

Trade Unions in the Age of Litigation

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November 24th 2014

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Abstract

This paper identifies the threat of accusation as a new source of demand for union representation and how increased demand for this service has led to an increased union density in specific labour markets. As society has become increasingly litigious employees from high risk occupations would rationally increase their demand for insurance against these risks. I model union membership as a form of private legal insurance, where the decision to join is partly determined by the perceived threat of having an allegation made against the agent. This is examined by estimating the demand for union membership amongst UK teachers, which has been increasing over the last twenty years, despite a downtrend in union density nationally. Using media coverage of allegations relating to local teachers as shock to the perceived threat, I find that unionisation rates increase with media coverage of relevant litigation at the regional and national levels. Ten relevant news stories in a region increases the probability of union membership by 5 percentage points. Additionally, the size of the effect is dependent on the relevance of the story to the teacher. This paper provides a reason why the demand for union membership in this and related sectors has increased, despite the possibility of free riding, as pay and working conditions are set centrally.

I thank Alex Bryson, Claudia Hupkau, Justin Gallagher, Steve Machin, Brendon McConnell, Emma Pickering, Imran Rasul, Felix Weinhardt, the participants of the CEP Labour Workshop, CESifo Education Group, the Lancaster Departmental Seminar and the Applied Seminar at UT Austin. All remaining errors are my own.

1. Introduction

Trade unions remain a significant factor of many labour markets, despite their marked decline across the developed world in recent decades (Neumann and Rissman, 1984; Blanchflower and Bryson, 2008). However, there are some occupational groups that have seen an increase in demand for membership. This paper identifies legal insurance as a new source of demand for union representation, and how this has increased union density in specific labour markets. The paper also provides an explanation for the longstanding free rider puzzle in the union literature, for why in occupations where pay and working conditions are centrally determined, and membership is not mandatory, do individuals pay their monthly union dues (Freeman and Medoff 1984; Bryson and Forth, 2010)?

There will be many consequences on labour markets as societies becomes increasingly litigious. These affects will be most acutely felt in occupations at most risk of accusations. Notably, where employees have unsupervised interactions with vulnerable groups. A rational response by these employees would be an increase demand for insurance against these risks. Trade unions offer legal protection and advice to individuals who were members at the time when the allegation is made and when it was alleged to have occurred. I put forward a model of union membership as form of private excludable legal insurance where the decision to join is partly determined by the perceived threat level of having an allegation being made.

I illustrate an example of this with the UK teacher labour market. As with most developed countries, the UK has seen a large decline in union membership. Total membership in 1979 stood at 13.2 million, twenty years later this had fallen to 7.9 million (DfB, 2009). The vast majority of occupational groups have experienced a fall in unionisation rates. However, some occupations have experienced a rise in union membership. The four occupations with the highest percentage point increases in union density since 1992 are Educational Assistants (28.7%), Secondary School Teachers (12.5%), Primary School Teachers (8.5%) and the Police (6.7%).¹ Considering teachers were already one of the most unionised occupations, makes these additional gains even more remarkable.²

¹ Of all three digit occupational groups with at least 100 employees per year. The unionisation rate amongst the clergy also increased rapidly reaching a peak in 2005 of 14.3% up from a base of 2.8% in 1992 but had less than 100 observations for 5 of the 18 years.

² Educational Assistants 20.4% to 48.1%, Secondary School Teachers 76.1% to 88.6%, Primary School Teachers 82.3% to 90.8% and the Police 76.8% to 83.5%.

The other novel feature of the teacher trade union market in the UK is that pay and working conditions are determined at the national level, and teachers are not required to be a member (or pay union dues) to teach and enjoy these benefits. This leads to the question, why do teachers choose to join when they could instead free ride? Modelling membership as insurance in part resolves this as it is a private and excludable service.

To test the model I estimate how the demand for union membership amongst UK teachers varies with the threat level over the last two decades. I generate two measures of threat. Firstly the number of news stories number originating in a region. This was created by searching for and codifying all 1709 stories relating to teachers and allegations since 1991, using the LexisNexis database. Details were extracted from each story including the relevance, date, location, gender of the teacher and the school type, allowing for analysis of the heterogeneity by story type. Whilst I cannot know how many or which newspapers individuals actually read, I expect that changes in the overall reporting levels to reflect general changes in perceived threat. The second measure of threat comes from collecting the actual amount of allegations made against school employees in 118 Local Authorities in the UK.

I find that unionisation rates increase with media coverage of relevant litigation at the regional and national levels. Ten relevant news stories in a region increase the probability of union membership by 5 percentage points. Additionally, the size of the effect is dependent on the relevance of the story to the teacher. Teachers from secondary schools react to stories involving other secondary school teachers but not to those involving primary school teachers. Similarly, the demand for union membership increases amongst male teachers when there is media coverage concerning other male teachers but not female teachers.

As a falsification exercise I confirm that media coverage of cases involving teachers which would not be relevant to a teacher's decision to join a union are un-related to the unionisation rate. Moreover the impact of these stories decreases as the labour market becomes less similar to that of teachers. Finally, show that the unionisation rate does not increase prior to the coverage. The model allows me to simulate demand from 1992 to 2010 with media coverage set to zero throughout the period. In this case predicted union membership remains stable at around 81% whilst observed membership actually rose to 87.5%.

In November 2005 new procedures were introduced by the government which restricted what could be published by newspapers before a case had gone to term (HM Government, 2006). Accordingly, post 2005 I observe a fall in the number of news stories

involving teachers and a fall in the overall unionisation rate. I collected additional data on the actual number of allegations through Freedom of Information requests to all Local Authorities in England. There is a geographical correlation between the incidents of allegations and news coverage, but whilst the unionisation rate and amount of media coverage fell the total number of allegations continued to rise.³ In a horserace between allegations and news coverage, over a shorter time period in a limited sample, I find that the incidents of news stories continue to have a significant relationship, but the number of actual allegations is not correlated. This is indicative that teachers are relating to the perceived threat of an allegation being made, rather than changes to the actual threat level. This may not be due to teachers behaving irrationally. Rather news coverage is more salient and so is less costly to collect and use to update expectations, compared with actual allegation probabilities which may not be immediately available.

The contribution of this paper is that it identifies a new source of demand for union representation, and how it has increased union density in specific labour markets against a background of general union decline. The paper also provides an additional explanation for the longstanding free rider puzzle in the union literature, that employees should rationally free-ride on the union benefits and not pay the costs, but individuals do join unions. Therefore there must be a private excludable benefit form membership, this has been discussed previously, but is the first to empirically show the demand for a private service in the form of legal insurance. The policy implication is if governments or employers wanted to reduce the demand for union membership, they could do so by providing more support in the workplace against allegations being made against staff.

In 1993 76.5% of teachers were unionised, by 2005 this had reached a peak of 87.0%, this 10.5 percentage point gain was whilst the rest of the UK workforce has seen a 6 percentage point decline in union density (Figure 1).

The UK teacher labour market is also a prime example of the trade union free-rider problem, in that pay and working conditions are determined centrally, and teachers are not required to be a member (or pay union dues) to teach. Why do they chose to be members?⁴ Moreover, since 1987 teacher trade unions have had no official roll in the

³ This actual allegations data is only available post 2006 and therefore could not be used for the main analysis.

⁴ The annual membership fees for a full time teacher in 2013 in the two largest teacher unions in the UK were £167 NASUWT and £170 NUT.

determination of pay, and could only state their recommendations. Despite this drop in union bargaining power, union membership has continued to increase, therefore there must be other benefits to joining a union. This is illustrated by the finding that from 2001 the proportion of teachers who thought that their pay and working conditions were affected by trade unions remained constant at, and then decreased from 75%, but the proportion of teachers that were in a union was higher at 83% and increased to 87% by 2005 (Figure 2).

A rational explanation for this increase in demand is an increase in the private benefits of union membership. One such benefit which is highly promoted by the unions is the legal advice and protection provided in the event of an allegation being made.⁵ Teachers who are members of a union at the time of the incident and when the allegation is made receive an official representative for the internal disciplinary meetings and legal representation if it does escalate. The teacher trade unions themselves consider this service to be the major driver of union demand.⁶ Moreover as part of the terms and conditions of membership many unions reserve the right to use the facts of successful cases to publicise their criminal representation scheme (NASUWT, 2014). It is not just the unions that consider the threat of accusations as a determinate of union membership, teachers do also. In a survey of Hertfordshire teachers in 2010/11 I found that in answering the question “*What were the MAIN reasons why you initially joined a teacher union?*”, the most popular response was “support in the event of allegations from pupils”, which 85% of the respondents indicated (Appendix Table 1).

For fear of allegations to explain the rise in demand for union membership the threat of allegations also needs to have risen over this time period. There are no comparable records directly measuring the threat of allegations annually, however one teacher union reported dealing with 71 cases of alleged sexual or physical abuse in 1991, 134 in 1992 and 158 in 1993 (Independent, 1994) and then estimated dealing with 800-900 per year in 2009 (Keates, 2009).⁷ To obtain a more detailed and comprehensive measure of threat against teachers, I use the number of national newspaper stories involving accusations of

⁵ The benefits of union membership now revolve more around servicing rather than organising. It is easier to exclude non-members from services such as: Continuing Professional Development, group discounts, group insurance offers.

⁶ Paddy Marshal, Head Recruitment Officer NUT stated in a phone interview in relation to the legal insurance that “the safety net is the biggest potential benefit”, April 2009. Tracy Twist, Assistant General Secretary of NASUWT stated in a meeting with me that “a lot of teachers join because of these concerns”.

⁷ NASUWT membership over this period increased by 63% (Certification Office, 2010) whilst the number of allegations against its members increased by 1167%.

teachers. I treat this media coverage of allegations relating to local teachers as an exogenous shock to the perceived threat. The hypothesis is that in years and regions which have more stories concerning allegations involving teachers, the demand for teacher union membership will increase.

Similar approaches have seen media coverage change individuals' expectations regarding social security (van der Wiel, 2009), inflation (Carroll, 2003; Lamla and Lein 2008) and returns to education (McGuigan et al. 2012). These paper found that newspaper reporting in period t affected expectations of outcomes in period $t+1$. Relating media reports to the demand for insurance specifically, Gallagher (2013) found that demand for flood insurance increased in regions that experienced flooding in the previous year. Moreover in non-flooded communities that were in the same television media market that the flood took place, these effects continue to persist for five years after the event. This paper provides similar estimates but for the demand for legal insurance post media coverage and adds to the literature, by using the details of each story, to learn more about how individuals update their expectations according to how similar it is to their own situation.

The media coverage information comes from the LexisNexis database over two decades from 1991 to 2011. I use a rubric to codify all news stories from national newspapers in the UK relating to teachers, according to how relevant they would be to a teacher who may be concerned about having an allegation made against them. For example, a news story concerning false allegations would be extremely highly relevant, but a coverage of a teacher who admits guilt of a crime would not (details in Section 4). I have also extracted additional details from each story including the date, location, gender of the teacher and the school type. Whilst I cannot know how many or which newspapers individuals actually read, I expect that changes in the overall reporting levels to reflect general changes in perceived threat.

I find that unionisation rates increase with media coverage of relevant litigation at the regional and national levels. Ten relevant news stories in a region increase the probability of union membership by 5 percentage points. Additionally, the size of the effect is dependent on the relevance of the story to the teacher. Teachers from secondary schools react to stories involving other secondary school teachers but not to those involving primary school teachers. Similarly, the demand for union membership increases amongst male teachers when there is media coverage concerning other male teachers but not female teachers. For falsification tests, I confirm that media coverage of cases involving teachers which are not relevant to a teacher's decision to join a union are un-related to the

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The rest of the paper is organised as follows. In Section 2, I formalise a model for union demand dependent on perceived threat of allegation. Section 3 describes the data

⁸ This actual allegations data is only available post 2006 and therefore could not be used for the main analysis.

sources and how the media coverage data was collected. Section 4 presents estimates of the impact of media coverage on demand for union membership. Section 5 provides some falsification exercises and explores the impact of actual versus reported allegations. Section 6 concludes.

