

**How long until we get there?
A survival analysis of the Investors in People initiative 1991-2001**

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Abstract

This paper evaluates the UK's Investors in People (IiP) policy initiative through an analysis of adoption and retention rates during its first 11 years of life. Established in 1991, the IiP Standard publicly credits organisations that “invest in their people” through training, development and worker involvement in decision making. Over time it has become one of the headline government policies and licenses to use it are being sold internationally. Our take on the accomplishments of IiP as a policy is to characterise involvement and life expectancy within the initiative. To this end we fit a duration model of participation in Investors in People. Once committed to the Standard, firms can exit to either becoming fully recognised Investors in People or else they can disengage from the programme without reaching full accreditation. We are therefore in a position of studying adoption and retention within a competing risk framework where we can assess the impact of organisational characteristics and the length of pre-recognition spells on success and failure rates. In accordance with the few previous findings, we find that larger and public sector organisations present higher success rates. New findings we obtain include a strong interaction between employment changes and IiP accreditation and the fact that the Standard has become significantly easier to obtain over time. Hazard rates for later cohorts are three times as high as for those committed in 1991. Finally, we also present the first attempt to gain insights into the process of disengaging from the standard or ceasing participation.

KEYWORDS: Investors in People, duration models, vocational education and training policy.

JEL Classification: C41, J58, J81

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I. Introduction

The Investors in People (IiP) Standard is notable for its longevity in the rapidly changing policy area of Vocational Education and Training (VET). IiP was introduced in 1991 with the purpose of promoting training and development practice in work organizations. It was at the time one of a number of initiatives intended to address perceptions that the UK's industrial performance was comparatively poor. The objective of the standard is to publicly credit organisations that “invest in their people” through training and development programmes and worker involvement in decision making¹. Organisations meeting given assessment criteria are rewarded with recognition by the lead body – IiP UK – and become entitled to use the IiP laurel wreath logo. The Standard sits amidst a plethora of ever-changing training initiatives (Keep, 2003) but it remains one of the headline long-term policies for workforce development (DfES, 2003) with state funding for IiP UK confirmed until the end of 2007. Furthermore, the IiP framework is not only alive and healthy in the UK. Licenses to use it are being purchased around the world, in countries that are usually presented as more advanced than the UK in skills development policy and practice (such as the Netherlands² – see Bell, Taylor and Hoque 2004). If durability and popularity were good indicators of success of policies Investors in People would be amongst the prime. It is therefore somewhat remarkable that little is known about the diffusion of the Standard and its implications. In this paper we describe and evaluate how IiP works with a special emphasis on the time series properties of IiP adoption and retention rates since it was first introduced.

Analyses of IiP have thus far focused on two areas. First, previous research has repeatedly questioned claims that the Standard has an impact on organisational performance (Hillage and Moralee 1996, Spilsbury, Moralee, Hillage and Frost 1995, Down and Smith 1998, Industrial Relations Services 2000). In the (to our knowledge) first analysis of the IiP-UK administrative data, Fraser (2003) argues that investing time and effort into gaining IiP status will only reap performance benefits to smaller

¹ Engaging with IiP requires employers to identify skills gaps in their organisation and encourages them to develop a more appropriately skilled workforce so as to enhance organisational performance. For an in-depth description of the initiative <http://www.iipuk.co.uk>

² The initiative is effectively up and running in the Netherlands: <http://www.iipnl.nl>.

companies if the Standard is embedded within a broader range of good human resource management (HRM) practices. A second strand of work questions whether IiP recognition does in fact mean better practice in workforce development; Hoque (2003) for example suggests that industrial sector, level of personnel management expertise, ownership, and size all influence the managerial decision to commit to the Standard, noting that training activity may not increase after recognition (see also Down and Smith 1998, Ram 2000 for qualitative analyses that make the same point). This paper opens a new approach to IiP with an examination of the dynamics of participation and retention rates of the initiative.

The adoption of Investors in People is in principle voluntary. By registering interest in obtaining the Standard an organisation becomes administratively committed to IiP. In order to obtain accreditation, organisations have to demonstrate that they have effective training and development practices and that the workforce is involved in the decision making of the establishment. IiP advisors decide jointly with the organisations what changes, if any, are necessary in order to meet the requirements of the Standard and if those are fulfilled then recognition as an Investor in People is granted. The process of commitment can take from days to years and it need not end up in accreditation. Since participation is voluntary firms can also disengage from the programme without penalty before or after obtaining recognition as Investor in People. The initiative is therefore a dynamic system where firms are legally free to enter and exit as they find suit, very much like entering or exiting an industry (Disney et al. 2003). In this paper we exploit this feature of the programme to evaluate the success of IiP with an analysis of adoption and retention. Compared to previous studies, we do not have data to look at the impact of IiP on individual firm profitability or stock market value but we are in a position to examine what categories of organisations are more attracted to the Standard and which ones are successful in achieving it. In addition, we account in detail for the timing of accreditation and cease which, provided that firms enter and exit the programme on the basis of their own needs, will give us a picture of strengths and weaknesses of the diffusion of the Standard.

Previous studies (Taylor, Fernandez and Bell, 2004) have found that larger organisations are significantly more likely to become Investors in People, particularly if they are privately owned. A plausible explanation for this fact that is commonly put forward is that larger organisations already have systems of workforce development and involvement in place that make it easier for them to meet the requirements of the Standard (Bell, Taylor and Thorpe 2001). In this paper we go that little bit further to verify this statement by examining the time elapsed since officially registering and becoming Investors in People. Should this period of commitment be systematically shorter for larger and/or privately owned organisations then one can argue that they have either less changes to implement or that they are more efficient at implementing the same number of organisational changes. On the other hand, it might be argued that managers in smaller organisations are faced with less complexity in terms of people management (Bacon, Ackers, Storey and Coates 1996, Keep 1989) and therefore lower resistance to changes, leading to the opposite conclusion that smaller firms would take shorter to obtain accreditation. Our empirical investigation lends support to the former though.

Thus the time elapsed between initial the commitment to the initiative and obtaining the award may be carrying information about the organisation and by extension about its potential success as Investor in People. More so as the initiative spreads out in the economy and the number of awarded establishments increases, organisations would like to qualify their commitment to workforce development further so as to distinguish themselves from other competitors for recruits and customers³. It is conceivable that longer pre-recognition spells in IiP participation may be regarded as worse a signal that disengaging from the programme altogether. It is also possible that the longer the pre-recognition spell the less likely it is that they actually achieve the target of obtaining accreditation⁴, still lending support to the idea that they face more difficulties in implementing changes. If (other things equal) staying-on pre-recognition for longer worsened the prospects of becoming Investor in People, it may be of interest as a candidate try to implement some of the predictable changes prior to official participation.

³ See the benefits section in the iip-uk webpage, op. cit.

⁴ Much in the same fashion as the prospects of gaining employment worsen as unemployment duration increases.

In this paper we will have little room for specific interpretations of the relevance of pre-recognition duration dependence, but we will take the first step of establishing whether it has an impact on the rates of recognition and cease, over and above other organisational characteristics such as size or ownership. In addition, we present the first attempt to analyse regularities in the group of companies that cease participation before obtaining the award.

The rest of the paper is organised as follows. We proceed in the next section with a description of the dynamic process of IiP participation and how to apply survival analysis to this case. We continue with a description of the data, followed by the estimation approach and results. The last section discusses the implications of our empirical findings.

