

The Settlement Negotiation Process for Automobile Bodily Injury Liability Claims In the Presence of Suspicion of Fraud and Build-Up.

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Abstract

Third party liability insurance settlements are by their nature the result of negotiations between the claimant, or his/her representative, and a representative of the insurer, acting on behalf of the policyholder (Ross, 1980). When substantial non-economic or general damages are expected in any settlement, such as in auto bodily injury liability claims, the nature of the settlement process must differ from the simple first party reimbursement for medical bills or vehicle repair or replacement costs paid and include negotiation and bargaining strategies. Recent research efforts have noted only the outcomes of lower negotiated general damage settlements, in the form of lower settlement to special damages ratios, in the presence of suspicion of fraud (Crocker and Tennyson (2002), Loughran (2002), and Derrig and Weisberg (2004). This paper uses a unique data set from Massachusetts to investigate the negotiation process in terms of the leverage points available to each party and the sequence of claimant demands and insurer offers through settlement. A framework for the negotiation process is proposed, in terms of offer to demand ratios with the value of one representing the settlement. We find that, on average, the ratio of complete offers to demands will increase by about $1/N$, where N is the number of rounds to settlement, but with wide variation depending on claim characteristic specifics. The initial anchoring provided by attorney demands plays a prominent role (Wright and Anderson, 1989) and leads to generally higher settlements as a result of negotiation. Suspicion of fraud and build-up has the opposite effect, lowering the general damage valuation agreed to by both parties. Lower (higher) than average offer/ demand ratio adjustments are generally followed by larger (smaller) ratio adjustments indicating an implicit fixed target ratio at the end of each full round of negotiations, perhaps influenced by the information held by each party on prior settlements.

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Introduction

According to A.M. Best, claims for private passenger auto liability/medical, as reported in Schedule P, Part 3B, totaled about \$45 billion in claim payments or 15 million claims per year from 1993 to 2002¹. The average payment for a BI liability claim in 2002 was \$8,245 (IRC, 2003, p.72), slightly less than ten years prior. This non-inflation in claim settlements represents a shifting of injury types to less serious injuries and, perhaps, a better use of the negotiation mechanism for reaching settlements. The shift in injury types has been well documented both nationally (IRC, 2003) and in Massachusetts (Derrig and Weisberg, 2003). The purpose of this paper is to explore the negotiation mechanism to gain some insight of the negotiation effect on final claim payments.

Third party liability insurance settlements are by their nature the result of negotiations between the claimant, or his/her representative, and a representative of the insurer, acting on behalf of the policyholder (Ross, 1980). When substantial non-economic or general damages are expected in any settlement, such as in auto bodily injury liability claims, the nature of the settlement process must differ from the simple first party reimbursement for medical bills or vehicle repair or replacement costs paid and include negotiation and bargaining strategies. Recent research efforts have noted only the outcomes of lower negotiated general damage settlements, in the form of lower settlement to special damages ratios, in the presence of suspicion of fraud (Crocker and Tennyson (2002), Loughran (2002), and Derrig and Weisberg (2004). Analysis in the past has only looked at final outcomes, but not the essentially fluid process to get to those settlements. The negotiating process appears to be evolutionary, however, since the Insurance Research Council (IRC, 2003, p.77) has noted a continual decrease in the ratio of auto BI liability payments to claimed specials from 1977 to 2002, 2.29 in 1977 decreasing to 1.49 in 2002². It is highly likely that developing information technology, in the form of increased access to information sources both inside and outside the insurer, played an asymmetric role favorable to the insurers. The use of claim settlement outcome databases would be one such developing source, as would fraud awareness and detection algorithms (Picard 2000, Derrig 2002, Brockett et al. 2002, Viaene et al. 2002, and Dionne et al. 2003).

