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ABSTRACT

Examining the Determinants of Agency Work: Do Family Friendly Practices Play a Role?*

This paper uses establishment data to estimate the determinants of using agency workers. It contends that those employers with less ability to direct effort of core workers are more likely to use agency workers to meet uncertain labor demand. Family friendly practices are viewed as either increasing or decreasing such ability, depending upon their influence upon absence rates. The empirical results imply that special leave practices reduce firms' ability to direct worker effort, thereby increasing the likelihood of using agency workers. On the other hand, practices linked with flexible working conditions (workplace nurseries, flexitime and job sharing) have the opposite effect. The findings thus distinguish between family friendly practices that make core workers better off without expanding contingent agency jobs, and those that do not.

JEL Classification: J13, J81, M52

Keywords: agency work, family friendly work practices, maternity leave, workplace nurseries, flexitime

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EXAMINING THE DETERMINANTS OF AGENCY WORK:
DO FAMILY FRIENDLY PRACTICES PLAY A ROLE?

1. Introduction

The rapid growth of temporary agency work has been identified as both "remarkable" in its size and "neglected" in terms of systematic research (Forde and Slater 2005). Agency work represents an extreme form of flexible staffing that has been credited with allowing firms to successfully respond to variations in workforce demand but which has also been seen as reducing the quality of employment. Understanding the determinants of agency use stands as a critical first step both in its evaluation and in the creation of successful policy recommendations.

We use the extraordinary detail of the 2004 Workplace Employment Relations Survey (WERS) to provide a far fuller specification of the determinants of agency use. In particular, we are unique in isolating the strategic management and workplace environmental variables likely to be associated with using agency workers and are the first to demonstrate a link between the provision of family friendly benefits and the use of agency workers.

This research contends that the nature of the existing employment contract with employees (explicit and implicit) stands as a central determinant of the use of agency workers. When that contract limits flexibility in the direction of workers, firms will be more likely to use agency workers to provide needed flexibility. As a major part of this contention, we argue that the provision of family friendly work practices influences the use of agency workers. In doing so, we blend a large literature concerned with the provision of family friendly work practices with an equally important concern over the extent of agency work. We do not contend there exists a simple unidirectional influence. Instead, we recognize that different family friendly work practices have different influences on the nature of work effort and the organization of

workplace. These differences in turn relate to the extent to which firms find agency workers profitable.

2. Flexible Staffing Arrangements and Agency Workers

Figure 1 shows the increase in agency working in the UK that underlies our paper's focus. The data from 1992-2006 show that while other types of temporary work, including fixed period contract work, have generally declined or been stable, agency work has increased strongly. This is the background to our inquiry and broadly matches the growth shown in longer time-series results from the United States. [1]

The use of agency workers allows firms to hire and fire at much lower cost. Autor (2001) offers convincing evidence that agency workers are trained and ready to employ, allowing the rapid assignment of needed workers. Similarly, agency workers can be fired with essentially no restrictions or costs making them ideally suited for responding to short-term employment needs (Autor 2003). No other form of flexible staffing provides these benefits to the same degree. Yet, despite these benefits to firms, there exists substantial concern from European policy makers (EC, 2002) that the rise of agency work represents a diminution in the quality of employment relations as agency workers have inferior pay and working conditions and lower job satisfaction (Forde and Slater 2006).

To date, labour force survey data give a good sense of the characteristics of US and UK agency workers: younger and more recent labor market entrants with weaker permanent job opportunities (Cohany 1996; Morris and Vekker 2001; Forde and Slater 2005, 2006). Houseman (2001) follows earlier work by Davis-Blake and Uzzi (1993) using US establishment data to

show that establishments using agency workers tend to be larger, less unionised, those that offer good fringe benefits and those with substantial fluctuations in product demand.

In attempting to provide a fuller (and UK based) explanation of the establishment level determinants of using agency work, we are not passing judgement on the decision to do so. Thus, we recognize that the use of agency workers may improve the profitability of the firm while at the same time having ambiguous consequences both for core permanent workers (Cappelli and Neumark 2004) and for agency worker who might have otherwise been permanent workers (Forde and Slater 2006).

The literature (Abraham and Taylor, 1996; Gram and Schnell, 2001) on the organization's decision to use flexible work arrangements such as agency work distinguishes at least three main motives. The first motive is to gain flexibility in buffering the organization from market turbulence. Here, we will add an extra element in that the provision of family friendly working conditions such as leaves may reduce the organization's flexibility regarding its core workforce, increasing the need for such buffers. The second motive is to reduce compensation costs, perhaps because agency workers can be paid less for some types of work, and thus allow firms to develop a two-tier compensation structure. The third motive is to obtain specialist skills not obtainable cost-effectively in-house. To allow for the specialist skills element, we distinguish between professional/managerial and routine agency workers in our estimations. In the remainder of this section we develop in turn each of the first two motivations and then discuss the role of family friendly practices.

Table 1 provides a general view from the WERS of the reasons that organizations themselves put forward for hiring agency workers. We distinguish between professional/managerial workers and others, and as might be expected, the chief difference is in

the need to obtain specialist skills, which is much more important for the professional/managerial group. The most important reason, for both groups, mentioned by over 50% of the organizations, is short-term cover for staff absence. Linked to this motive is cover for maternity leave or annual leave. Savings on wage and benefit costs may be of secondary importance, judging by the "unable to fill vacancies" reason, mentioned by about 20% of the organizations. In our later empirical estimates controlling for many other factors, we confirm that the provision of various categories of leave are important determinants of agency use. We now discuss the main motivations we have identified.

Agency work arrangements as a buffer

Agency workers are useful when an organization faces a problem of coordination of worker effort. Problems of coordination can arise both when the organisation has a production-line technology, so that all workers have to be in one place at one time, and when its market is turbulent, leading to peaks and troughs in labour demand. Let us consider these aspects in turn.