III. IiP Commitment and Recognition; Survival and Failure

Before getting into the empirics of survival analysis let us briefly consider the decision to engage with Investors in People. As suggested in the introduction, hard evidence so as to the benefits of obtaining the Standard is not wide. Some additional casual evidence can be found in the Fast Facts sheet of the IiP-UK webpage while there is a whole section on the suggested benefits of Investors in People in the same URL. Unfortunately we do not have data to support or reject the hypotheses there contained but we do know that the process of obtaining accreditation is costly, if only administratively, and that the administrative cost is increasing with establishment size⁵. Since participation is voluntary it seems reasonable to believe that organisations will only attempt to pay the cost of engaging if they expect to obtain some reward for it. We therefore assume that the observed establishments are those for which the net benefit of participating in IiP is non-negative. Our observed participation variable reflects the latent net benefit in the following way:

⁵ The daily rate of the IiP assessor is unavoidable and the size of the representative sample of employees to be interviewed increases with the size of the establishment. See the Assessment section under Implementing Investors at <http://www.iipuk.co.uk>.

$$\text{Commitment} = \begin{cases} 1 & \text{if Net Benefit} \geq 0 \\ 0 & \text{Otherwise} \end{cases} \quad (1)$$

This latent net benefit may be different across establishments and thus, despite truncation, the pattern of commitment may be informative of what categories of firms find it more profitable to engage with the programme. Commitment however is a necessary but not sufficient condition for reaching Investors in People status. Obtaining the award requires the establishment to fulfil certain criteria, the particulars of these to be agreed between the organisation and the IiP assessor upon commitment. However flexible this procedure is, it generates some degree of uncertainty prior to commitment concerning the likelihood of success which is the feature of the programme we exploit in our analysis.

$$\text{Recognition} = \begin{cases} 1 & \text{with Probability } q \\ 0 & \text{with Probability } (1 - q) \end{cases} \quad (2)$$

As a result of this uncertainty, establishments cannot tell a priori whether or when will they become Investors in People. We use the time elapsed from initial commitment as defined in (1) until obtaining recognition as in (2) to characterise the probability distribution of successful Investors in People. We are therefore interested in the length of pre-recognition spells, whether they are systematically shorter or longer for certain categories of firms and whether the duration of these spells has changed over time, always bearing in mind that participants can disengage from the initiative at any point at no additional cost.

In order to characterise the probability of recognition occurring in the next period, given that the establishment has remained committed until the present, we use a model of duration or survival analysis. These methods were initially developed within the life sciences to examine survival rates of subjects after treatment and subsequently adopted in engineering for the analysis of time to failure of components. For this reason the estimation techniques are collectively known as survival analysis with the end of the process referred to as death or failure⁶. Within the context of labour market studies

⁶ For a comprehensive description of survival analysis techniques and applications in social sciences see Kiefer (1988) and Neumann (1997).

survival analysis has been applied to entry and exit to unemployment, with failure consisting in finding a job or becoming inactive (de Uña-Alvarez, Otero-Giráldez and Álvarez-Llorente, 2003). Studies of industry dynamics (Harris and Hassaszadeh, 2002; Disney, Haskel and Heden, 2003) are another common application of survival analysis to social sciences. In the field of economics of education, transitions from university to work (Biggeri, Bini and Grilli, 2001) attempt to study how long does it take for graduates to find a job. Live cases are defined by graduation and deaths are successful recruitments. Any of these examples bears some similarities with our dynamic system of participation in Investors in People. Our duration event is the time elapsed from commitment or pre-recognition spell. Exit from this status, if it occurs, can be to receiving the award (recognition) or abandoning the quest altogether (cease)⁷, these are our failure or death events.

Survival analysis assumes that the duration of pre-recognition spells is a random variable (T) drawing values from a probability distribution. In models of duration it is common to represent the probability distribution through the survival function, which gives the probability that it took at least t periods to exit ($S(t) = P(T \geq t) = 1 - F(t)$; where $F(t) = P(T < t)$ is the distribution function of the random variable T). A final characterisation of the probability distribution behind the duration of pre-recognition spells is the rate at which these spells end, also known as hazard rate. That would be the probability that a firm becomes recognised in the next period given that it has remained committed until the present. Note however that participation in IiP is voluntary and thus the possibility of disengagement from the initiative at any point after commitment has to be factored into the analysis. A convenient way to model this possibility is to see organisations as simultaneously participating in two processes, one that leads to the award and one that leads to cease. Since our data is censored at failure we only observe the one that finishes first but so long as these two time processes are independent we can analyse them using an unconditional competing risk model⁸, where the two disjoint processes are considered simultaneously but allowing for the rates of failure to differ across exits. The incidence of

⁷ Cease would for example be equivalent to a worker dropping out of the labour force after some unemployment spells and not having found a job.

⁸ See Popkowski and Timmermans (2002) for an empirical comparison of different types of competing risks models.

recognition or cease is modelled as an instantaneous probability called hazard rate. The hazard of finishing a spell is allowed to differ for those who obtain the award and those who disengage

$$h_j(t_j) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t_j \leq T_j \leq t_j + \Delta t / T_j \geq t_j)}{\Delta t}, \quad \text{with } j = r, c. \quad (3)$$

In equation (3) hazard rates may be different for recognition (r) and cease (c), what is equivalent to assuming that upon entering IiP the clock starts ticking for two time processes, one per exit type. Since a firm cannot be recognised if it ceases and vice versa, if failure occurs in any of the two processes the clock stops ticking in both and the observation appears censored in the second process. We will be more specific about what this means when we describe our estimation strategy. The hazard rate in equation (3) represents the rate at which recognition or cease occur over time, or alternatively success and retention rates within Investors in People. The distribution function of pre-recognition spells ($F(t)$) can be recalled from the hazard rates:

$$h_j(t) = \frac{-d \ln S_j(t)}{dt} \quad \text{with } j = r, c \quad \text{and} \quad S(t) = P(T = t) = 1 - F(t) \quad (4)$$

There are two approaches to estimating the hazards of recognition and cease. Parametric models of duration specify some functional form for the hazard rate, which will then enable us to estimate the underlying distribution of the random variable(s) T . Semi-parametric models do not specify functional forms for the hazard function but they impose other restrictions on the structure of the model so as to facilitate estimation. We return to the specific model choice and estimation techniques after a description of the data.

II. Data

The database used in this paper is based on administrative information collected by the Standard's lead body in the UK⁹. It contains specific dates of commitment, recognition,

⁹ IiP UK is a private company with responsibility for maintaining the Standard's relevance and credibility. It is not however responsible for the delivery of IiP at a local level; that is currently with the Small Business

cease and revocation. Commitment is the moment in which an organisation is registered as participating in the initiative; recognition is the date in which Investors in People status is awarded for the first time¹⁰. Organisations can disengage from the initiative before or after being recognised; if the former occurs the organisation is said to cease participation whereas the latter implies that recognition has been revoked¹¹. In addition, the number of employees in each organization at each of these observational points is available, allowing changes in the size of the organisation between different points in time to be controlled for. Furthermore companies are classified according to their public/private status, sector of activity (Standard Industrial Classification 1 and 2-digit code), regional distribution, whether they are located on a single site and number of recognitions. Fraser (2003) provides the only previously published analysis of this database, focusing exclusively on smaller companies (10-49 employees).

