these simple comparisons fail to take into account the significant wage growth that was occurring in Ireland during this period. In some firms, low wage workers would have experienced a wage increase even in the absence of the legislation. When we adjust our analysis to take this into account we find that the minimum wage has had a negative effect on employment growth on the small number of firms most severely affected by the legislation. However the estimated elasticity of labour demand implied by our analysis is relatively small given the unskilled nature of the workers involved.

2. *The Irish Labour Market Prior to the minimum wage.*

In 1999 a Minimum Wage Commission was set up to oversee the introduction of a national minimum wage in Ireland. The commission recommended that

"The initial rate for the national minimum wage should be set at around two thirds of median earnings …..[noting that]… in today's terms, two thirds of median earnings would represent £4.40 per hour" (p. 59-60).

A separate rate for employees under 18 years of age, set at 70% of the full rate, was also recommended. While it was envisioned that the minimum wage would correspond to two thirds of median earnings, by the time of its introduction this had fallen somewhat. In 2000 the minimum wage rate of £4.40 corresponded to approximately 53% of the median male wage rate.

In a report commissioned by the Department of Enterprise, Trade and Employment (DETE) prior to the introduction of the minimum wage Nolan and McCormick (1999) used household survey data to describe the characteristics of those affected by the proposed legislation. The results were much as expected. Women accounted for approximately 55% of those below the minimum wage. Since women make up a minority of all employees, this means that they also faced a significantly higher risk of being low paid. Part-time employees were also over-represented among those below the minimum. Those working less than 30 hours per week made up one-fifth of all employees but about one-third of those below the hourly minimum wage. More than half of those aged under 21 were below the minimum. The percentage below the minimum wage was still relatively high for the 21-24 age group (approximately 25%), but then falls sharply to 10% for other age groups. In terms of an occupational breakdown about half of all those below the minimum wage were either commerce, insurance and finance workers, or service workers – two categories holding less than one-quarter of all employees.

As well as the numbers affected, the immediate impact of the minimum wage on the wage bill was a crucial concern. In the report it was estimated that the minimum wage was likely to have increased gross earnings by approximately 1.6% Not surprisingly, there was significant sectoral variation in the estimated wage bill effects. The wage bill was expected to increase by 4% in retailing and professional services sectors, and over 8% in personal services, while in production industries the increase was only about 1% of the wage bill. In the next section of the paper we analyse the impact of these changes using firm level data collected at the time the legislation was introduced.

3. *A New Survey of Firms.*

To examine the consequences of the minimum wage legislation on labour market outcomes we conducted a new survey of Irish firms. During the last quarter of 1998 2,330 establishments were asked to complete a questionnaire designed to collect details on current employment size,

employment structures by hourly pay rates, as well as age, gender and full or part-time composition of the workforce in the enterprise in the 12 months preceding the survey. We also collected data on the extent of vacancies, hirings, and departures from the firm, as well as information assessing attitudes and perceptions among businesses to the introduction of minimum wage legislation. In the first instance, an owner or director of the company was contacted in relation to the survey and they could if they wished pass the survey onto to someone in the firm with responsibility for and knowledge of the employment structure of the firm.[2] The initial survey was based on a random stratified sample of establishments in Ireland. 1064 questionnaires were successfully completed, corresponding to a valid response rate of 46%. These data describe the work practices and employment structure of firms 12-14 months prior to the introduction of the minimum wage.

In the last quarter of 2000 we conducted a follow up survey of these establishments in order to examine firm level responses to the minimum wage.[3] Attempts were made to contact each of the firms in the original survey. As well as these firms, a large number of additional firms were also surveyed. In total, 1045 firms responded to the second survey, of which 587 contained employment and wage data from both surveys. In addition we identified 50 firms that had gone out of business by the time of the second sweep, bringing the total number matched at the two surveys up to 637. Since the national minimum wage was introduced in April 2000, the data from the second survey reflects employment structures approximately 6 months after the minimum wage legislation was enacted. The matched firms are used to assess the impact of the minimum wage on labour market variables.

There are a number of potential problems associated with using panel surveys of this nature to analyse employment responses to minimum wage legislation. We have tried to address these issues in our survey design. It has been noted by a number of researchers (see for example Brown (1999) page 2132) that before-and-after comparisons may be affected by the *timing* of these comparisons. It is quite common for potential minimum wage legislation to be in the public domain for sometime prior to being passed. If this is the case then some firms, anticipating its introduction, may begin to make gradual changes to their employment structure even before the legislation is enacted. Studies that use employment levels before the minimum wage law is passed as the benchmark level of employment may therefore have already missed some of the employment response. To allow for this we included a series of questions at the end of the first survey examining the employers' awareness of the minimum wage and whether they had already taken steps to prepare

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[2] In the second survey for example 52% of the questionnaires were completed by an owner or director of the company, 37% by a human resource manager or equivalent and only 11% were completed by lower-grade staff. We should also point out that the surveys looked at employment practices in Ireland in general. Firms were not asked directly about the minimum wage until the final page of the first survey. Combining this with the fact that the survey was personally administered leads us to believe that strategic responses are unlikely to be important in our surveys.

for a situation where a minimum wage operates. Although 80% of firms reported having heard of the proposed minimum wage, less than half of those who had heard of it knew at what rate is was to be introduced.[4] Furthermore only 29% of these firms knew what year the legislation was due to be enacted (20% answered the wrong year and the remaining 51% said they did not know). Finally when asked if their company had taken any steps to prepare for the minimum wage only 13% of all firms said that they had.[5] These proportions are not very different even when we restrict our sample to firms that had minimum wage workers at the time of the first survey. We are confident, therefore, that the first wave data provide an appropriate pre-legislation benchmark for the firms in our survey.

It has also been suggested that measurement error may distort the results from surveys of this kind.[6] There are a number of reasons as to why we think this is less likely to be an issue for our data. Firstly, all our questionnaires were completed on a personally administered basis that involved an interviewer paying a visit to each respondent and completing the instrument on site. Secondly, while the employment data in our survey come from a question asking "… the total number of persons currently engaged in your company, on a full-time and part-time basis", the respondent was later asked to classify the staff on the basis of pay, age, gender and occupation. At each stage the interviewer was instructed to check that the totals from these classifications matched the response to the initial employment question. Where inconsistencies became apparent at a later stage these were resolved by phone follow-up with the respondent. These consistency checks increase the reliability of our employment data and reduce the likelihood of measurement error. Finally, we attempted to ensure that the same individual filled in the questionnaire in both waves of the survey. We were successful in doing so for approximately 63% of the firms, which aids comparability across waves. In the second survey 52% of the questionnaires were completed by an owner or director of the company, 37% by a human resource manager or equivalent and only 11% were completed by lower-level staff

To examine the issue of measurement further we follow Neumark and Wascher (2000). They argue that classical measurement error that is uncorrelated over time should manifest itself through a relatively low correlation in employment levels within firms across the two waves of the data. They report a correlation of .52 using survey data compared to a correlation of .81 using payroll data. Figure 1, shows a plot of wave 2 vs. wave 1 employment for the matched firms in our sample. The

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[3] A copy of the questionnaires used are available upon request.
[4] In particular only 48% of those firms who had heard of the minimum wage indicated a rate in the range of £4.30-£4.50. Only 10.43% correctly identified £4.40 as the national minimum wage rate.
[5] Furthermore many of the firms who responded positively to this question simply indicated that they already paid over the minimum.
[6] For example, Neumark and Wascher (2000) suggest that the employment data from Card and Krueger's survey of fast-food establishments may contain significant measurement error. See Card and Krueger (2000) for a reply.

estimated correlation is .92, which is higher than either of the samples considered by Neumark and Wascher. However it is important to recognise that if the measurement error in employment is not of the classical form then the test suggested by Neumark and Wascher is no longer valid.

4. Employment Effects of the National Minimum Wage.

The first wave of our survey shows that at the end of 1998 approximately 50% of the firms sampled had a worker earning less than £4.50. These workers constituted 21% of all private-sector employees in the firm survey. A more detailed breakdown of the incidence of low pay reveals that approximately 13% of private sector employees were being paid between £4.00 and £4.50 an hour and approximately 8.5% received an hourly wage less than £3.99. By the end of 2000 on the other hand only 24% of firms had at least one worker receiving £4.50 or less and these workers constituted only 4% of the employees in the firm survey. Only approximately 1% of all employees earned less than £3.99 by the end of 2000.