Conventional economic theory (Deardorff and Stafford, 1976) points to firms having an interest not only in wages and hours, but also work schedules. Firms will differ in their technologies. Some firms will have a production-line technology requiring all workers to be together at a certain time and place ("clock in"), and so necessarily constrain workers' choices about when to exercise their own work effort. These firms must pay a wage premium. They must also take special measures to prevent worker absenteeism (Allen, 1981; Heywood and Jirjahn, 2004) via more monitoring or having surplus workers (Coles and Treble, 1996). A further possibility, relevant to our inquiry, is that they may plan to "cover" for any absent workers via

agency temps. Conversely, where production technology grants workers more discretion, wages and absence costs will fall, and so will the need for agency arrangements.

The critical point to be taken from this line of economic theory is that organizations face different costs in coordinating the workplace, and workers place different values on the ability to direct their own work effort.[2] If the nature of the product or service requires all workers to be together at a certain times and place, the work process reduces the worker's ability to direct their own work effort and the organization must both pay earnings premiums and ensure against the effects of worker absence. Certainly, research from a number of countries finds that firms providing leaves and allowing flexible hours for workers (for example, flexitime), pay lower wages all else equal. See Baughman et al. (2003) for US evidence, Edwards (2006) for Australian evidence and Heywood et al. (2006) for UK evidence. At the same time, while leaves increase the likelihood that key workers will be missing, options such as flexitime can actually reduce absence (Heywood and Jirjahn, 2004).

As for temporal coordination, it has long been suggested that agency arrangements provide a buffer of workers than can be readily adjusted in the face of turbulent cyclical or seasonal demand fluctuations (Abraham 1988, Cappelli and Neumark 2004). Indeed, both recent US and Swedish time series evidence confirms that employment variation is greater over the business cycle among temporary and agency workers than among regular workers just as such a buffer theory would imply (Holmlund and Storrie 2002; Wenger and Kalleberg 2006). .

Thus, an important reason for using agency workers is to provide the firm with the flexibility to direct worker effort to the place and at the time it is needed. At issue, is under what circumstances will the agency worker form of flexibility be relatively more valuable to firms. Here we take the degree of flexibility the firm currently has over its own employees to be a

primary determinant. If it cannot easily redirect existing workers or hire (and fire) additional workers as needed, the option of agency workers becomes relatively more valuable. Certainly, a variety of international evidence tends to support such view. Autor (2003) finds that fully 20 percent of the growth in agency work in the United States from 1973 to 1995 flows from the growing restrictions on the employment at will doctrine by state governments. He estimates that a half million new agency worker jobs arose in response to this reduced flexibility in hiring and firing. Olsen and Kalleberg (2004) compare representative establishment samples in the US and Norway showing that Norwegian establishments make greater use of agency workers and argue that this difference reflects both greater restrictions in Norway on hiring and firing and the more generous leaves available in Norway. Lee and Kim (2005) use Korean workplace data to show that when unions reduce the flexibility of employers, those employers are more likely to engage in alternative flexible staffing arrangements including using agency workers. Autor (2003) confirms that firms in US states that have maintained higher degrees of unionization also make more use of agency workers. Yet, while unions may reduce flexibility, they may also negotiate limits to agency use making their ultimate role theoretically ambiguous. Nonetheless, one aim of our work below is to test the extent to which the use of agency work reflects constraints on employer flexibility.

We contrast internal and external flexibility. Practices that potentially limit hiring or firing can be seen as reducing external flexibility. Practices that decrease the ability of the firm to direct existing employees (for example limitations on cross-training or job assignment) reduce internal flexibility. The more restricted is the firm's external and internal flexibility, the more likely is it to use agency workers. A primary measure of external flexibility from the WERS indicates whether or not the establishment has a policy of guaranteed job security for employees.

We anticipate that such a guarantee raises the costs of hiring and firing employees and increases the demand for the flexibility of agency workers. Two additional variables isolate the extent of alternative types of flexible workers that might substitute for agency workers. We know the percent of part-time workers (whose hours may be more easily reassigned) and the percent of fixed-contract workers. We anticipate that increased use of these alternative working arrangements reduces the value of the flexibility provided by agency workers.

The measures of internal flexibility are several and deserve scrutiny. We have access to a group of variables that isolate the extent to which existing workers can be redirected within the firm. We also have a measure of the importance of the internal labor market indicating whether or not the firm looks inside for promotion. In addition, we know the variety of the tasks done by workers (a proxy for cross-training or multiple skills), and whether or not workers can share a job (increasing the chance that at least one of the associated workers is present at any given time). Also we know about the use of teams within the establishment. Teams can indicate cross-training, and thus more internal flexibility. Our expectation is that workplaces with these characteristics will have less need for agency workers, holding other influences constant. We will also use the workplace's absence rate directly as a determinant of agency work, since as noted high absence can both indicate the need for more cover and indicate strict constraints on worker choice, and thus low internal flexibility.

Reductions in wage and benefit costs

While there exists the potential to save on wage and benefit costs, such savings have not typically been identified as the most important factor in the hiring of agency workers. Courts generally view agency workers as not being employees of the client (Davidov 2004). Thus, the

client firm contracts with an agency, but the wage and benefit conditions of the client's workers are not passed on to the agency workers. The general view is that agencies compete on price and union attempts to improve the conditions of agency workers in the UK have been largely limited to procedural concessions (Heery 2004). UK evidence suggests that agency workers earn around 9 percent less than otherwise equal workers (Forde and Slater 2005), though US evidence puts the figure at only 3 percent less after correcting for individual fixed effects (Segal and Sullivan 1997).