Unfortunately the quasi-voluntaristic nature of the data contribution means that IiP UK's database is not as representative of the UK population of workplaces as for example the Workplace Employee Relations Survey; nor are potentially useful variables such as educational level of managers or level of investment in training collected. However as a database it does offer significant advantages. First, it represents the population of participating firms rather than a sample and therefore enables confident generalisation across committed and recognised organizations. Despite the caveat about contribution to the database being voluntary we believe IiP UK has reliable managerial mechanisms in place to encourage contribution of data¹², this is undoubtedly the most comprehensive dataset available regarding participation in IiP. Second, it allows longitudinal analysis of participation over the life of the Standard, enabling us to explore trends in engagement. Third, the analysis of the dynamics of recognition and cease might inform future policy regarding which categories of companies to target in order to improve their chances of recognition or lower exit rates from the initiative.

Service and Learning and Skills Councils, both of which employ private consultants to act as advisors. Advisors are required to contribute information on organizations that commit to the Standard which is then collated by IiP UK employees.

¹⁰ Investor in People is not an indefinite status. Three year re-assessments take place after the first recognition.

¹¹ Motives for disengagement from IiP before or after recognition are not collected systematically.

¹² For recent years information on accredited organizations has been made publicly available on IiP UK's website implying that the lead body has confidence in the reliability of their records.

Our version of the database contains details of all UK organisations that have committed to the IiP Standard from January 1991 until the end of December 2001. The unit of analysis is establishments, although for larger organizations company divisions may be counted separately. Since the sample does not contain non-committed establishments or any indicator of business performance, it is not possible to study the determinants of commitment or the performance benefits that IiP brings about. Therefore in this paper we study the time patterns of involvement, retention and success rates within the Standard.

As a first approximation to the characteristics of our data, Table A1 in the Appendix contains descriptive statistics for a number of variables as well as the yearly distribution of committed firms for the period considered. Our data includes all organisations with a commitment date posterior to the start of IiP, 1st January 1991, and dates of recognition, cease and revocation¹³ on or after commitment date. There are 570 and 8 organisations recorded to have been recognised and ceased on the same date as committed respectively, while there are 5 organisations that were revoked on the same date as recognised. Although these coincidences of dates may seem odd, the exclusion of these observations from the analysis does not modify any of the results. Note also that since most variables in Table 1 are binary the reported means represent the percentage of organisations in the sample falling into the corresponding category. The descriptive statistics reveal that one half of the 52 thousand organisations committed between 1991 and 2001 also obtained recognition at some stage within those years, while an additional 17% had ceased by the end of the observation period. The majority of establishments committed during the first 11 years of the scheme were privately owned and only half had less than 50 employees. The sectoral distribution of committed establishments appears quite even and so does the regional share of commitment. Over time, commitment peaked in the mid nineties and has slowed down since¹⁴.

IV. Incidence and length of commitment spells: an empirical approach.

¹³ Recall revocation occurs if IiP status is lost after recognition.

¹⁴ See Taylor et al. (2004) for a more detailed description of the data and how it compares with the population of working places in the UK.

For an illustration of the duration properties of the data and the hazards of recognition and cease we start without imposing any structure on the data. Since for each establishment we have dates of commitment and recognition (or cease) our time data is measured in days, making the continuous approximation to duration more plausible than in other applications and reducing significantly the number of ties per time period. The Kaplan-Meier estimator of the two survival functions is depicted in Figure 1, showing the cumulative proportion of surviving establishments and taking into account that exit is observed for all of them at the end of the period of analysis. Intuitively, the Kaplan-Meier counts the proportion of establishments that remain committed at each point in time taking into consideration that some of these will not obtain recognition nor cease in the period we observe them¹⁵. These latter establishments are censored in our analysis. Nevertheless at each point in time these establishments are at risk of becoming Investors in People *and* of ceasing, and they remain at risk of both when we stop observing them. Note also that when calculating the survival for recognition, ceased firms are censored and vice versa. This is one implication of the unconditional competition of risks, when an establishment obtains recognition, it is not at risk of ceasing anymore and therefore it has to be removed from the pool of establishments at risk of ceasing tomorrow.

Consider the risk of recognition first, depicted as the solid line, on the left hand graph of Figure 1. Although survival decreases rapidly in the early spells of commitment, approximately a quarter of establishments obtain recognition within the first one to two years of commitment¹⁶; while one half of those establishments that stay-on until three years become Investors in People. Note also that of those who stay committed for ten years a third will remain without award. Turning now to duration until cease (the dashed line), it is unsurprising to find that cease is overall less likely than accreditation, the survival function lies above and it falls at a slower pace than that of recognition. Clearly, since participation in IiP is voluntary, one would expect that more firms enter with the intention of staying than not. The pattern of the data also implies that for those firms that stay-on the likelihood of gaining accreditation is larger than that of ceasing participation.

¹⁵ See Theorem 13 in Lancaster (1990): 278.

¹⁶ That is 75% of establishments survived recognition after 700 days of commitment.

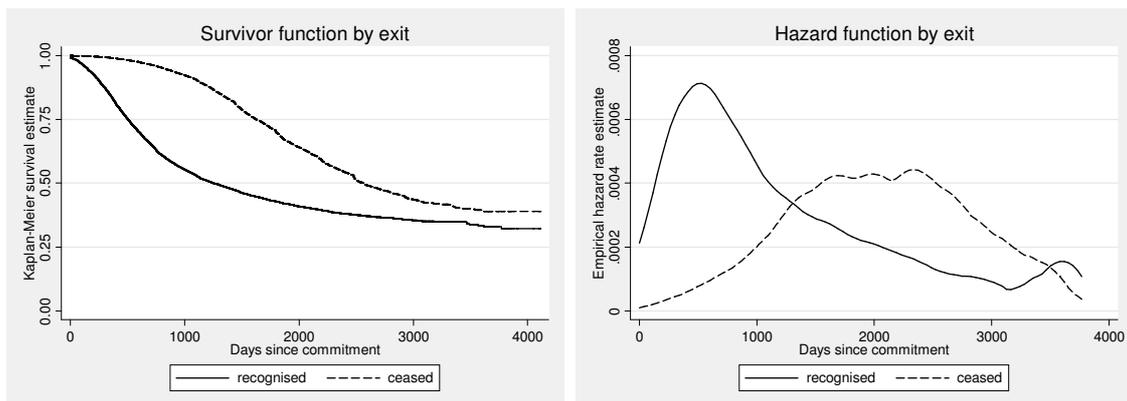


Figure 1: Survivor and Hazard functions by exit type

Take for example the group of firms that stayed committed for around five years (1,800 days of duration), a quarter of those exit on cease but 60% become Investors in People. The shape of the survival functions also hints that the hazard rates are not going to be monotonic. Note that survival from recognition falls rapidly at short durations but slower at longer durations. In the case of cease, survival falls slowly in the beginning, rapidly for mid-length durations and slowly again for very long durations.

To get a better idea of this aggregate pattern of recognition we display the empirical hazard rate. That is for each day after commitment, the probability of becoming Investor in People tomorrow conditional on commitment having lasted until today. Again, consider recognition first, we observe that up until around two years of commitment, the rate of recognition increases with duration. This implies that staying-on increases the chances of becoming an Investor in People or alternatively that for relatively short durations there is positive duration dependence in the process of IiP recognition. After two years however the risk of recognition falls continuously until durations of up to 9 years where the hazard of recognition appears to increase slightly¹⁷. Note however that the magnitude of these differences is small as the scale on the vertical axis shows probabilities ranging from 0.02% to 0.08%. The risk of cease is even smaller at low durations, although the time pattern of the cease rate appears more complicated, with ups and downs in middle-length durations. Ignoring those for the purposes of describing the process, the empirical analysis shows that after four years the risk of cease is higher than

¹⁷ There are around 500 organisations for which time to recognition lasts over 9 years.

that of recognition, although it has to be noted again that the largest difference is of the order of 0.03% for those who stay-on until 7 years (2,500 days) and smaller for all other durations.