2. Demand for Union Membership Model

2.1 Model and assumptions

Teacher unions provide a unique service in the form of legal advice and protection against allegations made by students. I model union membership as form of legal insurance that the teachers can chose to pay for with annual dues. The benefit is that the expected outcome once an allegation has been made is better if the teacher is a member of a trade union.

To formalise this decision process we need to make the following assumptions. There are multiple types of teachers that vary in their risk aversion, their actual risk of allegations being made against them and their other characteristics that can be correlated with the net benefits of union membership. These dimensions of teachers types are summarised by θ , which simultaneously represents risk aversion, riskiness and characteristics of a teacher⁹. This allows for variation in insurance take up across individuals with the same observable characteristics. Each teacher's utility is a function of income Y and type θ , $U(Y, \theta)$, which has decreasing marginal benefits from income. They are employed in schools which are 'open shops', where union and non-union members are both employed and earn the same wages $w > 0$. There is only one trade union and if a teacher decides to join the union they pay annual cost $c > 0$. Therefore teacher wages can either be spent on union fees or left as disposable income $w = Y - c$.

The perceived probability of an allegation being made against a teacher with characteristics x from region j , in year t , is $\delta(s_{xjt})$. This an increasing function of news stories s in the first derivative and negative in the second, reflecting the diminishing marginal impact of the news stories in a region.¹⁰ If an allegation is made against a teacher

⁹ Note that this allows for some types of teachers to potentially commit offences. All teachers were innocent all the time there would be no market for insurance as all teachers would be presumed non guilty.

¹⁰ The perceived threat can also be a function of other factors in addition to news stories, such as the actual number of allegations. Section 5.4 investigates the use of this other less salient measure of threat.

they incur cost a , regardless of the subsequent outcome, reflecting the social costs and potential damage to career prospects. Similarly there is an additional cost l if a teacher is found guilty of an allegation, and that $l \gg c$. I can now rank utilities for any given state of the world for all types θ :

$$U^n(w, \theta) > U^u(w - c, \theta) > U^{nw}(w - a, \theta) > U^{uw}(w - a - c, \theta) > U^{nl}(w - a - l, \theta) > U^{ul}(w - a - c - l, \theta) \quad (1)$$

where U^n and U^u are the utilities of non-members and members respectively with no allegation against them. U^w is the utility of winning a case, U^l is the utility of losing a case, which depend on union status. For union members $U^{uw} = U(w - c - a, \theta)$, and $U^{ul} = U(w - c - a - l, \theta)$, non-union members utilities U^{nw} and U^{nl} follow a similar structure, but do not incur membership cost c . The state with the highest utility is a non-member with no allegations against them U^n and the worst state is a union member who lost their case U^{ul} .

The probability of a teacher being exonerated is $r(x)$ which is increasing in the amount of resources devoted to their defence x . Teachers are not allowed to employ representation for internal school hearings, the only representation that teachers are allowed, apart from themselves, is that of the union. Given the restrictions that exist for teachers in employing private representation, I assume that the effective resources that can be devoted to a case are always higher than the cost of union dues ($x \gg c$). This reflects that income cannot be easily translated into defensive resources.¹¹ Therefore expected utility of a teacher once an allegation is made Z is a convex combination of winning and losing utilities for their union status.

$$\begin{aligned} Z^n &= r(x^n)U^{nw} + (1 - r(x^n))U^{nl} \\ Z^u &= r(x^u)U^{uw} + (1 - r(x^u))U^{ul} \end{aligned} \quad (2)$$

I can now model the teachers decision process regarding union membership. An individual of type θ^* is indifferent between joining a union or not, when there are no

¹¹ This is likely to be a large contributing factor why no private market for teacher legal insurance exists in the UK.

marginal benefits, $b = 0$, e.g. the expected utility from membership equals the subjective expected utility from non-membership.

$$\begin{aligned}
 b &= EU(\text{membership}) - EU(\text{non - membership}) = 0 \\
 b &= [\delta(s)Z^u + (1 - \delta(s))U(w - c, \theta^*)] - [\delta(s)Z^n + (1 - \delta(s))U(w, \theta^*)] = 0
 \end{aligned}
 \tag{3}$$

As $U(w - c, \theta^*) < U(w, \theta^*)$, and the perceived probability of an allegation is the same for an individual if they are a member or not, this means that the expected utility once an allegation is made for a union member, is greater than for a non-union member $Z^u > Z^n$. We must have that since the only difference between Z^u and Z^n comes from $r(x)$, for unions to have any members we need that unions provide more resources in for defence $r(x^u) > r(x^n)$.

Taking the first derivative of (2) with respect to the number of news stories, it can also be shown that the expected gain from membership for the marginal member is a function of news reports

$$\begin{aligned}
 \frac{db}{ds} &= [\delta'(s)Z^u - \delta'(s)U(w - c, \theta^*)] - [\delta'(s)Z^n - \delta'(s)U(w, \theta^*)] \\
 &= \delta'(s)(Z^u - Z^n) + \delta'(s)[U(w, \theta^*) - U(w - c, \theta^*)]
 \end{aligned}
 \tag{4}$$

Given the assumptions that $\delta'(s) > 0$, $Z^u - Z^n > 0$ and $(w - c, \theta^*) < U(w, \theta^*)$, then it follows that $\frac{db}{ds} > 0$. For an indifferent teacher with taste for risk θ^* , the marginal benefit of unions is increasing the number of news stories, as this increases the expected probability of an allegation being made.

2.2 Comparative Statics

I now present comparative statics to illustrate the case of a teacher of type θ^* would chose to be a union member when the perceived risk of an allegation is high, but choose not to when the perceived risk is low. Panel A of Figure 3 shows her utility function $U(Y, \theta^*)$, and the utility levels specified in (1). The chord linking the points U^{ul} and U^{uw} represent the convex combination of the two and represent the expected utility of a member once an allegation has been made (similarly for the points U^{nl} and U^{nw} for non-members). The point along the chord where the teacher will be is determined by the

probability of success $r(x)$. As $r(x^u) > r(x^n)$, the union member will be higher up the chord than the non-union member, and we can plot $Z^u > Z^n$. Note that Z^u and Z^n intersections both lie beneath the utility curve, reflecting the utility lost through risk aversion.

It follows that a non-union member with income w , would either receive $U(w, \theta^*)$ or Z^n , the expected utility of a non-union member once an allegation has been made. Therefore the expected utility before an allegation is made is a combination of these two outcomes. The lower chord that links the intersection of the utility curve with Z^n to the intersection with w , represents this expected utility space of a teacher who is not a union member (Figure 3 Panels B and C). Similarly, before an allegation is made, a union teacher is at a point on the upper chord between $U(w - c, \theta^*)$ and Z^u , reflecting that she is paying dues, but also has Z^u expected utility if an allegation is made.

This time point at which a teacher is along this new chord is dependent on their expectations of an allegation being made against them. Panel B of Figure 3 shows a high threat scenario $\delta(s)=0.5$, and the individual will be at the midpoint of each chord. With this high perceived threat level we can see that the expected utility from membership is greater than that of non-membership, $EU^u > EU^n$. In contrast Panel C shows the same teacher with the same taste for risk and type θ^* and same amount of union dues c , would chose not to be in a union if the risk level was low $\delta(s)=0.1$. In this case, although the teacher is at a higher point on each chord, the non-union option is more attractive as no dues are paid.

This basic example demonstrates that the demand for union membership is directly related to the perceived threat of allegations, $\delta(s_{xjt})$. When there is a low probability of an allegation being made, the cost of union membership outweighs the gains through better representation if an allegation was to occur and so teachers will not join the union.

2.3 Econometric Specification

I build on this basic model of rational decision making by the teacher to join the union as the basis of the estimation strategy. It stated that teacher i from region j in time period t will choose to join the union if the expected benefits of joining the union are positive, $EU_{ijt}^u - EU_{ijt}^n > 0$. Each of these terms will be a function of many factors in addition to perceived threat of an allegation being made and will be related to the teachers type θ . This can be summarised by the two following equations.

$$EU_{ijt}^u = \alpha^u + \rho^u \delta(s_{jt}) + \gamma^u X_{ijt} + \mu_j^u + \omega_t^u + \varepsilon_{ijt}^u \quad (5)$$

$$EU_{ijt}^n = \alpha^n + \rho^n \delta(s_{jt}) + \gamma^n X_{ijt} + \mu_j^n + \omega_t^n + \varepsilon_{ijt}^n \quad (6)$$

where $\delta(s_{jt})$ is the perceived threat in region j in time period t . The remaining parameters account for the other characteristics of a teacher type θ . α^u and α^n are the general benefits for being a (non)union member for all individuals in all time periods. X_{ijt} is a vector of observable individual characteristics which affect the perceived benefits such as age, qualifications, or gender. μ_j^u are the additional gains for being a union member in region j , this could reflect taste for unions in a particular region. ω_t^u allows for differential gains from union membership each year, which impacts all teachers in the same way, such as any general perceived fall in union power. Individuals also have an idiosyncratic taste for (non)union membership which varies overtime, ε_{ijt} . The probability that individual i in region j at time period t will be a trade union member is $Pr(EU_{ijt}^u > EU_{ijt}^n)$, using the standard result (McFadden, 1976) we can combine equations 5 and 6 into the following

$$Pr(EU_{ijt}^u > EU_{ijt}^n) = \frac{\exp(\alpha + \rho\theta(s_{jt}) + \gamma X_{ijt} + \mu_j \text{Region}_j + \omega_t \text{Year}_t)}{1 + \exp(\alpha + \rho\theta(s_{jt}) + \gamma X_{ijt} + \mu_j \text{Region}_j + \omega_t \text{Year}_t)} \quad (7)$$

where each parameter is now the marginal benefit for individual i to join the union ($\rho = \rho^u - \rho^n$). However, I am not able to separately identify the perceived threat from stories $\delta(s_{jt})$ and the marginal gain from a unit of threat ρ . Instead I will be estimating the combination of the two, the expected marginal gain per story. Given that by assumption $\delta(s_{jt})$ is a quadratic function, this will be parameterised into the effect per story β_1 , and its square β_2 . The demand for union membership can then be estimated using a logistic regression, where the parameters of interest is $\beta_1 + 2\beta_2 \bar{s}_{jt}$ representing the marginal effect of an additional story at the mean news coverage on union membership.

$$U_{ijt} = \alpha + \beta_1 s_{jt} + \beta_2 s_{jt}^2 + \gamma X_{ijt} + \mu_j + \omega_t + \varepsilon_{ijt} \quad (8)$$

where U is an indicator variable if individual i in period t is a union member or not and s_{jt} is the number of stories in region j in time period t . This specification assumes that media coverage in region j has no impact on the perceived benefits of union membership in a different region. To allow for spill-overs and to obtain estimates of the total impact of news stories on union membership, I additionally include a measure for total news stories

nationally each year, s_t and replace the year effects term with a more restrictive time trend term.

$$U_{ijt} = \alpha + \beta_1 s_{jt} + \beta_2 s_{jt}^2 + \beta_3^{Nat} s_t + \beta_4^{Nat} s_t^2 + \gamma X_{ijt} + \mu_j + \varphi Year_t + \varepsilon_{ijt} \quad (9)$$

Following similar reasoning that teachers are more likely to be affected by news stories originating in their region, one may expect certain stories to have a larger impact on certain teachers who share characteristics with the teacher involved in the media coverage. For example, a news story involving false allegations against a male teacher may be more relevant to other male teachers compared to female teachers. I investigate this by allowing the threat to vary by the characteristics of the teacher in the story s_{xjt} and estimate the impact when the characteristics of the teacher are the same or different to the characteristics of the story, $X_{ijt} = X_{sjt}$ and $X_{ijt} \neq X_{sjt}$. Any differences in the effect may be due to the threat that a given story generates is greater, $\delta(s_{xjt}) > \delta(s_{x'jt})$ when $X_{ijt} = X_{sjt}$ and $X_{ijt} \neq X_{sjt}$ or the expected marginal gain driven by the story is larger ($\rho_{X_{ijt}=X_{sjt}} > \rho_{X_{ijt} \neq X_{sjt}}$). Again, I cannot separately identify these effects but will instead estimate the marginal effect of a similar or less similar story.

$$Union_{ixjt} = \alpha + \beta s_{ixjt} + \beta s_{ixjt}^2 + \gamma X_{ijt} + \mu_j + \omega_t + \varepsilon_{ijt}$$

$$Union_{ixjt} = \alpha + \beta s_{ix'jt} + \beta s_{ix'jt}^2 + \gamma X_{ijt} + \mu_j + \omega_t + \varepsilon_{ijt} \quad (10)$$

3. Data and Descriptive Statistics

3.1 Union Membership Data

The objective of this paper is to estimate the effect of the threat of allegations on the individual decision to join a trade union. The population of interest are individuals employed in occupations which are at high risk of having an allegation made against them, and where union membership (or purchasing of indemnity insurance) is non-compulsory.¹² I have chosen to focus this paper on the teacher labour market as it is a

¹² For example, UK doctors are required to become members of the British Medical Association which is the professional association and registered trade union for doctors in the UK. Similarly for Physiotherapists and Radiologists who each have a professional body which provide including insurance cover, professional and legal advice, and support for continuing professional development (Royal College of Radiologists, and Chartered Society of Physiotherapy).

well-defined occupational group with a large number of employees and has also had considerable press attention regarding accusations from students over the last two decades.