The differential results by injury type observed nationally by Crocker and Tennyson (2002) and Loughran (2002) cannot be imposed unilaterally by the insurer in the tort context. First party payments, such as the no-fault, or PIP payment, are subject to the contractual limitations of the insurance policy. Insurers deal directly with their insureds and can subject claims for medical, lost wage and other out-of-pocket cost claims to a reasonability check, paying only those expenses commensurate with the injury and treatment. In third party situations, insurers have much less standardization of claim payments and must negotiate a settlement that in total covers both (reasonable) economic and non-economic damages. At a basic level, this negotiation process involves two functions: (1) an exchange of settlement offers until agreement or a trial outcome and (2) the insurer's decision to investigate the claim (spend money) to illuminate further the true facts of the claim. Both functions may be repeated several times in the course of a complicated claim. This paper will elaborate on the demand/offer dynamic, while the latter appears in another setting (Derrig and Weisberg, 2003).

The paper proceeds as follows. Section 1 describes the negotiation context for automobile bodily injury liability claims. Evidence from a recent study of Massachusetts claims (Derrig and

¹ Best's Aggregates and Averages, Property/Casualty, US and Canada, 2003 Edition, Supplement, p.77.

² The settlement to economic damage ratio is quite different in Europe, and much lower, due principally to the separate payment of attorney fees by the "losing" side (Pfennigstorf, 1984).

Weisberg, 2004) demonstrates the bottom line results of reducing claim payments through negotiation. Section 2 describes a new quantitative framework for the negotiation process in terms of the relationship of the insurer’s multiple settlement offers to the claimant settlement demands. Section 3 describes the data set of Massachusetts bodily injury liability claims used to illustrate the framework of Section 2. Section 4 extracts the structure of negotiation within the framework for this unique data set and Section 5 concludes.

1. Claim Settlement Negotiations

The vast majority of auto bodily injury liability claims payments in Massachusetts are the result of face-to-face, or more accurately, telephone-to-telephone, negotiations between the attorney representing the claimant and insurance company adjusters representing and defending the at-fault driver. Only a minority of claims include a formally filed lawsuit (“in suit”), trial and judgment award by a judge or jury. In Massachusetts, about 12 percent of the liability claims are put “in suit” with only one percent involved in a trial and judgment. Nationally, the proportions tend to be lower in states with full tort systems. The reason is full tort states must include payments for all minor injuries, rather than third party tort claims only when economic damages exceed a legally mandated threshold in no-fault states like Massachusetts³.

While our modeling effort involves the objective negotiation steps described above, those steps do not take place in a vacuum (Raiffa, 1982). Each side, claimant/attorney and insurance adjuster, negotiates within parameters that are defined by statutes, past practices, and economic considerations. In our case, negotiations may be complicated by the presence of fraud and build-up claims and their “gaming-the-system” nature (Picard, 2000). Table 1 will list some advantages that accrue to experienced claim adjusters⁴. Most advantages flow from the fact that the insurer (eventually) will pay some settlement amount and that good faith investigation may delay that settlement.

Table 1

BI Negotiation Leverage Points
Adjuster Advantages
Adjuster has ability to go to trial
Company has the settlement funds
Attorney, provider, or claimant needs money
Adjuster knows history of prior settlements
Adjuster can delay settlement by investigation
Settlement authorization process in company
Initial Determination of Liability

³ Roughly 50 percent of Massachusetts PIP claims are associated with a BI liability claim. Nationally about 50 percent tort claims involve attorneys (IRC, 2003, p.105) whereas more about 90 percent of Massachusetts tort claims have attorney representation (Derrig and Weisberg, 2003).

⁴ Tables 1 and 2 replicate Table 5 of Derrig and Weisberg, 2004, p.13.

The claimant or attorney, on the other hand, has several advantages that flow from the insurer's obligation to engage in fair settlement practices. Table 2 lists some of those advantages, topped by the ability to continue medical treatment which may not be medically necessary. The laws defining "bad faith" claim settlement practices set a framework for negotiation behavior that differs by state depending on the statutory definition and construction. Browne, et al. (2004) finds that stronger bad faith laws; i.e. more restrictive definitions of fair practices, are associated with higher claim costs. That finding clearly indicates that the rules governing claim handling and negotiation provide differential and differing advantages to the claimant/attorney. Thus, the quantitative results that follow from Massachusetts data may not be reproducible exactly under other auto injury compensation systems.