In the second wave we asked firms to indicate the approximate percentage increase in their wage bill resulting directly from the legislation. 76% of the firms who responded stated that the legislation had no effect on their wage bill. The average increase in labour costs among the remaining 24% was approximately 8.6%. This is a relatively large increase in wages and suggests that for those firms that were affected, the minimum wage may have had a significant bite. In the second survey we also asked firms if they had "to increase the hourly rates of higher grade staff to maintain pay differentials?". 18% of firms acknowledged some spillover effects. The extent of spillover among these firms is quite large. Within firms who reported increasing the wages of higher grade staff, on average 50% of the high wage workers were said to have had their wages increased in order to maintain pay differentials.[7]

We begin examining the employment effects of these wage changes by looking at the firms who had gone out of business by the time of the second survey. Table 1 classifies firms according to their business status in 2001 and also according to their sales and profit activity between 1998 and 1999. Not surprisingly we see that firms that went out of business are over represented among firms who were experiencing both sales and profit difficulties in the years before closing down. However what is of more interest for us is the extent to which the closure decision of these firms was affected by the minimum wage legislation. Table 2 classifies these firms according to the wage structure of their employment force in 1998. These figures show that firms who went out of business by the time of the second survey tend to be over represented among high wage firms and under represented

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[7] We return to the issue of wage spillovers later in the paper.

among firms employing a large number of minimum wage workers. This is not what you would expect if it was the minimum wage legislation that was the driving force behind these firms decision to shut down. We have also estimated a probit model for the likelihood of going out of business, which as well as including controls for wage structure and profit status also controls for a range of other firm characteristics. As expected firms who were performing poorly were significantly more likely to close down. However the estimated coefficient on the minimum wage indicator was statistically insignificant (p-value .39).

Although the minimum wage may not have resulted in many firms going out of business it may still have caused employment reductions among those firms who remained in business. To examine the employment effects of the wage changes for these firms we relate employment growth over this period to measures capturing the effective bite of the minimum wage. Although Ireland was experiencing rapid growth during this period there was a lot of variation across firms. On average employment in these firms increased by approximately 18% over this period.[8] However the median increase in employment was only 3%. 30% of the firms experienced a *decline* in employment and approximately 18% of firms had no change in their number of employees.

To examine the link between the minimum wage legislation and the employment changes we estimated the following equation:

$$\Delta \ln(N_{it}) = \beta_0 + \beta_1 \, MinW_{I, \, t-1} + \beta_2 X_{it-1} + e_{it} \qquad\qquad (1)$$

where N measures employment, MinW measures the effective bite of the minimum wage and X controls for observable characteristics of the firms. To estimate this equation we needed to construct a measure of MinW. Given the design of our survey a number of possibilities were available: the first was a simple indicator denoting whether or not the firm employed workers below the NMW prior to its introduction (we label this LowWage99); the second measures the proportion of the firm's labour force that was below the NMW prior to its introduction (we denote this by PropLow99). The results of estimating equation (1) using only these measures as controls are given in the first two columns of table 3. Neither measures of the minimum wage bite are significantly related to employment growth. This is consistent with the Card and Krueger (1995) and Dickens, Machin and Manning (1999) findings.

One problem with this approach however, is that identification is achieved by comparing firms with minimum wage workers to firms without these workers. However it is likely that these

firms may have experienced different employment patterns even without the legislation. Failure to control for these differences could distort any minimum wage impact. Our surveys allow us to identify some characteristics of the firms that may be useful control variables. Among the control variables available are whether the firms was Irish or foreign owned (Irish), whether the firm exported or not (Export), an indicator of the profitability of the firm in the year prior to the minimum wage (Profit), an indicator variable denoting whether or not at least 50% of the firm's non-managerial employees were in a Trade Union (Union), as well as the percentage of the company's total operating costs that are accounted for by their total wage bill (Wage Bill). We also included the firms initial employment level (TotEmp99) as a regressor. Summary statistics for these variables are given in the Appendix.[9] The results from this specification are given in columns (3) and (4) of table 3. Looking at the results we see that more profitable firms experienced faster employment growth. None of the other control variables are statistically significant.[10] From our perspective the important coefficients are those on the minimum wage variables. Including the additional controls had little effect on the minimum wage estimates. Irrespective of the measure used the minimum wage effect is still small and insignificant.

An alternative way of achieving identification is to focus only on firms with a minimum wage worker and to use variations in the proportion of the labour force below the minimum wage to identify the effect. While this reduces the number of observations available, it should also reduce the unobserved heterogeneity in the sample. The results from this exercise are given in Table 4. Restricting the sample just to minimum wage firms makes little difference to our results. Again it appears as though the minimum wage had little effect on employment growth for this sample of firms.

While the results so far suggest that the minimum wage had little effect on employment levels we need to be careful in interpreting these findings. We noted earlier that approximately 20% of Irish employees were receiving less than the minimum wage in the year prior to the introduction of the NMW. In the analysis so far this group has formed the basis of our treatment group. However, a criticism that has often been levelled at these types of studies is their inability to distinguish

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[8] Total non-agricultural employment in Ireland over this same period increased from 1.4m to 1.58m, an increase of approximately 13% (QNHS Report February 2001).

[9] The summary statistics are provided for both the full first wave sample and the restricted matched sample. The results show that on average there is very little difference in the characteristics of the firms in these two samples. We have also estimated a probit for participation in the second survey. The p-value on the minimum wage variable was .45, which suggests that non-random attrition between the first and second surveys in unlikley to affect the minimum wage analysis.

[10] There are some variables in our data that do a better job of explaining employment fluctuations, such as the trend in sales over this same period. This variable is highly significant when included in the employment regression. However, since our goal is to isolate the impact of the minimum wage on employment changes and part of this effect may work through a reduction in output (scale-effect) we do not include this variable in the regression.

between potential and actual bite of the minimum wage (Deere, Murphy and Welch (1996)). It is reasonable to assume that some of the workers receiving wages below the minimum wage in 1998 would have received a wage increase by 2000 in any case. It would not be surprising to find that the legislation had little effect on these workers even though they are recorded in our data as minimum wage workers.

This wage growth is likely to be quite a serious issue in the Irish context. While restrained wage growth was a notable feature of the Irish labour market for much of the 1990s, the labour market tightened significantly in the late 1990s. Employment grew by over 6 per cent in 1999 and the unemployment rate fell below 5 per cent at the end of 1999. This growth continued in 2000 with an additional 75,000 people in work in 2000. The rise in employment was accompanied by a marked decline in unemployment and long-term unemployment. The long-term unemployment rate more than halved since the beginning of 1998, to reach just 1.7 per cent by the first quarter of 2000.

Evidence on earnings trends across a broad range of occupations and sectors show that wage inflation began to accelerate significantly from 1997 onwards. Of particular concern in this study is the growth rate in wages between the last quarter of 1998, when our first survey was conducted and April 2000, when the minimum wage was introduced. Data on industrial earnings indicate that average hourly earnings increased by 8.5 per cent over this period. The average hourly earnings of unskilled and semi-skilled operatives in the construction industry increased by over 15%. In the services sector average weekly earnings over this same period were up 18% per cent in distribution, 24% in retail trade and 12% in the business services sector. Given these circumstances it seems reasonable that the 50% of firms identified as having a minimum wage worker in the 1998 survey over estimates the actual number of firms affected by the legislation.

To account for the natural growth in wages we asked firms affected by the minimum wage the following question

Q.31 Given trends in the labour market in Ireland over the last year, do you think that you would have had to increase wage rates anyway up to the minimum level set out in the minimum wage?

Of the second wave firms who said that they had workers below the minimum wage when it was introduced, 84% of them said that they would have increased these wages in any case. This is in keeping with the rapid economy wide increases in wages outlined in the earlier paragraph. To allow for this in our analysis we create a new minimum wage variable (EffectiveMW). This takes the value 1 only if the firm reported in 2001 that they had workers affected by the legislation *and* would not have increased wages were it not for the minimum wage. Using these criteria only 4% of

firms (38 firms) were actually directly affected by the minimum wage legislation. Looking at those firms in more detail we find that 23% did not reported having any minimum wage workers in 1999. These firms must have hired minimum wage workers sometime between the first and second surveys or else the wage effects that they referred to reflect wage spillovers to higher wage workers.