To obtain information on teachers and their union status, I used data from the UK Quarterly Labour Force Surveys (QLFS) over the period 1992 through 2010. The QLFS is conducted by the Office of National Statistics and follows approximately 60,000 households every quarter. A rotating panel of households are surveyed over five quarters, and are then removed and replaced with a new household. Individuals are asked for employment and personal characteristics. This allows me to condition on factors that have been shown to be important determinants of union status (Machin, 2006); age, tenure, gender, region, occupation, public sector employee, qualifications and region. Information relating to union membership is only collected in the autumn quarter.¹³ The estimates are generated over the period 1993 to 2010, as some individual characteristics are not available in 1992.

Teachers are identified through three digit occupation codes, which allows teachers who work in Primary Schools, Secondary Schools and Special Schools to be separately identified. This results in a final sample used for estimation of 30,392 teachers, with on average 1,782 teachers per year, 827 of which teaching at Primary Schools and 817 teaching at Secondary Schools. Summary statistics on teachers in comparison to the workforce in general can be found in Table 1. As one may expect the teacher labour market is considerably different, 88.6% are employed in the public sector compared with 24.6% in the wider economy. Moreover the teacher population is also more female (72.5% versus 47.5%) and has a higher proportion of graduates (74.3% versus 18%).

Regarding the main characteristics of interest, the unionisation rate of teachers is 84% compared with 27.6% for non-teachers and 59.4% in the public sector as a whole. This paper uses the twenty detailed Government Office Regions as the region of analysis, which is derived from Local Authority residence. These larger regions allow for news stories to have wider impacts outside of their immediate vicinity.¹⁴

3.2 Media Coverage

¹³ As the QLFS is a continuously rotating panel of households interview over five quarters and information relating to union membership is obtained every autumn, a quarter of individuals are asked twice about their union status. Unfortunately the number of repeated teacher observations is too small to run auxiliary analysis on this sample.

¹⁴ Use of the restricted access QLFS with Local Authority information is not possible before 2002 as these files have been converted to the new calendar framework and as union questions were only asked in the Autumn were removed from files.

Many different factors may influence the perceived threat of an allegation being made against a teacher. This paper uses the impact of media coverage originating in the region teacher *i* is a resident of as an indicator for overall threat. To assume this to be exogenous that there is no moral hazard on the behalf of teachers, that they are not more likely to commit an offence if they are a union member. Moreover it also requires that cases involving union members are no more likely to be mentioned than not. It would be very difficult to have a measure of all news coverage e.g. television programmes, news websites, newspapers and magazines. Therefore, similar to other papers (Carroll, 2003; Lamla and Lein, 2008; van der Wiel, 2009) I will be using the number of articles in national newspapers as a proxy for all media coverage. The data on news stories is obtained from LexisNexis, an online database of media published in the UK.¹⁵ I searched for all articles which contained the word ‘teacher’ in the headline and included any of the following terms (or derivatives) in the headline or main text; *teacher, damages, sued, litigation, allegation, jail, court, dismissed or fired*, over the period September 1991 to August 2010. Using the date of the QLFS interview and media publication date, I allocate media coverage from the twelve months prior to the interview to the teacher.

As advised in Woolley (2000) I created a rubric by which to classify news stories before the search was conducted. This coding frame classified news stories into four levels according to how relevant they would be to influence the perceived benefit of joining a union; Extremely Relevant- teacher found innocent and case thrown out; Highly Relevant-teacher currently on trial; Little Relevance- Guilty of a lesser offence/on trial strong evidence; Not Relevant- Teacher admits guilt of extreme sexual abuse (See Appendix Table 2). Note, it is possible that a single case can appear in different levels as the newspaper stories develop over time. In total 1709 stories were coded, of which 623 were classified as extremely relevant and a further 548 as highly relevant.

The newspaper stories are also categorised by story type according to if they involve: *Allegations; Being Sued, Suing, Being Attacked, Criminal Activity, Being Sacked, Employment Tribunal* and *Teacher Union Activity*. For the main analysis the story types of interest are ‘*Allegations*’, ‘*Being Sued*’ and ‘*Criminal Activity*’, with auxiliary analyses using all story types. The total number of stories of this type in the balanced panel of

¹⁵ Some national newspapers were not included in the LexisNexis database throughout the entire period. To have a consistent measure of newspaper coverage over time these newspapers are excluded from the analysis. Their inclusion does not change the interpretation of the results. These newspapers are The Morning Star, The Express, The Daily Telegraph, Sunday Express, Sunday Telegraph, The Sun, The News of the World, The People.

newspapers that are extremely or highly relevant are 439. Table 2 summarises the total number of stories by level and type.

The number of relevant stories has dramatically increased, between 1992 to 1998 the mean number of stories involving allegations against teachers per year was 6.6, from 1999 to 2007 this had increased to 37.9 (See Figure 3). Post 2005 there was a fall in the number of news stories in national newspapers which coincides with a change in the law which gave more protection to teachers to prevent their case being reported before the individual had been charged with a criminal offence.¹⁶

In addition to the relevance and region of the news stories, I have also extracted information on the teacher involved in the story. From the name of the teacher, or pronoun used in each story I was able to infer the gender of the teacher. Using references to the school name or the age of the pupils involved I was able to determine if the teacher was teaching in a Primary or Secondary school. In this way I was able to assign gender in 96.6% of stories and primary or secondary school level in 82.4% of stories. For stories where the gender or school level of the teacher were not mentioned, the story was not counted for either group. Stories relating to trade unions are only counted towards the total number of stories nationally. Stories involving secondary school teachers are the most common representing 66.3% of highly relevant stories. The balance between the genders is more equal with 50.7% of highly relevant stories involving male teachers and 46.5% involving female teachers (Table 3).

4.3 Actual Allegations

I obtained information on the actual allegations made against public sector employees who work with children and young people through use of the Freedom of Information Act. After contacting all 152 Local Authorities in England I received responses from 118 (See Appendix 1 for detailed list). This details which sector occupational group the allegation was made against, and the nature of the allegation.¹⁷ Teachers received more than half of

¹⁶ In accordance with the Association of Chief Police Officers (ACPO) guidance the police will not normally provide any information to the Press or media that might identify teacher who is under investigation, unless and until the person is charged with a criminal offence. In exceptional cases where the police might depart from that rule, e.g. an appeal to trace a suspect, the reasons should be documented and partner agencies consulted beforehand.

¹⁷ There are 15 occupational groups: Social, Care, Health, Education, Foster Carers, Connexion, Police, YOT, Probation, CAF/CASS, Secure Estate, NSPCC, Voluntary Youth Organisations, Faith Groups,

all allegations out of all occupations that work with children, with 52.6%. Of these, 56.9% are physical in nature and 23.9% sexual, which is comparable with allegations for all non-teacher occupational groups with 52.5% and 25.1% respectively (Table 4). These data also provides a count of the outcomes of allegations over the previous twelve months, which I have codified into four categories; 1) Not Upheld; 2) Police Involvement; 3) Disciplinary Procedures, and 4) Referral.¹⁸ These outcomes cannot be connected to occupations, but in general 46.1% of these allegations are not upheld (Table 5). This means that for an innocent teacher there is still a risk of having an allegation being made against them.

The total number of allegations provides us with the size of actual risk. The shortcoming of these data is that it was not compulsory for Local Authorities to record this information and therefore the data are over a comparatively shorter period of time. The earliest reports start in 2007 up until the most recent in 2011. From these I have constructed a balanced panel of 66 Local Authorities over a three year period between 2008 and 2010 (Appendix 1).¹⁹ Using this balanced panel the total amount of allegations made against public employees increased from 4691 to 6091 and for teachers this has also marginally increased from 2866 in 2008 to 2944 in 2010. To obtain a measure of relevant threat I normalised these totals by the number of teachers in each Local Authority taken from the School Workforce in England (2011). This growth in allegations equates to an increase of 1.49 to 1.5 allegations per 100 teachers per year. Assuming that these allegations are evenly concentrated over teachers over time, and that 46.1% of allegations are not upheld, this means an average teacher over a career of 35 years can expect a 24.2% chance to have an non-upheld allegation made against them.

4. Results

4.1 Aggregate Trends

Armed Forces, Immigration/Asylum Support Services, and Other. There are five abuse categories: Physical, Emotional, Sexual, Neglect and Other.

¹⁸ The 16 outcome categories are: Not Upheld – No further action after initial consideration, Being unfounded, Being unsubstantiated, Being malicious, Acquittal ; Police Involvement – Criminal investigation, Conviction; Disciplinary Procedures – Disciplinary Action, Suspension, Dismissal, Resignation, Cessation of use, Inclusion on barred/restricted employment list; Referral - Section 47 investigation, Referral to DCSF, Referral to Regulatory Body.

¹⁹ A smaller balanced panel of 32 local authorities over a longer period of 2007 to 2010 is also available and provides similar results.

Between 1993 and 2005 the union density amongst teachers increased by 10.5 percentage points, whilst amongst non-teachers it fell by 6 percentage points (Figure 1). This increase in unionisation rate has occurred across all teacher age groups, which implies that this growth rate is not solely due to improvement in recruitment rates amongst newly qualified teachers but a general demand in union membership across all teaching age groups (Figure 3).

During this same period the formal bargaining power of trade unions did not improve. Additionally one may have expected a fall in teacher union membership as the Burnham Committee, through which unions were directly involved in the decisions of setting of teacher pay, was replaced by the School Teacher Review Body (STRB) 1991.²⁰ In the QLFS teachers are asked '*are your pay and working conditions directly affected by agreements between a trade union and your employer?*' This shows a lower proportion of teachers agree with this statement than are union members (Figure 3), which implies that teachers are members and pay their dues for other reasons. Moreover as pay and working conditions are set centrally for all employees there is a traditional free-rider issue that teachers could choose not to be a union member (and pay the dues) but receive the same pay and conditions. To explain this previous papers have modelled union membership as a form of insurance against becoming unemployed, using the variation in the local unemployment rate as an indicator for the risk (Blanchflower et. al. 1990). However there is indicative evidence that this is not the main driver of union membership amongst teachers as union density continued to fall during the start of the great recession. The hypothesis of this paper is that unions are now providing a private benefit in the form of legal insurance in the case of an allegation being made.