Table 2

BI Negotiation Leverage Points
Attorney/Claimant Advantages
Attorney/Claimant can build-up specials
Asymmetric information (Accident, Injury, Treatment)
Attorney/Claimant can fail to cooperate
Attorney has experience with company
Investigation costs the company money
Attorney can allege unfair claim practices (93A)
Adjuster under pressure to close files

Of course, both sides have the ability to pursue the jury trial option. Neither side, however, has the inclination to go to trial in most instances because of increased costs and the uncertainty of jury outcomes. And, indeed, the low percentage of claims at trial is indicative of the importance of avoiding such costs and outcomes by reaching negotiated settlements. Trials tend to go forward and negotiations fail when the two parties have much differing views of the fair compensation. For 1996 through 2002, the final demand and final offers prior to trial for vehicular liabilities averaged \$40,000 and \$11,000 respectively (Thomas, 2004, p.13). Median awards by trial were \$15,155 indicating that the claimant/attorneys were less realistic about the market in settlements than the insurers.

Table 3

Variable	Final Negotiation Model			Final Evaluation Model		
	1996 data ¹			1996 data ²		
	(422 Claims in Data Set)			(429 Claims in Data Set)		
	Coefficien t	Chi- Square	p-Value	Coefficien t	Chi- Square	p-Value
Intercept	4.577	161.5	<.0001	4.521	186.4	<.0001
Log (Total Med + 1)	0.552	182.7	<.0001	0.508	168.7	<.0001
Log (Wages + 1)	0.055	61.4	<.0001	0.054	66.6	<.0001
Log (Fault proportion)	0.584	8.2	0.0041	0.554	7.1	0.0078
Attorney Involved				0.167	2.2	0.1415
Fracture Involved	0.568	16.8	<.0001	0.598	28.7	<.0001
Log (Disability wks + 1)	0.129	11.7	0.0006	0.153	19.6	<.0001
Serious Visible Injury	0.192	1.6	0.2014	0.311	3.4	0.0648
Three or more claimants in vehicle	-0.154	10.3	0.0013	-0.132	8.0	0.0048
Claimant received non emergency CT Scan or MRI	0.295	19.7	<.0001	0.270	16.1	<.0001
Low Collision Impact	-0.093	4.2	0.0404	-0.153	13.8	0.0002
Same Co/Same Policy - Claimant is passenger	-0.240	9.1	0.0025	-0.246	12.4	0.0004
Disability Unknown	0.431	10.7	0.0010			
1st Demand Ratio	0.013	9.8	0.0017			
BI IME No Show	-0.384	6.3	0.0118			
BI IME Not Requested	-0.152	6.1	0.0135			
BI IME Performed with positive outcome	-0.168	5.1	0.0245			
Suspicion	-0.027	7.0	0.0080			

¹ 1996 data set - includes "Unknown Disability" claims and claims with a 1st Demand Amount

² 1996 data set - excludes 64 "Unknown Disability" claims

In general, attorney demands are made in the hope of achieving higher settlements than the company adjusters offer and, conversely, adjusters offer lower settlements to achieve smaller settlement amounts. Formally, this process can be modeled as a two-party game (Raiffa, 1982) but we prefer to avoid that mathematical nicety for the moment and propose a simpler structure representative of the underlying game. The outcome of this game or process appears from the Derrig-Weisberg compensation model shown in Table 3 (Derrig and Weisberg, 2004) to allow for both superior negotiating skills by attorneys, first demands raise settlements on average by nine percent, and the breakdown of the information asymmetry by the adjuster in terms of independent medical examination results and the function of a level of suspicion of fraud and build-up. Table 3a shows that negotiations, on average, settle at about 13 percent (factor of 0.87) less than a claim evaluation based on objective facts. The information represented by a suspicion index, zero to ten, appears to allow for the entire demand adjustment of 13 percent after neutralizing, on average, the attorney's first demand signal.