However, these differences in earnings seem unlikely to be directly translated to cost savings for the firm. The agency pays the substantial coordination costs of making sure the client receives the hours of worker effort when and where it is desired (see Kvasnicka 2005 for an economist's description of the internal operation of a major German agency). These coordination costs obviously help drive a wedge between what the agency workers are paid and the cost of the agency workers to the client (over 100% in the German case – Kvasnicka, 2005, 23). US establishment surveys (Houseman, 2001, 159) suggest that even including the benefit costs of regular employees, a very large share of US compensation, 58 percent of firms report that agency workers cost the same or *more* than regular workers. In fact, only 11.5% of firms using agency workers cite savings in wages or benefits as an important reason, paralleling the low figure for the UK in Table 1. Numbers such as these suggest that the motivation to use agency workers may not be simply to save money by contracting out.[3] Nonetheless, our estimations will hold constant the provision of critical fringe benefits (pensions) and our robustness checks will examine the role played by high labor costs.

Family Friendly Practices

Family friendly work practices – such as the ability to take leaves of absence – also have the potential to alter the ability of the firm to direct worker effort to fit the needed schedules, and so stimulate the use of agency workers. Yet, we stress the heterogeneity in such practices. Some types of practices reduce the ability of firms to direct work effort but others can be anticipated to increase that ability. Indeed, Heywood et al. (2006) make this heterogeneity apparent in their study of the compensating wage differentials associated with family friendly policies. They found that family leaves and broad forms of flexibility such as work-sharing were associated with lower earnings, suggesting that these policies were costly to firms. On the other hand, workplace nurseries and the ability to work at home (telecommuting) were associated with increased earnings. They suggest that while leaves reduce the control that employer's have over the labor supply (effort) of employees, nurseries often allow workers to put forth greater effort as their children's needs are taken care of on-site. Thus, we anticipate that firms that provide a variety of more generous leave policies increase the likelihood that key personnel will be absent, thereby increasing the likelihood that agency workers will be needed. On the other hand, providing workplace nurseries may reduce absences due to scheduling conflicts with childcare and so reduce the use of agency workers.

In general, we roughly classify a range of family friendly policies according to their anticipated influence on the firm's ability to direct worker effort. In keeping with our general theoretical framework, when that ability is decreased we predict increased use of agency workers and when that ability is increased we anticipate decreased use of agency workers. We recognize that some practices may not be easy to categorize *a priori* but anchor our discussion on the anticipated consequence of a given family friendly policy on absences. The policies that are most likely to reduce the ability to direct worker effort are leaves that are largely at the discretion

of workers. These leaves create an increased likelihood of absence and so an increase in the use of agency workers. We include a wide variety of such leave policies (for example, maternity/paternity leave, and leave for careers) as explanatory variables. By contrast, nurseries may increase the dependability of workers as described above. Similarly, working at home makes workers more nearly on-call and so can increase the ability of firms to direct worker effort. Job sharing provides an interesting middle ground. Workers sharing a job may be able to increase their individual flexibility by each relying on the other to "cover" when unanticipated events might otherwise cause an absence. Yet, from the firm's perspective this "covering" means that it is less likely to face the absence and so less likely to need to use an agency worker.

The final category of family friendly practices we examine is the provision of flexibility in starting and finishing times. Since such flexitime moves the balance of direction in favor of workers, its consequence for firms will be similar to job sharing in that worker absence is reduced. In fact, it is well know that such flexibility is associated with reduced worker absence (Allen 1981, Heywood and Jirjahn 2004). We recognize that such flexibility is only available in certain technologies but that is precisely the point of Deardorff and Stafford (1979). Then, in those circumstances in which the technology does not demand identical timed schedules, we anticipate that absence rates will be lower and the use of agency workers will be less.

Thus, as stressed, family friendly practices should not be anticipated to all have the same influence on the use of agency workers. At heart, the direction of influence should depend on whether the practice makes worker effort more reliable or less reliable. In this fashion, family friendly practices change the contract with existing workers in ways that can either enhance or limit the ability of firms to direct the effort of workers.

3. The Data and Estimation Strategy

The data are drawn from the management questionnaire of the 2004 Workplace and Employee Relations Survey (WERS – see Department of Trade and Industry, 2005). The WERS is a well-known national survey of establishments in Great Britain. It was first conducted in 1980, with four further surveys carried out in 1984, 1990, 1998 and 2004. The survey follows a stratified random sample design (Chaplin et al, 2005), excluding workplaces employing less than 5 people, and excluding agriculture and mining. It achieved a sample of 2,295 workplaces, and – with the appropriate weights supplied with the dataset (Chaplin et al, 2005, 104) – is intended to be nationally representative. The manager interviewed is the 'the senior manager dealing with personnel, staff or employment relations', and consequently this national survey is appropriate for our purposes.

One major improvement of the 2004 WERS over its predecessors is that it extended its coverage of small workplaces to those with 5 to 9 employees in the cross-sectional survey. This enlarges the sample representation (Kersley et al, 2006, 3) to 700,000 workplaces (37% of all workplaces in the UK), and 22.5 million employees (91% of all employees in employment).

Our fundamental dependent variable indicates whether or not the establishment currently uses temporary agency workers. The responses will be fitted to a cumulative normal distribution through maximum likelihood probit estimations. These estimations will correct for the complex sample design by using the survey's sample weights and stratification variables (Chaplin et al, 2005, chapter 8). This will be done both for a parsimonious estimation and then for the complete estimation. The entire sample will be used along with a separate private sector sample. Marginal effects will be identified for each independent variable. As a robustness check, the type of agency worker hired will be examined as well. Separate estimates will be presented for

using agency workers for professional and managerial jobs and for using agency workers for all other types of jobs. Finally, we will estimate the determinants of the number of agency workers hired by each establishment as corroboration.