One immediate concern that arises in this context is whether it is plausible for only 4% of firms to say they were directly affected by the legislation. While it is difficult to address this issue directly with our data we can get some idea of the likely magnitudes involved by combining our estimates for average wage growth over this period with the information on the extent to which wages in these firms fell below the minimum. We noted earlier that average wage growth of unskilled and semi-skilled workers ranged between 15% and 24% over this period. With this wage growth (say 20% on average) workers who had been earning £3.66 in the first survey would have had their wage exceed the minimum by the time of the legislation. Although our survey does not contain individual data on wages, we can classify low-wage workers into three categories – those initially earning between £4.00 and £4.50, those earning between £3.00 and £4.00 and those earning less than £3.00. Given the above wage growth it seems very likely that any worker in the first category in 1999 would no longer be classified as a minimum wage worker in 2001. Of the 50% of firms that initially reported having workers in the minimum wage category, almost half had workers in the first category only. Excluding these firms from the minimum wage group reduces the proportion of firms affected from 50% to 28%. However even this figure is likely to overstate the number of firms affected since in some of the remaining firms the vast majority of workers (though not all) were in the £4-£4.50 category. Furthermore given the wage growth figures provided earlier it is reasonable to assume that a significant proportion of workers originally receiving between £3.00 and £4.00 would also have had their wages rise to above the minimum wage. If we make the stronger assumption that only workers that were initially in the lowest wage category (less than £3 an hour) would have been affected when the legislation was introduced, then the proportion of firms affected falls to 8.7%. This is closer to the 4% of firms that report that they were directly affected by the legislation but is based on the rather strong assumption that all workers earning £3.00 or more would have seen there wage rise to £4.40 by 2001. Therefore it seems that the 4% figure used here may understate the number of firms affected but is likely to be much closer tot the truth than the initial uncorrected proportion.

To get a better understanding of the nature of these affected firms, Panel A of Table 5 summarises average and median employment levels in each of three groups for both 1998/1999 and 2000/2001. The first column refers to the entire sample, the second refers to those firms that had

minimum wage workers in 1999 (the basis for the earlier estimates) and the third column refers to those firms who reported having workers affected by the legislation in 2000 and who would not have risen wages were it not for the legislation. We refer to these latter firms as "Effective Minimum Wage Firms,". The large differences between the mean and median figures reflect the fact that employment in these firms is highly skewed to the right. Comparing employment levels over time reveals substantial employment growth for the first two class of firms, with much more modest growth for the affected firms.

Before looking at these employment changes in more detail, Panel B of Table 5 highlights some of the other differences between the affected firms and the other firms in the sample. The table classifies firms by other measures likely to be associated with exposure to the minimum wage legislation. These include the proportion of firms with at least one worker earning less than £4.00 in 1998/99, the average number of workers affected by the legislation in 2000, the proportion of workers currently being paid at or below the minimum wage, the increase in the wage bill associated with the minimum wage and the probability and extent of wage spillovers as a result of the minimum wage legislation. While firms that state they were most affected by the legislation were less likely to have low wage workers in 1999 than those firms who said they would have increased wages in any case, the former did have a greater number of workers actually affected by the legislation. They also had a larger proportion of their current workforce located at or below the minimum wage and had larger increases in their wage bill as a result of the minimum wage. As mentioned earlier, it may be the case that these firms were also more affected by spillovers higher up the distribution. To examine this we use firms' responses to the following questions:

Q.32 When the minimum wage was introduced did you have to increase the hourly rates of higher grade staff to maintain pay differentials?

Yes...................❑₁   No.......................❑₂

Q.33 I would like you to think in terms of those workers who were above the minimum wage when it was introduced. Approximately what percentage of your workforce which was above the minimum wage received an increase in hourly pay rates as a result of restoring pay differentials?

_____ per cent

The last two rows of Table 5 summarises responses to these questions. Firms who reported being most affected by the legislation were 60% more likely to be affected by spillovers and once

affected had also to raise wages for a larger proportion of the non-minimum wage workforce. This may account for an important part of the higher wage increases that these firms incurred as a result of the legislation.

To see the employment effects of the legislation on these firms we re-estimated equation (1) using the redefined measure of the minimum wage bite. The results from this analysis are presented in the first column of Table 6. None of the estimates on the control variables change much as a result of redefining the minimum wage variable. However, there is a striking change in the estimated minimum wage effect. Whereas in previous specifications the minimum wage variable was small and insignificant, it is now statistically significant and negative. Firms that had workers subjected to the minimum wage legislation *and who would not have increased wages were it not for the legislation* have significantly smaller increases in employment than other firms.

It is important to acknowledge that these estimates are based on relatively few firms. When we restrict attention to firms that have valid data on each of the control variables we are left with only 15 firms who report that they were effectively affected by the legislation. In this context it is essential that we examine the robustness of our findings. We check the robustness of our results using two alternative estimators. Firstly we re-estimate the model using a median regression estimator rather than OLS. As the median estimator minimises the sum of the absolute value of the residuals it is less sensitive to outliers than the OLS estimator. Secondly we use the two stage robust estimator suggested by Li (1985). This estimator initially omits gross-outliers based on measures of the influence of an observation on the estimated coefficient vector. Thereafter the estimator performs iteratively, estimating weighted regressions. The weights are based on estimated residuals with cases with small absolute residuals receiving a weight of one and cases with larger residuals receiving gradually smaller weights.[11] The results of the median regression are given in the second column of table 6, while the results of the robust regression are given in the third column. The results from both these approaches are very similar. Although these estimators cause the minimum wage estimate to fall it is clear that the significantly negative effect identified in the linear regression model is robust to outliers in the data.

If we are to be confident about these estimates it is important that the effect that we are measuring captures a response to the minimum wage and not some other shock. We noted in table 5 that the firms classified as minimum wage firms were also more likely to exhibit greater response to the minimum wage in terms of the direct wage-bill and spillovers. However using this self-reported measure of minimum wage bite may not be valid if there is a relationship between employment

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[11] For a general description of this approach see Berk (1990).

changes and a firm's willingness to increase wages irrespective of any minimum wage legislation. Perhaps the estimator is simply picking up the fact that firms that perform poorly are most likely to be low wage and also constrained when it comes to increasing wages or that these firms performed poorly and are using the minimum wage as an ex-post justification of their failures. The estimated minimum wage effect in this case may simply measure unobserved characteristics that are associated with both poor employment growth and low wages. A traditional approach to correcting for this type of problem would be to instrument the minimum wage variable. However it is difficult to construct satisfactory instruments in this example – that is a variable that is correlated with the self-reported minimum wage bite but uncorrelated with the unobserved measures affecting a firm's performance. We therefore seek an alternative approach.

If our redefined minimum wage variable is simply a proxy for firms with poor "employment-creating characteristics" then we would expect to see these firms perform poorly even in the absence of the minimum wage legislation. Since the employment records in our survey are limited to one observation before and after the minimum wage legislation we cannot calculate actual employment changes for the firms in other periods. However in the first wave of our survey we did ask firms to record "if compared to the same period in 1997 their labour force had increased, stayed the same or fallen". This provides us with a self-reported measure of employment changes from 1997-1998, two years prior to the minimum wage legislation. If the self-reported minimum wage variable is proxying for firms with unfavourable unobserved characteristics then we should expect to see these firms also experiencing relative employment falls in this period. To see if this is so we constructed a binary variable taking the value 1 if employment fell between 1997 and 1998 and zero otherwise. We then estimated the relationship between this binary measure of employment change and the self-reported minimum wage bite from the second wave of the survey. The results are presented in column 1 of table 7. While the self-reported minimum wage variable does increase the probability of observing employment declines from 1997-1998 it is not statistically significant.

One could argue that using the binary measure of employment changes reduces the variation in the employment variable and it is this that is responsible for the insignificant effect in the earlier period. To check this we created a similar binary indicator for the 1998-2000 employment changes using the survey data and re-estimated the minimum wage equation using this as the dependent variable. The results are given in column 2 of Table 7. The results clearly show that even when a binary indicator of employment decline is used to measure employment changes before and after the minimum wage legislation, the self-reported minimum wage bite significantly increases the probability of observing an employment decline. Furthermore the estimated coefficient is over twice as large as that estimated for the period without the legislation. Thus, although the redefined

minimum wage variable has a negative effect on employment changes, even in years prior to the legislation, the fact that it is statistically insignificant and much smaller in magnitude than the later effects suggests that it is more than just a proxy for unobserved firm-level characteristics.[12]

It has also been suggested that the employment losses experienced by these firms may reflect a fall in output demand in these sectors. If this was the case we would expect output prices to fall in these firms. However, when asked in the survey what happened to output prices over this period, firms affected by the minimum wage were more likely to indicate that output prices had risen. This is consistent with a shift in the industry supply curve due to increased costs rather than a reduction in demand.

So far we have identified the self-reported minimum wage effect by comparing the employment growth of these firms with that of firms who were already above the minimum wage or who said they would have raised their workers wages in any case. To reduce the heterogeneity in this sample and to focus on low-paying firms we could restrict our sample only to firms that would not have increased wages without the legislation. For these firms we could use variations in the proportion of the work force that were low paid to identify the minimum wage effect. As mentioned earlier restricting our sample in this way leaves only a very small number of firms. The relationship between employment changes and the proportion of workers on low pay is given in Figure 2. These data seem to indicate a negative relationship between employment changes and the bite of the minimum wage for firms that were directly affected. This would tend to support the view that the effects presented in Tables 6 and 7 reflect, at least in part, the impact of the minimum wage legislation. However the relationship in Figure 2 is based on a very small number of observations and is likely to be sensitive to outliers. This needs to be borne in mind when interpreting these data.