Table 3a

Total Value of Negotiation Variables	
Total Compensation Variables	Avg. Claim/Factor
Evaluation Variables	\$13,948
Disability Unknown	1.05
1st Demand Ratio	1.09
BI IME No Show	0.99
BI IME Not Requested	0.90
BI IME Performed with Positive Outcome	0.97
Suspicion	0.87
Negotiation Variables	0.87
Total Compensation Model Payment	\$12,058
Actual Total Compensation	\$11,863
Actual BI Payment	\$8,551

2. Modeling the Negotiation Process

We describe the modeling of the negotiation process in terms of payment demands, usually by an attorney, followed by an offer from the insurer. The negotiation process, when there is an attorney, generally proceeds in several steps. The first step is a demand presented by the attorney, often justified by a somewhat selective summary of the accident, injury and treatment facts. After some investigation and possible interaction with the attorney, the adjuster typically proposes a counter-offer⁵. At this point, the attorney will generally have three options:

- Accept the adjuster's offer
- File a lawsuit
- Present a second demand

In most cases, a negotiated settlement will ultimately be achieved, although further stages of negotiation may be needed. In rare instances, the settlement will not occur until the eve of trial, and in even rarer instances, a trial will actually occur. Of course, in reality there are many variations on this simplified template, which is intended to cover the basic elements of the process.

Implicit in the adjuster and attorney/claimant advantages shown in Tables 1 and 2, is the time dimension. Alternate demands and offers of settlement proceed over time from the date of the accident to the decision to file a claim to the formulation of specifics of demands and offers (Cooter and Rubenfield, 1989). Time may play a role, in addition to the statutory setting, in arriving at a settlement amount simply because time is valuable to both parties. Put simply, the prime motivating factors may be that adjusters need to close claims and claimants/attorneys need the money.

Negotiations can be modeled via a formal theory of bargaining. Parties would have utility functions that govern their choices given the current status of the negotiation. Optional, or

⁵ On average, the first offer is given 40-50 days after the first demand (see Table 5).

pareto optional, solutions would emerge from the axiomatic setup (Thomson and Lensburg, 1989). Less formal models would have each negotiating round consist of a formal demand (offer) and “reservation price”, unknown to the opposition, that represents the least (most) that would be accepted (offered) for a settlement. If the reservations prices of the two parties overlap, the reservation demand is less that the reservation offer, a settlement is feasible and subsequent rounds determine where in the feasible range the settlement will occur (Raiffa, 1982).⁶

Recently, a return to a simpler analysis has been proposed (Epley and Gilovich, 2001) based upon the opening demand, or the “anchor”, and the subsequent adjustments to that anchor to reach a settlement (Tversky and Kahneman, 1974). From our point of view, this simpler model is more easily described (and understood) using empirical data and implicitly incorporates the human or behavioral effects of the two party interactions.

3. The Massachusetts Negotiation Data Set

We quantify the negotiation modeling process by recording the alternate demands and offers from the AIB CSE BI Study (Derrig and Weisberg, 2003). Examination of the underlying claim files produced 290 claims with some observable demands and offers prior to settlement. We created two subsets for analysis: Claims with three (119) or four (100) rounds of negotiation to BI settlement.⁷ Table 4 provides examples of demand/offer dollar sequences to settlement. We note that demands generally decrease and offers generally dollar increase⁸ with each full round, where a round consists of demand, offer pair. Data for a sample of five claims is shown in Table 4.

Table 4

Negotiation - Steps (dollars)							
Claim	Demand 1	Offer 1	Demand 2	Offer 2	Demand 3	Offer 3	BI
Example 1	10,000	4,100	7,500	4,600	6,000	4,750	5,500
Example 2	30,000	5,000	50,000	5,000	25,000	14,500	14,500
Example 3	20,000	2,330	15,000	3,200	6,666	3,900	6,500
Example 4	20,000	12,000	19,000	15,000	na	na	17,500
Example 5	35,000	6,000	20,000	11,000	na	na	15,000
AVG 4 Rds	28,083	4,679	15,385	5,978	11,452	7,536	8,536
STD 4 Rds.	41,340	3,110	15,107	3,670	10,344	5,157	6,265
AVG 3 Rds.	21,488	5,552	11,266	7,211	na	na	7,926
STD 3 Rds.	19,026	4,074	12,385	5,094	na	na	5,608

Dollar averages and variations are shown for the full three and four round subsamples in Table 4. First demands average \$28,083 and \$21,488 for claims with four and three rounds of

⁶ This approach can be seen in Raiffa’s Checklist for negotiators found at www.mcn.org/c/rsurratt/Negotiatetips.html.