In choosing the independent variables, our discussion above leads to emphasis on the use of agency workers as a buffer. Within this area, we focus on the way in which family friendly practices may – or may not – increase the buffering need. We have several measures of family friendly practices, and enter them separately because of their likely differing impacts on the buffering role of agency work.

Moreover, as we have also discussed, a further important factor increasing the need for agency workers as a buffer are workplace practices promoting job security. The WERS provides an appropriate control here, since managers are questioned about job security guarantees. We expect workplaces that offer such guarantees to demand more agency workers.

Naturally, we aim to control the effects of market turbulence that will also affect the need for agency workers. Several proxies help capture the extent to which product demand may vary. We know from managers both whether or not the market for their main product can be described as "turbulent" and whether or not it is "competitive." We anticipate that managers in more turbulent and competitive markets face greater variation in the demand for their product and so in their demand for worker services. We also include a measure for the introduction of the new product with similar expectations that it adds uncertainty to product demand.

We include a measure of the extent of training of existing workers. Workers with training specific to the employer are less likely to be easily substituted for by workers from agencies. Our variable measures the share of workers for whom six months of experience is needed to successfully do their job. We anticipate this variable will be negatively associated

with temporary hiring. We also include occupational controls for the extent of professionals and managers as another proxy for training. A further related variable is whether the firm regularly uses paid consultants to help recruiting. Recruiting in this fashion may indicate the need to seek specialized talent and the willingness to move human resource management functions outside the firm. As such, we anticipated it will be associated with increased use of agency workers. Further, we have a measure of whether or not workers in the establishment receive an employer pension. While past survey evidence remain mixed on the role of cost savings, pensions represent a substantial compensation cost that firms will not pay agency workers.

Controls for the extent of unionization within the firm, and for employee involvement via joint consultative councils (JCCs) are also included. As suggested, unions may reduce managerial flexibility and give rise to an increased demand for agency workers. Yet, unions usually object to the use of agency workers and may structure collective bargaining to limit them. In US establishment data, heavily unionized establishments are often less likely to use agency workers (Houseman 2001 and Gramm and Schnell 2001). Thus, unions may simultaneously increase the employer's desire to use agency workers but be associated with a reduced probability of using them. JCCs, for their part, can be closely associated with unions, and be used to limit agency numbers. On the other hand, JCCs also exist in non-union environments, and could promote agency work by providing an alternative plant level mechanism of employee involvement and voice (Addison et al. 2000). As such, they may also limit managerial discretion in directing worker effort and give rise to an increased desire for agency work. Additionally, the presence of a JCC may represent improved communication and trust that allows the hiring of agency workers to be seen as less threatening, or implemented in a

less threatening fashion. Thus, the influence of the JCC variable remains uncertain, *a priori*, and it may well differ in union and non-union workplaces.

Establishment size can be anticipated to be positively associated with the use of agency workers. There may be set-up costs associated with incorporating outside agency workers, suggesting their use is associated with larger establishments. Moreover, if we simply measure any use of agency workers, larger establishments would be more likely to use agency workers just because they have many more workers and so potential opportunities.

Female workers typically have higher absence rates (Heywood and Jirjahn 2004) and often have entitlements to (or are more likely to use) leaves from work. Thus, employers with large shares of women may be more likely to use agency workers. In addition, if women have jobs with lower employer attachment and less firm specific training, such jobs may be more easily filled with agency workers. Thus, to the extent that gender matters, we anticipate that establishments that have predominately female workers will make more use of agency workers.

Finally, we will control for the industry of the establishment and in particular, for whether the establishment is in the public or private sector. The public sector in the UK has made extensive use of temporary agency workers. This influence is potentially far-reaching, hence we will control for it in full sample results, and will also examine separately the private sector subsample. We recognize that our basic hypothesis that agency workers are used by firms to increase flexibility in directing worker effort may best be tested on the private sector subsample for which assumptions of profit maximization and market clearing can be more nearly taken for granted. Nonetheless, the substantial growth in agency work in the public sector argues that we not exclude it.

Table 2 presents the descriptive statistics both for the full sample and for the subsample of private establishments. While the means are generally similar, there is a clear pattern for public establishments both to be more likely to have family friendly practices and to use agency workers.

4. Results

The first column of Table 3 presents the estimation of the probability of using agency workers on the full sample. It uses a parsimonious specification but many of the persistent results are already evident. Larger firms are significantly more likely to use agency workers, as are firms with larger shares of professionals and managers. The professional/manager result may also reflect a size influence, since these groups are more likely to be hired as agency workers in large firms (see below). One of the indicators of alternative forms of staffing flexibility, the proportion of part-time workers (*pptime*) takes a strongly negative coefficient suggesting a trade-off between the use of agency workers and the extent of alternative avenues of flexibility.

The indicators of external and internal flexibility also play their anticipated role. If the firm guarantees employment security to core workers (*jobsecu*), reducing its external flexibility, it is more likely to use agency workers (while only marginally significant here, this variable achieves significance in fuller specifications). As for internal flexibility, one indicator is whether workers are expected to perform a variety of tasks (*variety*). We see that workplaces where this variable is positive are less likely to use agency workers (again, this variable achieves significance in some of the fuller specifications). Furthermore, those establishments with long training periods (train6) are less likely to use agency workers, again supporting the theoretical prediction. Thus, a wide variety of the controls perform as anticipated.

The indicators of family friendly practices also suggest an early pattern. Two of the leave policies (*patleave* and *specleave*) are associated with significantly greater probabilities of using agency workers. The implication here is that generous leave policies increase the likelihood that key personnel will be absent, and force recourse to agency work, as discussed above. On the other hand, workplaces offering flexitime and jobsharing are less likely to use agency workers. This finding supports the notion that flexitime and job sharing may not only provide flexibility for workers but also make absence less likely, so reducing the need for agency work.