To understand the implications of our estimates we can convert them into wage elasticities. To do this we need to know the percentage change in employment for the affected minimum wage firms as a result of the legislation (α_N), along with the percentage increase in wages associated with the legislation (α_w). The elasticity of demand can then be calculated as α_N/α_w. The results presented in table 8 estimate the elasticity of demand under a number of differing assumptions. The first column uses the median regression estimates to calculate the percentage change in employment. We need to calculate :

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[12] We have also estimated the employment equations in Table 3, including the binary measure of employment change in the earlier period as a control variable. This had only a small effect on the estimated coefficients with the estimated mean employment effect changing from -.29 to -.28 and the median effect moving from -.19 to -.17.

$$\frac{N_{t,MW} - N_{t,noMW}}{N_{t,noMW}} = \frac{N_{t-1}(1 + g_{MW}) - N_{t-1}(1 + g_{noMW})}{N_{t-1}(1 + g_{noMW})} = \frac{(g_{MW} - g_{noMW})}{(1 + g_{noMW})}$$

The denominator refers to the difference in growth rates as a result of the legislation, which we estimate from our median regression as -.19. To estimate the denominator we use our median regression to predict the growth rate of firms with average characteristics not affected by the legislation. This gives an estimate of g_{noMW} equal to .05. This in turn implies that the percentage change in employment for these firms as a result of the minimum wage was approximately –.18. To estimate the percentage increase in wages as a result of the minimum wage for these firms we take the average response of these firms to the question in the second wave which asked "By approximately what percentage did the minimum wage directly increase your labour costs ?" . The average response for the affected firms was 9%. Combining these we get an elasticity of labour demand of approximately :

$$\eta_{LL} = \frac{-.18}{.09} = -2.0$$

This estimate is certainly within the range of previous estimates of labour demand elasticities (Hamermesh 1993 Ch. 3). It is somewhat higher than the average estimate which tends to lie in the range of [-.6,-.9]. However we must remember that our elasticity refers to the demand for unskilled labour which tends to be higher than the elasticity of more skilled labour (Hamermesh 1993).

However, there are a number of reasons as to why this estimate may tend to overestimate the elasticity of labour demand. As noted earlier firms classified as "Effective Minimum Wage Firms," were experiencing employment declines prior to the legislation. As a result the 18% decline in employment after the legislation is likely to overestimate the fall due to the minimum wage. To account for this we asked firms in the second survey.

Q.36 **Suppose the minimum wage had not been introduced. Do you think you would be employing: more people today than you are; the same number of people or fewer people**.

More people ....☐₁   Same number...........☐₂   Fewer people ....☐₃

Q.37 About how many more/less _____ people

Approximately 30% of effected firms answered this question positively and the average increase in employment across all these firms is approximately 6% of their current workforce. This provides an alternative measure of the reduction in employment for these firms directly as a result of the minimum wage and is somewhat smaller than the regression estimate. This is used in column 2 of table 8 as a measure of α_N and gives an elasticity of -.66.

Finally the third column of table 8, adjusts the change in wages as a result of the minimum wage to allow for spillover effects. Firms were asked if they had to adjust wages of higher grade staff in response to the minimum wage. Those who answered yes were then asked what percentage of higher-grade staff received this increase. When we adjust for spillovers[13] we find an estimated wage effect (α_w) of 12%, which is approximately three percentage points higher than the wage change without spillovers. Combining this with the self-reported employment loss gives an elasticity of approximately -.5.

Using the effective minimum wage variable to identify firms affected by the legislation and then using self-reported measures of employment and wage changes gives and elasticity of demand in the region of [-.5,.-7]. This effect falls within the range of elasticities reported by Hamermesh (1993). Indeed in a recent survey carried out by Fuchs et al (1998) a number of labour economists were asked to provide their best guess of the total wage elasticity of labour demand. The average(median) guess equalled -.63(-.50), which is very close to the number we report. On the other hand, there are reasons as to why we might have expected our estimate to be higher than these traditional estimates. Firstly we allow firms to self-select themselves into the treatment group. For reasons discussed above we might expect this to push the estimated elasticity upwards as only the most affected employers acknowledge the wage increase. Secondly our experiment is driven by reductions in the price of unskilled labour which traditionally tends to have relatively high elasticities. Taking these into account one might reasonably conclude that our estimates fall towards the lower end of the range identified in previous studies.

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[13] The percentage change in wage bill can be written as $\Delta\%W_T = P_{mw}\Delta\%W_{mw} + (1-P_{mw})\Delta\%W_{non.mw}$ where P_{mw} represents the proportion of wage bill accounted for by minimum wage workers. To adjust the wage bill for spillovers we assume that firms reporting the direct effect of the legislation on the wage bill provide an estimate of $P_{mw}\Delta\%W_{mw}$ and that P_{mw} can be proxied by the proportion of minimum wage workers in the firm. For firms that report a spillover effect on $\delta\%$ of higher-grade staff we calculate the adjusted wage bill effect as $\Delta\%W_{Tso} = P_{mw}\Delta\%W_{mw} + \delta(1-P_{mw})\Delta\%W_{mw}$. The average adjusted wage change across the effected firms is approximately 12%. In calculating this average we omit two firms that seem to be outliers in terms of their wage data. The firms report increases in the wage bill in excess of 100%. Including them would increase the adjusted wage effect to 25% and reduce the elasticity further to -.25. Since the proportion of minimum wage workers in the firm will overestimate their contribution to the wage bill the estimated elasticities should be viewed as an upper bound of the true elasticity.

5. Conclusion.

In this paper we have looked at the employment effects of the national minimum wage introduced in Ireland in April 2000. To do this we use a panel survey of firms that were contacted both before and after the minimum wage was introduced to obtain information on their work practices and employment structure. Initial results show that employment growth among firms with low wage workers prior to the legislation was not significantly different to that for firms not affected by the legislation. This is consistent with recent studies that have argued that minimum wages seem to have no adverse effects on employment. However, it has been recognised for some time now that counts of workers below the minimum wage (even when adjusted for distance from the minimum wage) may be an unsatisfactory measure of the bite of the minimum wage. Some workers, initially below the minimum wage are likely to have their wages increased over time irrespective of the legislation. It seems incorrect to include these workers in the treatment group when looking at the effects of the legislation. This is likely to be a particular problem in Ireland where wages have been growing significantly in the years prior to the legislation and suggests that a partial explanation for the absence of a minimum wage effect in these data is that so few firms were affected by the legislation. To allow for this we redefined the minimum wage variable to include only firms who had low wage workers *and who state that they would not have increased wages by as much were it not for the minimum wage legislation.* When we used this redefined measure of the minimum wage bite we find the negative employment and hours effects predicted by the competitive model of the labour market. Further analysis suggests that this result is not driven by unobserved firm-level characteristics associated with employment growth and self-reported wage restraint. Although there is evidence of employment losses among the small number of firms most severely affected by the legislation the estimated elasticities of labour demand calculated for these firms tend to be relatively modest in size, especially when wage spillovers are taken into account.