⁷ A total of 40 claims had more than four rounds of negotiations. In those cases the third round values were taken to be the values just prior to settlement. Twelve claims had only two rounds to settlement. The remaining claims were joint tort-feasor claims or those with some attorney offers or demands missing.

⁸ Demands can increase and offers decrease but only in the presence of new and unexpected information such as a change in medical condition or results of an Independent Medical Examination.

negotiation respectively. Second demands decrease substantially to \$15,385 and \$11,266 on average for four and three rounds respectively. On the other hand, first offers average only \$4,679 and \$5,552 for four and three round claims respectively. Second offers increase substantially to \$5,978 and \$7,211 on average for four and three round claims respectively. Note, however, there is substantial variation from these averages for individual claims as the standard deviations are roughly equal to the means.

Table 5

Negotiation – Times (<i>days from accident date</i>)								
Claim	Demand 1	Offer 1	Demand 2	Offer 2	Demand 3	Offer 3	BI	BI - Demand 1
Example 1	798	798	798	798	825	825	838	40
Example 2	710	798	1,397	1,397	1,477	1,477	1,510	800
Example 3	131	165	227	227	300	300	462	331
Example 4	478	595	597	597	0	0	597	119
Example 5	130	221	269	269	0	0	284	154
AVG 4 Rds	285	346	413	437	475	496	536	234
STD 4 Rds.	164	187	256	274	310	328	339	243
AVG 3 Rds.	309	351	407	419	<i>na</i>	<i>na</i>	472	157
STD 3 Rds.	209	186	221	231	<i>na</i>	<i>na</i>	261	184

Table 5 adds a time dimension to the negotiating rounds. Our illustrative sample of 5 claims shows time to settlement from accident date ranging from 40 to 800 days. On average, first demands arrive nearly 300 days from the accident date and take about 200 more days to settle. Again the variation by claim is large as the standard deviation of settlement time is about equal to the mean. The decrease in demands and the increase in offers by round is a natural part of the negotiation process. A similar pattern is present on a relative basis; i.e., normalized by claimed special or economic damages. The demands in our dataset average 5.8, 3.4, and 2.6 times the claimed specials for rounds one, two and three respectively⁹. The offers average 1.2, 1.6 and 1.8 times the claimed specials for rounds one, two and three respectively. The gap of 2.6-1.8 times specials is closed in the final settlement. It is that process we turn to next.

4. The Quantitative Structure of Negotiations

We quantify a model of the negotiation process in terms of the narrowing of differences between demands and offers. Our preferred method of analysis is the tracking of the offer/demand ratio both by each step and by full rounds. Table 6 shows the average progress by full round from round one (O_1/D_1) to settlement relative to the last demand (BI/D_3). Note that for a four round negotiation, the progression of ratios is approximately 0.25, 0.50, 0.75 and 1.00. For three rounds the progression is approximately 0.33, 0.67 and 1.00. But for each round the variation in

⁹ It is possible that the claimed specials at settlement may be larger or smaller than those claimed in each round. Our benchmark here is the final specials.

ratios is quite large at about 20 percent. The final (B_1/D_3) ratio can be used to show how much the insurer's offer is increased to settlement as well as the claimants' demand is reduced.

Table 6

Negotiation – Offer/Demand Ratios by Round				
4 ROUNDS (100 claims)				
	O_1/D_1	O_2/D_2	O_3/D_3	BI/D_3
Average	0.246	0.476	0.724	0.798
Std. Dev.	0.153	0.213	0.211	0.191
3 ROUNDS (119 claims)				
	O_1/D_1	O_2/D_2	BI/D_2	
Average	0.393	0.708	0.766	
Std. Dev.	0.610	0.212	0.191	

For example, on average for four rounds, the third offer/demand ratio stands at 0.724, the BI/D_3 ratio averages 0.798, making the settlement offer $BI = O_3 \times (798/724)$, or about 10 percent higher than the third offer. Likewise, the settlement demand $BI = D_3 \times (798/1000)$ or about 20 percent lower than the third demand.