The second column limits the parsimonious estimation to the private sector, and includes the indicator of competition (relevant only to the private sector). As can be seen, this indicator emerges with the expected positive coefficient, and is highly significant suggesting that the uncertainty in labor demand associated with more competitive environments increases the use of agency workers. In addition, the indicator of job sharing again shows a strong negative partial correlation with use of agency workers. Even stronger is the effect of the presence of workplace nurseries (*nursery)* that markedly reduces the likelihood of using agency workers. As we have argued, this family friendly practice reduces scheduling conflicts between work and home and reduces the chance of worker absence. Interestingly, this effect appears to be much stronger in the private sector than for the sample as a whole.

Columns 3 and 4 retain the samples of column 1 and 2 but add industrial dummies to the specification. The significance of the job security coefficient returns when examining the entire sample. More fundamentally, the general pattern of other results remains very similar in that it continues to support the importance of both external and internal flexibility as determinants of using agency workers. The family friendly practices continue to play a role with a sharp

distinction between the significant positive coefficients on several leave variables and the significant negative coefficients on other practices.

The final two columns present the fullest specification that includes the original variables, the industrial dummies and the extended set of controls. Also presented are the marginal effects associated with each coefficient in order to discuss the economic magnitudes. Again, the basic point to be taken is that even in this full specification the important results remain.

Several of the new variables play important roles. Being in a turbulent market place (*market_tur*) and introducing a new product (*newprod*) join being in a competitive market (competitive) as indicators of demand variations, and – in the private sector, at least - as positive indicators of the use of agency workers. Unionization is a significant deterrent to agency use in the full sample (reflecting the high union density in the public sector). Also, the presence of a joint consultative committee emerges as a positive determinant of using agency work both in the full sample, and in the private sample. This result suggests that employee involvement at the plant level may help create an environment in which it is more difficult to direct workers, so raising the need for agency workers, or that the JCC is associated with improved communication and trust that allows the hiring of agency workers to implemented in a less threatening fashion. There are signs that this effect is more marked in the public sector as the marginal effect in the private sector is essentially half the size.[4]

Using paid consultants to assist recruiting (*empagent*) also appears as a significant positive indicator of using agency workers, showing the link between some types of agency work and specialist skills. Finally, the family friendly variable denoting being allowed to work at home (*wkhome)* emerges as a factor reducing agency work.

Looking at the marginal effects, the public sector dummy has the largest impact on the probability of using agency workers. The marginal effect indicates that public sector establishments are approximately .093 more likely to use agency workers. This figure can be judged against the average probability of using agency workers in the sample of .119. Thus, an otherwise typical public sector establishment is approximately twice as likely to use agency workers. The influence of providing special paid leaves (*specleave)* is almost as large. These increase the likelihood of private sector firms using agency workers by .073. Next in line of magnitude is the job security provision for (core) workers, with a marginal effect of .057 for the full sample. Furthermore, in addition to special paid leave, several family friendly practices have economically important effects reducing agency work, in particular the nursery and flexitime variables.

Two robustness checks help convince us that the series of results highlighted above are stable. First, we have emphasized the importance of absence as a reason to use agency workers. Thus, agency workers may cover for permanent workers on leave. Yet, it remains unclear whether workers or not workers on leave would be identified in traditional absence measures. Nonetheless, we included the absence rate (see Table 1 for definitions) as an additional independent variable. While missing data resulted in the loss of several hundred observations, the absence rate emerged as a significant and positive determinant of the use of agency workers. his result did not, however, change the tenor of the other results. Virtually every previously significant result remained, including evidence that leaves are associated with the use of agency workers. Second, while we cannot control for the relative wage of the establishment, we can control for the share of costs comprised by labor expenses. Including this proxy changed nothing, as it was routinely insignificant in the estimations.

Table 4 splits the dependent variable into two separate dependent variables, distinguishing between agency workers used for professional/management positions, and agency workers used for all other (line) positions. As can be seen, for agency workers in line positions, most of specific results, and certainly the same general patterns emerge as they did in Table 3. Indeed, almost all the family friendly indicators are now significant, with the leave variables positively linked with agency work, and flexible working conditions (flexitime, nursery and working at home) being negatively linked. However, with the exception of firm size and a few other variables such as using paid consultants for recruiting, we do not identify strong determinants of using agency workers for professional and managerial positions. Evidently our arguments based on the importance of internal and external flexibility do not apply so well to professional/managerial agency workers where specialist skills are likely to be the main determining factor. Nevertheless, our arguments are still important, since there are about three times as many agency workers in line as in professional/managerial positions.

Finally, it might be argued that the simple decision of whether or not to use agency workers is not as important as the number of workers that are actually hired. We have undertaken a variety of robustness checks to examine this issue and they all support the picture already painted. Table 5 presents estimations in which the dependent variable measures the log of the number of agency workers hired. Using the log both captures the anticipated non-linearity, and matches the log employment size used as an independent variable. In addition, the estimation implements a Tobit specification so that the influence both on provision and then on the log number is captured. The results largely replicate those already seen with nearly the same collection of variables being significant and in the same directions.

5. Conclusions

While the use of agency workers is determined by many factors, we have stressed the role played by the existing staffing arrangements with core workers. When those arrangements are less flexible from the firm's point of view, we anticipated and found that the use of agency workers is more likely. Unique to our presentation has been the emphasis on family friendly practices. We view such practices as heterogeneous and anticipate they will have different influences. When they increase the likelihood of absence, as in the case of special leaves, they are found to also increase the likelihood of using agency workers. When they generate an increased ability of the employer to direct work effort and reduce absence, such as in job sharing and nursery provision, they tend to decrease the use of agency workers.