4.2 Main Results

In this section I present estimates of the effect of relevant news stories on union membership. I use the exogenous number of national news stories that originated in a region from the previous twelve months, as a shock to the perceived threat of an allegation being made and would expect an increase in probability in an individual teacher being a union member. Table 6 presents the marginal impacts of a news story from a logistic estimation of specification 8. To aid interpretation these have been transformed from the

²⁰ There was an interim period between 1987 and 1991 when the Minister of Education had the power to determine the size of the pay award directly.

logistic parameters to the marginal effect multiplied by 100 and so can be thought of as percentage change in probability.²¹

Column 1 of Panel A shows a positive significant raw correlation of 0.548** between the number of Extremely Relevant stories involving an accusation in a region on the likelihood of union membership.²² Column 2 conditions on individual characteristics that have been shown to be determinants of membership. There is little change in the coefficient which implies that there is little correlation between the incidence of news stories and these characteristics (0.588***). This is what one should expect if there was little sorting across region due to stories by teacher characteristics. Column 3 additionally allows for varying union demand in each region, and is therefore using the within region variation in news stories over time. The final column additionally includes year effects which allows for the average unionisation rate to increase over time, which is the smallest of the estimates at 0.498 but still significant at the 5% level. The quadratic term is negative and significant, implying that each additional story beyond the first has a smaller impact. Evaluating the marginal effect at the mean, I find that each additional highly relevant story increases the probability of being a union member by 0.428%. Panel B shows the same specifications on the same sample, but uses both extremely and highly relevant stories, instead of just the most relevant. As one may expect the marginal impact is smaller, at 0.380%**, but remains significant.²³

One may be concerned that these effects could be generated from random fluctuations in the number of news stories by region. Therefore as a robustness check Panel C of Table 6 estimates the impact of stories of Little to No Relevance on union membership. Reassuringly I find that the incidence of these stories have no impact on union demand.

These estimates are the impacts within a region, this would not capture the total impact of news stories annually on national membership, as I am using the annual variation at the regional level whilst accounting for national year effects. To obtain a national impact I replace the 17 year effect terms with a single year trend variable. Total number of stories nationally per year is no longer absorbed by the year effect, and reflects the additional

²¹ Original estimates of the logit parameters available upon request. The parameters are transformed by $P(\text{Union}) * (1 - P(\text{Union}))$, changing them from odds ratios to probabilities at the mean.

²² I define an accusation story as coverage of the following types of stories: Allegations, Being Sued and Criminal Behaviour

²³ I have run a parallel set of estimations which instead use a measure of news impact, derived from the number of words per story normalised by mean story length in that newspaper in that year. These results mirror those found in this chapter and are available upon request.

growth over the long run unionisation trend.²⁴ The corresponding estimates are found in Table 7. The number of the most relevant stories nationally has an additional impact above and beyond the number of regional stories. The impact is smaller than the regional impact (0.108, versus 0.481). Using the average number of stories locally and nationally I can calculate the mean total effect of newspaper stories on union demand. Compared to a year with none of the most relevant news stories, the mean number of stories in the past year increases the probability of union membership by 1.46 percentage points.

4.3 Media Impact by Relevance of Coverage

The model describes a teacher's rational decision process in choosing to become a teacher, highlighting the roll of the threat of litigation driven by news stories, on the marginal benefit of joining the union. If a teacher shares more characteristics with the teacher in the story one may expect that the story is more relevant in their updating process.

Table 8 presents results according to the school type of the potential union member works for (Primary School, Secondary School) and by the school type reported in the media. To simplify the table I report the final marginal impact of stories, accounting for the negative quadratic term, conditioning on individual characteristics, year and regional effects (original estimates appear in Appendix Table 3). Column 1 uses the subsample of Secondary School teachers, and Column 2 the sub-sample of Primary School teachers. The top panel estimates the impact of all relevant news stories, and shows that secondary school teachers react to media coverage but there is no significant reaction from primary school teachers. This coincides with there being more relevant stories involving secondary school teachers (relevant news: 285 Secondary stories, 90 Primary stories; Table 3). The lower two panels, Panels B and C, instead use only the stories involving Secondary and Primary School teachers respectively. I find that demand for union membership amongst Secondary School teachers significantly reacts to stories involving other secondary school teachers (0.907***) but not to stories involving Primary School teachers (0.131) (Column 1). For Primary School teachers neither effects are statistically significant, but the coefficient relating to Primary School stories is higher than the one for secondary schools.

These results are replicated in columns 3 and 4 which instead uses all relevant news stories, not just those relating to allegations, criminal activity or being sued. As before this

²⁴ The stories additionally include relevant union activity at the national level that could not be allocated to a specific region.

produces similar results to the highly relevant stories, in which secondary school teachers react more in general and react more to secondary school stories than those set in primary schools. With this broader news story definition I now find a marginally significant effect of Primary news stories on Primary School teachers.

Table 9 has the same structure as Table 8 but focuses on the similarity of the teachers' gender to that of the story. Here we see that only female teachers react significantly to relevant news stories in general. However, once we examine the impact by story type, male teachers do significantly react to news stories involving other male teachers (0.591*) but not to those relating to female teachers (-0.056). Interestingly, I also find that female teacher react more to stories involving male teachers rather than female teachers (0.897***, 0.386). One could infer that female teachers, despite ostensibly having more in common with other female teachers mentioned in the press, may associate the incidence of false allegations to be higher in cases involving men and therefore react more to these types of stories. These findings are repeated using other story types (Columns 3 and 4), rather than those just relating to accusations against the teacher and produce similar results.

4.4 Media Impact on Other Occupations

To this point the paper has estimated the impact of media coverage of accusations against teachers on the unionisation rate of teachers. One may have more confidence in the estimates that these stories are reflecting the change in the perceived threat of teachers if they also have effects on other related occupations, and no impact on unrelated occupations. Table 10 shows the impact of these stories on occupations that are increasingly less similar to teaching; educational assistants, higher education professionals, non-teacher public sector graduates, and non-teacher graduates. The coefficients of interest are not significant for any of the other occupational groups. However there is indicative evidence of an effect on education assistants which has a larger marginal effect at the mean compared to the teachers, but is insignificantly determined (0.622 versus 0.428*). This could be reflective of there being only 10,022 Educational Assistants in the sample, compared with 30,392 teachers. Moreover, the marginal (insignificant) effects decrease in size as the occupations become less similar to

teachers, with the effect of teacher news stories being a tenth of the size on non-teacher graduates in general.

4.5 Long Run Media Impact

All the estimates presented thus far have been estimating the impact of media coverage that occurred in the twelve months prior to the interview, thereby restricting the impact of news that occurred before this time to have no influence on an individual's decision. This section will vary the exposure length to examine the fade out of these media effects on union membership. Table 11 presents the impact of regional highly relevant media over periods of time increasing in six month periods from six months up to thirty months. I find that stories within the last six months have a similar impact to those over the last twelve, but once the period of time is extended to two years there is no significant impact of total news stories over that period.

This assumes all stories within this time period have the same impact, therefore Table 12 allows for individuals to be more affected by stories that happened more recently and shows the impact of news stories for each six month period up to thirty six months before the interview. Again I find that individuals react in a similar way to stories from the last six to twelve months, and there are effects from stories that happened between a year and eighteen months ago, but stories prior to that have not significant impact. This implies that for those marginal members who were otherwise indifferent to joining, being a union member is not an absorbing state. Alternatively, it could be interpreted that if a potential union member hasn't joined within the first eighteen months of a story being published then that story is not going to impact on their decision.²⁵

As we have seen that there are effects of news stories up to eighteen months beforehand, I now estimate the total impact of media coverage on union membership over time. Allowing for separate effects for the amount of news stories in each six month period up to thirty six months prior to the QLFS interview, both nationally and regionally, I predict the probability of union membership for the years between 1993 and 2010. These estimates are plotted in Figure 6. The model is a good fit as these predicted probabilities fit very closely to the plotted series of actual union density, rarely diverging from the 95% confidence interval band. To estimate the aggregate impact the increased perceived threat

²⁵ Despite observing approximately 25% of teachers twice a year apart, the sample is too small to separate these effects.

has had on union membership, I use these estimates re-predict union membership for each year, but fix the total news coverage to zero. This provides a counterfactual time series of what would have occurred had there been no increase in the threat of allegations. The figure shows that without media coverage the union membership would have been relatively stable at around 81% from 1996 onwards, in contrast to it steadily rising and reaching a peak of 87.5%. In the period from 1999 through to 2009 the probability of union density is significantly greater than estimates where there was no media coverage and between 2002 to 2008 the estimated difference in union membership is 5% points.

4.6 Actual allegations versus media impact

Thus far I have used media coverage as the determinant of the threat of an accusation being made against a teacher. But it may be the case that these news stories reflect a growing number of actual allegations being made against teachers, and the coverage itself has no impact. To the extent that any national increase in allegations would be accounted for with the individual year effects, and local differences in threat rate would similarly be accounted for with the regional effects, we may be convinced that this is the impact of media coverage. However, this makes a strong assumes that the incidence of a news story originating from a region in a given year is not strongly correlated with the number of incidents. I test this directly using the balanced panel of Local Authorities from 2008 to 2010, aggregating totals to be reflective of the region as a whole. The correlation between the incidence of highly relevant news stories and allegations per teacher is 0.27.²⁶ Regressing the number of news stories from a region on the number of allegations per hundred teachers conditional on year and regional effects, still leaves a significant correlation. For each additional allegation per hundred teachers 1.36 additional extremely relevant news stories appear in a national newspaper originating from that region.²⁷ Therefore I reject the assumption that in this limited period the number of news stories is not related to the number of allegations per teacher.

²⁶ The correlation with the total number of news stories in a region was 0.001 and insignificant, however the allegations per teacher would be the parameter of interest in a union demand specification.

²⁷ This result is from a OLS regression of extremely relevant news stories from a region on the number of allegations per hundred teachers in that region. This uses fifteen regions over a three year period with regional and year effects. This has a coefficient of $\beta_{allegations} = 1.364$ and standard error 0.4401. Using the broader classification of highly relevant stories, generates more stories $\beta_{allegations} = 2.90$ and standard error 0.794.

Ideally it would be possible to run a *horse race* between news stories and allegations over the entire sample, to determine which the more important factor is. However I only have the number of allegations for the last three years of the sample and for a limited number of Local Authorities, which limits any inference that can be made. With this in mind, I include the number of allegations per teacher in a region simultaneously with the number of news stories, in a specification similar to 8. This is a greatly reduced sample, but I continue to find that the number of news stories has a significant effect, but the actual rate of allegations is uncorrelated (Table 13). This is indicative evidence that it is the more salient news stories rather than the actual risk of allegations that change an individual's demand for union membership. This may be expected as the underlying actual risk is already accounted for by the teacher and the media coverage are changes to this perceived threat.

5. Conclusions

This paper examines the role of the threat of accusations has had in the demand for trade union membership amongst teachers in the UK. I have found that teachers from regions in which news stories concerning accusations against other teachers originated are more likely to join a union in the following eighteen months. For every ten stories a teacher is 5% more likely to join. These effects are larger if teachers share characteristics with the teacher mentioned in the story, e.g. secondary school teachers react more to stories involving other secondary school teachers, similarly for male teachers. I show that the impact of stories are again larger the more relevant they are to an innocent teacher. In contrast occupations that a less like teachers do not react to these stories.

The specification accurately predicts the changes in union membership since 1993. Setting media stories to zero throughout the period, I forecast that union membership would remain steady at approximately 81% rather than increasing to 87% as seen in the data. This paper provides evidence as to why the unionisation rate amongst some occupational groups with direct and unsupervised interaction with vulnerable members of the public, has increased. Moreover, I provide a further answer to the puzzle of why individuals choose to join the union even if they could free ride and receive the higher pay and working conditions derived through union action without having to pay the union dues. Unions offering a private excludable service can maintain demand for membership, as long as demand for that service remains. The implication for policy is that there may

be an increasing unmet demand for union membership in previously under-unionised service sectors. Moreover if regulations are introduced that protect individuals from allegation, then the demand for union services, and hence membership, will decline. Suggestive evidence for this can be seen in the fall in union density post the 2005 governmental reforms on newspaper reporting, which continued to fall despite the worsening of economic conditions, which is traditionally thought of as a key driver of union demand.