Offer Demand Ratios (Sorted by Descending Losses) – Figure 1

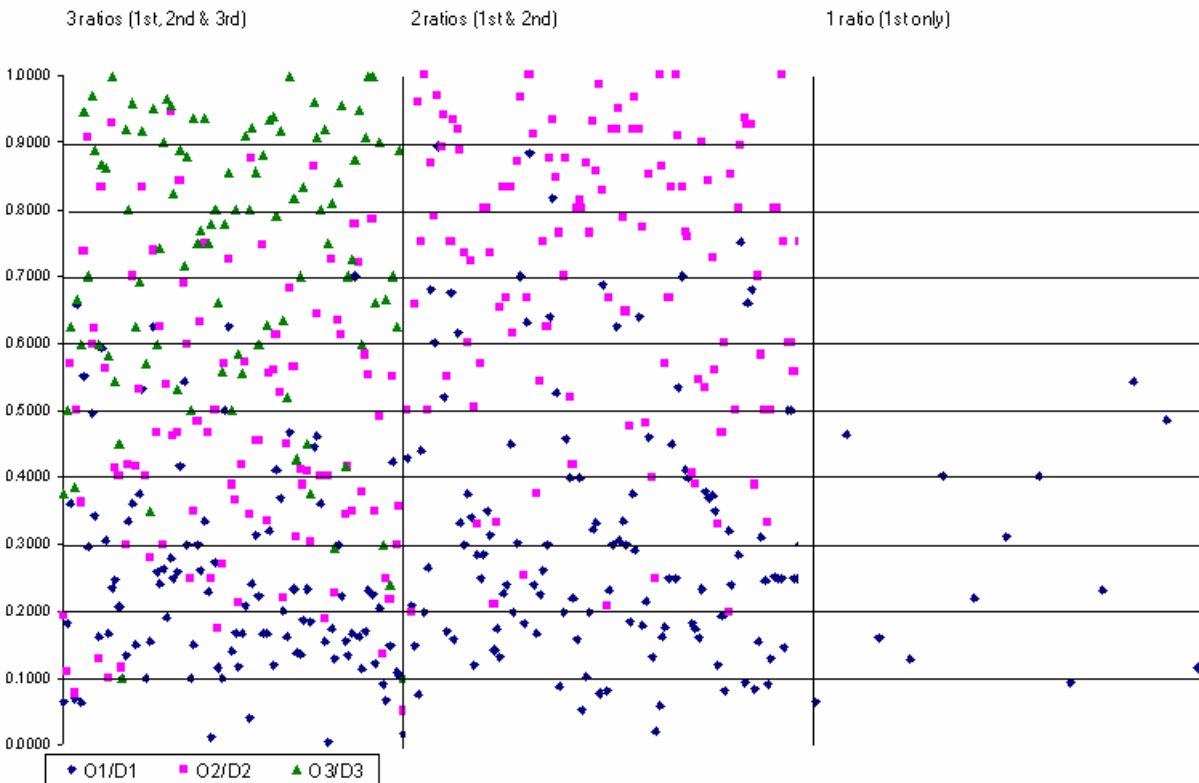
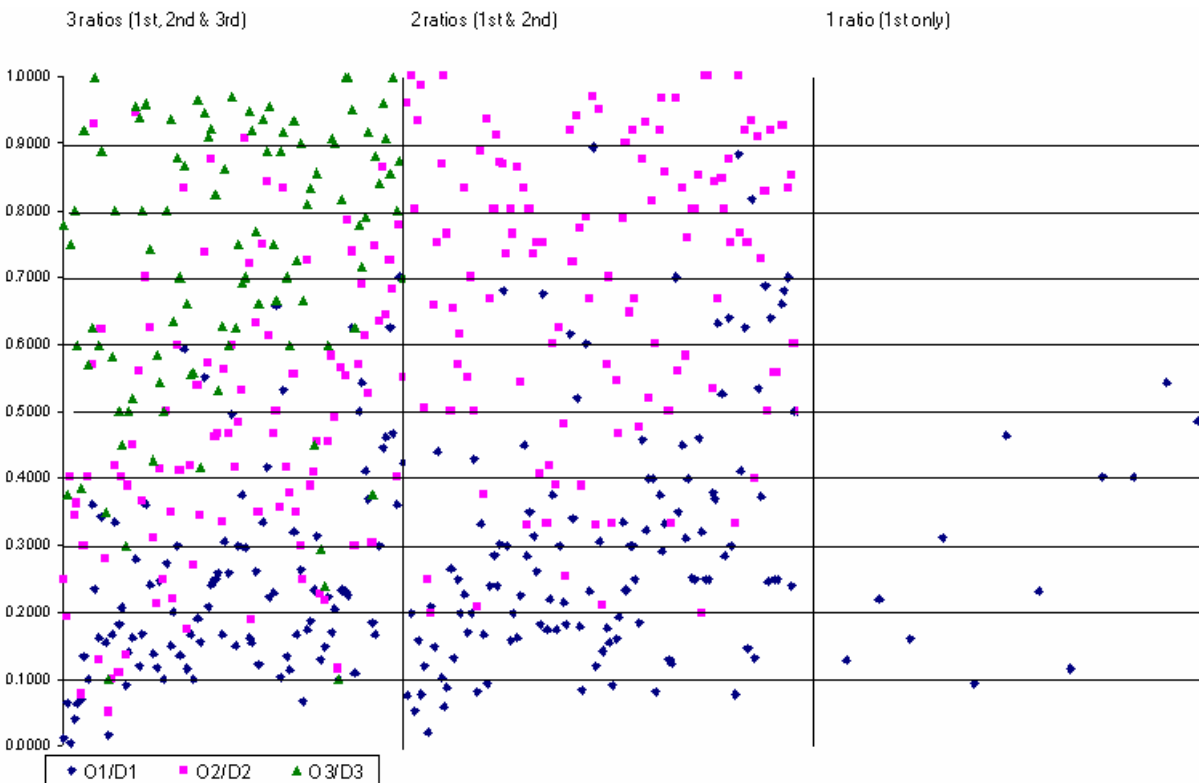