Our estimates control for many of the anticipated influences on agency use, but it might be argued that there remain omitted variables. While recognizing that possibility, we emphasize that the addition of controls in our methodology and the robustness tests did little to change the basic pattern of results. Perhaps, more importantly, our ability to explain the use of agency workers is largely limited to filling non-professional and non-managerial positions - which constitute the large majority of agency use. Evidently, our hypothesis that employers with less existing staff flexibility are more likely to use agency workers does not apply to professional and managerial agency workers. Developing a model for these categories remains a task for future work.

Our research offers insight into the orthodox trade-off between good conditions for incumbents and larger numbers of outsiders (agency workers). Certainly job security and policies promoting special leaves (or job security guarantees) involve just such a trade-off. These improve working conditions for incumbents while increasing the number of agency workers. But

family friendly policies such as workplace nurseries or job sharing do not involve this trade-off. These policies give employers more control over staff, make incumbents better off and reduce the demand for agency workers. Our research thus distinguishes between policies that provide family friendly benefits without expanding contingent jobs, and those that do not.

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Table 1: Reasons for Hiring Agency Workers

Reason	Professional/ managerial	Non-professional
Matching staff to peaks in demand	41%	35
Short-term cover for staff absence	58	53
Cover for maternity leave or annual leave	13	14
Unable to fill vacancies	22	24
To obtain specialist skills	21	4
Freeze on permanent staff numbers	12	4
Number of workplaces hiring agency workers	291	533

Source: WERS 2004
Notes: the figures show the proportion of workplaces agreeing with the given statement. More than one statement could be accepted, so the columns do not sum to 100%.

Table 2: Definitions of Variables, and Summary Statistics (all firms)

Variable		Definition	Mean (std dev)	
			Total	**Private**
Agency worker variables	agency	Whether any temporary agency staff are presently working at the establishment	0.119 (0.323)	0.104 0.306
	hagency	Whether temporary agency staff presently working at the establishment are in the professional, managerial or associated professional groups	0.037 (0.189)	0.025 0.157
	bagency	Whether temporary agency staff presently working at the establishment are in secretarial, sales, personal service or operatives groups	0.081 (0.272)	0.078 0.269
	nagency	Number of temporary agency staff presently working in the establishment, if such staff are hired	8.23 (47.8)	8.87 (52.0)
Family friendly variables	matleave	Whether the establishment offers maternity leave at the normal full rate of pay	0.527 (0.499)	0.492 0.500
	patleave	Whether the establishment offers paternity leave at the normal full rate of pay	0.445 (0.497)	0.413 0.493
	paidleave	Whether the establishment allows an employee to take special paid leave to deal with family emergencies	0.465 (0.499)	0.431 0.495
	specleave	Whether employees are entitled to a specific period of leave as carers of older adults	0.058 (0.234)	0.042 0.202
	flexitime	Whether the establishment offers a flexitime option to all of its employees (no set start/finish times, only set hours per week or month)	0.240 (0.427)	0.234 0.423
	nursery	Whether the establishment has a workplace nursery	0.019 (0.139)	0.011 0.105
	wkhome	Whether the establishment offers an arrangement to any of its workers to work at home during normal working hours	0.247 (0.431)	0.233 0.423
	jobshare	Whether the establishment offers an arrangement to any of its workers to share a full-time job with another employee	0.257 (0.437)	0.195 0.396
logsize	Log of total number of employees on payroll at establishment		2.689 0.960)	2.623 0.925
pffem	Percent full-time female workers employed at establishment		47.3 (34.3)	44.297 33.991
pmprof	Percent managerial and professional workers employed at establishment		28.7 (26.8)	26.439 25.278
pptime	Percent part-time workers (< 30 hours a week) employed at establishment		32.9 (30.4)	31.663 30.479
pfixterm	Percent fixed-term contract workers employed at establishment		5.2 (17.0)	4.866 17.331
variety	1-4 scale for whether individuals in the largest occupational group have "variety" in their work		2.31 (0.778)	2.278 0.792
interlab	Whether the establishment gives internal job applicants a preference over external		0.208 (0.406)	0.220 0.414
train6	Whether it takes more than 6 months for a new hire in the largest occupational group to be able to do their job as well as experienced workers		0.201 (0.401)	0.178 0.382
newprod	Whether the establishment has introduced a technologically new/significantly improved product/service in the past 2 years		0.303 (0.460)	0.304 0.460
jcc	Whether the establishment has a joint consultative council		0.087	0.067

		(0.281)	0.250
profit	Whether the establishment makes profit-related payments to any employees	0.301 (0.459)	0.342 0.474
pension	Whether workers in the largest occupational group in the establishment are entitled to membership of an employer pension scheme	0.597 (0.491)	0.551 0.497
competitive	1-5 scale of manager's assessment of degree of competition in the market for firm's main product	NA	2.984 (1.083)
market_tur	Whether manager describes current state of market for the firm's main product to be turbulent	NA	.0.169 (0.375)
empagent	Whether the establishment used a fee-charging provate employment agency to fill recent vacancies	0.130 (0.337)	0.139 0.346
pteam	Percent of workers at the workplace working in formally designated teams	52.4 (46.1)	48.936 46.045
jobsecu	Whether the establishment has a policy of guaranteed job security for all employees	0.088 (0.284)	0.074 0.261
punion	Percent union members	14.5 (28.2)	8.9 22.745
pabsence	Percentage of work days was lost through employee sickness or absence over the last year	4.47 (6.89)	4.17 (6.24)
ind1	Manufacturing	0.111 (0.315)	0.125 0.331
ind2	Electricity/gas/water	0.001 (0.037)	0.002 0.039
ind3	Construction	0.049 (0.216)	0.054 0.227
ind4	Wholesale/retail	0.249 (0.432)	0.282 0.450
ind5	Hotels and restaurants	0.089 (0.285)	0.099 0.299
ind6	Transport/communication	0.478 (0.213)	0.053 0.225
ind7	Financial services	0.052 (0.222)	0.059 0.236
ind8	Other business services	0.149 (0.356)	0.165 0.371
ind9	Public administration	0.022 (0.146)	NA
ind10	Education	0.049 (0.217)	0.011 0.105
ind11	Health	0.116 (0.320)	0.092 0.289
ind12	Other services		
public	Whether the establishment is part of the public sector including central/local government and nationalised industries	0.117 (0.322)	NA
Number of observations		2295	1745

Note: statistics are calculated using workplace sampling weights.