It has previously been argued that certain types of organisations may be inherently advantaged for recognition by the structure of IiP. Identifying which are those categories could potentially inform prospective policy initiatives aimed at balancing involvement with the Standard. Quantitatively our framework can reveal whether this claim is substantiated and which categories of firms are more prone to obtain recognition by showing systematically higher hazards of recognition for those with an advantage. Table 1 illustrates overall differences in the incidence and average length of commitment spells leading to recognition and cease across categories of firms. The top half of Table 1 shows that the incidence of recognition is higher for not-for-profit and public organisations than for private ones. Furthermore private establishments take longer on average to gain recognition. Turning to the process of cease, private organisations appear more likely to cease on average although they also take longer to abandon the initiative. A pattern that is going to be repeated throughout our analysis is that the differences by size are much less clear cut than those arising from ownership. From the bottom half of Table 1 we observe that large organisations appear to be on average slightly more likely to become Investors in People but not when it comes to cease. However, medium-sized and large organisations take longer to gain accreditation and to cease participation than small ones.

A better picture of the differences is obtained through inspection of the empirical survival functions across categories of establishment. Consider the top left graph in Figure 2. As noted above and elsewhere there is evidence that the incidence of IiP recognition is higher for large organisations and those in the public sector. The empirical survivor function of public and not-for-profit organisations lies below that of private ones for all durations, indicating a higher risk of recognition for the former. Take for example those that are still at risk after four years (1,450 days), just around a third of private sector establishments in this group obtain accreditation whereas one half of the non-private become Investors in People. This gap in the risk of recognition widens over time so that

		Incidence of event		Days until event	
		Mean	Std Dev	Mean	Std Dev
Charity	Recognition	0.68	0.468	643.90	446.75
	Cease	0.06	0.245	1077.77	601.44
Private	Recognition	0.47	0.499	670.52	512.64
	Cease	0.20	0.402	1423.34	634.62
Public	Recognition	0.62	0.486	592.50	504.34
	Cease	0.07	0.249	1327.07	742.58
Small	Recognition	0.45	0.498	578.88	464.97
	Cease	0.19	0.390	1384.89	624.67
Medium	Recognition	0.54	0.498	723.49	501.88
	Cease	0.16	0.367	1400.57	640.90
Large	Recognition	0.61	0.488	717.93	572.66
	Cease	0.16	0.364	1510.02	703.16

Table 1: Average incidence and duration until recognition and cease across ownership and size.

after nine years of commitment, 70% of the remaining public and not-for profit organisations obtained accreditation but only 40% of private ones achieved IiP status.

The differences in the time dynamics of recognition are less clear in terms of size especially at low durations as the bottom left graph in Figure 2 suggests. For comparison with other studies, notably Hoque (2003), we define small organisations as employing up to 49 employees (51% of the pooled sample as illustrated in Table 1); medium-sized organisations as employing 50 to 249 employees (34%) and large organisations as employing 250 or more employees (15%). The empirical survivor function suggests that at durations of less than a year, larger organisations have lower chances survival; hence larger organisations exit from commitment to recognition more frequently than small and medium-sized ones. For commitment spells of between one and two years, medium-sized organisations are more at risk of gaining accreditation. After two years the survival of smaller firms remains higher, indicating a lower risk of recognition than large and medium sized firms. In order to confirm these patterns we report the empirical hazard functions for categories of firms in Figure A1 in the Appendix.

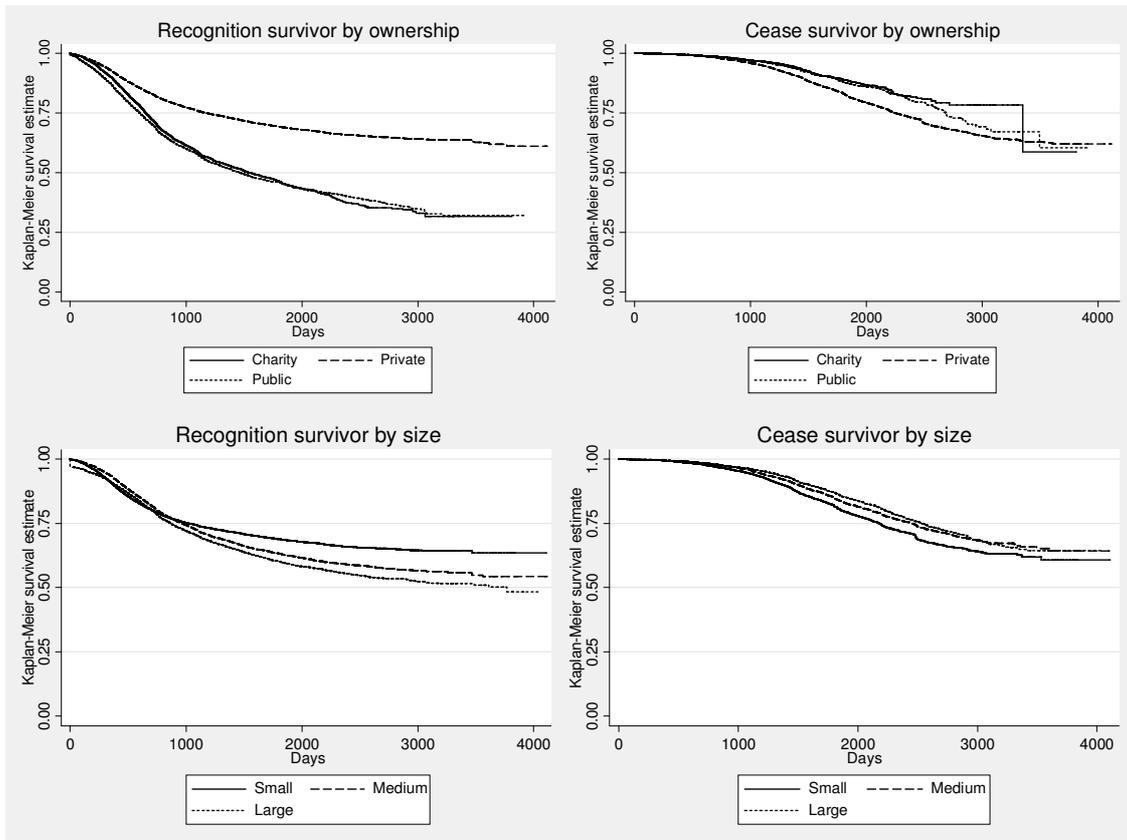


Figure 2: Risk of recognition. Small for up to 50 employees, large for 250 or more employees.

Probably due to a complete absence of data, previous studies of IiP have been silent about the possibility and motives of disengaging from the initiative without reaching accreditation. Although we do not know the motives for which an organisation should abandon a voluntary initiative like IiP we can start to get some idea of what organisations are leaving the scheme before accreditation. The differences in the dynamics of cease across categories of firms are less marked than those in recognition, but not inexistent. At short durations, say commitment spells of up until two years; it is difficult to tell whether there are differences in the survivor functions across ownership and size. However for longer commitment spells it is clear that private organisations have lower survival than the other two categories, hence higher incidence of cease. In terms of size, it is also apparent that for durations above two years small organisations have lower survival rates. Thus, it appears that private organisations and small establishments are more likely to cease although it has to be borne in mind the differences are smaller for this process. The

empirical hazard rates as depicted in Figure 3 in the Appendix confirm that at short durations it is still the case that private and small organisations face higher risk of cease.