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Figure 1. Employment Correlation within Firms across the two waves of the Survey.
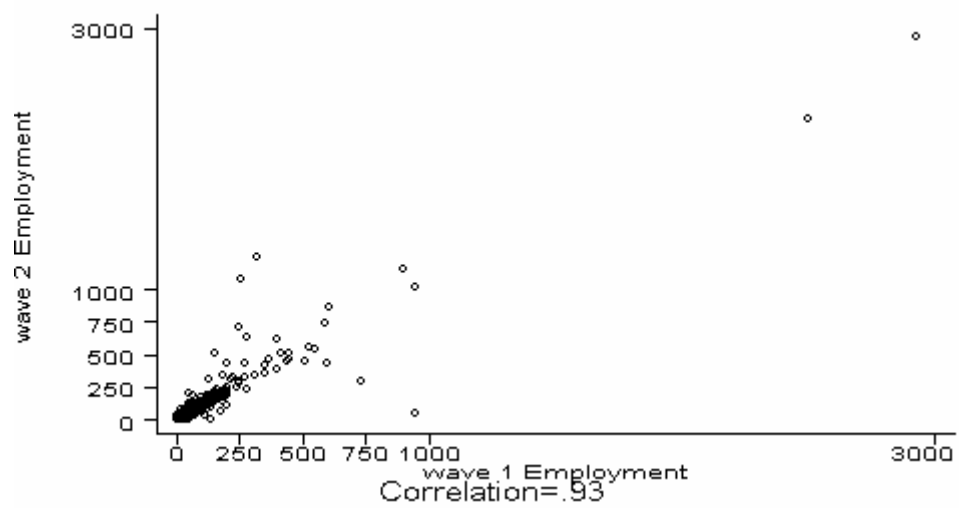
Figure 2: : Relationship between Employment changes and proportion of low wage workers for affected firms.
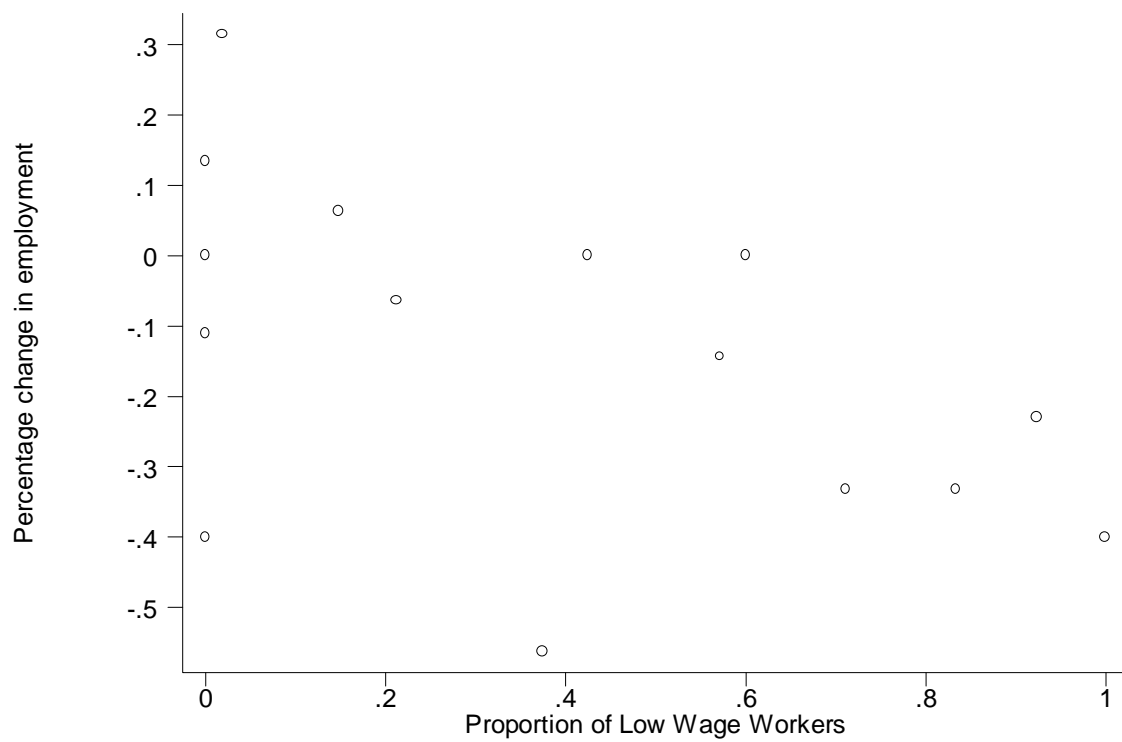
Table 1 : Firms that participated in the first round (1999) of the survey cross-classified according to the volume of their business/level of profits in the 12 months preceding the 1999 survey and business status in 2001

Trends in 1998-99 in:	In Business in 2001	Out of Business in 2001	All Firms
	(per cent)	(per cent)	(per cent)
(a) Business Volumes			
Increased	56.1	40.2	54.8
Stayed the same	36.9	32.1	36.5
Decreased	7.0	27.7	8.7
Total	100.0	100.0	100.0
(b) Profit Levels			
Substantial Loss	0.8	12.7	1.8
Moderate Loss	5.1	15.8	6.0
Broke Even	21.4	29.8	22.1
Moderate Profit	67.6	41.7	65.5
Substantial Profit	5.1	0.0	4.7
Total	100.0	100.0	100.0

Table 2 : Firms that participated in the first round (1999) of the survey cross-classified according to percentage of employees in 1999 who were below an hourly basic pay of IR£4.50 and business status in 2001

Percentage Below IR£4.50 an hour in 1999	In Business in 2001	Out of Business in 2001	All Firms
	(per cent)	(per cent)	(per cent)
None	52.6	61.2	53.3
Less than 15%	4.2	1.0	4.0
15% or more	43.2	37.7	42.7
Total	100.0	100.0	100.0

Table 3. *The impact of Minimum wages on Employment*
(Dependent Variable – percentage change in employment form 1998-2000
t-stats in parentheses are based on White's robust standard errors)

Explanatory Variable				
	(1)	(2)	(3)	(4)
Constant	.15*	.14*	.28*	.27*
	(3.68)	(4.40)	(1.79)	(1.71)
LowWage99	-.012		-.012	
	(-.23)		(-.22)	
PropLow99		.0002		.0002
		(.18)		(.17)
Irish			-.12	-.12
			(-1.16)	(-1.18)
Export			.006	.007
			(.10)	(.11)
Profit			.10*	.10*
			(1.65)	(1.63)
Union			-.02	-.02
			(-.35)	(-.31)
WageBill			-.002	-.002
			(-1.25)	(-1.18)
Totemp99			-000	-.0001
			(-1.00)	(-.98)
Sample Size	451	451	451	451

Table 4: *The impact of Minimum wages on Employment – Minimum wage Firms only*
(Dependent Variable – percentage change in employment form 1998-2000
t-stats in parentheses are based on White's robust standard errors)

Explanatory Variable	(1)	(2)
Constant	.12*	.26
	(2.69)	(1.11)
PropLow99	.0006	.0008
	(.54)	(.51)
Irish		-.20*
		(-1.7)
Export		-.01
		(-.18)
Profit		.14*
		(2.07)
Union		.09
		(.91)
WageBill		-.001
		(-.40)
Totemp99		-.0006*
		(1.80)
		.
Sample Size	230	230

Table 5: *Characteristics of firms classified by exposure to the Minimum wage Legislation.*
(standard errors in parentheses)

Variable	All Firms	Firms with Minimum Wage Workers in First Sweep (LowWage99)	Firms Constrained by the legislation (Effective MW)
Panel A			
Average/Median Employment Levels in 1998-1999	66/20	58/25	90/17
Average/Median Employment Levels in 2000-2001	82/22	64/28	94/17
Panel B Average proportion of Firms with some workers earning less than £4.00 in 1999	28%	56%	43%
Average Number of Workers Affected by the Legislation in 2000	4 (.58)	7.3 (1.3)	14.3 (3.8)
Average Proportion of Workers at £4.50 after Legislation	.06 (.005)	.10 (.01)	.24 (.05)
Average Percentage Increase in Wage Bill as a result of Legislation	1.99% (.16)	3.7% (.39)	10.11% (1.54)
Proportion of Firms Affected by Wage Spillovers	17.51%	29.19%	47.37%
Proportion of Workers Affected by Wage Spillovers (Affected Firms only)	54.45%	54.14%	62.9%

Table 6: *The impact of Minimum wages on Employment using self-reported measure of minimum wage bite*
(Dependent Variable – percentage change in employment form 1998-2000
t-stats in parentheses)

Explanatory Variable	(1) – OLS[a]	(2) Median Regression[b]	(3) Robust Regression
Constant	.28* (1.86)	.07 (1.5)	.08 (1.17)
Effective MW	-.29[*] (-3.83)	-.19* (-2.07)	-.20* (-2.4)
Irish	-.11 (-1.08)	-.05 (-1.43)	-.04 (-.75)
Export	.007 (.11)	.01 (.36)	.002 (.08)
Profit	.10 (1.53)	.09* (3.02)	.06 (1.6)
Union	-.02 (-.28)	-.08* (-1.8)	-.02 (-.6)
WageBill	-.002 (-1.2)	-.001 (-1.05)	-.001 (-.72)
Totemp99	-.0001 (-.98)	.0001 (.3)	.0001 (.25)
Sample Size	444	444	444

[a] t-stats based on White's robust standard errors
[b] t-stats calculated using bootstrap procedure

Table 7: *The Relationship between self-reported minimum wage bite and employment changes from 1997-1998 and 1998-2000.*
(t-stats in parentheses)

Explanatory Variable	(1) 1997-1998	(2) 1998-2000
Constant	-1.38 (-18.06)	-.54 (-9.71)
EffectiveMW	.35 (.99)	.67* (2.34)
Sample Size	574	574

Table 8: *Estimated Elasticities of Labour Demand*

α_N Calculated from Median Regression	-.18		
α_W Calculated without Spillovers	-.09		
α_N Calculated from Self-Reported Employment Losses		-.06	
α_W Calculated without Spillovers		-.09	
α_N Calculated from Self-Reported Employment Losses			-.06
α_W Adjusted for Spillovers			-.12
η_{LL}	-2.0	-.66	-.5

Appendix
Table A1: Summary Statistics
(MS – Matched Sample, FS – Full Sample)

Variable Name	Mean (MS)	Standard Deviation (MS)	Mean (FS)	Standard Deviation (FS)
Deltaemp	.18	.65	NA	NA
Irish	.89	.31	.88	.32
Export	.34	.47	.32	.47
Profit	.77	.43	.73	.44
Union	.23	.42	.21	.41
Wage Bill	.35	.19	.35	.19
Totemp99	69	192	67	179

National Survey of Employment Practices in Ireland, 2000/2001

STRICTLY CONFIDENTIAL

ID. ☐☐☐☐☐

Int. Name _____ Int. No ☐☐☐ Date_____

The Economic and Social Research Institute has been commissioned by the Department of Enterprise, Trade and Employment to carry out a survey into employment practices in Ireland.