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Table 1: Employee Summary Statistics

	Teachers		All Employees	
	Mean (1)	Std. Dev. (2)	Mean (1)	Std. Dev. (2)
Union Member	0.840	0.367	0.276	0.447
Public Sector	0.886	0.317	0.246	0.431
Male	0.275	0.447	0.525	0.499
Full Time	0.786	0.410	0.738	0.440
University Qualification	0.743	0.437	0.180	0.384
A-Level Qualification	0.761	0.426	0.304	0.460
Age	42.67	10.32	40.29	12.78
<i>Tenure</i>				
less than 3 months	0.066	0.249	0.058	0.235
3 months but less than 6	0.016	0.125	0.047	0.211
6 months but less than 12	0.026	0.158	0.068	0.252
1 year but less than 2	0.082	0.275	0.107	0.309
2 years but less than 5	0.188	0.390	0.207	0.405
5 years but less than 10	0.205	0.403	0.193	0.395
10 years but less than 20	0.241	0.428	0.196	0.397
20 years or more	0.176	0.381	0.123	0.329
<i>Government Region</i>				
Tyne and Wear	0.015	0.122	0.018	0.132
Rest of North East	0.025	0.155	0.024	0.154
Greater Manchester	0.037	0.190	0.039	0.194
Merseyside	0.022	0.145	0.019	0.138
Rest of North West	0.049	0.217	0.050	0.218
South Yorkshire	0.021	0.142	0.021	0.144
West Yorkshire	0.038	0.191	0.037	0.190
Rest of Yorkshire & Humberside	0.028	0.165	0.029	0.167
East Midlands	0.073	0.260	0.074	0.262
West Midlands Metropolitan County	0.041	0.198	0.039	0.193
Rest of West Midlands	0.048	0.213	0.050	0.218
East of England	0.097	0.296	0.099	0.299
Inner London	0.030	0.170	0.034	0.180
Outer London	0.068	0.252	0.066	0.248
South East	0.145	0.352	0.147	0.354
South West	0.079	0.269	0.088	0.283
Wales	0.050	0.217	0.046	0.208
Strathclyde	0.039	0.193	0.035	0.185
Rest of Scotland	0.057	0.232	0.055	0.228
Northern Ireland	0.040	0.195	0.030	0.170
Observations	30,392		988,256	

Source: QLFS 1993-2010 Autumn Survey, sample of all employees 18-64

Notes: Teachers defined as Standard Occupational Classification codes (1993-2000):233, 234, 235 and Standard Occupational Classification codes (2001-2010): 2314, 2315, 2316

Table 2: Summary Statistics –News Coverage 1991-2010

Story Type									
Panel A: All Newspaper Stories									
Relevance of Story	Allegations	<i>Being Sued</i>	<i>Suing</i>	<i>Being Attacked</i>	<i>Criminal Activity</i>	Sacked	<i>Employment Tribunal</i>	<i>Union Activity</i>	Total
Extremely Relevant	322	45	100	4	12	15	61	64	623
Highly Relevant	179	28	52	45	53	36	43	112	548
Little Relevance	155	12	3	19	123	14	12	56	394
Not Relevant	55	1	2	10	68	4	0	4	144
Total	711	86	157	78	256	69	116	236	1709
Panel B: Balanced Newspaper Panel Stories									
Relevance of Story	Allegations	<i>Being Sued</i>	<i>Suing</i>	<i>Being Attacked</i>	<i>Criminal Activity</i>	Sacked	<i>Employment Tribunal</i>	<i>Union Activity</i>	Total
Extremely Relevant	222	27	78	3	6	9	48	48	441
Highly Relevant	115	22	36	29	37	16	35	78	368
Little Relevance	95	5	1	10	77	8	9	46	251
Not Relevant	38	1	2	1	32	0	0	2	76
Total	470	55	117	43	152	33	92	172	1136

Source: LexisNexis 1991-2010. News search of national newspapers with the following term: *headline(teacher) and court or damages or sued or jail or litigation or dismissed or fired or allegations and #GC329#*. National Newspapers: Daily Mail, Daily Star, Mail on Sunday, Morning Star, The Express, Sunday Express, The Daily Telegraph, Sunday Telegraph, The Sun, The News of the World, The Guardian, The Independent, The Observer, The People, The Times, The Sunday Times. The Balanced Panel of Newspaper Stories: Daily Mail, Mail on Sunday, The Guardian, The Independent, The Mirror, Daily Star, Observer, The Times, The Sunday Times

Table 3: Total News Coverage by Story Subject

Panel A: All Newspaper Stories 1992-2010				
News Story Subject	Relevant Stories		Any Relevance Stories	
	Story Type Accusation	All Types	Story Type Accusation	All Types
By School Type				
Secondary School	435 (68.1%)	661 (66.2%)	706 (67.0%)	975 (66.1%)
Primary School	126 (19.7%)	186 (18.6%)	184 (17.5%)	249 (16.9%)
By Teacher Gender				
Male Teacher	327 (51.1%)	469 (46.9%)	591 (56.1%)	762 (51.6%)
Female Teacher	303 (47.4%)	521 (52.2%)	455 (43.2%)	705 (47.8%)
All Stories	639	999	1053	1476
Panel B: Balanced Newspaper Panel Stories 1992-2010				
News Story Subject	Relevant Stories		Any Relevance Stories	
	Story Type Accusation	All Types	Story Type Accusation	All Types
By School Type				
Secondary School	285 (66.3%)	439 (63.9%)	443 (65.0%)	620 (63.7%)
Primary School	90 (20.9%)	142 (20.7%)	128 (18.8%)	182 (18.7%)
By Teacher Gender				
Male Teacher	218 (50.7%)	315 (45.9%)	381 (55.9%)	490 (50.4%)
Female Teacher	200 (46.5%)	362 (52.7%)	289 (42.4%)	471 (48.4%)
All Stories	430	687	677	973

Source: LexisNexis 1991-2010 of National Newspapers, Balanced Panel

Note: Percentages in parentheses represent proportion of all stories of that type on that subject. Story Type: Accusation includes- Allegations, Being Sued and Criminal Activity. Union Activity not included under All Types as is only counted in national totals as not based in one region or reflect a specific teacher type. Total stories do not equal those from Table 3 as some stories are double counted when both male and female teachers are mentioned, or both primary and secondary schools are mentioned.

Table 4: Allegations by Employer and Type of Allegation

Type of Allegation						
Panel A: All Reporting Local Authorities 2007-2011						
Employer	Physical	Emotional	Sexual	Neglect	Other	Total
Education	6,267	932	2,642	316	862	11,019
Foster Carers	1,512	305	388	255	70	2,530
Social Care	1,085	169	356	176	112	1,898
Secure Estate	384	15	26	0	6	431
Health	257	42	177	66	41	583
Voluntary Youth Organisations	203	34	342	23	48	650
Faith	177	8	96	1	12	294
Police	142	33	72	9	12	268
Immigration	39	2	39	6	0	86
Connexions	14	4	14	3	5	40
Youth Offending Teams	10	8	19	6	9	52
Armed Forces	6	0	25	1	0	32
Probation	5	0	2	1	0	8
NSPCC	4	1	2	0	1	8
CAFCASS	1	2	2	1	1	7
Other	1,380	247	941	233	247	3,048
Total by type	11,486	1,802	5,143	1,097	1,426	20,954
Panel B: Balanced Panel of Local Authorities 2008-2010						
Employer	Physical	Emotional	Sexual	Neglect	Other	Total
Education	2,440	284	1,123	111	224	4,182
Foster Carers	647	120	171	98	32	1,068
Social Care	486	76	167	85	48	862
Secure Estate	159	8	12	0	0	179
Health	129	27	90	24	19	289
Voluntary Youth Organisations	84	13	151	13	25	286
Faith	76	3	40	1	5	125
Police	76	23	22	3	3	127
Immigration	11	1	19	3	0	34
Connexions	6	3	7	0	2	18
Youth Offending Teams	3	3	6	6	4	22
Armed Forces	0	0	11	0	0	11
Probation	4	0	1	1	0	6
NSPCC	2	0	1	0	1	4
CAFCASS	0	1	2	0	1	4
Other	465	115	374	94	77	1,125
Total by type	4,588	677	2,197	439	441	8,342

Source: Freedom of Information Requests to English Local Authorities

Note: Lists of responding Local Authorities and balanced Panel of Local Authorities is in Appendix 1

Table 5: Total Recorded Outcomes of Allegations

	Allegation Outcome				Total
	Not Upheld	Police Involvement	Disciplinary Procedures	Referral	
Panel A: All Reporting Local Authorities 2007-2011					
Total	4,680	1,030	3,058	1,373	10,141
Percent of total	46.1%	10.2%	30.2%	13.5%	
Panel B: Balanced Panel of Local Authorities 2008-2010					
Total	3,384	656	2,305	1,022	7,367
Percent of total	45.9%	8.9%	31.3%	13.9%	

Source: Freedom of Information Requests to English Local Authorities

Notes: Not Upheld – No further action after initial consideration, Being unfounded, Being unsubstantiated, Being malicious, Acquittal ; Police Involvement – Criminal investigation, Conviction; Disciplinary Procedures – Disciplinary Action, Suspension, Dismissal, Resignation, Cessation of use, Inclusion on barred/restricted employment list; Referral - Section 47 investigation, Referral to DCSF, Referral to Regulatory Body. Total outcomes do not equal total number of cases as not all cases had an outcome in the last 12 months.

Table 6: Union Membership on News Coverage

Panel A: Extremely Relevant News Stories of Accusations				
P(Union Membership)	(1)	(2)	(3)	(4)
Stories Regionally	0.548** <i>0.235</i>	0.588*** <i>0.206</i>	0.674** <i>0.325</i>	0.498** <i>0.251</i>
Stories Regionally Squared	-0.024 <i>0.018</i>	-0.034** <i>0.015</i>	-0.047** <i>0.019</i>	-0.046*** <i>0.014</i>
Marginal Effect at Mean	0.512** <i>0.234</i>	0.535*** <i>0.207</i>	0.603* <i>0.326</i>	0.428** <i>0.252</i>
Panel B: All Relevant News Stories of Accusations				
P(Union Membership)	(1)	(2)	(3)	(4)
Stories Regionally	0.841*** <i>0.158</i>	0.783*** <i>0.139</i>	0.758*** <i>0.200</i>	0.449*** <i>0.149</i>
Stories Regionally Squared	-0.041*** <i>0.008</i>	-0.039*** <i>0.007</i>	-0.034*** <i>0.008</i>	-0.026*** <i>0.007</i>
Marginal Effect at Mean	0.731*** <i>0.160</i>	0.679*** <i>0.140</i>	0.667*** <i>0.201</i>	0.380** <i>0.150</i>
Panel C: Little/No Relevance News Stories of Accusations				
P(Union Membership)	(1)	(2)	(3)	(4)
Stories Regionally	0.098 <i>0.202</i>	0.169 <i>0.177</i>	0.222 <i>0.153</i>	-0.152 <i>0.146</i>
Stories Regionally Squared	0.015 <i>0.012</i>	0.003 <i>0.010</i>	-0.004 <i>0.005</i>	0.004 <i>0.005</i>
Marginal Effect at Mean	0.120 <i>0.202</i>	0.173 <i>0.177</i>	0.216 <i>0.153</i>	-0.145 <i>0.146</i>
Teacher Characteristics		✓	✓	✓
Regional Effects			✓	✓
Year Effects				✓
Observations	30,392	30,392	30,392	30,392

Source: QLFS 1993-2010

Notes: Estimates from a logit regression of individual decision to join a union. Reporting the marginal effects after transforming by $P(\widehat{Union}) * (1 - P(\widehat{Union}))$. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\overline{s}_t$. Accusation stories are stories involving *Allegations*, *Being Sued* and *Criminal Activity*. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides. Standard errors in *italics*, clustered at the regional level.