V. A Competing Risks Proportional Hazard Model for liP Commitment

The non-monotonic nature of the hazard rates as shown in Figures 1 and 2 limits the use of fully parametric models such as the exponential or Weibull, since these specify some constant or monotonic hazard rates. In a wide range of applications the most commonly used semi-parametric model is the proportional hazard proposed by Cox (1972). The main advantage of proportional hazard specifications is their flexibility and that they easily allow for explanatory variables of risk of failure other than time elapsed until failure. The functional form of the hazard rate proposed by Cox is such that the effect of explanatory variables is to shift an unknown baseline hazard function which is left unspecified and hence need not be monotonic:

$$h(t / X) = h_0(t) \exp(\beta' X) \quad (5)$$

Where t represents days elapsed since commitment, X is a vector of explanatory variables and β is a vector of coefficients to be estimated. As is apparent from Equation (5) the effect of explanatory variables is constant over time while the effect of time on the hazard of recognition enters only through the baseline hazard function.

Proportional hazard models can be easily extended to deal with competing risks (Cox and Oakes, 1988) such that the baseline hazard is allowed to differ across exit types.

$$h_j(t / X) = h_{0j}(t) \exp(\beta' X_j) \dots \text{with} \dots j = r, c \quad (6)$$

Note that in equation (6) not only we are letting the impact of explanatory variables such as ownership or size to be different for the two processes, but also we are allowing the shape of the baseline hazard to differ across exit types. Following from our empirical

investigation for example, recognition appears more likely to display negative duration dependence than cease. Specification (6) allows for this possibility.

Despite our relatively narrow range of firm characteristics, our analysis will highlight some interesting features of the time history leading to IiP recognition. Our shifters of the baseline hazard include size and ownership status of the establishment; changes in the number of employees between commitment and recognition or cease; whether the organisation is based on one or several sites; one-digit Standard Industrial Classification (1992); 11 regional dummies and 11 cohort dummies where cohort follows from commitment year.

V.1. The Hazard of IiP Recognition

Table 2 presents a reduced set of the results obtained from estimating the hazard of IiP recognition using the competing risk proportional hazard model suggested in Equation (6). Consider first the results for the pooled sample in Column 1. Conditional on the duration of commitment the hazard of becoming Investors in People is 15%¹⁸ lower for small organisations and 14% larger for larger establishments. Our framework therefore lends support to the conventional wisdom that larger organisations find it easier to meet the requirements of the Standard, due perhaps to some already existing systems of worker development and involvement in place. Note also that at least the administrative cost of assessment is possibly higher for larger organisations as a representative sample of workers has to be interviewed by the assessor. Furthermore larger organisations pay higher wages (Oi and Idson, 1999) therefore the opportunity cost of assessment may also be higher. Thus larger organisations experience higher losses if they do not achieve accreditation. It is therefore not surprising that they are more prone to succeed since they have an implicit incentive to do so.

Public and private ownership both have a negative impact on the risk of recognition compared to not-for-profit organisations. Since the effects of both categories of

¹⁸ The hazard rate of category j with respect to the default is $\exp(\text{coefficient of } j) - 1$. For small organisations it is $\exp(-0.16) - 1 = -0.148$.

ownership appear to be similar, we run a test for equality of hazards for private and public companies. As the last row in Table 2 indicates, the null hypothesis of equal hazard of recognition is widely rejected at narrow confidence levels. That the hazards by ownership are different is somewhat reassuring, but the observation that the overall risk appears rather similar is at odds with prior qualitative research arguing that public sector organisations should be performing comparatively better in this initiative. We explore in greater detail the differences in the hazards of recognition faced by public and private sector organisations later on in the paper.

Given the positive effect of size on the hazard of recognition it is perhaps not surprising to find that up-sizing¹⁹ improves the chances of becoming an Investor in People. More difficult to justify with this argument is the finding that down-sizing also increases the risk of recognition and that this effect is slightly stronger than up-sizing. Changes in the number of employees may be capturing some characteristic, missing in our data, which makes an organisation more suited to become an Investor in People. In the absence of alternative explanations we interpret this finding as indicating that firms undergoing organisational change as captured by changes in employee numbers increase their chances of recognition for any given commitment length²⁰. Multi-site organisations face a 2.5% lower risk than single-sited ones. Organisations based in more than one site may be more complex to manage and thus any changes needed to obtain recognition more difficult to implement.

The coefficients on the cohort of commitment reveal an interesting implication; gaining IiP accreditation has become easier over time. The hazard of recognition was significantly lower in the early nineties and significantly higher in the subsequent years. The risk of becoming Investor in People is three times larger for organisations committing in 2001 as those committed in 1991. Whether this time pattern is due to the Standard becoming better known or less demanding, or even due to organisations being

¹⁹ Recall that we defined up (down)-sizing equal to 1 if the number of employees at recognition or cease is higher (lower) than that at commitment and zero otherwise.

²⁰ Assessment guidelines indicate that IiP candidates should be able to provide evidence of workforce development and involvement, generally with examples. We argue that in times of change the workforce is more aware of what is happening within the organisation thereby increasing the ability to provide examples and the likelihood of obtaining accreditation.

better equipped for staff development is impossible to discern within the boundaries of our analysis. This finding however raises doubts on the sustainability of the prestige of the Standard, which has been argued to be fundamental to its success (Bell, Taylor and Thorpe, 2001).

Since our analysis rejected the hypothesis of equality of hazard functions between public and private organisations, in the last three columns of Table 2 we split the sample across ownership status. Unsurprisingly most of the results in the pooled sample are driven by the prevalence of privately owned organisations in the data. Nevertheless, an interesting pattern appears when comparing the combination of ownership and size. Take the first row corresponding to the risk of recognition for small organisations. Being not-for-profit carries an 8% higher risk while being private carries an 18% lower risk. So far, not-for-profit organisations perform better as IiP candidates. Consider the second column for the hazard of recognition of larger organisations. Now being not-for-profit carries an 11% lower hazard while being privately owned implies a 27% higher hazard of recognition.

However confusing these findings may appear they are not contradictory. Theoretically the effects of size on the risk of recognition can be argued in both directions. It is plausible that smaller organisations face fewer managerial hurdles when it comes to implementing workforce development practices, and that it is therefore easier and quicker for them to obtain accreditation. On the other hand it can also be argued that larger organisations are more likely to have workforce development systems in place before commitment and hence are in a better position to achieve IiP recognition. The story our results are telling is that ownership matters for the impact of size on the risk of recognition. Small charities and voluntary organisations working perhaps at a local level are at an advantage to implement IiP requirements than larger ones perhaps operating on an international scale. In the case of privately owned companies it appears to be more the case that the larger ones have already implemented training and participation systems that comply with IiP making it easier for them to obtain accreditation. Note that tailoring the assessment to the needs of the organisation means making the process easier for them but need not imply the process is faster. Our framework takes time into account and in every column we are looking at differential probabilities of success conditional on the duration

of commitment. It is more reasonable that the effect of the same process be different for organisations with varied characteristics than the alternative that all organisations respond in the same way to a given stimulus.