Figure 1 divides the dataset into three groups: those claims reaching settlement in two, three and four rounds. The progression of the negotiation toward settlement is shown by claim (ordered by highest to lowest settlement value.) The wide dispersion in sequences of offer/demand ratios is also evident, as is that of the final round to settlement (distance from last O/D to value 1 line). While there is no apparent pattern of offer/demand ratio by size of settlement, there is a (noisy) upward sloping pattern visible when ordered by first demands (Figure 2).

Offer Demand Ratios (Sorted by Descending 1st Demands) – Figure 2



The fact that a pattern exists at all reinforces the anchor/adjustment model as reactions (adjustments) to the attorney/claimant demands vary somewhat systematically by the size of the demand.

Table 7

Offer/Demand Ratio Dependence on Demand				
Ratio	Rounds	Intercept	Intercept S.E.	Demand (000) Coefficient
O_1/D_1	2	0.55	0.08	-0.0074
O_2/D_2	2	0.78	0.02	-0.0061
BI/D_2	2	0.84	0.02	-0.0057
O_1/D_1	3	0.28	0.02	-0.0013
O_2/D_2	3	0.56	0.03	-0.0055
O_3/D_3	3	0.79	0.03	-0.0058
BI/D_3	3	0.84	0.02	-0.0040
All intercept and demand coefficients significant at 1%				

Table 7 shows the values of a simple regression of the offer reaction (offer/demand) to the opening of each round (demand). All full rounds exhibit downward adjustments that vary inversely with the size of the demand: Higher demands are met with (relatively) lower offers. Additionally, the regressions show implicit “anchors” by round that are quantifiably similar for both three and four round negotiators. The final settlement to last demand is 0.84 in both cases. The last offer/demand anchor prior to settlement is about 0.78 with the previous offer/demand anchor at 0.55. An additional round appears necessary with offer/demand anchor of 0.28 if the opening round finds the parties well apart in settlement estimates.

