Centre for Risk & Insurance Studies

enhancing the understanding of risk and insurance

Nottingham University Business School

The impact of the Woolf reforms on costs and delay

Paul Fenn, Neil Rickman, Dev Vencappa

CRIS Discussion Paper Series – 2009.I

The impact of the Woolf reforms on costs and delay[1]

March 2009

Paul Fenn*

Neil Rickman+

Dev Vencappa*

* Centre for Risk and Insurance Studies, Nottingham University Business School

+ Department of Economics, University of Surrey

[1] This paper originated from a project undertaken on behalf of the Department for Constitutional Affairs in April 2005. We acknowledge the financial support of the DCA; however, our findings are not necessarily the views of the DCA. Any quotation or citation should be cleared with the authors.

The impact of the Woolf reforms on costs and delay

Paul Fenn, Neil Rickman and Dev Vencappa

Abstract

In his Interim Report in 1995, Lord Woolf identified the "key problems facing civil justice today" as cost, delay and uncertainty. His solution to these problems (published in 1996) was a detailed rewriting of the rules of civil procedure, which were subsequently implemented as the Civil Procedure Rules (CPR) in 1999. Clearly, it is important that such significant and far-reaching reforms are evaluated: both to see how they have operated and to learn for the future. We have access to a large quantity of data from insurers and solicitors relating to both pre- and post-Woolf cases so we can, for the first time, analyse statistically the effects of the reforms. In particular, we focus on the "key problems" identified by Lord Woolf in 1995: cost and delay.

1. Introduction

In 1993, Lord Woolf was asked by the Lord Chancellor to conduct an investigation into the operation of the rules for civil procedure in England and Wales. The request came against a background of growing evidence to suggest that civil litigation in England and Wales was costly, time-consuming, complex and adversarial – all to the point where some potential litigants may be deterred from pursuing a claim or a defence. In his Interim Report in 1995, Lord Woolf identified the "key problems facing civil justice today" as cost, delay and uncertainty.

Lord Woolf's solution to these problems (published in 1996) was a detailed rewriting of the rules of civil procedure. Specific changes were designed for particular categories of personal injury. However, the broad thrust of the proposals centred around two features: pre-action protocols to regulate activity prior to the filing of a claim, and a raft of rules to tighten activity once a claim had been made. In the former case, the intention was to ensure that the parties had the clearest possible view of each other's position at an early stage so that agreements could be encouraged and litigation avoided. In the latter case, a series of tight timetables (with cost penalties for non-adherence), cost-containment measures (e.g. limiting the number of experts called at trial) and new rules (e.g. Offers into Court) were designed to minimize delay and strategic behaviour once litigation was underway.

The new rules came into force in 1999 and represent a bold attempt to manage litigation (and pre-litigation) activity more effectively than had happened before. Clearly, it is important that such significant and far-reaching reforms are evaluated: both to see how they have operated and to learn for the future. Until now, the relative nascence of the new rules has prevented them from receiving rigorous statistical evaluation. To the extent that this would require a comparison between pre- and post-Woolf claims, average case length may have created a biased post-Woolf sample. One solution to this problem is to discuss the effects of the reforms with those directly affected: practitioners, insurers and claimants. This is the approach adopted by Goriely et al (2002). On balance, they find a positive response to the reforms. Interestingly, however, they make the following observation:

> *"There is some evidence, based on insurers' analyses, of substantial increases in average case costs since the [Woolf] reforms were introduced in 1999. This is an issue that needs to be investigated further, through a deeper analysis of data from a wider range of companies. It would be particularly interesting to include the cost of litigated cases, as well as those settled in-house." (p. 181).*

Fenn and Rickman (2003) presented the first statistical analysis of data that, in principle, could shed some light on the effects of Woolf and it is this that we seek to build upon in the current paper. We have access to a large quantity of data generated by pre- and post-Woolf cases so we can, for the first time, analyse the effects of the reforms. In particular, we focus on the "key problems" identified by Lord Woolf in 1995: cost and delay. Is there evidence of reduced cost and/or delay in personal injury cases, as envisaged by Lord Woolf?

The paper is structured as follows. In the next section, we set out some hypotheses about potential effects of the Woolf reforms. This is followed by a discussion of our data and methodology, then two sections in which our time-series and cross – sectional results are presented. A final section concludes.

2. Hypotheses

As we have explained, Lord Woolf's reforms aimed at managing cost and delay in civil claims in England and Wales. He directed his proposals at both pre- and post-action behaviour. We consider each in turn. It should be noted that, without formal modelling of the potential effects of the reforms, we are unable to make strong predictions. Instead, we use this section to motivate the issues we investigate in our empirical work below. We do this by illustrating the fact that Woolf's reforms may, indeed, be expected to have effects on the variables we study.

Pre-action claims

If we wish to evaluate the effects of Lord Woolf's reforms, we need to compare an equivalent set of pre- and post-Woolf claims. If we think about claims during the stage before an action has been filed, we might expect the following:

1. Pre-action protocols are designed to provide some structure for the pre-action stage of claims and to prevent litigation being started without the grounds for doing so having been clearly understood. It seems likely that these will, therefore, increase the duration and cost of pre-action activity. In principle, this need not be the case: it may depend on the strategies adopted by the claimant's solicitor when pursuing the claim (see Genn, 1984). Solicitors taking a relatively cooperative approach to claims may have taken time finally to file an action. In this situation, however, one might expect to find low costs associated with high duration (i.e. the cooperative strategy may not have involved significant work). If so, an increase in pre-action cost and duration would be consistent with a 'Woolf-effect'.
2. Lord Woolf's reforms may also have an indirect effect on costs and delay at the pre-action stage. To the extent that post-action claims are tightly monitored, with penalties for non-compliance, we might expect solicitors to 'front-load' their work in order to be prepared once

litigation has been commenced. This would involve additional work, costing time and money. Notice that this effect may be distinguished from the above if we are able to control for (say) duration when analyzing cost so that any increase in cost is the result of more intense work effort, rather than delay.

Post-action claims

If pre-action activity is used to produce and share information, and to clarify the issues between the parties, we would expect post-action phases of litigation to be both shorter and cheaper under Woolf. The combined effect of pre-and post-action changes on the overall cost and duration of claims is therefore ambiguous (the gains from improved case management may or may not be offset by the extra front-loading costs and delays).

We now proceed to perform the first large-scale statistical tests of these hypotheses, using both cross-section and time-series data. We begin by explaining our data and techniques.

3. Data and methodology

3.1. Introduction

Having established the theoretical possibility that personal injury claims run under procedures implemented by Woolf may have significantly different durations and costs by comparison with similar claims run under the previous set of rules, we are faced with the task of testing these hypotheses empirically. We begin by noting that the main difficulty with testing for a Woolf impact arises from the potentially long intervals between the initiation of personal injury claims and their outcomes; for instance there are claims still not concluded which began under pre-Woolf rules. We note also the inferential problems caused by the (near) simultaneous introduction of recoverable CFAs as well as the recent satellite litigation over costs. Consequently various multivariate cross-section and time-series techniques are required using outcome data from claims opened both before and after Woolf. Acquiring data with sufficient case-level detail which has been collected consistently over a sufficient period of time is not easy. We are fortunate in being able to draw on data collected (or provided to us) during previous research projects funded by the DCA (LCD) on related topics. Some of these datasets have more detail than others. Some are drawn from single company sources, some are drawn more widely. Some consist of data from only one type of personal injury claim (RTA, EL etc). Our objective is to draw from a sufficiently diverse set of sources such that the robustness of our findings can be determined.