Turning to the differences in cohort effects across ownership categories we observe that the lower hazard of recognition in the early nineties was driven by the prevalence of private organisations. It has been suggested that public sector organisations face political pressures to engage with the Standard (Grugulis and Bevitt, 2002). Our data cannot confirm the reasons for the differential hazards of public versus private organisations but it does show that while in early years privately owned organisations faced subsequently lower hazards of recognition compared to the 1991 cohort, public companies did not face significantly lower hazards. The analysis also illustrates how the higher risk of recognition for the pooled sample is increasingly driven by the higher hazard of public organisations. It is also noticeable that the rate at which the risk of recognition grows for recent cohorts is larger for private organisations. If this trend were to remain, private companies committing beyond 2002 may face higher hazards than public ones, other things equal.

V.2. The Hazard of Cease

A candidate to IiP is said to cease if they stop participating in the initiative before achieving accreditation. Given the voluntary nature of engaging with IiP it is not straightforward to see why a company would cease participation. Recall however that there are some costs, if only administrative, arising from being a candidate. Not only the assessor has to be paid but also the assessor's views taken into account when agreeing on the requisites for accreditation. In the absence of other explanations so as to why firms drop off the initiative we can only say that at some stage during commitment the costs of continuing are higher than the benefits of disengaging. If accreditation as an Investor in People was indicative of good working practices then it is possible that passing a certain threshold of commitment duration, staying on would be sending a worse signal than abandoning altogether. External observers may be tempted to interpret longer pre-recognition spells as poor working practices or poor management. In our empirical

analysis we obtained that the hazard of cease was low for short durations and increased with commitment time, giving some support to this hypothesis.

The results for the competing hazard of cease reported in Table 3 broadly picture a mirror image of those in Table 2. It is possible that indeed the same reasons that lead to certain organisations being more successful Investors in People also make the corresponding establishments less likely to abandon the initiative. It is also possible however that unobserved characteristics correlated in the right direction with the observed ones are the driving force behind these results²¹. The reduced number of firm characteristics in our data limits the appropriate control for unobserved heterogeneity and therefore the following results have to be read with some caution. Nevertheless it also seems perfectly plausible that those types of establishments that are at higher risk of recognition also be at lower risk of cease, as suggested by intuition and obtained by our model specification.

Consider the pooled sample in Column 1 of Table 2. The overall gap in the risk of cease between small and large organisations is wider than that of recognition and it is mostly due to an almost 3 times higher hazard of smaller organisations compared to medium-sized ones. Unlike what happened with recognition however, ownership status does not interact with size in changing the hazard of cease across categories of firms. Provided that larger organisations face higher costs of obtaining the Standard then it is not surprising that they would be more reluctant to cease participation, at least on the basis of their opportunity costs.

In a previous section we saw that from a strictly empirical approach it was not easy to discern whether ownership made a difference for the risk of cease (Kaplan-Meier Survivor functions in Figure 1). The results from the estimation confirm that privately owned organisations face a higher hazard of cease but there are no significant differences in the cease dynamics of public and not-for-profit organisations. This latter result may be driven by the relatively small number ceasing organisations that are not privately owned. There are only 333 not-for-profit and 395 public organisations that ceased at some point during the first 11 years of Investors in People. These compare with 8,341 private

²¹ For example ceased firms may leave IiP because they exit the industry or go out of business.

organisations that ceased. Although the test of equality of hazards for public and private organisations rejects the null at conventional significance levels, the small sample sizes for the two non-private categories calls for some caution in interpreting the results of the split samples, shown in Table 3 for comparison.

Finally the hazard of cease appears to have also been increasing over time although somewhat less steeply than the hazard of recognition. If we are to believe that the higher risk of recognition as evidence of higher accessibility to Investors in People then we would expect the risk of cease to have correspondingly decreased over time. Instead we find that retention rates within the Standard have been steadily worsening for the period considered. Further research is therefore needed in order to understand why more recently committed establishments face higher hazards for both types of exit.

VI. Conclusions

In this paper we considered patterns of involvement and success within the Investors in People initiative. We first describe how the initiative works and what implications participation may have for interested establishments. We then proceed to analyse the dynamics of involvement by fitting a model of duration to administrative data on organisations participating in IiP. Since firms are free to enter and leave IiP as they find suit, the process of engagement fits an unconditional competing risk framework with two possible exits: one leading to IiP accreditation and the other leading to ceased participation. A primary aim of this analysis is to open up understanding of the processes of access and retention within IiP in the UK. We would suggest that this is a key area for policymakers to consider in setting up variants of the initiative in other countries.

In our analysis of recognition over time we confirm a number of previous findings notably that size and ownership status interact with the likelihood of accreditation. Larger organisations face higher hazards of recognition than smaller ones for given commitment lengths. Likewise public sector organisations appear to have responded diligently and successfully to policy inducements to engage with the Standard. In addition, our findings highlight an area that has not been previously explored: the effects of changing employee

numbers on IiP accreditation. Both up and down-sizing significantly increase the risk of becoming an Investor in People. This is a finding that we associate with the particular way in which the Standard is implemented; whereby organisations have to provide 'evidence' that certain practices are in place. This evidence takes a number of forms, one of which is that managers and workers must be aware of policies relating to and opportunities for skills development. We conjecture that awareness may well be higher in organisations that undergoing change.

We also provide evidence that IiP accreditation has become increasingly easier to obtain over time. Organisations committing in 2001 faced three times as high a risk of recognition as those registering in 1991. On the basis of our data we cannot discern whether this is due to the Standard becoming less demanding or due to other factors such as managers choosing to commit to the Standard only when they are confident that their organizations will achieve the target. Whatever the underlying reasons, the decreasing exclusivity of the 'IiP club' may have implications for the value of the Standard as a marketing device or as a symbol of prestige.

The process of recognition displays negative duration dependence by which the longer an organisation stays on, the lower the hazard of recognition. However there is a period of positive duration dependence at low durations. This implies that there is an optimum commitment period of up to approximately two years before which the risk of accreditation increases with commitment length but after which the risk of gaining recognition falls continuously over time. With this we do not claim that organisations should abandon the initiative after two years of commitment. Given the objectives of IiP, it can be argued that whilst companies remain committed then training and development will also remain embedded in the organisation. Even though they may be decreasing, retention rates may still be carrying support for the achievements of the initiative.

Our study of retention rates is limited by the fact that we do not have reasons why 17% of our sample disengaged from a voluntary initiative like IiP. In analysing the dynamics of this process we found that with few exceptions the results represent a mirror image of those obtained for the risk of recognition. One specific finding opened an issue for future

discussion: the hazard of cease has been increasing over time. It therefore appears that as access has improved, retention has worsened. In order to understand this finding better it may be useful to analyse another type of disengagement from the initiative; that of revocation. Revocation of the Investor in People status after having obtained it can occur and in our data 10% of recognised organisations have had their status revoked. As with cease we do not know the reasons why revocation occurs but we can compare the characteristics and dynamics of these two processes of disengagement from Investors in People.