Table 3: Determinants of Whether Agency Workers are Hired

Probit Regressions, Dependent variable: agency

		All	Private	All	Private	All		Private	
							Marg. effect		Marg. effect
family friendly indicators	matleave	-.100	-.118	-.072	-.097	-.056	-.006	-.061	-.006
	s.e.	.111	.130	.115	.129	.123		.142	
	patleave	.241*	.191	.236*	.181	.219*	.027	.167	.016
	s.e.	.132	.154	.126	.148	.130		.153	
	paidleave	.000	-.107	-.015	-.111	-.025	-.003	-.122	-.011
	s.e.	.113	.131	.119	.139	.124		.145	
	specleave	.604***	.788**	.582**	.770**	.526**	.070	.810**	.073
	s.e.	.240	.333	.240	.338	.256		.369	
	flexitime	-.255*	-.207	-.265*	-.218	-.318**	-.034	-.270	-.024
	s.e.	.138	.169	.141	.175	.144		.175	
	nursery	-.034	-.866***	-.112	-1.017***	-.149	-.016	-1.23***	-.042
	s.e.	.283	.280	.273	.311	.273		.376	
	wkhome	-.022	-.031	-.044	-.072	-.213*	-.026	-.266*	-.024
	s.e.	.109	.138	.111	.138	.119		.150	
	jobshare	-.189*	-.295**	-.210*	-.306*	-.151	-.018	-.277*	-.025
	s.e.	.110	.132	.115	.166	.117		.150	
logsize		.426***	.453***	.426***	.449***	.345***	.042	.383***	.035
	s.e.	.051	.062	.051	.059	.057		.068	
pffem		.003	.005	.002	.003	.001	.000	.002	.000
	s.e.	.002	.003	.002	.003	.002		.003	
pmprof		.006***	.008***	.008***	.011***	.008***	.001	.010***	.001
	s.e.	.002	.002	.002	.002	.002		.003	
pptime		-.013***	-.013***	-.012***	-.010***	-.011***	-.001	-.009***	-.001
	s.e.	.003	.003	.002	.003	.003		.004	
pfixterm		-.0005	.000	.0004	.001	.002	.000	.002	.000
	s.e.	.003	.003	.003	.003	.003		.003	
variety		-.101	-.085	-.111	-.104	-.149**	-.018	-.146*	-.013
	s.e.	.072	.079	.072	.080	.075		.085	
train6		-.261**	-.186	-.326**	-.306*	-.300**	-.032	-.252	-.020
	s.e.	.129	.152	.136	.166	.140		.170	
jobsecu		.322	.324	.339*	.352	.370*	.057	.418	.051
	s.e.	.207	.285	.209	.289	.211		.266	
public		.370***		.301		.560**	.093		
	s.e.	.151		.189		.232			
competitive			.240***		.304***			.280***	.025
	s.e.		.085		.065			.067	
market_tur								.111*	.010
	s.e.							.191	
newprod						.183	.024	.286**	.029
	s.e.					.122		.146	
jcc						.411***	.065	.325**	.037
	s.e.					.130		.158	
profit						.120	.015	.133	.012
	s.e.					.124		.136	

pension					.085	.010	.051	.005
	s.e.				.130		.144	
empagent					.488***	.078	.538***	.068
	s.e.				.153		.173	
pteam					-.0006	-.000	-.002	-.000
	s.e.				.002		.002	
punion					-.005**	-.001	-.003	-.000
	s.e.				.002		.003	
interlab					-.182	-.020	-.129	-.011
	s.e.				.133		.150	
public					.560**	.093		
	s.e.				.233			
Industry dummies		No	No	Yes	Yes	Yes		Yes	
Constant		-2.24***	-2.44***	-2.30***	-2.52***	-2.08***		-3.06***	
Wald-test		15.1** *	10.8***	12.0***	10.9***	10.4***		9.5***	
N		2176	1529	2176	1529	2061		1453	

Notes: *, **,** * denotes significance at the 1, 5 and 10 percent levels, and s.e. denotes the standard error of the coefficient which is calculated accounting for stratification in the sampling procedure (see Forth et al, 2006). See Table 1 for variable definitions.

The marginal effects give the change in the probability of hiring an agency worker for a unit change in the independent variable, evaluated at the mean. Thus, for the first variable, *matleave*, the marginal effect is -.006 for the total establishment sample, meaning that changing this variable from 0 to 1 has a small effect, lowering the probability of hiring an agency worker from .116 to .110.