3.2 Available datasets

a. Our first LCD study on the funding of personal injury litigation (Fenn, Rickman, Gray and Carrier, 2002) provides claim level data with detailed information about case complexity and timing of litigation events[2]; the dataset consists of closed claims obtained from claimant solicitor firms from 1999-2001. Numbers are relatively small (635 cases) but this is the only dataset which allows us to take into account direct measures of case

[2] The sample consisted of 50% RTA claims, 21% EL, 18% PL, and 11% other.

complexity as well as case value and costs. It is also the only source of data on the timing of proceedings.

b. As part of our study for the CJC on predictable costs (Fenn and Rickman, 2003), data on 42184 settled RTA claims was obtained from a prominent cost negotiator, which included data from a large number of motor insurers over the period 2000-2002. All claims in this dataset were closed after Woolf, but many started before Woolf. Data are available on settlement amounts, whether a CFA was claimed, and whether proceedings were issued or not[3]. No data are available on zero damage claims (i.e. those which were withdrawn/repudiated).

c. As part of an extension to the same CJC work, a large defendant insurer provided data on a large (unsampled) number of closed EL claims from 1997-2003. Some of the claims were opened and closed before Woolf, some opened and closed after Woolf. Data are present on settlement amounts, whether a CFA was applicable and whether proceedings issued or not. Data are also available on zero damage claims. The dataset contains records of 35910 closed Accident EL claims with damages ranging between £0 and £ 2 millions, of which 8486 claims were litigated. The closure date of these cases runs between 2st of January 1997 to 31st December 2003. The earliest case commencement date recorded is the 8th of June 1984.

We believe these datasets provide a sufficiently wide coverage of the legal services market in relation to personal injury litigation. The unit of analysis is the individual claim, and while the sampling is clustered by necessity, the sample sizes are in most cases very high[4]. Moreover, as stated above, we have drawn from a variety of sources representing all sides of the market.

---

[3] 38,752 cases were closed prior to litigation; 3,432 cases were closed after litigation.

[4] Although they are of course a relatively small proportion of the total market [by comparison with the population of claims as reported by the Compensation Recovery Unit (CRU) in 2003, the RTA claims in dataset [b] represent 4.7% of market and the EL claims in dataset [c] represent 8% of the market]. The key point, however, is that large samples randomly drawn from the population of claims can be used to test hypotheses using tools of statistical inference. We acknowledge that the

3.3 Definition of terms

Because we have necessarily been restricted to using the data definitions as supplied to us in the datasets described above, there may be some unknown sources of inconsistency in terminology across these datasets. To the extent that it is possible, we have attempted to use the following terms consistently in this paper:

- *settlement*: where the claim outcome involved the payment of agreed damages to a claimant
- *abandonment*: where the claim was discontinued without payment of damages
- *commencement*: date the claim is first notified to the defendant.
- *closure*: date the case is recorded as closed (settled or abandoned) in the dataset. For datasets (a) and (c), this was the date at which the file was closed after payment of any costs. For dataset (b) it was possible to use either the date the cost negotiator returned the file after agreeing costs, or the date the settled claim was received from the defendant with a view to negotiating costs[5].
- *duration/delay*: the number of days between commencement and closure of a claim, where these terms are defined as above.
- *costs*: for datasets (a) and (b) these represent the base costs of a case (including VAT but excluding disbursements, success fees and ATE

clustering of our samples (b) and (c) across a limited number of insurers will result in some unknown loss in efficiency which is difficult to estimate given insufficient information to estimate the variation of outcomes across as well as within firms. Consequently, extrapolating our results to the entire personal injury market should be done with caution, as we emphasise in our conclusion to this study.

[5] We estimated results using both definitions of closure; however, in order to remove the effect of the slowdown in cost negotiations during the period of satellite litigation over costs in 2003, we use the date the claim was received from the defendant in the results reported below.

premiums). For dataset (c), no breakdown was available between disbursements and base costs, and the sum of these was used in estimation[6].

- *litigated*: a closed claim is defined as "litigated" if legal proceedings had been issued prior to its closure.

3.4 Estimation methods

We have undertaken two levels of analysis – time-series and cross-sectional. The main focus of estimation is the impact of Woolf on delay and costs. Because costs increase as chargeable time elapses, which is in turn likely to be correlated with delay, we first determine whether Woolf has an impact on delay, then whether Woolf has an impact on costs, conditioned on delay.

i. time series estimation

Our time-series analysis has drawn on dataset c) as described above, collapsed into a dataset of monthly means over the period 1997-2003. We explore the determinants of mean claim duration over time as function of mean case value, the proportion of CFAs, the proportion of cases litigated, and the proportion of cases which had started since the Woolf rules were implemented. Then we explore the determinants of mean claim cost as function of mean delay controlling for the other variables as above. All variables are tested for stationarity, and appropriate corrections for serial correlation and heteroskedasticity are applied in the estimation.

ii. cross-sectional estimation

Our cross-sectional analysis has drawn on all three datasets as described above. Two separate equations are estimated: one using multivariate survival analysis to test for the impact of Woolf on delay, and a second using OLS regression to test for the Woolf impact on costs after controlling for delay. Control variables include estimated/actual case value, and CFA funding. In order to test for a front-loading

[6] Where relevant, this is made clear in the text below.

effect, we estimate these equations separately on non-litigated cases and litigated cases respectively.

4. Time series results

4.1 Introduction

In this section, we first use data set (c) to determine the drivers over time of average case duration, and the average claimant costs per case. This data set contains records of 35910 closed Accident EL claims with damages ranging between £0 and £ 2 millions. The closure date of these cases runs between 2st of January 1997 to 31st December 2003. The earliest case commencement date recorded is the 8th of June 1984.

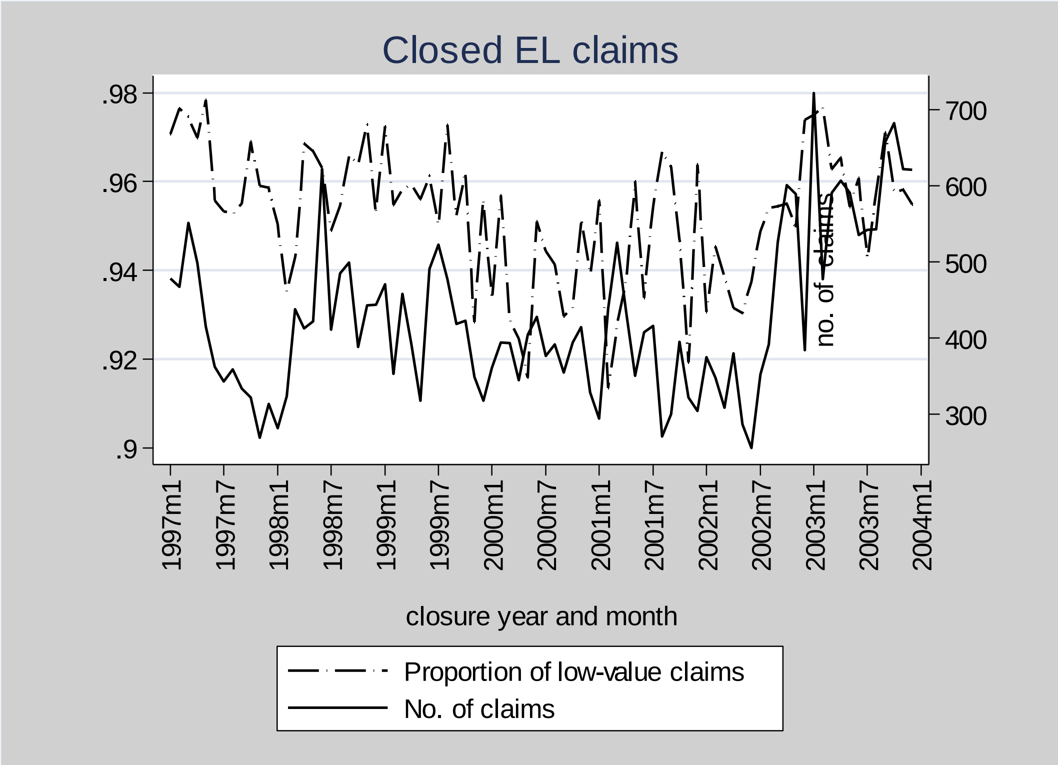
4.2 Graphical analysis

Volume of cases closed

The majority of cases were low-value ("fasttrack") EL claims (defined as any EL claim settled at a damage of no more than £15000), as is obvious from figure 1. There seems to be an increase in the volume of closed cases from about mid-2002 onwards, following a long term trend downwards during the previous 5 years[7]. Moreover, this recent rise seems to be associated with a higher proportion of small (i.e. low-value) claims.