The survey is based on a nationally representative sample of all businesses throughout the country. Your firm was selected, on a random statistical basis, for participation in the survey.

The questionnaire will take about 30 minutes to complete. The information collected will be treated in the strictest confidence. The report which we will prepare will contain only aggregate details, percentages etc. It will not be possible to identify individual firms or their responses from this report.

The results will be used to inform policy makers on employment practices in Ireland today. It is *your* experience and *your* views on such issues that we want to measure in this survey.

Your assistance in completing the questionnaire would be greatly appreciated.

Q.1   Name of Company_____

Q.2   Name of person completing the questionnaire_____

Q.3   What is your own position within the company?_____

Q.4   Please describe as fully as possible the nature of your business_____
_____
_____

Q.5   **Which of the following best describes your company?** [Tick one only].

Irish owned private company .... ❏$_1$ Semi-state .... ❏$_5$
Irish owned public company .... ❏$_2$ Co-Operative .... ❏$_6$
Subsidiary of overseas company .... ❏$_3$ Other (please specify) .... ❏$_7$
International franchise in Ireland .... ❏$_4$

Q.6   **How many branches or outlets does your company currently have throughout the Republic of Ireland?**

_____ branches/outlets.

Q.7   **What is the total number of persons currently engaged in your company, on a full-time and part-time basis, in all the company's branches throughout the Republic of Ireland? By part-time we mean usually working less than 30 hours per week. Please include proprietors, owners and managers.**

_____full-time   _____part-time

Q.8a   **Does your firm export?**   Yes….❏$_1$➔Go to Q.8b   No....❏$_2$➔Go to Q.9

Q.8b   **Approximately, what percentage of your output goes to (a) the domestic market (b) the UK market and (c) other export markets?**

(a) Domestic Market_____%   (b) UK Market _____%   (c) Other Export Markets _____%
[Int. (a) + (b) + (c) must sum to 100%]

Q.9   **Has your volume of business increased, stayed the same or decreased in the last 2 years?**

Increased .... ❏$_1$ Stayed the same .... ❏$_2$ Decreased............ ❏$_3$

Q.10   **Compared with this time two years ago, is your workforce today**

Larger............... ❏$_1$ The Same .... ❏$_2$ Smaller……….. ❏$_3$

Q.11   **We would like you to compare the rate of staff turnover today with that of 12 months ago. Would you say the rate of staff turnover in the last 12 months has:**[Please tick (✔) one box only].

Decreased	*Decreased*	*Remained*	*Increased*	*Increased*
substantially	*slightly*	*Constant*	*Slightly*	*substantially*
❏$_1$	❏$_2$	❏$_3$	❏$_4$	❏$_5$

Q.12 **Listed on this card [Int. Show Card A] are 7 possible difficulties which could face a company in business today. I would like you to rank them from 1 to 7 in order of importance as they face your company. Assign a '1' to the difficulty you think is most important to your company, a '2' to the second most important difficulty and so on.**

Rank in terms of importance

Poor Industrial Relations... ☐

Difficulties in recruiting staff... ☐

Employer's PRSI .... ☐

Basic Labour Costs/Wages (other than PRSI element) .... ☐

Unfair Competition from other companies... ☐

Corporate taxes/Taxes on profits .... ☐

Affordable equity and working capital .... ☐

Int. Record rank given to "Difficulties in recruiting staff": _____ (rank).
If this is ranked 1 or 2 ask Q.13. -otherwise go to Q.14.

Q.13 **Why do you think you experience these difficulties in recruiting staff?** [Int. Show Card B and tick all that apply.]

(i)   workers do not find it worthwhile taking a job at the wages offered ....☐$_1$
(ii)   the terms of employment do not suit many workers...☐$_2$
(iii)   there is no career progression in the relevant jobs...☐$_3$
(iv)   there is too much competition from other employers......................................☐$_4$
(v)   there is a severe shortage of suitable applicants ....☐$_5$
(vi)   long/unsocial hours ....☐$_6$
(vii)   other (please specify) ....☐$_7$

Q.14 **Thinking back over the last year, in terms of the overall profits of your company would you say your business has shown:**

A Substantial	A Moderate	Broken	A Moderate	A Substantial
Loss............ ☐$_1$	Loss............ ☐$_2$	Even ...... ☐$_3$	Profit .... ☐$_4$	Profit .... ☐$_5$

Q.15 **Approximately what percentage of your firm's non-managerial employees (full-time and part-time) would you say are in a Trade Union?**

25 per cent or less.......☐$_1$ 26 – 50 per cent.......☐$_2$ 51-75 per cent.......☐$_3$ 76+per cent......☐$_4$

Don't know……❑5

Q.16a **Approximately what percentage of your company's total operating costs would be accounted for by your total wage bill (for both full-time and part-time workers, including proprietors, owners and managers?)**

Wage bill as a percentage of operating costs _____ per cent

*PERSONS WORKING ON A **FULL-TIME** BASIS*

Q.17A **You mentioned that you have a total of _____ people working on a FULL-TIME basis in your company (See Q.7 above). How many of these full-time staff (including proprietors, owners and managers) would you have in each of the occupational categories listed on this Card** [Int. Show Card C].

OCCUPATIONAL CATEGORIES	Q17A Number of FULL-TIME Workers
1.Managers/Proprietors (e.g production; marketing; purchasing; & computer systems managers)	
2.Engineering/Science/Computer/Other Professionals (e.g. civil, chemical, electrical, electronic engineers; physicists, chemists, technologists, graduate software staff, architects, accountants, solicitors)	
3.Engineering/Science and Computer Technicians/Other Associate Professionals (including Computer Technical Staff) (e.g. electrical, electronic, production, plastics, instrumentation technicians; laboratory, plastics technicians; systems analysts, computer programmers; technical support; computer technicians)	
4.Clerical/Secretarial (e.g. telebusiness operators, computer operators, clerical supervisors, telephonists, typists)	
5.Skilled Maintenance and Skilled Production (e.g. electricians, fitters, electronic workers, welders, printers, carpenters)	
6.Production Operatives (e.g. millers, bakers, dyers, bleachers, machinists, paper makers, plastics workers)	
7.Transport and Communications (e.g. drivers, couriers, messengers)	
8. Sales (e.g. shop assistants, sales representatives)	
9.Personal Services (e.g. catering workers, domestic servants and cleaners, laundry workers)	
10.Labourers (incl. Security) etc. (e.g. dock labourers, other unskilled labourers, caretakers, watchmen, security guards)	
TOTAL	

Q.17B **Approximately how many of your total FULL-TIME workers would fall into the following hourly basic pay rates?** [Int. Show card D]

Q.17C **Approximately how many FULL-TIME workers in each of the hourly pay rates are male and how many are female?** [Int. Show card D]

Q.17D **Approximately how many FULL-TIME workers in each of the hourly pay rates are aged 18 years or less, 19-25 years; 26 or more years?** [Int. Show card D]

Q.17E Do any workers in each of these hourly basic pay grades receive any form of regular fringe benefit from the company (e.g. meal allowance, health insurance, accommodation, etc). If so, please specify the nature of their fringe benefits. [Int. Show card D]

Hourly Basic Pay Rates	Q 17B Number FULL-TIME Staff in hourly basic pay grade	No of FULL-TIME workers					Q 17E
		Q 17C		Q 17D			Receive fringe benefits?
		Males	Females	18 yrs old or less	19-25 yrs old	26 or more yrs old	No Yes If Yes, specify
£4.50 or less per hour							☐₁ ☐₂ _____
£4.51 to £5.50 per hour							☐₁ ☐₂ _____
£5.51 to £6.50 per hour							☐₁ ☐₂ _____
More than £6.50 per hour							☐₁ ☐₂ _____
Total							☐₁ ☐₂ _____

[Int: Check totals are same as at Q.17A]

Q.17F Thinking now only of the _____ FULL-TIME workers referred to at Q.17B who are paid £4.50 or less per hour. Please tell me how many fall into each of the following occupational grades.[Int. Show Card C.]