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		Pooled	NFP	Private	Public
Number of Employees					
	Up to 50	-0.160 (0.014)***	0.076 (0.041)*	-0.195 (0.016)***	-0.016 (0.040)
	Over 250	0.130 (0.019)***	-0.116 (0.048)**	0.242 (0.022)***	-0.066 (0.046)
Ownership					
	Private	-0.231 (0.022)***			
	Public	-0.231 (0.024)***			
Upsize		1.123 (0.015)***	0.691 (0.041)***	1.254 (0.017)***	0.742 (0.042)***
Downsize		1.134 (0.018)***	0.602 (0.047)***	1.283 (0.020)***	0.777 (0.046)***
Multi-site		-0.025 (0.014)*	-0.011 (0.037)	-0.042 (0.016)***	0.055 (0.040)
Commitment Year					
	1992	-0.037 (0.073)	-0.158 (0.319)	-0.011 (0.081)	0.074 (0.213)
	1993	-0.304 (0.068)***	-0.262 (0.308)	-0.297 (0.076)***	-0.104 (0.195)
	1994	-0.400 (0.067)***	-0.147 (0.305)	-0.421 (0.075)***	-0.062 (0.185)
	1995	-0.402 (0.067)***	-0.235 (0.305)	-0.426 (0.075)***	0.025 (0.182)
	1996	-0.155 (0.067)**	0.032 (0.304)	-0.189 (0.076)**	0.159 (0.183)
	1997	0.081 (0.067)	0.082 (0.304)	0.055 (0.076)	0.628 (0.182)***
	1998	0.245 (0.067)***	0.246 (0.304)	0.239 (0.076)***	0.762 (0.182)***
	1999	0.555 (0.067)***	0.383 (0.306)	0.540 (0.076)***	1.274 (0.184)***
	2000	1.025 (0.069)***	0.898 (0.315)***	1.033 (0.078)***	1.434 (0.184)***
	2001	1.180 (0.073)***	0.808 (0.328)**	1.232 (0.084)***	1.432 (0.192)***
Log Likelihood		-265932.58	-26992.54	-190036.25	-28064.71
Test public=private		2484.12	Pr>Chi2	0.000	

Table 2: Competing Risk Proportional Hazard Model of the risk of Recognition for establishments committed to IiP between 1991 and 2001. Sector of activity and regional dummies included for all specifications in Table A1 in the Appendix. Displayed non-exponentiated coefficients. Robust (Lin and Wei, 1989) standard errors in parentheses.* significant at 10%; ** significant at 5%; *** significant at 1%. NFP= not for profit (charity/voluntary organisation)

		Pooled	NFP	Private	Public
Number of Employees					
	Up to 50	0.259 (0.025)***	0.272 (0.142)*	0.262 (0.025)***	0.170 (0.131)
	Over 250	-0.122 (0.035)***	0.025 (0.153)	-0.112 (0.037)***	-0.370 (0.133)***
Ownership					
	Private	0.317 (0.069)***			
	Public	0.034 (0.078)			
Upsize		-0.660 (0.058)***	-1.745 (0.442)***	-0.563 (0.059)***	-1.575 (0.308)***
Downsize		-0.188 (0.053)***	-1.185 (0.361)***	-0.082 (0.053)	-1.018 (0.286)***
Multi-site		0.225 (0.023)***	0.084 (0.124)	0.231 (0.024)***	0.095 (0.117)
Commitment Year					
	1992	0.102 (0.111)	0.654 (1.105)	0.098 (0.115)	0.546 (0.488)
	1993	0.226 (0.103)**	0.803 (1.122)	0.220 (0.107)**	0.688 (0.435)
	1994	0.351 (0.102)***	1.221 (1.113)	0.347 (0.106)***	0.546 (0.426)
	1995	0.384 (0.103)***	1.469 (1.119)	0.359 (0.107)***	1.070 (0.427)**
	1996	0.427 (0.104)***	1.452 (1.112)	0.403 (0.109)***	1.122 (0.431)***
	1997	0.270 (0.109)**	1.170 (1.118)	0.233 (0.115)**	1.163 (0.447)***
	1998	0.356 (0.112)***	0.966 (1.121)	0.376 (0.117)***	0.955 (0.470)**
	1999	0.607 (0.117)***	1.412 (1.128)	0.568 (0.124)***	1.760 (0.479)***
	2000	1.022 (0.141)***	1.670 (1.206)	1.162 (0.147)***	0.398 (0.575)
	2001	0.570 (0.236)**	0.398 (1.502)	0.760 (0.256)***	0.304 (0.742)
Log Likelihood		-85822.84	-2294.83	-77907.17	-2542.08
Test public=private		93.27	Pr>Chi2	0.000	

Table 3: Competing Risk Proportional Hazard Model of the risk of Cease for establishments committed to IiP between 1991 and 2001. Sector of activity and regional dummies included for all specifications in Table A1 in the Appendix. Displayed non-exponentiated coefficients. Robust (Lin and Wei, 1989) standard errors in parentheses.* significant at 10%; ** significant at 5%; *** significant at 1%. NFP= not for profit (charity/voluntary organisation)

TABLE A1	Variable	Mean	Standard Dev.
Status	Recognised	0.507	0.500
	Ceased	0.174	0.379
	Revoked	0.053	0.223
Type	Charity/Voluntary	0.099	0.299
	Private	0.787	0.410
	Public	0.114	0.318
Size (employees)	Small (up to 50)	0.512	0.500
	Medium (50-250)	0.341	0.474
	Large (over 250)	0.147	0.354
	Upsized	0.096	0.294
	Downsized	0.065	0.247
Multi-site	Yes	0.392	0.488
One-digit SIC 92	Primary	0.011	0.104
	Manufacture	0.181	0.385
	GEW	0.006	0.076
	Construction	0.032	0.175
	Wholesale	0.037	0.188
	Hotels	0.052	0.222
	Transport	0.029	0.168
	Finance	0.020	0.141
	Real Estate	0.153	0.360
	Public Admin	0.082	0.274
	Education	0.203	0.402
	Health	0.132	0.338
	Other Community Services	0.060	0.238
	Private Household	0.002	0.043
	Extra-territorial	0.001	0.026
Region	East Midlands	0.088	0.283
	East	0.068	0.252
	London	0.138	0.345
	North West	0.125	0.330
	North	0.043	0.204
	South East	0.109	0.312
	South West	0.077	0.266
	West Midlands	0.084	0.278
	Yorkshire & Humberside	0.086	0.280
	Wales	0.049	0.215
	Scotland	0.089	0.285
	Northern Ireland	0.013	0.115
	Highlands & Islands	0.030	0.172
Commitment Year	1991	0.006	0.079
	1992	0.024	0.152
	1993	0.079	0.269
	1994	0.139	0.346
	1995	0.146	0.353
	1996	0.117	0.322
	1997	0.099	0.299
	1998	0.114	0.318
	1999	0.113	0.316
	2000	0.081	0.273
	2001	0.082	0.274
Number of Establishments	52,177		