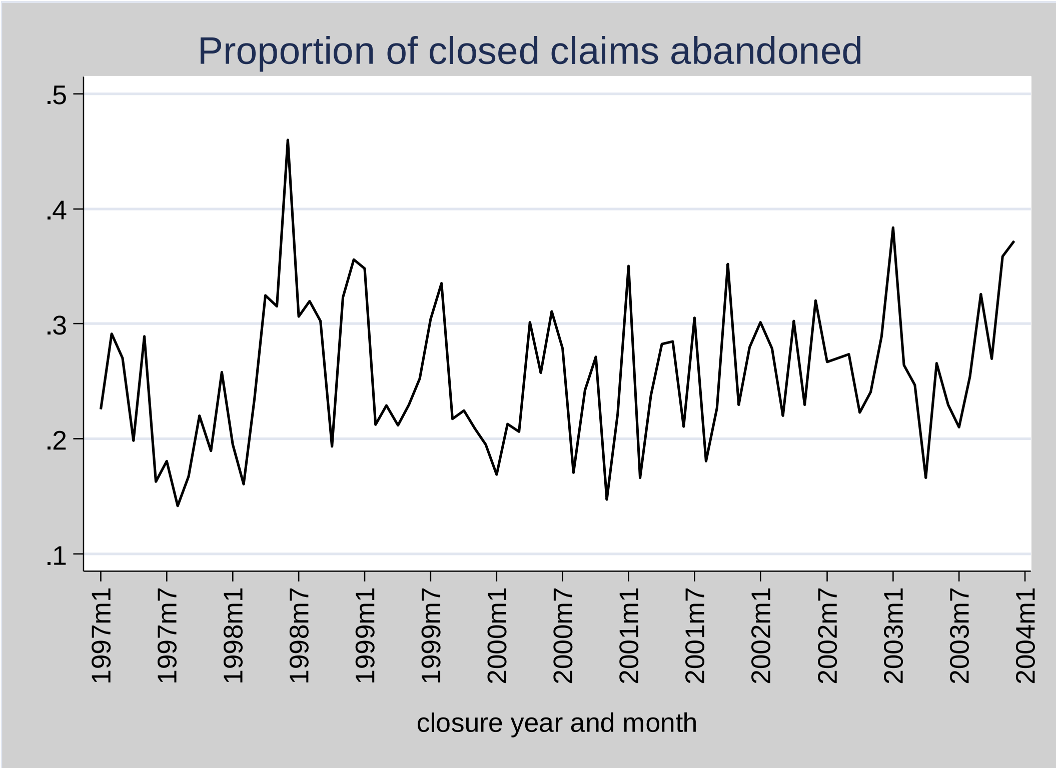
Figure 1

[7] The volume of new EL claims has been observed by CRU to be falling since 2000. It is possible that the increase in closures observed in figure 1 during late 2002 may be attributable to the short-run impact of claims management companies (but other explanations may be equally valid)



These cases include claims that are closed with zero costs (base cost and disbursements) and zero damages. We treat these as abandoned/repudiated cases. These cases make up roughly about 25 % of closed EL cases every month, as shown in figure 2 below. Claims that are closed with some damage payment are treated as settled/paid cases.

Figure 2



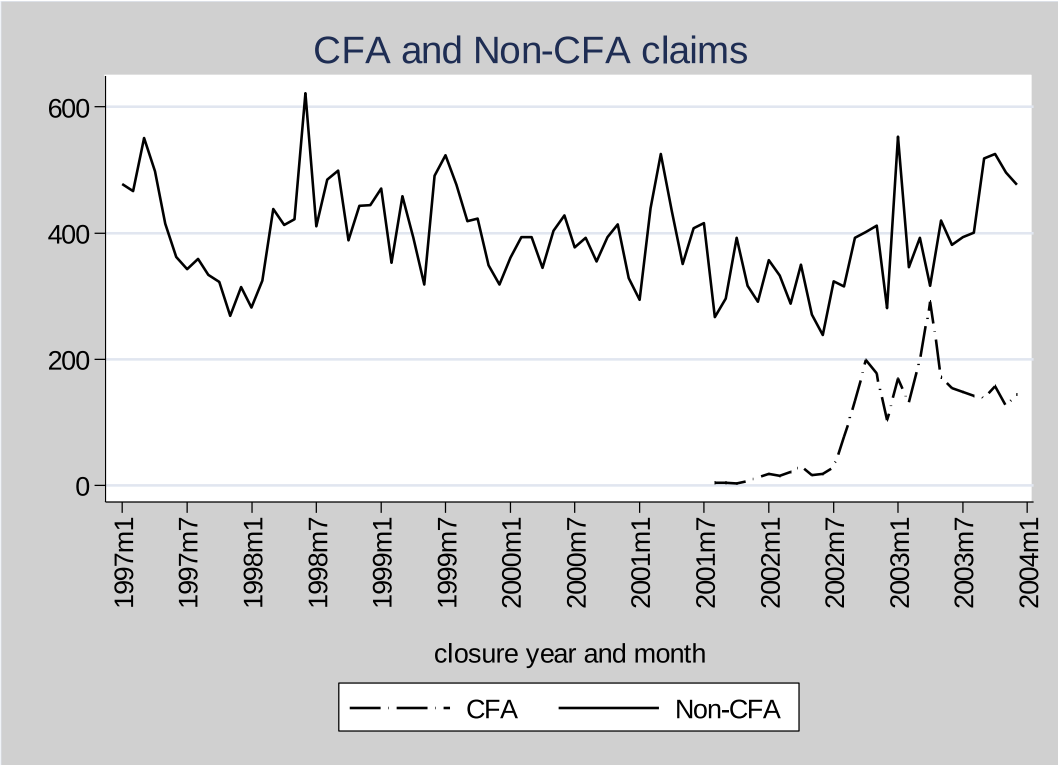
CFA vs Non-CFA cases

Because of the potential for confounding evidence arising from the introduction of recoverable CFAs alongside the Woolf reforms, we must attempt to separate out the effect of the former in order to determine the impact of the latter. In this section we graph the properties of CFA-funded cases as opposed to non-CFA funded cases in dataset c)[8]. Cases run as recoverable CFAs began to be closed from mid-2001 and have rapidly become a major source of funding for EL claims (see figure 3 below). In fact, the increase in CFA funded closed claims seems to have emerged without any noticeable reduction in closed claims funded by other means. This could imply that CFA funding has increased the overall volume of litigation,

[8] It is important to remember that cases recorded as CFAs in an insurer database will be those where some costs are recoverable; hence, these are all "new style" CFAs. Cases run on the basis of "old style" non-recoverable CFAs are not recorded.

but is equally consistent with CFA funding being associated with earlier closure of relatively small claims.[9]