OCCUPATIONAL CATEGORIES	Q17F Number of FULL-TIME Workers
1.Managers/Proprietors (e.g production; marketing; purchasing; & computer systems managers)	
2.Engineering/Science/Computer/Other Professionals (e.g. civil, chemical, electrical, electronic engineers; physicists, chemists, technologists, graduate software staff, architects, accountants, solicitors)	
3.Engineering/Science and Computer Technicians/Other Associate Professionals (including Computer Technical Staff) (e.g. electrical, electronic, production, plastics, instrumentation technicians; laboratory, plastics technicians; systems analysts, computer programmers; technical support; computer technicians)	
4.Clerical/Secretarial (e.g. telebusiness operators, computer operators, clerical supervisors, telephonists, typists)	
5.Skilled Maintenance and Skilled Production (e.g. electricians, fitters, electronic workers, welders, printers, carpenters)	
6.Production Operatives (e.g. millers, bakers, dyers, bleachers, machinists, paper makers, plastics workers)	
7.Transport and Communications (e.g. drivers, couriers, messengers)	
8. Sales (e.g. shop assistants, sales representatives)	
9.Personal Services (e.g. catering workers, domestic servants and cleaners, laundry workers)	
10.Labourers (incl. Security) etc. (e.g. dock labourers, other unskilled labourers, caretakers, watchmen, security guards)	
TOTAL	

[Int: Check total with Q17B]

Q.17G **Approximately how many of these FULL-TIME workers who are paid £4.50 or less per hour would be paid between £4.00 to £4.50 and £3.99 or less per hour.**

	Number of Full-time Workers
£4.00 - £4.50 per hour	
£3.99 or less per hour	
Total	

[Int. Check total reconciles with Q17b]

Q.17H **Once again, thinking in terms of your FULL-TIME workers (including proprietors, owners and managers) in this basic pay category of £4.50 or less per hour. When FULL-TIME staff in this pay category start with your company approximately how many days initial training do they receive to bring them up to a minimum level of proficiency? I would like you to tell me how many days initial training they receive (i) on-the-job while continuing with their job or productive function in the company; (ii) in-house on the company's premises but not on-the-job; (iii) out of the company.**
[Int: If none write NONE.   Do not leave blank].

(i) On-the-job _____ days of initial training

(ii) In-house (not on-the-job) _____ days of initial training

(iii) Out of the company _____ days of initial training.

[Int: If none write NONE. Do not leave blank]

Q.17I **While these full-time employees are undergoing this initial training do they receive a reduced wage?**

Yes.........................❏₁   No ....❏₂

*PERSONS WORKING ON A **PART-TIME** BASIS*

Q.18A **You mentioned that you had a total of _____ people working on a PART-TIME basis in your company (See Q.7 above). How many of these part-time staff (including proprietors, owners and managers) would you have in each of the occupational categories listed on this Card** [Int. Show Card C].

OCCUPATIONAL CATEGORIES	Q18A Number of PART-TIME Workers
1.Managers/Proprietors (e.g production; marketing; purchasing; & computer systems managers)	
2.Engineering/Science/Computer/Other Professionals (e.g. civil, chemical, electrical, electronic engineers; physicists, chemists, technologists, graduate software staff, architects, accountants, solicitors)	
3.Engineering/Science and Computer Technicians/Other Associate Professionals (including Computer Technical Staff) (e.g. electrical, electronic, production, plastics, instrumentation technicians; laboratory, plastics technicians; systems analysts, computer programmers; technical support; computer technicians)	
4.Clerical/Secretarial (e.g. telebusiness operators, computer operators, clerical supervisors, telephonists, typists)	
5.Skilled Maintenance and Skilled Production (e.g. electricians, fitters, electronic workers, welders, printers, carpenters)	
6.Production Operatives (e.g. millers, bakers, dyers, bleachers, machinists, paper makers, plastics workers)	
7.Transport and Communications (e.g. drivers, couriers, messengers)	
8. Sales (e.g. shop assistants, sales representatives)	
9.Personal Services (e.g. catering workers, domestic servants and cleaners, laundry workers)	
10.Labourers (incl. Security) etc. (e.g. dock labourers, other unskilled labourers, caretakers, watchmen, security guards)	
TOTAL	

Q.18B **Approximately how many of your total PART-TIME workers would fall into the following hourly basic pay rates?** [Int. Show card D]

Q.18C **Approximately how many PART-TIME employees in each of the hourly pay rates are male and how many are female?** [Int. Show card D]

Q.18D **Approximately how many PART-TIME employees in each of the hourly pay rates are aged 18 years or less, 19-25 years; 26 or more years?** [Int. Show card D]

Q.18E Do any workers in each of these hourly basic pay grades receive any form of regular fringe benefit from the company (e.g. meal allowance, health insurance, accommodation, etc). If so, please specify the nature of their fringe benefits. [Int. Show card D]

Hourly Basic Pay Rates	Q 18B Number PART-TIME Staff in hourly basic pay grade	No of PART-TIME workers					
		Q 18C		Q 18D			Q 18E
		Males	Females	18 yrs old or less	19-25 yrs old	26 or more yrs old	Receive fringe benefits? No Yes If Yes, specify
£4.50 or less per hour							☐₁ ☐₂ _____
£4.51 to £5.50 per hour							☐₁ ☐₂ _____
£5.51 to £6.50 per hour							☐₁ ☐₂ _____
More than £6.50 per hour							☐₁ ☐₂ _____
Total							☐₁ ☐₂ _____

[Int: Check totals are the same as Q.18A]

Q.18F **Thinking now only of the _____ PART-TIME workers referred to at Q.18B who are paid £4.50 or less per hour. Please tell me how many fall into each of the following occupational grades.**[Int show Card C]

OCCUPATIONAL CATEGORIES	Q18F Number of PART-TIME Workers
1.Managers/Proprietors (e.g production; marketing; purchasing; & computer systems managers)	
2.Engineering/Science/Computer/Other Professionals (e.g. civil, chemical, electrical, electronic engineers; physicists, chemists, technologists, graduate software staff, architects, accountants, solicitors)	
3.Engineering/Science and Computer Technicians/Other Associate Professionals (including Computer Technical Staff) (e.g. electrical, electronic, production, plastics, instrumentation technicians; laboratory, plastics technicians; systems analysts, computer programmers; technical support; computer technicians)	
4.Clerical/Secretarial (e.g. telebusiness operators, computer operators, clerical supervisors, telephonists, typists)	
5.Skilled Maintenance and Skilled Production (e.g. electricians, fitters, electronic workers, welders, printers, carpenters)	
6.Production Operatives (e.g. millers, bakers, dyers, bleachers, machinists, paper makers, plastics workers)	
7.Transport and Communications (e.g. drivers, couriers, messengers)	
8. Sales (e.g. shop assistants, sales representatives)	
9.Personal Services (e.g. catering workers, domestic servants and cleaners, laundry workers)	
10.Labourers (incl. security) etc. (e.g. dock labourers, other unskilled labourers, caretakers, watchmen, security guards)	
TOTAL	

[Int: Check total with Q18B]

Q.19a **Approximately how many of these PART-TIME workers who are paid £4.50 or less per hour would be paid between £4.00 to £4.50 and £3.99 or less per hour.**

	Number of Part-time Workers
£4.00 - £4.50 per hour	
£3.99 or less per hour	
Total	

[Int. Check total reconciles with Q18b]

Q.19b **Once again, thinking in terms of your PART-TIME workers (including proprietors, owners and managers) in this basic pay category of £4.50 or less per hour. When PART-TIME staff in this pay category start with your company approximately how many days initial training do they receive to bring them up to a minimum level of proficiency? I would like you to tell me how many days initial training they receive (i) on-the-job while continuing with their job or productive function in the company; (ii) in-house on the company's premises but not on-the-job; (iii) out of the company.**

[Int: If none write NONE. Do not leave blank].