	Pooled	NFP	Private	Public
Manufacture	-0.002 (0.069)	-0.113 (0.387)	-0.020 (0.070)	-0.381 (0.554)
Gas/Electricity/Water	0.622 (0.105)***	0.005 (0.885)	0.592 (0.107)***	-1.289 (1.187)
Construction	0.080 (0.076)	-0.215 (0.518)	0.073 (0.078)	-0.977 (1.010)
Wholesale	0.048 (0.076)	-0.343 (0.506)	0.056 (0.078)	-0.841 (0.916)
Hotels & Catering	0.444 (0.072)***	-0.171 (0.471)	0.457 (0.073)***	-0.866 (0.595)
Transport	0.230 (0.077)***	0.586 (0.418)	0.170 (0.079)**	0.111 (0.524)
Finance	0.542 (0.080)***	0.170 (0.465)	0.531 (0.082)***	0.600 (0.645)
Real Estate	0.405 (0.069)***	0.278 (0.371)	0.402 (0.070)***	-0.022 (0.516)
Public Administration	0.741 (0.072)***	0.491 (0.358)		-0.002 (0.501)
Education	0.663 (0.068)***	0.255 (0.358)	0.680 (0.070)***	-0.038 (0.499)
Health	0.504 (0.069)***	0.193 (0.360)	0.497 (0.071)***	-0.079 (0.503)
Other Community	0.452 (0.071)***	0.008 (0.367)	0.459 (0.073)***	-0.065 (0.512)
Private Households	-0.063 (0.189)	1.132 (1.153)	-0.090 (0.190)	
Extra-territorial	1.084 (0.215)***	1.084 (0.450)**	1.067 (0.239)***	0.695 (0.768)
London	-0.157 (0.021)***	-0.028 (0.055)	-0.241 (0.027)***	-0.081 (0.049)*
North	-0.029 (0.017)*	-0.035 (0.050)	-0.034 (0.020)*	0.072 (0.049)
South	-0.023 (0.018)	0.200 (0.050)***	-0.046 (0.022)**	-0.028 (0.048)
Wales	-0.197 (0.035)***	-0.335 (0.128)***	-0.133 (0.038)***	-0.831 (0.159)***
Scotland	0.319 (0.024)***	0.611 (0.147)***	0.331 (0.026)***	0.222 (0.085)***
N. Ireland	0.106 (0.056)*	-0.031 (0.236)	0.054 (0.063)	0.504 (0.144)***
Observations	52177	5179	41053	5945

Table A2: Coefficients on sector and regional dummies for the hazard of recognition. See Table 2 in the text.

	Pooled	NFP	Private	Public
Manufacture	-0.035 (0.092)	-0.290 (1.121)	-0.029 (0.092)	20.687 (1.249)***
Gas/Electricity/Water	0.144 (0.159)	-43.513 (0.000)	0.168 (0.158)	-22.265 (0.000)
Construction	-0.040 (0.108)	-0.391 (1.266)	-0.037 (0.108)	-20.309 (0.000)
Wholesale	0.085 (0.099)	0.125 (1.251)	0.089 (0.099)	-23.209 (0.000)
Hotels & Catering	-0.242 (0.103)**	0.365 (1.202)	-0.248 (0.103)**	20.322 (0.000)
Transport	0.008 (0.105)	0.193 (1.246)	-0.001 (0.105)	21.977 (0.850)***
Finance	-0.018 (0.116)	0.541 (1.232)	-0.028 (0.116)	-21.532 (0.000)
Real Estate	-0.103 (0.093)	-0.336 (1.128)	-0.103 (0.093)	19.723 (1.002)***
Public Administration	0.107 (0.121)	-0.198 (1.088)		20.990 (0.690)***
Education	-0.626 (0.097)***	-0.739 (1.081)	-0.606 (0.097)***	20.112 (0.699)***
Health	-0.158 (0.095)*	-0.005 (1.090)	-0.165 (0.095)*	20.471 (0.737)***
Other Community	-0.202 (0.100)**	-0.116 (1.106)	-0.205 (0.100)**	20.134 (0.897)***
Private Households	0.660 (0.140)***	3.312 (1.189)***	0.663 (0.140)***	
Extra-territorial	0.251 (0.575)	-41.440 (0.000)	0.323 (0.580)	-20.034 (0.000)
London	-0.439 (0.037)***	-0.934 (0.209)***	-0.380 (0.039)***	-1.021 (0.181)***
North	-0.033 (0.030)	-0.027 (0.144)	-0.046 (0.031)	0.281 (0.145)*
South	-0.029 (0.030)	-0.680 (0.188)***	-0.012 (0.031)	0.061 (0.139)
Wales	-1.011 (0.071)***	-1.040 (0.389)***	-0.979 (0.074)***	-1.987 (0.475)***
Scotland	-0.839 (0.047)***	-46.084 (0.000)	-0.797 (0.048)***	-1.847 (0.360)***
N. Ireland	-2.556 (0.337)***	-1.058 (1.034)	-2.592 (0.357)***	-45.881 (0.000)
Observations	52177	5179	41053	5945

Table A3: Coefficients on sector and regional dummies for the hazard of cease. See Table 3 in the text.

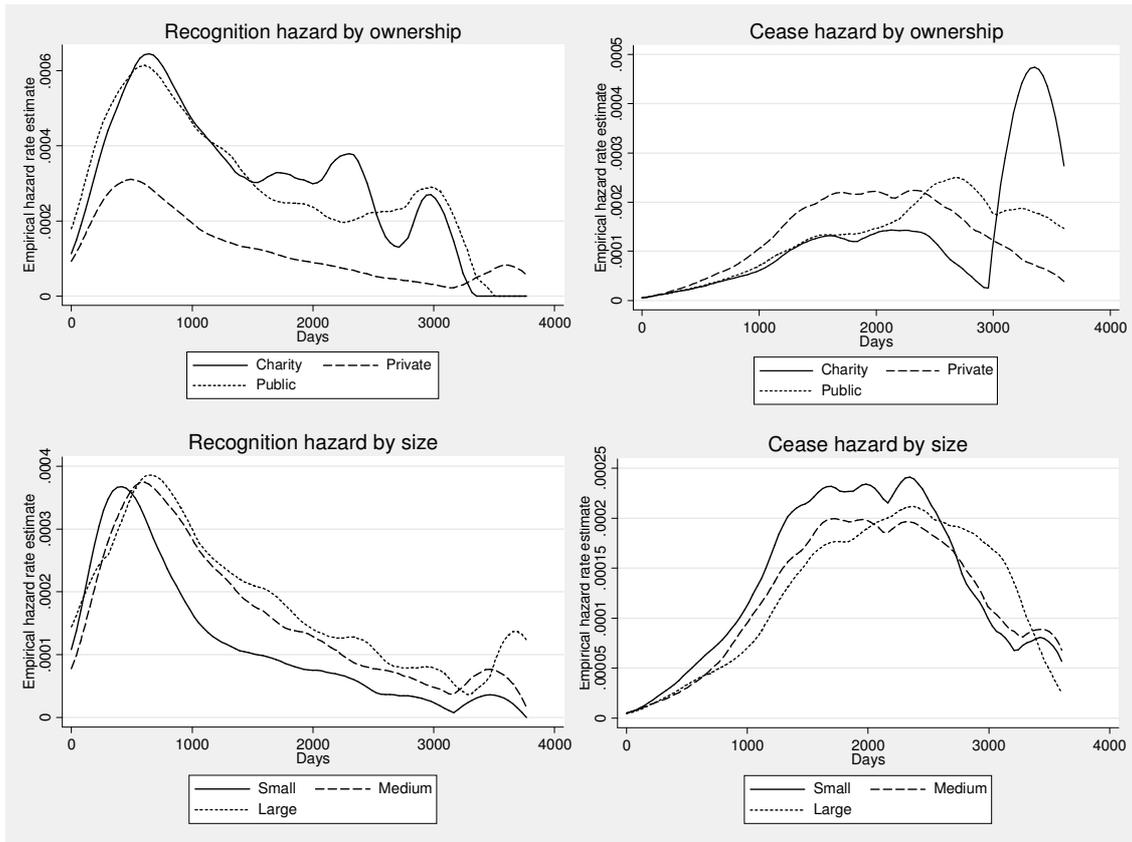


Figure 3: Risk of Cease