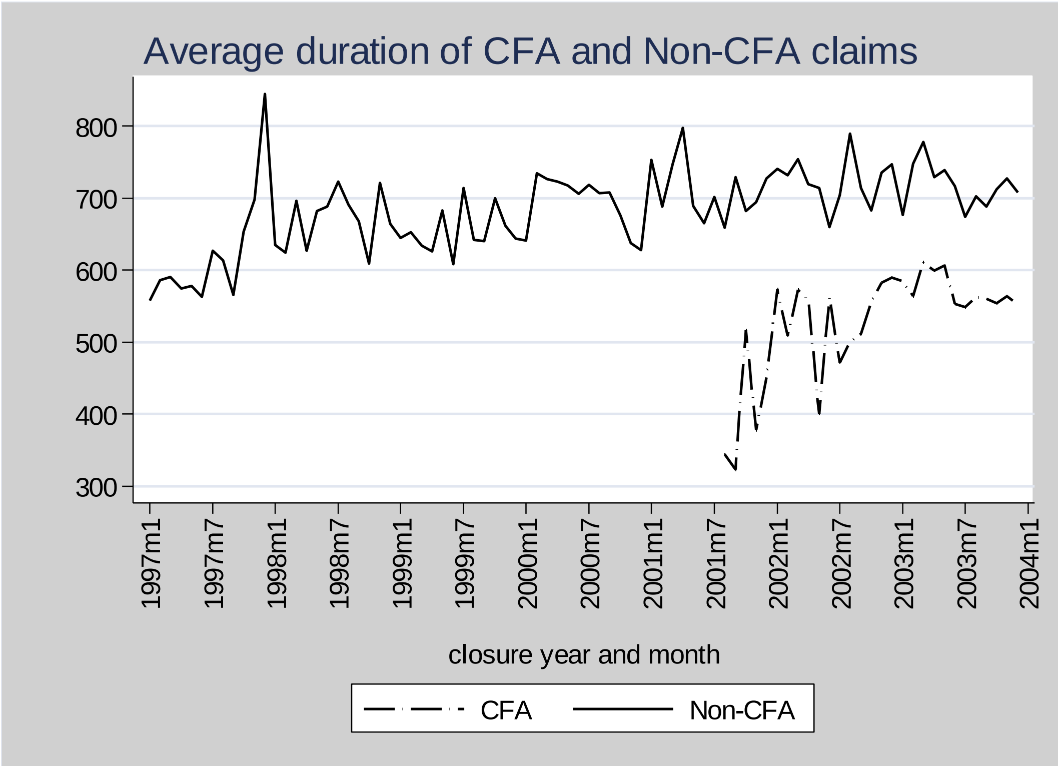
Figure 3



On the face of it, we could compare the mean duration of closed CFA claims with the duration of non-CFA claims to determine whether the new source of funding was having an effect on delay. However, given the nature of our sample (that is, claims closed by end 2003), it is inevitable that CFA claims which have closed during this period will be on average shorter in duration than other claims, simply because (recoverable) CFA claims did not exist before 2000. Figure 4 illustrates this observation clearly.

[9] Indeed data from the Compensation Recovery Unit (CRU) shows a fall in newly opened EL claims over recent years, which tends to rule out the first of these possibilities. Again, the role of accident management companies in bringing small value claims during this period may be relevant here.

Figure 4



The same observation applies to the proportion of cases that are litigated. Figure 5 below shows that the total proportion of cases that were litigated fell significantly during 2002 and 2003, but that this can be entirely explained in terms of the influx of CFA claims of relatively short maturity. The line for non-CFA claims shows very little consistent change in the proportion of cases litigated – it has remained around 25% over the period.

Figure 5

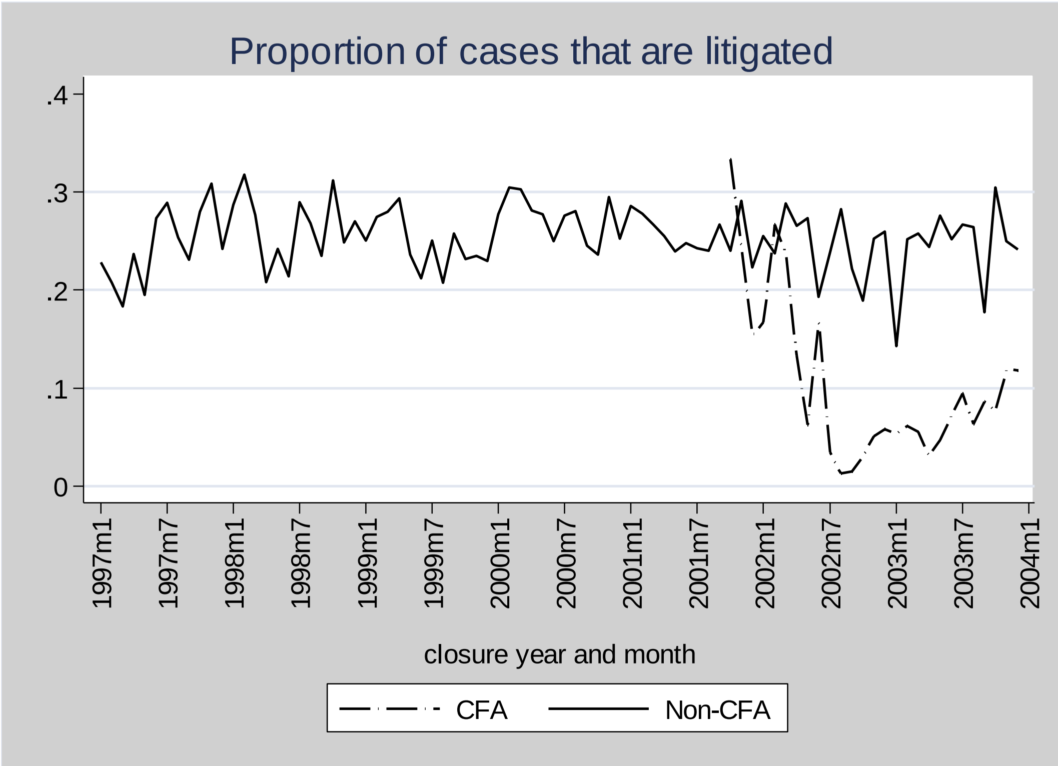
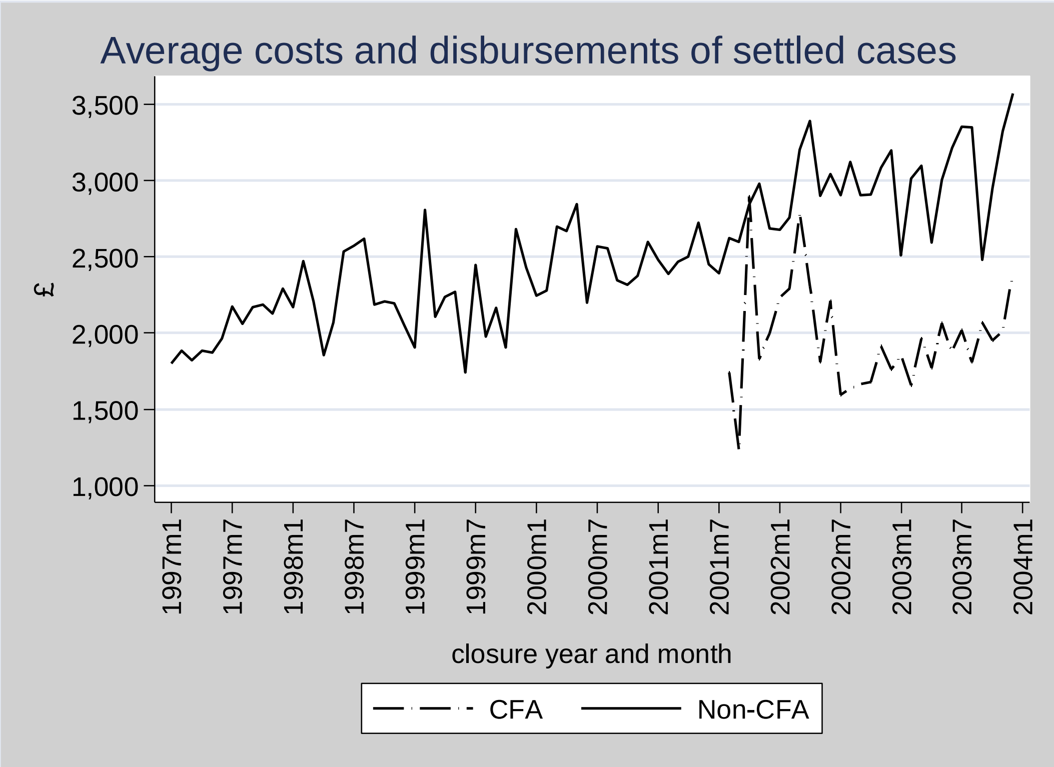


Figure 6 reports the average claimant costs and disbursements[10] of settled EL cases for each month. There is a clear increasing trend in the average claimant costs of all cases in general. CFA-funded cases appear to have much lower average costs than non-CFA cases, but, for the same reasons as stated above in relation to delay, this is highly misleading as closed CFA cases observed to date are necessarily shorter and therefore less costly on average than closed cases funded by other means.