     (i) On-the-job   _____ days of initial training

     (ii) In-house (not on-the-job)   _____ days of initial training

     (iii) Out of the company   _____ days of initial training

[Int: If none write NONE. Do not leave blank]

Q.19c **While these part-time employees are undergoing this initial training do they receive a reduced wage?**

     Yes .... ❑₁   No .... ❑₂

VACANCIES, HIRINGS AND DEPARTURES OF LAST 12 MONTHS - £5.50 to £6.50 PER HOUR

Q.20 **I would like you to think back over the last year about vacancies which your company had in the basic pay range £5.50 to £6.50 per hour (about £215 - £255 per week). By vacancies I am referring to unmet demand for labour where the positions were/are unoccupied and you were/are actually searching for employees. How many vacancies in the basic pay range of £5.50 - £6.50 per hour (about £215 - £255 per week) did your company have in the last year (including any current outstanding vacancies)?**

_____ vacancies in pay range £5.50 – £6.50 per hour

[Int. If none, write NONE, do not leave blank]

Q.21 **How many people were HIRED into the basic pay range of £5.50 - £6.50 per hour (about £215 - £255 per week) in the last year?**

_____ persons hired within range of £5.50 - £6.50

[If none please write NONE do not leave blank]

Q.22 **How many people LEFT, RETIRED OR WERE DISMISSED from positions in the basic pay range of £5.50 - £6.50 per house (about £215 – £255 per week) in the last year?**

_____ persons left, retired or were dismissed within range of £5.50 - £6.50

[If none please write NONE do not leave blank]

VACANCIES, HIRINGS AND DEPARTURES OF LAST 12 MONTHS - £4.50 or LESS PER HOUR

Q.23 **I would now like you to think back over the last year about vacancies which your company had in the basic pay range of £4.50 or less per hour (about £175 or less per week). By vacancies I am referring to unmet demand for labour where the positions were/are unoccupied and you were/are actually searching for employees. How many vacancies in the basic pay range £4.50 or less per hour (about £175 or less per week) did your company have in the last year (including any current, outstanding vacancies).**

_____ **vacancies in pay range £4.50 or less.**

[Int. If none, write NONE, do not leave blank]

Q.24 **How many people were HIRED into the basic pay range of £4.50 or less per hour (about £175 or less per week) in the last year?**

_____ persons left, retired or were dismissed within range of £4.50 or less

[If none please write NONE do not leave blank]

Q.25 How many people LEFT, RETIRED OR WERE DISMISSED from positions in the basic pay range of £4.50 or less per hour (about £175 or less per week) in the last year?

_____ persons hired with range of £4.50

[If none please write NONE do not leave blank]

Q.26 Have you heard about the introduction of the minimum wage?

Yes................... ❑₁ ➔ go to Q.27   No .... ❑₂ ➔ end interview

Q.27 When was it introduced? Please record month and year.

_____ month   _____ year   Don't know........ ❑

Q.28a What was the basic hourly rate of pay for an experienced adult worker under the minimum wage?

IR£ _____ per hour   Don't know....... ❑

Q.28b What was the basic hourly rate of pay for a young and inexperienced worker under the minimum wage?

IR£ _____ per hour   Don't know ..... ❑

Q.29a The minimum wage for an experienced adult worker is £4.40 per hour although there are some exceptions to this for certain categories of young employees in their first year of employment or training. These exceptions are referred to as sub-minimum rates and are below the usual £4.40 level. Has your company availed of these so-called sub-minimum rates permitted under the minimum wage legislation?

Yes….$\square_1$ ➔ go to Q.29b   No….$\square_2$ ➔ go to Q.30   Never heard of sub minimum rates $\square_3$ ➔ go to Q.30

Q.29b Which sub-minimum rates have you availed of? [Please tick (✓)the relevant boxes]

	Yes	No
(i) Under 18 years of age	$\square_1$	$\square_2$
(ii) in first year of employment over 18 years	$\square_1$	$\square_2$
(iii) in second year of employment over 18 years	$\square_1$	$\square_2$
(iv) trainee over 18 years in structured training	$\square_1$	$\square_2$

Q.29c Have you applied more than one sub-minimum rate to the *same* employee since April 1st 2000?

Yes .... $\square_1$ ➔ go to Q.29d   No........... $\square_2$ ➔ go to Q.30

Q.29d Which sub-minimum rates have you applied to the *same* employee? [Please tick (✓) the relevant boxes]

	Yes	No
(i) Under 18 years of age	$\square_1$	$\square_2$
(ii) in first year of employment over 18 years	$\square_1$	$\square_2$
(iii) in second year of employment over 18 years	$\square_1$	$\square_2$
(iv) trainee over 18 years in structured training	$\square_1$	$\square_2$

Q.30 Thinking back to when the minimum wage was introduced in April 2000, about how many people in your company got an increase in their hourly rate *as a direct result* of the minimum wage?

_____ persons got increase directly due to minimum wage If none, write NONE.

Do not leave blank.

Q.31 Given trends in the labour market in Ireland over the last year, do you think that you would have had to increase wage rates anyway up to the minimum level set out in the minimum wage?

Yes.................. $\square_1$ No...................... $\square_2$

Q.32 **When the minimum wage was introduced did you have to increase the hourly rates of higher grade staff to maintain pay differentials?**

Yes.................. ❏$_1$ No....................... ❏$_2$

Q.33 I would like you to think in terms of those workers who were above the minimum wage when it was introduced. Approximately what percentage of your workforce which was above the minimum wage received an increase in hourly pay rates as a result of restoring pay differentials?

_____ per cent

Q.34 **Would you say that the introduction of the minimum wage directly increased your labour costs or had no effect on your labour costs.**

Increased labour costs . ...❏$_1$ No effect............. ❏$_2$

Q.35 By approximately what percentage?

Less than 3% .... ❏$_1$ 3 to less than 5 % .... ❏$_2$ 5 to less than 10% ... ❏$_3$

10% to less than 25% .... ❏$_4$ 25% or more......... ❏$_5$

Q.36 **Suppose the minimum wage had not been introduced. Do you think you would be employing: more people today than you are; the same number of people or fewer people.**

More people ....❏$_1$ Same number........... ❏$_2$ Fewer people ...…..... ❏$_3$

Q.37 About how many more/less _____ people

Q.38 Has the introduction of the minimum wage in April 2000 led to any of the following in your company. Please state whether the effect was significant, slight or none.

	Significant Effect	*Slight Effect*	*No Effect*
(i) changes to workers pay and benefits structures e.g. payment methods; overtime rates; pay supplements, commission or tips; benefits in kind etc.	$\square_1$	$\square_2$	$\square_3$
(ii) Changed the way work is organised (e.g. working patterns; shift systems; overtime)	$\square_1$	$\square_2$	$\square_3$
(iii) A reduction in working hours of workers	$\square_1$	$\square_2$	$\square_3$
(iv) More inexperienced and less experienced staff	$\square_1$	$\square_2$	$\square_3$
(v) Increase in prices of your goods and services	$\square_1$	$\square_2$	$\square_3$
(vi) Reduction in your profits	$\square_1$	$\square_2$	$\square_3$
(vii) Reduction in expenditure on staff training	$\square_1$	$\square_2$	$\square_3$
(viii) Tightened controls on labour (e.g. treatment of absenteeism, paid breaks, staff meals)	$\square_1$	$\square_2$	$\square_3$
(ix) Increased investment in training and development of employees	$\square_1$	$\square_2$	$\square_3$
(x) Increased use of technology/machinery	$\square_1$	$\square_2$	$\square_3$
(xi) Improved quality of service or product	$\square_1$	$\square_2$	$\square_3$

Q.39 Finally, what effect would you say that the introduction of the minimum wage has had on the following areas of your businesses? For each area please tell me whether or not the minimum wage has resulted in a significant decrease; slight increase, no effect, slight increase or a significant increase.

	Significant Decrease	*Slight Decrease*	*No Effect*	*Slight Increase*	*Significant Increase*
(i) Staff morale	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
(ii) Productivity	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
(iii) Retraining of low paid staff and up-grading of their work	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
(iv) Amount of subcontracting work undertaken	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
(v) Staff turnover	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
(vi) Industrial relations	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$

Q.40   **Did you receive any information on the National Minimum Wage from the following sources** [Please tick (✔) Yes or No in respect of each]

	Yes	No		Yes	No
(i) TV Advertisements…………………	❏$_1$	❏$_2$	(v) Employee(s)………………………………	❏$_1$	❏$_2$
(ii) Radio Advertisements…………	❏$_1$	❏$_2$	(vi) Employer/business organisation ………	❏$_1$	❏$_2$
(iii) Newspaper Advertisements……	❏$_1$	❏$_2$	(vii) Dept of Enterprise Trade & Employ.	❏$_1$	❏$_2$
(iv) Information leaflet/booklet…….	❏$_1$	❏$_2$	(vii) Other source…………………………	❏$_1$	❏$_2$

Q.41   **Do you have any, final comments which you would like to make on the National Minimum Wage?**

_____

_____

THANK YOU FOR HAVING TAKEN THE TIME TO COMPLETE THIS QUESTIONNAIRE. YOUR CO-OPERATION HAS BEEN OF GREAT ASSISTANCE TO US