Table 7: Union Membership on Regional and National News Coverage of Accusations

P(Union Membership)	Story Relevance		
	<i>Extremely Relevant Stories</i>	<i>Relevant Stories</i>	Little/No Relevance
Stories Regionally	0.481* <i>0.263</i>	0.436*** <i>0.147</i>	-0.159 <i>0.137</i>
Stories Regionally Squared	-0.042*** <i>0.015</i>	-0.022*** <i>0.001</i>	0.005 <i>0.004</i>
Stories Nationally	0.108** <i>0.050</i>	0.030 <i>0.043</i>	-0.205 <i>0.236</i>
Stories Nationally Squared	-0.002* <i>0.001</i>	0.000 <i>0.001</i>	0.005 <i>0.001</i>
Marginal Effect at Mean	0.469* <i>0.270</i>	0.403** <i>0.158</i>	-0.182 <i>0.160</i>
Total Effect at Mean	1.460	1.205	-2.003
Teacher Characteristics	✓	✓	✓
Regional Effects	✓	✓	✓
Time Trend	✓	✓	✓
Observations	30,392	30,392	30,392

Source: QLFS 1993-2010 Notes: Estimates from a logit regression of individual decision to join a union on news stories. Reporting the marginal effects. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\bar{s}_j$. Total effect at mean $(\bar{s}_j\beta + \bar{s}_j^2\beta + \bar{s}\beta + \bar{s}^2\beta)$. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. Stories Nationally is a count for the number of all news stories in the previous 12 months, including stories that could not be allocated to a specific region. Standard errors in *italics*, clustered at the regional level.

Table 8: Union Membership on Union Membership by Teacher and Story School Type

P(Union Membership)	Stories of Accusations		All Story Types	
	Secondary School Teachers	Primary School Teachers	Secondary School Teachers	Primary School Teachers
	(1)	(2)	(3)	(4)
Panel A: Relevant Stories				
Total Marginal Effect	0.696*** <i>0.241</i>	0.042 <i>0.147</i>	0.437** <i>0.196</i>	0.090 <i>0.136</i>
Panel B: Relevant Secondary School Stories				
Total Marginal Effect	0.907*** <i>0.229</i>	0.048 <i>0.306</i>	0.389* <i>0.239</i>	0.127 <i>0.218</i>
Panel C: Relevant Primary School Stories				
Total Marginal Effect	0.131 <i>0.664</i>	0.627 <i>0.672</i>	0.057 <i>0.461</i>	0.632* <i>0.403</i>
Teacher Characteristics	✓	✓	✓	✓
Regional Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Observations	13,949	14,076	13,949	14,076

Source: QLFS 1993-2010 Notes: Estimates from a logit regression of individual decision to join a union on news stories. Reporting the marginal effects at mean after accounting for quadratic terms. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\bar{y}$. All estimates conditional on teacher characteristics. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. Standard errors in *italics*, clustered at the regional level.

Table 9: Union Membership on Union Membership by Teacher and Story Gender

P(Union Membership)	Stories of Accusations		All Story Types	
	Male Teachers	Female Teachers	Male Teachers	Female Teachers
	(1)	(2)	(3)	(4)
Panel A: Relevant Stories				
Total Marginal Effect	0.038 <i>0.154</i>	0.51** <i>0.201</i>	0.147 <i>0.18</i>	0.294 <i>0.136</i>
Panel B: Relevant Male Teacher Stories				
Total Marginal Effect	0.591* <i>0.305</i>	0.897** <i>0.374</i>	0.564* <i>0.428</i>	0.473* <i>0.363</i>
Panel C: Relevant Female Teacher Stories				
Total Marginal Effect	-0.055 <i>0.305</i>	0.386 <i>0.412</i>	0.086 <i>0.220</i>	0.128 <i>0.221</i>
Teacher Characteristics	✓	✓	✓	✓
Regional Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Observations	8,361	22,031	8,361	22,031

Source: QLFS 1993-2010 Notes: Estimates from a logit regression of individual decision to join a union on news stories. Reporting the marginal effects at mean after accounting for quadratic terms. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\bar{y}$. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. Standard errors in *italics*, clustered at the regional level.

Table 10: Union Membership on Union Membership by Occupation

Occupation Group	Teachers	Education Assistants	Higher Education	Non Teacher Public Sector Graduates	Non Teacher Graduates
P(Union Membership)	(1)	(2)	(3)	(4)	(5)
Relevant Stories	0.498**	0.688	0.235	0.161	0.052
Regionally	<i>0.251</i>	<i>0.577</i>	<i>0.422</i>	<i>0.202</i>	<i>0.090</i>
Relevant Stories	-0.046***	-0.021	-0.018	-0.001	-0.000
Regionally Squared	<i>0.014</i>	<i>0.023</i>	<i>0.018</i>	<i>0.010</i>	<i>0.005</i>
Marginal Effect at Mean	0.428* <i>0.252</i>	0.622 <i>0.582</i>	0.185 <i>0.425</i>	0.133 <i>0.204</i>	0.051 <i>0.091</i>
Teacher Characteristics	✓	✓	✓	✓	✓
Regional Effects	✓	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓	✓
Observations	30,392	10,022	9,007	49,671	154,932

Source: QLFS 1993-2010 Notes: Reporting the marginal effects after transforming by $P(\widehat{Union}) * (1 - P(\widehat{Union}))$. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\bar{y}$. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. SOC codes: Educational Assistants 652, 6124; Higher Education 230, 231, 2311, 2312. Standard errors in *italics*, clustered at the regional level.

Table 11: Union Membership on Union Membership by News Coverage Period

News Coverage period	In last 6 months	In last 12 months	In last 18 Months	In last 24 Months	In last 30 Months	In last 36 Months
P(Union Membership)	(1)	(2)	(3)	(4)	(5)	(6)
Relevant Stories	0.540**	0.449***	0.521***	0.331***	0.141	0.065
Regionally	<i>0.260</i>	<i>0.149</i>	<i>0.107</i>	<i>0.119</i>	<i>0.103</i>	<i>0.104</i>
Relevant Stories	-0.058***	-0.026***	-0.024***	-0.014**	-0.005	-0.001
Regionally Squared	<i>0.019</i>	<i>0.007</i>	<i>0.004</i>	<i>0.005</i>	<i>0.004</i>	<i>0.004</i>
Marginal Effect at Mean	0.472* <i>0.261</i>	0.380** <i>0.150</i>	0.429*** <i>0.425</i>	0.258** <i>0.204</i>	0.112 <i>0.106</i>	0.055 <i>0.109</i>
Teacher Characteristics	✓	✓	✓	✓	✓	✓
Regional Effects	✓	✓	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓	✓	✓
Observations	30,392	30,392	30,392	30,392	30,392	30,392

Source: QLFS 1993-2010 Notes: Reporting the marginal effects after transforming by $P(\widehat{Union}) * (1 - P(\widehat{Union}))$. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. Marginal effect at mean calculated by $\beta_1 + 2\beta_2\bar{y}$. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous X months. Standard errors in *italics*, clustered at the regional level.

Table 12: Union Membership on Union Membership by
News Lag Period

News Lag period	Marginal Effects	Total Marginal Effect
P(Union Membership)	(1)	(2)
Stories Last 6 Months	0.487**	0.424**
	<i>0.214</i>	<i>0.215</i>
Stories Last 6 Months Squared	-0.053***	
	<i>0.019</i>	
Stories 7-12 Months Previous	0.508***	0.453***
	<i>0.148</i>	<i>0.148</i>
Stories 7-12 Months Previous Squared	-0.037***	
	<i>0.008</i>	
Stories 13-18 Months Previous	0.948***	0.861**
	<i>0.348</i>	<i>0.349</i>
Stories 13-18 Months Previous Squared	-0.078***	
	<i>0.030</i>	
Stories 19-24 Months Previous	-0.182	-0.166
	<i>0.217</i>	<i>0.218</i>
Stories 19-24 Months Previous Squared	0.010	
	<i>0.013</i>	
Stories 25-30 Months Previous	-0.319	-0.280
	<i>0.326</i>	<i>0.328</i>
Stories 25-30 Months Previous Squared	0.035	
	<i>0.032</i>	
Stories 31-36 Months Previous	-0.385	-0.348
	<i>0.296</i>	<i>0.296</i>
Stories 25-30 Months Previous Squared	0.015	
Teacher Characteristics	✓	✓
Regional Effects	✓	✓
Year Effects	✓	✓
Obs	30,392	30,392

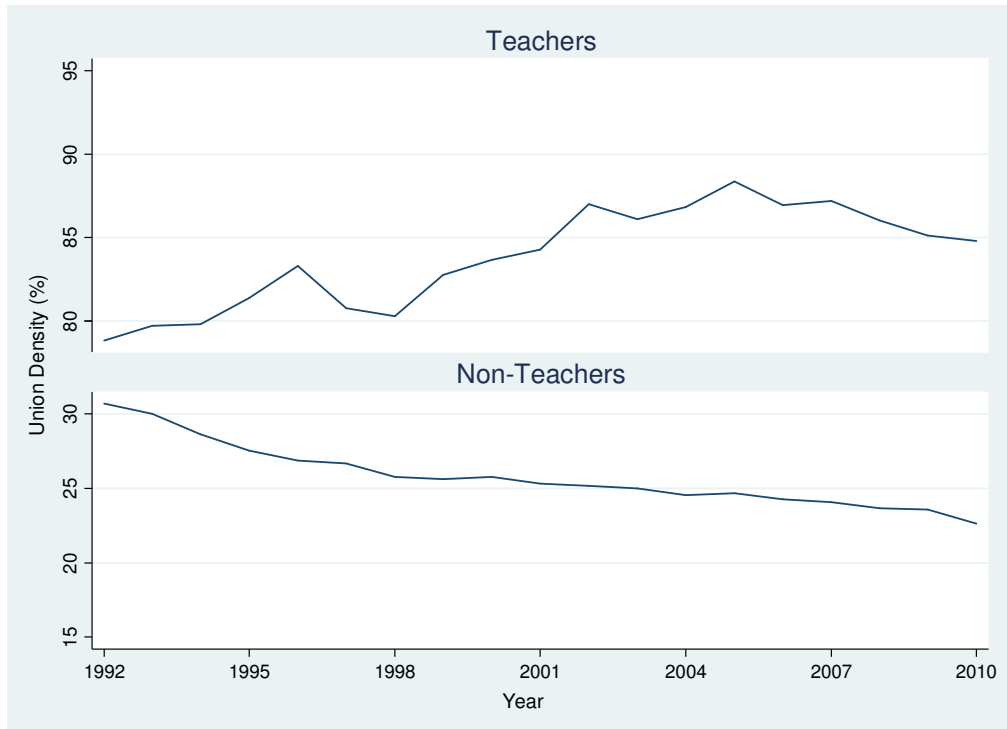
Source: QLFS 1993-2010 Notes: Estimates from a logit regression. Reporting the marginal effects All coefficients and standard errors are multiplied by 100 for ease of interpretation. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Standard errors in *italics*, clustered at the regional level.