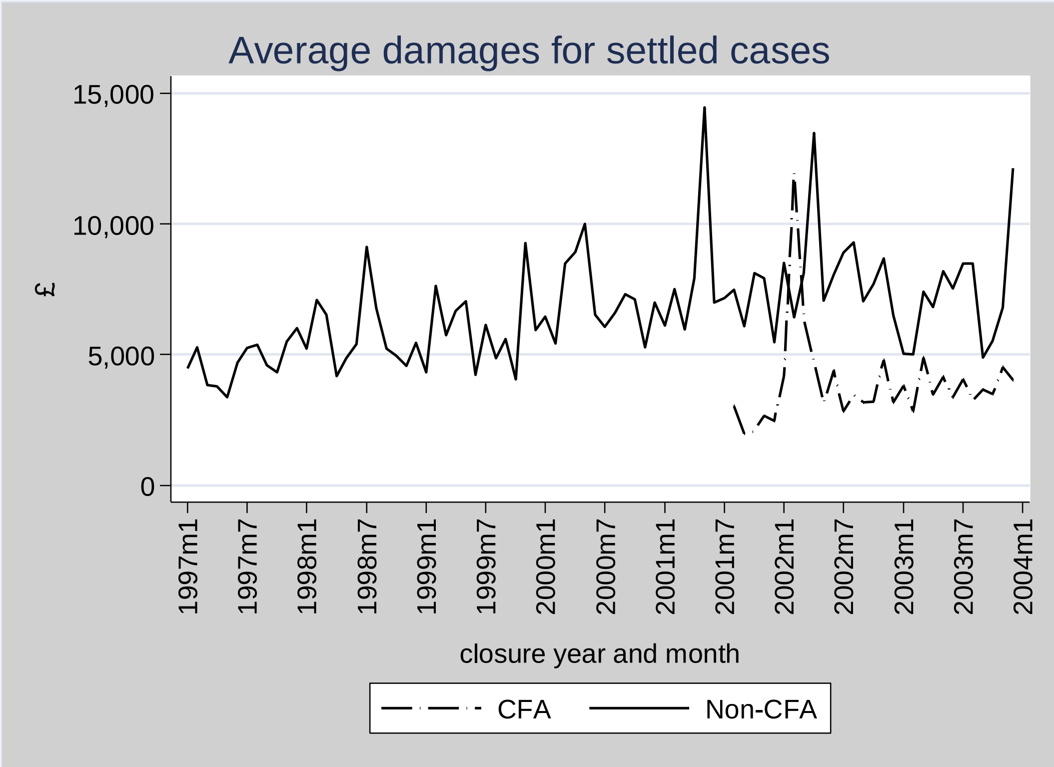
[10] These are nominal costs and have not been corrected for inflation. Inflation corrected cost values display a similar behaviour.

Figure 6



Finally, average damages paid on EL claims (Figure 7) seems to have increased until around mid-2001 to follow a gradual decline afterwards. Again, this appears to be mainly due to the effect of short-maturity CFA claims in the sample. The mean damage awards for non-CFA claims appears to have fallen slightly if at all.

Figure 7

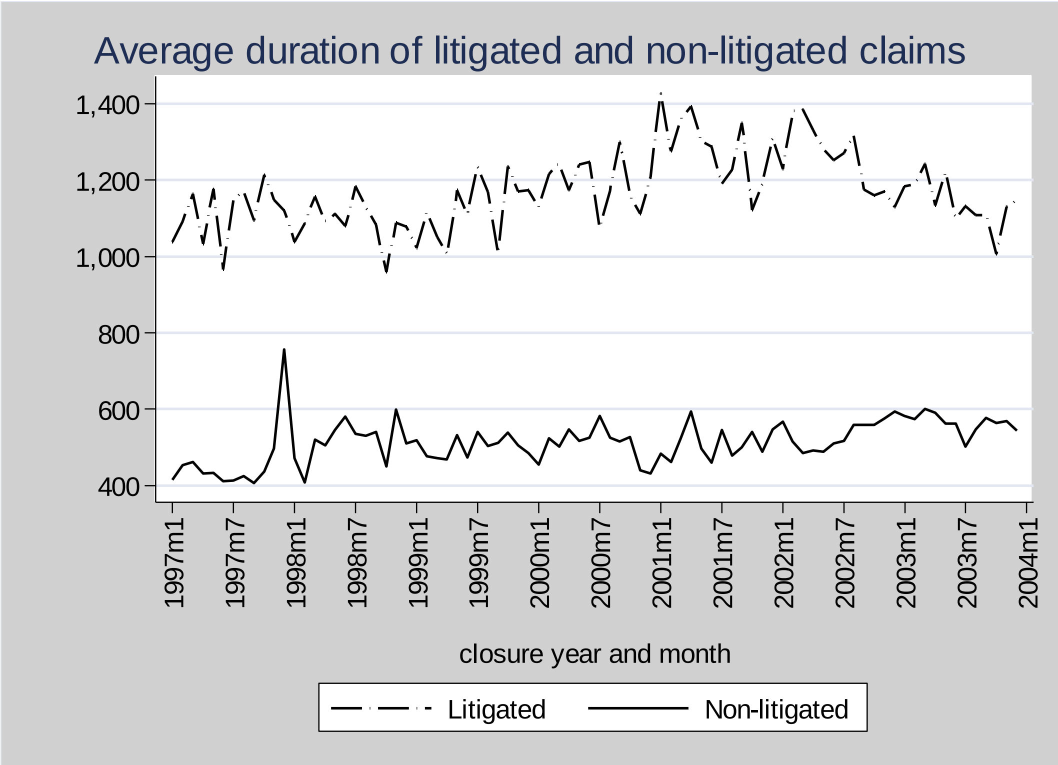


Litigated vs non-litigated claims

Given the nature of our hypotheses, we next explore the characteristics of litigated cases as opposed to non-litigated cases, with respect to volume, duration, claimant costs and damages. In order to purge the data of any confounding effect from CFA funding, as revealed in the previous section, the remaining graphs are based on non-CFA claims only.

As expected, average duration is higher for litigated cases (Figure 8). However, the main feature of this graph is the pronounced fall in the duration of (non-CFA) litigated claims at the same time as a pronounced rise in the duration of (non-CFA) non-litigated claims. These trends appear to date from early 2002, prior to which there had been a steady rise in the duration of both litigated and non-litigated claims.

Figure 8



Finally, Figures 9 and 10 show the trends in mean monthly costs and damages for settled EL claims. The axes have been calibrated such that trends for litigated and non-litigated cases can be compared more easily. Figure 9 shows that, prior to 2002, the mean costs of settling litigated cases has increased roughly in proportion to the mean costs of settling non-litigated cases. Since early 2002, however, the trend in costs for litigated cases has been down, whereas the trend in costs for non-litigated cases has been up. Clearly, this reflects similar comparisons in relation to case duration (see Figure 8 above). As far as mean damage awards is concerned, this is subject to considerable variability on a month to month basis, presumably because of the very skewed nature of the damage distribution, and it is difficult to perceive any marked trends. Clearly, mean damage awards are much higher for litigated settlements than for non-litigated settlements.