Table 4: Determinants of Hiring Agency Workers by Type (Marginal Effects×10)
Probit Regression Results

	Professional/Managerial (Dependent variable: hagency)		Non-professional/managerial (Dependent variable: bagency)	
	All	Private	All	Private
matleave	-.048	-.009	.022	.026
patleave	.016	-.014	.224*	.229*
paidleave	.011	-.000	-.003	-.062
specleave	.014	.036	.591***	.927*
flexitime	.013	.001	-.374***	-.204*
nursery	.084	-.021***	-.291**	-.301***
wkhome	-.008	-.012	-.191**	-.174*
jshare	.033	.008	-.160*	-.156
logsize	.056***	.024***	.307***	.255***
pffem	-.000	-.000	.001	.001
pmprof	.003***	.000***	.002	.002
pptime	-.002**	-.000	-.008***	-.007***
pfixterm	.000	.000	-.000	-.000
variety	.015	.014*	-.181***	-.163***
train6	-.043*	-.025**	-.223**	-.108
jobsecu	-.001	.011	.573**	.466*
public	.150		.516*	
market_tur		.008		.085
competitive		.013*		.161***
newprod	.072*	.051**	.077	.123
jcc	.150***	.020	.379**	.324*
profit	-.005	-.002	.129	.123
pension	-.036	-.024	.148	.116
empagent	.242***	.141***	.431***	.403***
punion	.000	.000*	-.006***	-.004**
interlab	-.036	-.008	-.117	-.009
Industry dummies	Yes	Yes	Yes	Yes
Wald-test	10.2***	5.72***	10.27***	9.45***
N	2040	1442	2056	1452

Notes: *, **,** * denotes significance at the 1, 5 and 10 percent levels. Estimates account for stratification in the sampling procedure (see Forth et al, 2006). See Table 1 for variable definitions. See Table 3 for an explanation of the marginal effects shown in this table.

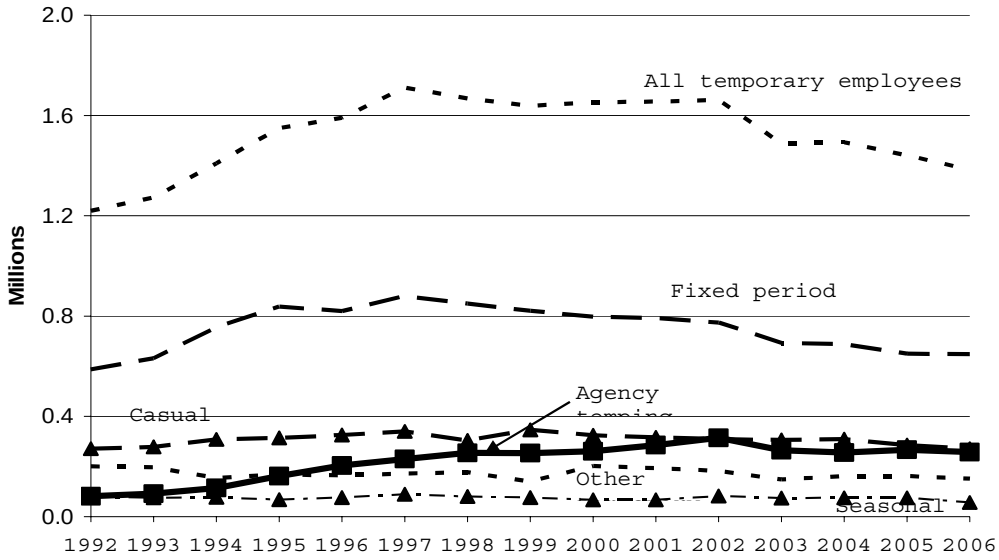
Table 5: Determinants of the Number of Agency Workers Hired
Tobit Regression Results, Dependent variable: log (nagency)

	All	Private
matleave	-.147	-.176
s.e.	.281	.330
patleave	.489*	.357
s.e.	.294	.359
paidleave	-.091	-.295
s.e.	.279	.329
specleave	1.565***	2.251***
s.e.	.571	.820
flexitime	-.727**	-.643
s.e.	.326	.407
nursery	-.538	-2.891***
s.e.	.516	.728
wkhome	-.523	-.730**
s.e.	.264	.343
jshare	-.375	-.700**
s.e.	.254	.329
logsize	1.023***	1.160***
s.e.	.138	.175
pffem	.005	.006
s.e.	.005	.007
pmprof	.018***	.026***
s.e.	.005	.005
pptime	-.031***	-.027***
s.e.	.007	.009
pfixterm	.006	.007
s.e.	.007	.00
variety	-.390**	-.379*
s.e.	.174	.207
train6	-.642**	-.623*
s.e.	.306	.385
jobsecu	.935**	1.092*
s.e.	.482	.625
public	1.096**	
s.e.	.507	
market_tur		.348
s.e.		.454
competitive		.712***
s.e.		.146
newprod	.510*	.734**
s.e.	.267	.325
jcc	.929***	.772***
s.e.	.237	.301
profit	.239	.321
s.e.	.277	.309
pension	.143	.067
s.e.	.298	.329

empagent		1.172***	1.373***
	s.e.	.325	.378
pteam		-.002	-.004
	s.e.	.004	.004
punion		-.010**	-.008
	s.e.	.004	.006
interlab		-.381	-.243
	s.e.	.288	.332
Industry dummies		Yes	Yes
Wald-test		24.06***	.34.93***
N		2061 (1333 are zero)	1453 (1009 are zero)

Notes: *, **,** * denotes significance at the 1, 5 and 10 percent levels. Estimates account for stratification in the sampling procedure and use the interval estimations procedure in Stata (see Forth et al, 2006). See Table 1 for variable definitions.

Figure 1: Trends in Temporary Employment 1992 – 2006 (millions of workers)



Source: Labour Force Surveys

Endnotes

[1] Indeed, Segal and Sullivan (1997) estimate an 11 percent annual growth rate in US agency employment since 1972.

[2] The firm's benefits may include increased retention or improved recruiting. Waldfogel (1998) and Waldfogel et al. (1999) demonstrate that family leave increases female retention and Leroy (2000) provides an employer's view on recruiting. The firm's costs can include leaving sections short staffed (or the associated expansion in staff) and increased coordination expenses. For lists of firms' benefits and costs see Woodland et al (2003, 245-6).

[3] We also recognize that cost savings may play a role when deciding to use agency workers in some occupations but not in others (See Abraham and Taylor 1996 and Houseman et al. 2003.)

[4] An interaction of union and JCC was also added to the specification. It emerges with a positive but not statistically significant coefficient.