Table 13: Union Membership on News Coverage of Accusations and Actual Allegations

News Relevance	Extremely Relevant Stories			Relevant Stories		
	(1)	(2)	(3)	(4)	(5)	(6)
P(Union Membership)						
Stories Regionally		0.348** <i>0.140</i>	0.335*** <i>0.109</i>		0.220 <i>0.173</i>	0.197 <i>0.168</i>
Stories Regionally Squared		-0.055** <i>0.021</i>	-0.040** <i>0.019</i>		-0.050 <i>0.093</i>	-0.046 <i>0.065</i>
Allegations Per 100 Teachers	-0.310* <i>0.227</i>		-0.355 <i>0.215</i>	-0.310* <i>0.227</i>		-0.388 <i>0.253</i>
Teacher Characteristics	✓	✓	✓	✓	✓	✓
Regional Effects	✓	✓	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓	✓	✓
Observations	3,399	3,399	3,399	3,399	3,399	3,399

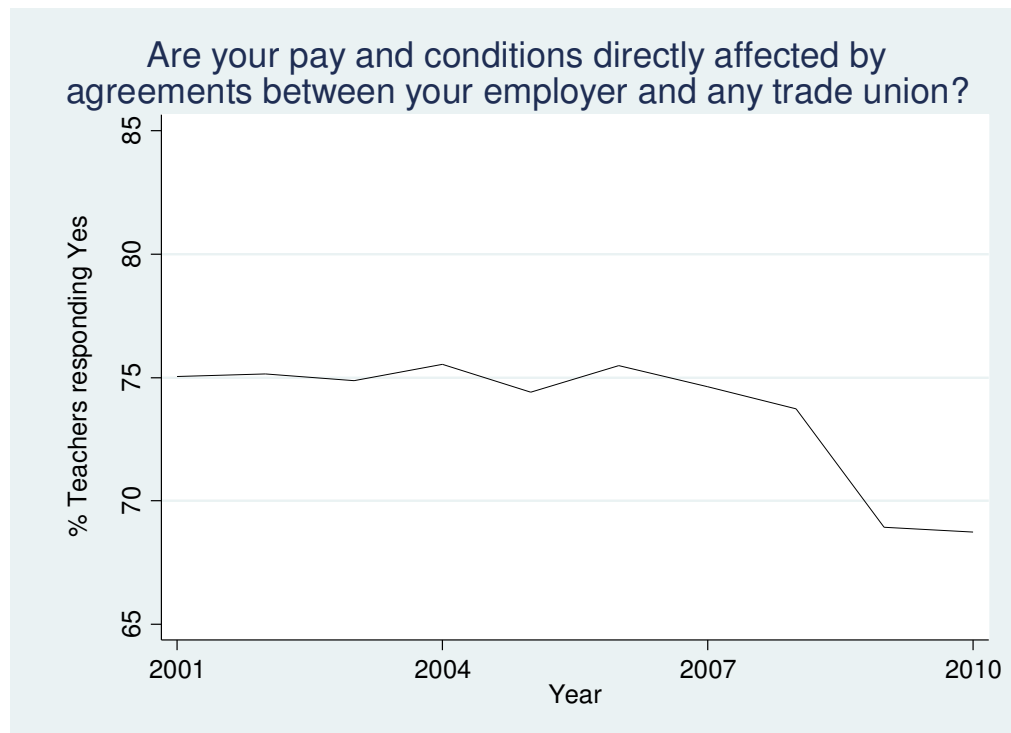
Source: QLFS 2008-2010 Notes: Estimates from a logit regression. Reporting the marginal effects All coefficients and standard errors are multiplied by 100 for ease of interpretation. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Standard errors in *italics*, clustered at the regional level.

Figure 1: Union Density Time Series by Occupation



Source: QLFS 1992-2010

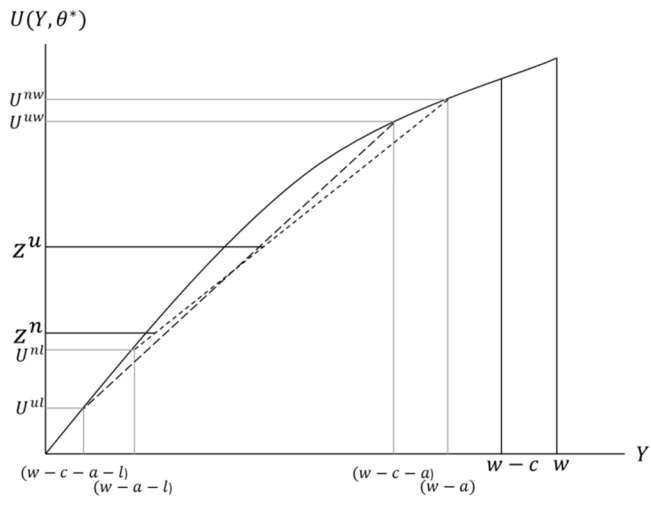
Figure 2: Teacher Perception of Union Power



Source: QLFS 2001-2010: All employees, regardless of union status were asked "Are your pay and conditions directly affected by agreements between your employer and any trade union?"

Figure 3: Illustration of Union Membership Decision

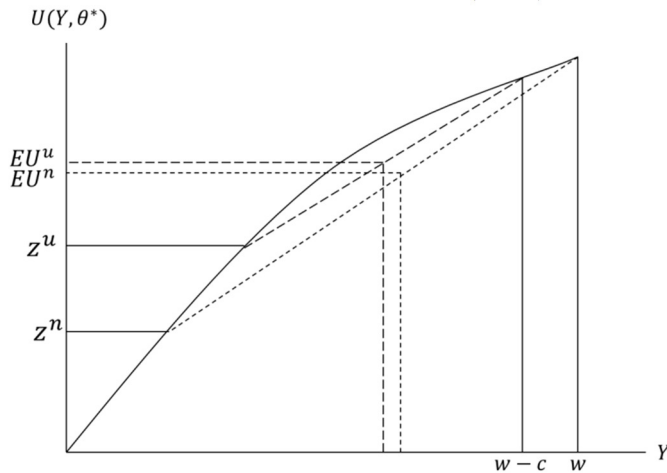
Panel A: Utility curve of teacher $U(Y, \theta^*)$ with wages w , union dues c .



Notes: U^{uw} (U^{ul}) is the utility of a union member who has had an allegation made against them and won (lost) their case. Similarly for non-members U^{nw} (U^{nl}). Z^u (Z^n) represents the expected utility once an allegation has been made for a (non) union member. a represents the cost of an allegation and l the additional cost of being found guilty.

----- Union Member
 ----- Non Union Member

Panel B: Expected utilities of teacher $U(Y, \theta^*)$ with a high perceived risk $\delta(s)=0.5$

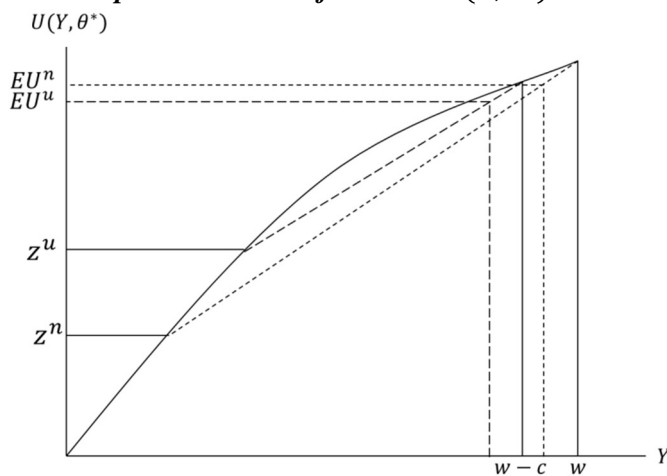


Notes: EU^u (EU^n) represents the expected utility of a (non) union member for a given threat level $\sigma(s)$.

When the risk is high $\delta(s)=0.5$, at the midpoint of each cord, then $EU^u > EU^n$.

----- Union Member
 ----- Non Union Member

Panel C: Expected utilities of teacher $U(Y, \theta^*)$ with a low perceived risk $\delta(s)=0.1$

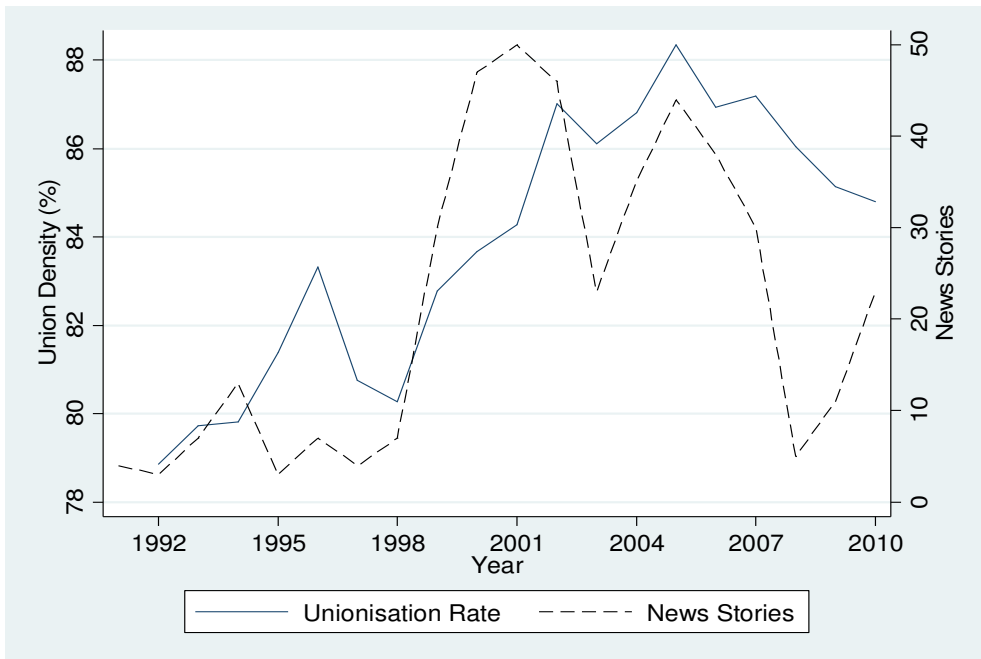


Notes: EU^u (EU^n) represents the expected utility of a (non) union member for a given threat level $\sigma(s)$.

When the risk is low $\delta(s)=0.1$, teachers are at a higher point on each cord and then $EU^u > EU^n$.

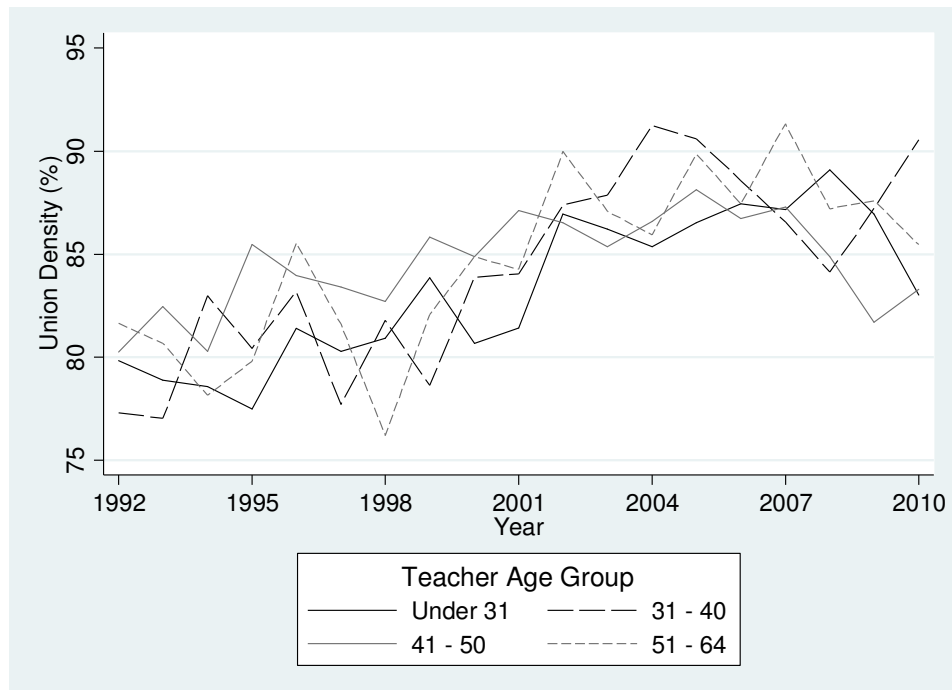
----- Union Member
 ----- Non Union Member