Figure 9

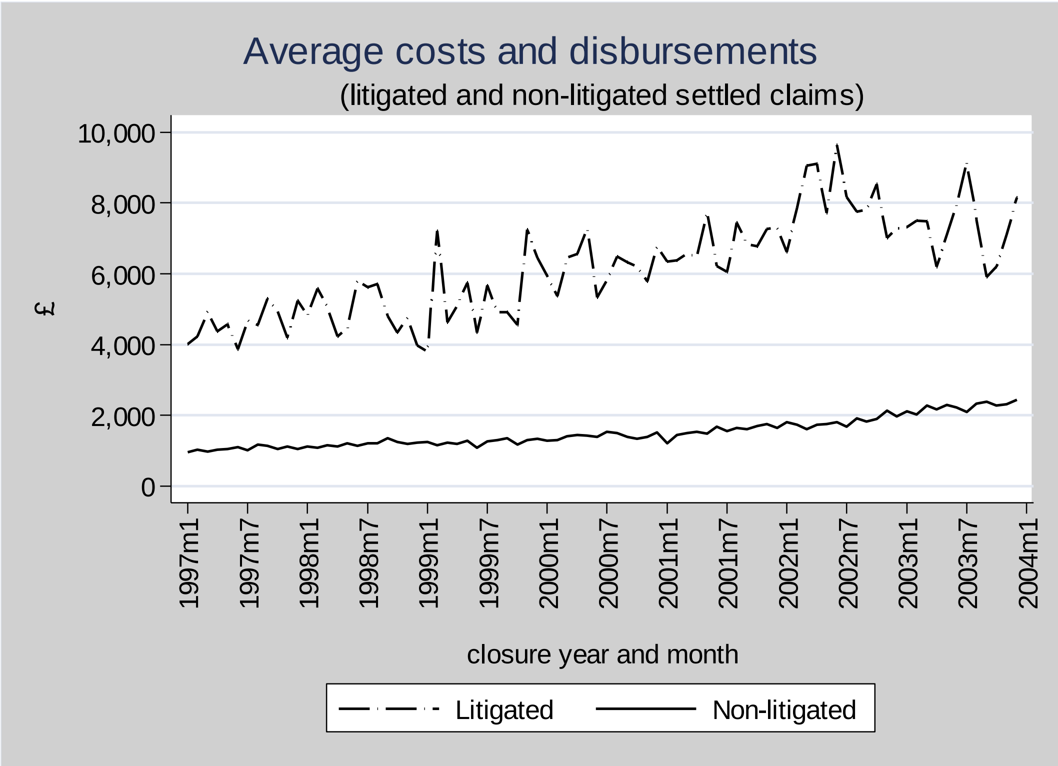
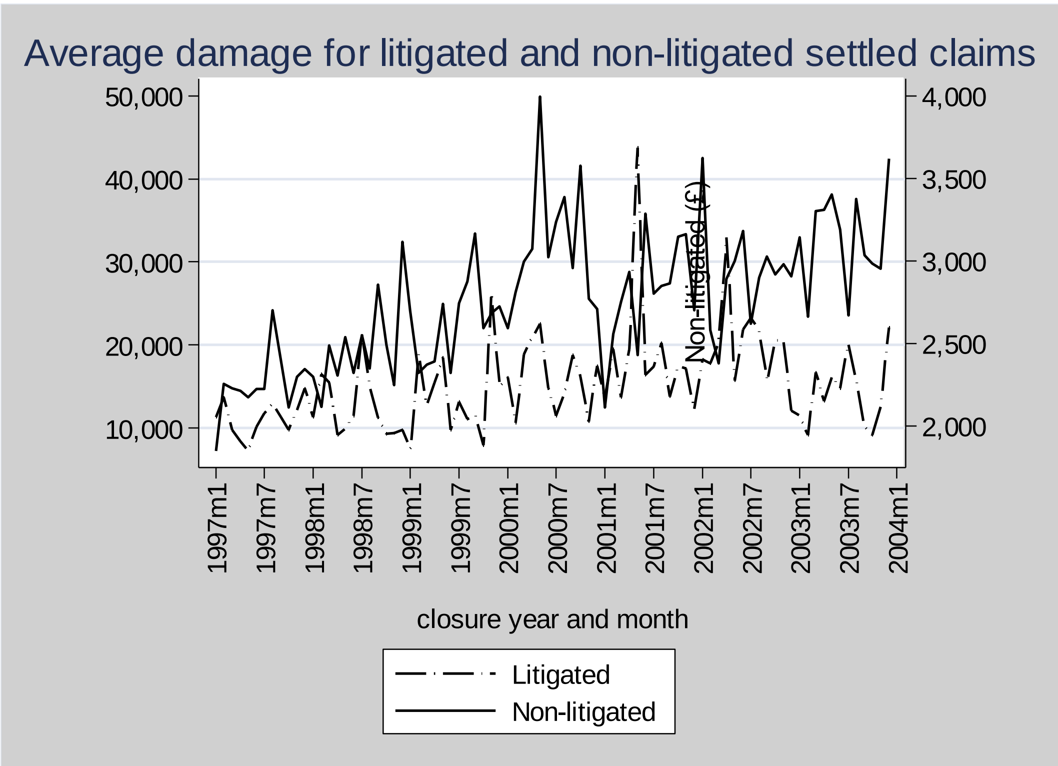


Figure 10



4.3 Regression analysis

While the graphical analysis in the previous section help in the search for possible relationships between key variables over time, they do not allow us to test hypotheses rigorously, because, first, we have not used statistical inference to provide any such tests, and second, the inter-relationships between damages, litigation, delay and costs suggests the need to adopt a multivariate approach when attempting to identify a "Woolf effect". In this section we attempt to use a time-series regression methodology to provide some answers along these lines. For reasons explained above, we restrict our analysis to non-CFA claims only.

The model to be tested can be summarised in the following regressions.

$$\ln delay_i = \beta_1 \ln damage_i + \beta_2 litigation_i + \beta_3 Woolf_i + u_i \qquad (1)$$

$$\ln cost_i = \beta_1 \ln delay_i + \beta_2 \ln damage_i + \beta_3 litigation_i + \beta_4 Woolf_i + u_i \qquad (2)$$

where *delay* is a monthly mean duration variable, computed as described earlier; *damage* represents the monthly mean damages agreed on settled cases; *litigation* is the monthly proportion of cases litigated; *cost* represents the monthly mean base costs and disbursements for a case, and *Woolf* captures the proportion of cases closed each month which were started after the April 1999 reforms were implemented. The residual u picks up the effect of measurement error, and unobserved influences including chance.

The first equation models the impact of various factors on the average duration of a case. A first determinant of a claim is the damages expected from the case. The higher the damage actually settled for, the longer it takes for a case to settle. We expect cases that end up in litigation will increase the duration of a case. Finally, the Woolf variable is there to capture any change in delay which can be attributed to the reforms or the responses to them by litigating parties (see section 2 above).

The second regression attempts to estimate the determinants of mean base costs (plus disbursements) of a case. Higher case value may be expected to be associated with higher base costs. Similarly, we expect litigated cases to increase base costs given the increased intensity of work on such cases. Finally, for a given case value and stage of litigation, we would expect cases with longer durations to have higher costs. Consequently, this equation is an attempt to identify whether the Woolf reforms have had an effect on mean case costs after taking into account any effect they may have had on delay (as estimated by the first equation).

To estimate equations (1) and (2), the relevant variables under analysis in dataset (c) were averaged over each month to provide a time series of 84 monthly observations running from Jan 1999 to December 2003. For the purpose of the time series analysis, we focus on settled cases only. Time series analysis brings about its own set of problems, such as serial correlation and stationarity.[11] We have addressed these issues in our estimation methodology.[12] We first check for the stationarity properties of our time series in order to avoid the risk of spurious significance in our results. For unbiased estimates, the assumptions underlying the classical OLS regression model necessitate that all the variables in a regression equation be stationary and the errors have zero mean and finite variance. We therefore adopt an

[11] A time series Y_t is stationary if its probability distribution does not change over time. In other words, the joint distribution of (Y_{s+1},Y_{s+2} , Y_{s+3},.........,Y_{s+T}) does not depend on *s*, otherwise the series Y_t is said to be nonstationary. Stationarity requires the future to be like the past, at least in a probabilistic sense[11]. In practice, economic time series data very often tend not to have these nice stationary properties. They tend to include a trend component. However, running a regression with variables that are non-stationary might end up in spurious regressions (Granger and Newbold, 1974). A spurious regression has a high R-squared, t-statistics that appear to be significant, but the results are without any economic meaning. Therefore, it follows that in order to get meaningful regression results on trended series, the trend has to be removed first. One of the most common tests for stationarity is the Dickey-Fuller (1979) test.

[12] More detailed descriptions of these problems and how we dealt with them are available on request from the authors.

appropriate estimator to correct for both heteroskedasticity and serial correlation of the error term.

Table 1 reports the results of the Dickey-Fuller test for unit root for each of the variables we use in the analysis.

Table 1: Dickey-Fuller unit root tests

Variables	DF statistics on levels	Order of integration
Ln(Delay)	6.887***	I(0)
Ln(Damages)	3.284**	I(0)
Ln(Costs)	6.762***	I(0)
Proportion of litigated cases	5.204***	I(0)

*** significant at 1%; **significant at 5%;*significant at 10%.

Clearly, all our variables are stationary, and relationships between them over time can be considered as being immune from the spurious regression problem.

Table 2 below presents our estimates of both equations. An initial simple OLS regression showed the presence of autocorrelation of first order in the residuals. To address this problem, we use the Prais-Winsten transformed regression estimates that correct for first-order serial correlation (see Appendix 2). The results seem to indicate that the time path of mean delay is mainly determined by the behaviour of mean case value (damages); after controlling for case value the proportion of cases which are litigated does not appear to affect delay. The proportion of cases started post-Woolf has a positive effect on overall delay (i.e. it increases delay), but it is not quite significant at the 5% level. The costs equation shows a strong influence of case value and delay on mean costs over time. After controlling for case value and delay, Woolf is estimated to have had a significant positive effect on costs (i.e. it increases costs).

Table 2: Time series regression results (non-CFA cases only)

	(1)	(2)
	Delay	Cost
Damages	0.350	0.682
	(0.104)**	(0.110)**
Proportion of cases litigated	-0.128	0.489
	(0.288)	(0.249)
Proportion of cases started post-Woolf	0.064	0.318
	(0.041)	(0.049)**
Delay		0.232
		(0.101)*
Constant	3.523	0.365
	(0.764)**	(0.751)
Observations	84	84
R-squared	0.83	0.95
DW:original model	1.38	0.95
DW:transfomed model	2.03	2.28

Standard errors in parentheses
* significant at 5%; ** significant at 1%

5. Cross-section results

5.1 Introduction

In this section, we use datasets (a), (b) and (c) to explore the determinants of case duration and claimant costs. The unit of analysis here is the individual claim, and each of these datasets provides information about every claim's history and outcome. In addition we know in each case whether a claim was funded through a CFA or otherwise. The basic method used in this section is to estimate for each dataset the relationship between case cost, case duration and case value for both litigated and non-litigated claims. Then, because each of these datasets pools together claims closed over several years during which the impact of the Woolf reforms on completing cases was growing, we explore whether there have been changes in delay and costs which cannot be explained through changes in claim value. Moreover, because in each dataset we can separate those claims which settled pre-issue from those settled post-issue, we are also able to test whether any unexplained changes are associated with different phases of the settlement process.

5.2 Delay: methodology

In principle a multiple regression of case durations against case value could be undertaken. However, given the nature of our samples, in which some claims are present which were either withdrawn or repudiated without payment, it is better to model the conditional probability of paid settlement, using data on settlement timings together with information on each case's disposition at conclusion.

A conventional proportional hazards regression approach is adopted here, where the settlement hazard for case i at a point in continuous time t is given by

$$\lambda_{it} = \lambda_0(t)\exp(\rho_\lambda{}' X_{it} + \sigma_\lambda{}' Z)$$

where $\lambda_0(t)$ is the baseline hazard, and *X* and *Z* are defined as case characteristics and intervention variables respectively, and ρ_λ and σ_λ are corresponding vectors of coefficients. Consequently it is assumed that CFAs or Woolf may have a proportional effect on the baseline hazard, which itself summarises the behaviour of the settlement hazard over time. In order to estimate this equation, a suitable parametric form for the function $\lambda_0(t)$ has to be chosen, and in our case we specify a Weibull distribution. To take account of the bias which might result from unobserved heterogeneity, we also incorporate a gamma distributed random variable which varies across all cases. In this case the discrete time hazard is now given by

$$\lambda_{it} = \lambda_0(t)\exp(\rho_\lambda' X_{it} + \sigma_\lambda' Z + \ln(\upsilon_i))$$

where υ_i is the heterogeneity component which is assumed to be distributed as $\Gamma(1, \nu)$. The parameters ρ_λ and σ_λ can be estimated by maximum likelihood methods, and the parameter ν can likewise be estimated for the gamma heterogeneity. We are particularly interested in the estimates for σ_λ as these will reflect the impact of the intervention variables (CFA, Woolf) on the settlement hazard and consequently on the duration of the claim.

5.3 Delay: results

Tables A1, A3 and A5 in Appendix 1 show the full results from the Weibull regressions for each of the three datasets available to us. In each table we show estimates of three regressions, for non-litigated cases, litigated cases, and all cases combined. Dataset (a) has detailed case-level information on causation and liability issues, which allows us to control for case complexity as well as case value. Datasets (b) and (c) only allow us to control for case value. All of the control variables are significant and in the expected direction[13]. The key to exploring the impact of Woolf in these regressions is to explore the impact of closure time on delay: in each case we have identified the change in delay after controlling for case value/complexity where possible. We have summarised the results in the form of

[13] It should be noted that the results reported in the Appendix are, as explained above, models of conditional settlement probabilities. As such, a positive coefficient implies a greater likelihood of settling early, and therefore less delay.

marginal effects (the impact of successive closure years on delay, holding case value etc constant) in the following table:

Table 3: Marginal effects of closure time on delay

Change in delay (in days) controlling for case value			
	Non-litigated	Litigated	Total
Dataset a			
2000	0	0	0
2001	55	198	61
Dataset b			
2000	0	0	0
2001	20	-59	17
2002	34	-62	30
Dataset c			
1997	0	0	0
1998	0	0	0
1999	30	11	21
2000	7	68	19
2001	9	131	19
2002	81	100	50
2003	123	30	80

The final column of this table shows that delay has increased overall, in all datasets, since 2000[14]. However, the pattern has been different when comparing litigated and non-litigated cases. While it appears that the duration of non-litigated cases has increased steadily from 2001, the duration of litigated cases seems to have risen to 2001 and then fallen subsequently. If accepted, this evidence seems consistent with a story in which the Woolf reforms have "bought" a reduction in the duration of litigated cases at the expense of an increase in delay for non-litigated cases.

5.4 Costs

Tables A2, A4 and A6 in Appendix 1 provide the results for OLS regressions in which the (log of) claimant's costs are regressed against measures of delay and case value (and, in the case of dataset (a), measures of case complexity). The standard errors used to produce the t-statistics in these regressions are robust to the presence of heteroskedasticity. Again we have estimated regressions for non-litigated,

[14] For statistical significance of these marginal effects, see the relevant tables in the Appendix.

litigated and all cases respectively. The coefficient estimates are, by and large, significant and in the direction expected. In dataset (a), cases with a high proportion of liability admitted are settled at lower costs, whereas those with causational problems tend to cost more. Increased case value and delay tend to strongly increase costs in all regressions. Controlling for case value and complexity, it seems that CFA cases are significantly more costly than non-CFA cases.

Controlling for all of these factors, it is possible to summarise the findings on the impact of closure time in the same way as before. Table 4 presents the marginal effects (the impact of successive closure years on claimant costs, holding case value etc constant)[15]

Table 4: Marginal effects of closure time on claimant costs

Changes in costs (in %) controlling for case value and duration			
	Non-litigated	Litigated	Total
Dataset a			
2000	0.00%	0.00%	0.00%
2001	18.20%	17.70%	17.60%
Dataset b			
2000	0.00%	0.00%	0.00%
2001	17.20%	-3.10%	15.70%
2002	28.80%	11.90%	28.00%
Dataset c			
1997	0.00%	0.00%	0.00%
1998	-0.40%	5.20%	1.70%
1999	8.60%	9.50%	7.80%
2000	12.90%	20.70%	13.50%
2001	19.00%	23.30%	17.70%
2002	14.40%	36.80%	18.10%
2003	31.10%	45.50%	33.70%

The picture here is of an increase of around 15-20% in claimant costs from 2001 after controlling for case value and duration. Results from dataset (b) appears to suggest a further increase in 2002, and results from dataset (c) suggest a further

[15] For statistical significance of these marginal effects, see the relevant tables in the Appendix.

increase in 2003 (however this is our only source of data on 2003 settlements). Because these estimates are controlling for delay and CFA funding, the inference must be that more work is being done on cases of similar durations and case value, and this generally holds for litigated as well as non-litigated cases.

6. Conclusions

We have provided evidence from both time-series and cross-section analyses of personal injury claim data. Our basic approach in both of these has been to see if, using best practice econometric methods, it is possible to identify a "Woolf effect" on costs and delay, and disentangle that from other changes in the litigation landscape. We believe we have been successful. For our time-series analysis, we were restricted to only one available source of data which was sufficiently mature and complete. Moreover, the near simultaneity of both Woolf and CFA reforms causes problems for separating the contribution of each when using time-series estimation. We therefore chose to restrict our time-series analysis to non-CFA claims experience only, and the findings appear to support a strong overall Woolf effect towards increased costs, but only a relatively weak effect towards increased delay.