Figure 4 Union Density and Relevant News Stories over time



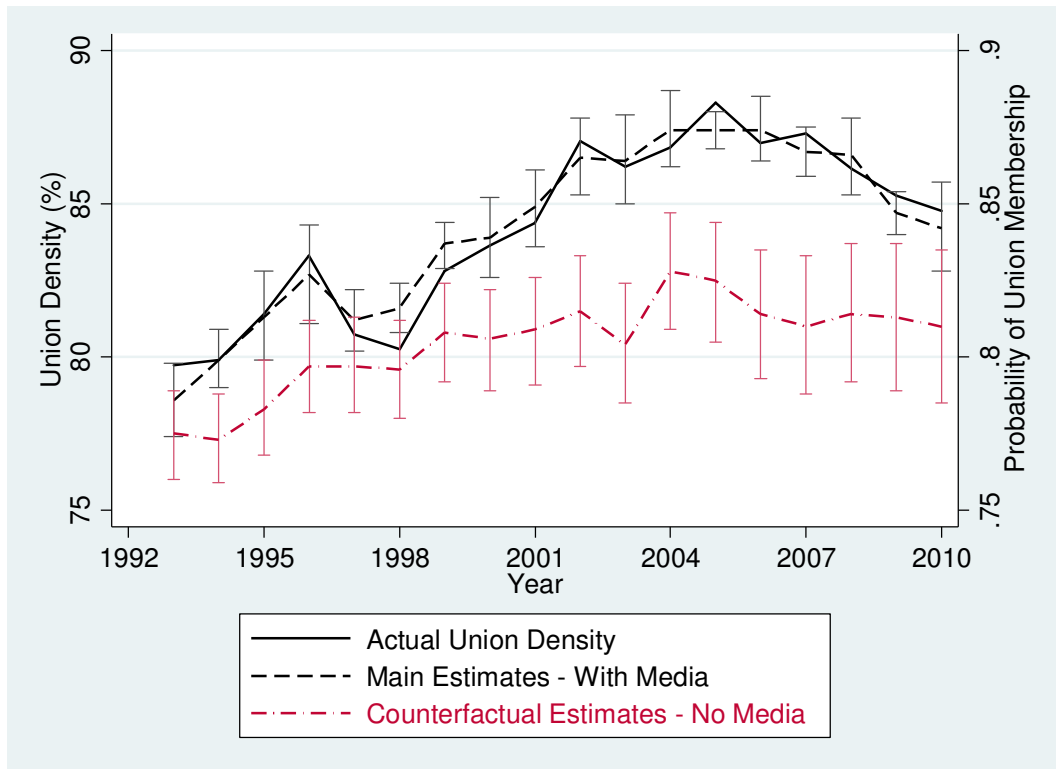
Source: QLFS 1992:2010, Lexis Nexis 1992-2010 Notes: Annual union density based on mean union membership of teachers based on QLFS reporting year. News story total based on total relevant news stories about teachers concerning Allegations; Being Sued, and Criminal Activity over a calendar year.

Figure 5 Union Density and Relevant News Stories over time



Source: QLFS 1992:2010 Notes: Annual union density based on mean union membership of teachers based on QLFS reporting year.

Figure 6 Predicted Union Density with and without Media Reports



Source: QLFS 1993-2010 Notes: Predictions of probability union from a logit regression for each year. Allow separate effect of news stories regionally and nationally (and their square), for each six month period up to thirty six months prior to the interview. The counterfactual estimates generated with the same parameters apart from setting the media terms to zero. Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 6 months, 7-12 months, 13-18 months, 19-24 months, 25-30 months, 31-36 months. Similarly Stories Nationally is a count for the number of all news stories, including stories that could not be allocated to a specific region. Standard errors in *italics*, clustered at the regional level.

Appendix 1: Local Authorities who responded to the Freedom of information request regarding allegations

All Local Authorities who responded (Years of data):

Local Authority (Years), Barnet (2) Barnsley (3), Bath and North East Somerset (3), Bedford (1), Bexley (2), Blackburn with Darwen (3), Bolton (3), Bracknell Forest (2), Bradford (3), Brent (4), Bristol City (3), Bromley (3), Buckinghamshire (4), Calderdale (3), Cambridge (2), Camden (3), Central Bedfordshire (1), Cheshire East Council (1), Cheshire West and Chester (2), Cornwall (1), Croyden (3), Cumbria (3), Derby (1), Derbyshire (3), Devon (1), Doncaster (3), Dorset (3), Dudley (3), Durham (3), East Riding of Yorkshire (4), East Sussex (2), Essex (4), Gateshead (3), Gloucestershire (2), Greenwich (4), Hackney (1), Hammersmith and Fulham (2), Hampshire (3), Haringey (2), Havering (4), Hertfordshire (2), Hillingdon (3), Hounslow (2), Isle of Scilly (4), Isle of Wight (3), Islington (4), Kensington and Chelsea (2), Kent (4), Kingston Upon Hull (3), Kingston Upon Thames (4), Kirklees (3), Knowsley (3), Lancashire (4), Leeds (4), Leicester (3), Lewisham (4), Lincolnshire (1), Liverpool (1), Luton (2), Manchester (2), Medway (3), Milton Keynes (1), Newham (1), Norfolk (3), North East Lincolnshire (3), North Lincolnshire (1), North Somerset (4), North Yorkshire (3), Northumberland (4), Nottingham City (4), Nottingham County (2), Oldham (4), Oxfordshire (4), Peterborough (1), Plymouth (4), Poole (3), Reading (4), Redbridge (3), Richmond (1), Rochdale (3), Rotherham (1), Rutland (4), Salford (4), Sandwell (3), Scilly Isles (4), Sheffield (2), Shropshire (1), Slough (2), Solihull (4), Somerset (4), South Gloucester (2), Southampton (2), Southend (3), St Helens (4), Stockport (4), Suffolk (3), Surrey (2), Sutton (2), Swindon (2), Telford and Wrekin (2), Thurrock (4), Torbay (3), Trafford (2), Wakefield (3), Walsall (4), Waltham Forest (3), Wandsworth (4), Warrington (2), West Berkshire (2), West Sussex (3), Wigan (2), Wiltshire (2), Winsor and Maidenhead (2), Wirral (4), Wokingham (2), Wolverhampton (2), Worcestershire (4), York (3), All (323)

Balanced Panel of Local Authorities 2008-2010:

Barnsley, Bath and North East Somerset, Blackburn with Darwen, Bolton, Bradford, Brent, Bristol City, Bromley, Buckinghamshire, Calderdale, Camden, Croydon, Cumbria, Derbyshire, Doncaster, Dorset, Dudley, Durham, East Riding of Yorkshire, Essex, Greenwich, Hampshire, Havering, Hillingdon, Isle of Scilly, Isle of Wight, Islington, Kent, Kingston Upon Hull, Kingston Upon Thames, Kirklees, Lancashire, Leeds, Leicester, Lewisham, Medway, North East Lincolnshire, North Somerset, North Yorkshire, Northumberland, Nottingham City, Oldham, Oxfordshire, Plymouth, Poole, Reading, Redbridge, Rutland, Salford, Sandwell, Sicily Isles, Solihull, Somerset, Southend, St Helens, Stockport, Suffolk, Thurrock, Torbay, Wakefield, Walsall, Waltham forest, Wandsworth, West Sussex, Wirral, Worcestershire

Appendix Tables

Appendix Table 1: Reasons for Union Membership

“What were the MAIN reasons why you initially joined a teacher union?”

Belief in the union movement	40%
To improve job security	44%
To improve terms and conditions	56%
For solidarity with other workers	24%
Advice/opinion on educational policy	62%
Support in the event of allegations from pupils	85%
No particular reason	3%
<i>Observations</i>	<i>176</i>

Source: Online Survey of Hertfordshire Teachers 2010/11 for unrelated evaluation of UK Resilience Programme on teaching staff (Murphy 2011)

Appendix Table 2: Media Rubric

	Allegations	Being Sued	Suing	Being Attacked	Criminal Activity	Sacked	Employment Tribunal	Union Activity	Total
Extremely Relevant	Found innocent, case thrown out	Teacher sued for school activity	Sues for damages/libel	Pupil attacks teacher in classroom	Manslaughter of pupil charges	For health and safety or allegations	Legitimate Unfair dismissal	Discuss threat of allegations/being sued	
<i>Stories</i>	322	45	100	4	12	15	61	64	623
Highly Relevant	Currently on trial, no verdict	May be sued, could be sued	Lose case, indirectly related to school	Parent-Pupil attacks teacher outside of school	Criminal accusations from pupil	Inappropriate behaviour, not up to standards	Other Unfair dismissal, inappropriate behaviour	As above but brief mention or union demands	
<i>Stories</i>	179	28	52	45	53	36	43	112	548
Little Relevance	Guilty of lesser offence, on trial of hard offence	School/Council sued	Threats to sue for indirect teaching	Attacked by ex pupil	School related crime	Miscellaneous school related activity	Union back the dismal	Comment on education policy	
<i>Stories</i>	155	12	3	19	123	14	12	56	394
No Relevance	Admits guilt of extreme sexual abuse	Non school related activity	Non school related activity	Non school related activity	Child pornography /murder	Non-school related activity	Non-school related activity	Anti-union members	
<i>Stories</i>	55	1	2	10	68	4	0	4	144
Total	711	86	157	78	256	69	116	236	1709

Appendix Table 3: Union Membership by Teacher and Story School Type – Showing Quadratic Terms

Probability of Union Membership	Accusation Stories		All Story Types	
	Secondary School Teachers	Primary School Teachers	Secondary School Teachers	Primary School Teachers
	(1)	(2)	(3)	(4)
Panel A: Relevant Stories				
Stories Regionally	0.795***	0.066	0.524***	0.127
	<i>0.239</i>	<i>0.146</i>	<i>0.193</i>	<i>0.134</i>
Stories Regionally Squared	-0.035**	-0.009	-0.020***	-0.009
	<i>0.010</i>	<i>0.007</i>	<i>0.007</i>	<i>0.006</i>
Panel B: Relevant Secondary School Stories				
Secondary Stories	1.000***	0.063	0.447*	0.151
	<i>0.228</i>	<i>0.304</i>	<i>0.238</i>	<i>0.217</i>
Secondary Stories Squared	-0.049**	-0.008	-0.021**	-0.009
	<i>0.001</i>	<i>0.015</i>	<i>0.010</i>	<i>0.010</i>
Panel C: Relevant Primary School Stories				
Primary Stories	0.11	0.685	-0.009	0.701*
	<i>0.663</i>	<i>0.671</i>	<i>0.457</i>	<i>0.352</i>
Primary Stories Squared	0.036	-0.108*	0.068	-0.079*
	<i>0.069</i>	<i>0.060</i>	<i>0.064</i>	<i>0.035</i>
Observations	13,949	14,076	13,949	14,076

Source: QLFS 1993-2010 Notes: Estimates from a logit regression of individual decision to join a union on news stories. Reporting the marginal effects at mean. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. All estimates conditional on teacher characteristics Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. Standard errors in *italics*, clustered at the regional level.

Appendix Table 4: Union Membership by Teacher and Story School Type – Showing Quadratic Terms

Probability of Union Membership	Accusation Stories		All Story Types	
	Male Teachers	Female Teachers	Male Teachers	Female Teachers
	(1)	(2)	(3)	(4)
Panel A: Relevant Stories				
Stories	0.075	0.594***	0.218	0.363***
	<i>0.154</i>	<i>0.200</i>	<i>0.179</i>	<i>0.135</i>
Stories Squared	-0.015**	-0.031**	-0.018	-0.016**
	<i>0.006</i>	<i>0.009</i>	<i>0.006</i>	<i>0.005</i>
Panel B: Relevant Male Teacher Stories				
Male Stories	0.714*	1.090***	0.684**	0.602*
	<i>0.401</i>	<i>0.367</i>	<i>0.319</i>	<i>0.347</i>
Male Stories Squared	-0.105**	-0.151***	-0.069	-0.067
	<i>0.047</i>	<i>0.055</i>	<i>0.051</i>	<i>0.056</i>
Panel C: Relevant Female Teacher Stories				
Female Stories	-0.036	0.426	0.130	0.152
	<i>0.304</i>	<i>0.411</i>	<i>0.219</i>	<i>0.220</i>
Female Stories Squared	-0.016	-0.028	-0.020	-0.009
	<i>0.015</i>	<i>0.022</i>	<i>0.008</i>	<i>0.009</i>
Observations	8,361	22,031	8,361	22,031

Source: QLFS 1993-2010 Notes: Estimates from a logit regression of individual decision to join a union on news stories. Reporting the marginal effects at mean. All coefficients and standard errors are multiplied by 100 for ease of interpretation. Estimates can be read a percentage change in probability. All estimates conditional on teacher characteristics Accusation stories are stories involving *Allegations, Being Sued and Criminal Activity*. Relevant Stories include both Extremely and Highly relevant news stories. Stories Regionally is a count for the number of news stories that originated in the region that the teacher resides in the previous 12 months. Standard errors in *italics*, clustered at the regional level.