One possible reason for the weak Woolf effect towards increased delay is that there may be countervailing effects on pre-issue and post-issue case duration (see section 2 above). We were able to investigate this through our cross-section analyses. The story which has emerged from these is one in which the Woolf reforms of April 1999 may have achieved its objective in reducing delay in the settlement of litigated claims. However, this achievement may have been bought at the expense of an apparent increase in the delay in settling claims pre-issue (the majority of all cases). At the same time, after controlling for these changes in case duration, it seems that overall case costs have increased substantially over pre-2000 costs for cases of comparable value (a finding consistent with our time-series results). Moreover, these results are found after taking into account and controlling for the impact of CFA funding on costs, so they must be explained in terms of some non-CFA factor operating on closed claims post-2000. There may of course be other factors at work in this period, but the weight of evidence does at least suggest that the Woolf reforms are a plausible candidate explanation.

Finally, we should conclude by reiterating some of the "health warnings" raised above in relation to our findings. In particular, some of the analyses presented here have been based on databases of personal injury claims obtained from specific insurers and/or cost negotiators. As such these analyses are only generalisable to the population of personal injury claims to the extent that the data sources are seen to be representative in their acquisition and treatment of claims. We believe nevertheless that the companies which provided us with data are not atypical of industry claim handling practices, and that our results – particularly those that are replicated across different datasets – can be seen as shedding some light on general trends in the post-Woolf period. We would of course encourage others to test the robustness of our results on additional data, and welcome the opportunity of a continuing debate around these preliminary findings.

References

Damodar Gujarati (2003) *Basic Econometrics,* Mc Graw Hill

Fenn, P., A. Gray, N. Rickman and H. Carrier (2002) 'The impact of conditional fees on the selection, handling and outcomes of personal injury cases', *Research Series No. 6/02*, Lord Chancellor's Department.

Granger, C. W. J and P. Newbold (1974) 'Spurious regressions in econometrics' , *Journal of Econometrics,* vol. 35, pp. 143-159.

Engle, R. F and C. W. J Granger (1987) 'Cointegration and Error Correction: Representation, Estimation and Testing', *Econometrica,* vol. 55, pp. 251-276.

Dickey, D.A. and W. A. Fuller (1979) 'Distributions of the estimators for autoregressive time series with a unit root', *Journal of the American Statistical Association,* vol. 74, pp. 427-431.

APPENDIX 1: SUPPLEMENTARY TABLES

Table A1: Delay to settlement, dataset (a)

	Non-litigated	Litigated	Total
% liability admitted	0.163	0.639	0.915
	(0.61)	(1.53)	(4.09)**
Ln(estimated case value)	-0.431	-0.231	-0.541
	(4.64)**	(0.92)	(4.78)**
Moderate causation problems	0.112	0.074	0.001
	(0.50)	(0.12)	(0.00)
Significant causation problems	-0.780	-0.540	-0.866
	(3.48)**	(1.23)	(3.89)**
closyr== 2001	-0.317	-0.734	-0.331
	(2.12)*	(1.84)	(2.20)*
Constant	-17.334	-21.230	-17.918
	(11.72)**	(4.49)**	(11.20)**
Observations	392	117	509

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%

Table A2: Claimant costs, dataset (a)

	Non-litigated	Litigated	Total
Ln(delay)	0.177	0.084	0.210
	(3.14)**	(1.67)	(3.69)**
% liability admitted	-0.259	-0.200	-0.340
	(4.53)**	(1.71)	(5.37)**
Ln(estimated case value)	0.373	0.386	0.395
	(8.94)**	(3.94)**	(7.67)**
Moderate causation problems	0.154	0.228	0.187
	(2.26)*	(1.38)	(2.54)*
Significant causation problems	0.163	0.472	0.243
	(1.38)	(9.23)**	(2.32)*
CFA	0.161	0.126	0.176
	(2.13)*	(0.68)	(1.89)
closyr== 2001	0.182	0.177	0.176
	(2.89)**	(1.26)	(3.77)**
Constant	3.548	4.281	3.276
	(6.98)**	(5.31)**	(8.14)**
Observations	368	101	469
R-squared	0.39	0.43	0.48

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table A3: Delay to settlement, dataset (b)

	Non-litigated	Litigated	Total
Ln(damages)	-0.978	-0.729	-0.959
	(56.64)**	(20.14)**	(60.75)**
closyr== 2001	-0.152	0.198	-0.120
	(4.99)**	(2.42)*	(4.17)**
closyr== 2002	-0.254	0.214	-0.214
	(8.10)**	(2.56)*	(7.20)**
Litigated			-1.408
			(46.77)**
Constant	-10.090	-11.643	-10.089
	(80.42)**	(40.01)**	(88.77)**
Observations	38752	3432	42184

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Table A4: Claimant costs, dataset (b)

	Non-litigated	Litigated	Total
Ln(delay)	0.194	0.274	0.232
	(33.64)**	(13.56)**	(41.01)**
Ln(damages)	0.267	0.264	0.285
	(41.57)**	(16.86)**	(47.63)**
CFA	0.169	0.159	0.170
	(26.36)**	(5.50)**	(26.81)**
closyr== 2001	0.172	-0.031	0.157
	(10.14)**	(0.59)	(9.47)**
closyr== 2002	0.288	0.119	0.280
	(17.06)**	(2.30)*	(16.86)**
Constant	3.878	3.875	3.553
	(78.30)**	(28.23)**	(78.02)**
Observations	32780	2698	35478
R-squared	0.21	0.34	0.27

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%

Table A5: Delay to settlement, dataset (c)

	Non-litigated	Litigated	Total
estimated value from £3k to £10k	-0.467	-0.209	-0.555
	(18.57)**	(3.95)**	(25.83)**
estimated value from £10k to £15k	-1.283	-0.775	-1.477
	(19.34)**	(10.65)**	(31.63)**
estimated value from £15k to £50k	-1.713	-1.263	-2.003
	(26.08)**	(19.57)**	(46.65)**
estimated value from £50k to £250k	-2.438	-1.854	-2.653
	(15.75)**	(25.66)**	(48.57)**
estimated value over £250k		-2.418	-3.092
		(16.00)**	(21.59)**
closyr== 1999	-0.135	-0.029	-0.308
	(3.68)**	(0.55)	(8.99)**
closyr== 2000	-0.034	-0.183	-0.299
	(0.88)	(3.53)**	(8.60)**
closyr== 2001	-0.043	-0.344	-0.300
	(1.13)	(6.37)**	(8.53)**
closyr== 2002	-0.357	-0.265	-0.409
	(9.60)**	(4.73)**	(11.73)**
closyr== 2003	-0.536	-0.083	-0.512
	(15.71)**	(1.66)	(15.55)**
Constant	-14.435	-20.453	-13.729
	(99.70)**	(66.02)**	(117.63)**
Observations	27325	8486	35811

Absolute value of z statistics in parentheses
* significant at 5%; ** significant at 1%

Table A6: Claimant costs, dataset (c)

	Non-litigated	Litigated	Total
lndelay	0.433	0.333	0.539
	(32.11)**	(16.30)**	(47.07)**
estimated value from £3k to £10k	0.550	0.547	0.591
	(43.84)**	(17.88)**	(49.66)**
estimated value from £10k to £15k	0.861	0.826	0.965
	(36.30)**	(22.77)**	(47.48)**
estimated value from £15k to £50k	0.965	1.107	1.238
	(37.90)**	(31.43)**	(59.10)**
estimated value from £50k to £250k	1.291	1.500	1.693
	(18.89)**	(38.48)**	(60.92)**
estimated value over £250k		2.326	2.537
		(25.51)**	(29.77)**
closyr== 1998	-0.004	0.052	0.017
	(0.19)	(1.82)	(0.96)
closyr== 1999	0.086	0.095	0.078
	(4.40)**	(3.24)**	(4.67)**
closyr== 2000	0.129	0.207	0.135
	(6.14)**	(7.09)**	(7.67)**
closyr== 2001	0.190	0.233	0.177
	(8.56)**	(7.74)**	(9.61)**
closyr== 2002	0.144	0.368	0.181
	(6.07)**	(11.77)**	(9.26)**
closyr== 2003	0.311	0.455	0.337
	(13.87)**	(14.42)**	(17.94)**
CFA	0.364	0.028	0.216
	(22.36)**	(0.75)	(14.77)**
Constant	3.921	5.033	3.351
	(49.64)**	(37.29)**	(48.93)**
Observations	19050	7675	26725
R-squared	0.35	0.45	0.52

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%