Table 8

Negotiation – Steps (<i>Ratio</i>)								
	Step 0	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
Claim	ϑ / D_1	O_1 / D_1	O_1 / D_2	O_2 / D_2	O_2 / D_3	O_3 / D_3	O_3 / BI	Settlement
Example 1	ϑ	0.410	0.547	0.613	0.767	0.792	0.864	1.000
Example 2	ϑ	0.167	0.100	0.100	0.200	0.580	1.000	1.000
Example 3	ϑ	0.117	0.155	0.213	0.480	0.585	0.600	1.000
Example 4	ϑ	0.600	0.632	0.789	<i>na</i>	<i>na</i>	0.857	1.000
Example 5	ϑ	0.171	0.300	0.550	<i>na</i>	<i>na</i>	0.733	1.000
<i>Note: Step 6 for 3 rounds is O_2/BI</i>								
AVG 4 Rds		0.246	0.377	0.476	0.608	0.724	0.909	
STD 4 Rds.		0.153	0.192	0.213	0.224	0.211	0.148	
AVG 3 Rds.		0.393	0.579	0.708	<i>na</i>	<i>na</i>	0.920	
STD 3 Rds.		0.610	0.451	0.212	<i>na</i>	<i>na</i>	0.137	

We now examine the sequence of steps from the first demand to settlements. Table 8 breaks down the negotiation rounds into steps (two steps per round). Our analysis includes a maximum of 7 steps to settlement. Table 9 strongly hints that the adjustment process, the movement of the offer/demand ratio upward in each step, is a fairly regular closing movement of about 10 to 20 percent per adjustment, at least on these data.

Table 9

Negotiation – Steps (<i>Adjustments</i>)							
	Adj _{0,1}	Adj _{1,2}	Adj _{2,3}	Adj _{3,4}	Adj _{4,5}	Adj _{5,6}	Adj _{6,7}
Claim	O_1/D_1	$O_1/D_2 - O_1/D_1$	$O_2/D_2 - O_1/D_2$	$O_2/D_3 - O_2/D_2$	$O_3/D_3 - O_2/D_3$	$O_3/BI - O_3/D_3$	$1 - O_3/BI$
Example 1	0.410	0.137	0.067	0.153	0.025	0.072	0.136
Example 2	0.167	-0.067	0.000	0.100	0.380	0.420	0.000
Example 3	0.117	0.039	0.058	0.267	0.105	0.015	0.400
Example 4	0.600	0.032	0.158	<i>na</i>	<i>na</i>	<i>na</i>	0.143
Example 5	0.171	0.129	0.250	<i>na</i>	<i>na</i>	<i>na</i>	0.267
<i>Note: Adj_{6,7} for 3 rounds is $(1 - O_2/BI)$</i>							
AVG 4 Rds	0.246	0.131	0.100	0.132	0.116	0.185	0.091
STD 4 Rds.	0.153	0.134	0.088	0.137	0.097	0.176	0.148
AVG 3 Rds.	0.393	0.186	0.128	<i>na</i>	<i>na</i>	<i>na</i>	0.080
STD 3 Rds.	0.610	0.476	0.433	<i>na</i>	<i>na</i>	<i>na</i>	0.137

Table 10 shows the result for 280 claims of a simple regression of the dependent variable O_1/D_1 , the first round ratio, on claim characteristics, inclusive of the initial demand D_1 . Other variables of interest were, the ratios of offers and demands to special damages and the ultimate BI settlement, the Derrig-Weisberg negotiation factors¹⁰, and the reporting and settlement lags.

Table 10

Model for the First Round Ratio (O_1/D_1)			
Variable	Coefficient	Standard Error	p-Value
Demand 1 (000's)	-0.0041	0.0009	<.0001
O_1 / BI Settlement	0.8561	0.0674	<.0001
Suspicion	-0.0020	0.0012	0.1021
BI Total Paid (000's)	0.0101	0.0045	0.0264
Serious Injury	0.2193	0.0938	0.0204
Log Disability Wks	-0.0595	0.0336	0.0781
Three or more claimants	-0.1263	0.0638	0.0493
Disability Unknown	-0.2682	0.1480	0.0715
Settlement Lag 1-2 yrs	0.2012	0.0650	0.0022
$R^2 = .66$			

The regression shows that:

1. Higher demands, in absolute terms, lead to relatively lower first offers.
2. Claims that settle within one to two years from the accident date have higher initial offers relative to demands.
3. The suspicion score, based on a ten point scale, shown to influence the final total compensation by a decrease of about 2.5% per point (Derrig-Weisberg, 2004a, Table 4) lowers the first offer relative to the demand (but with marginal significance).

5. Conclusion

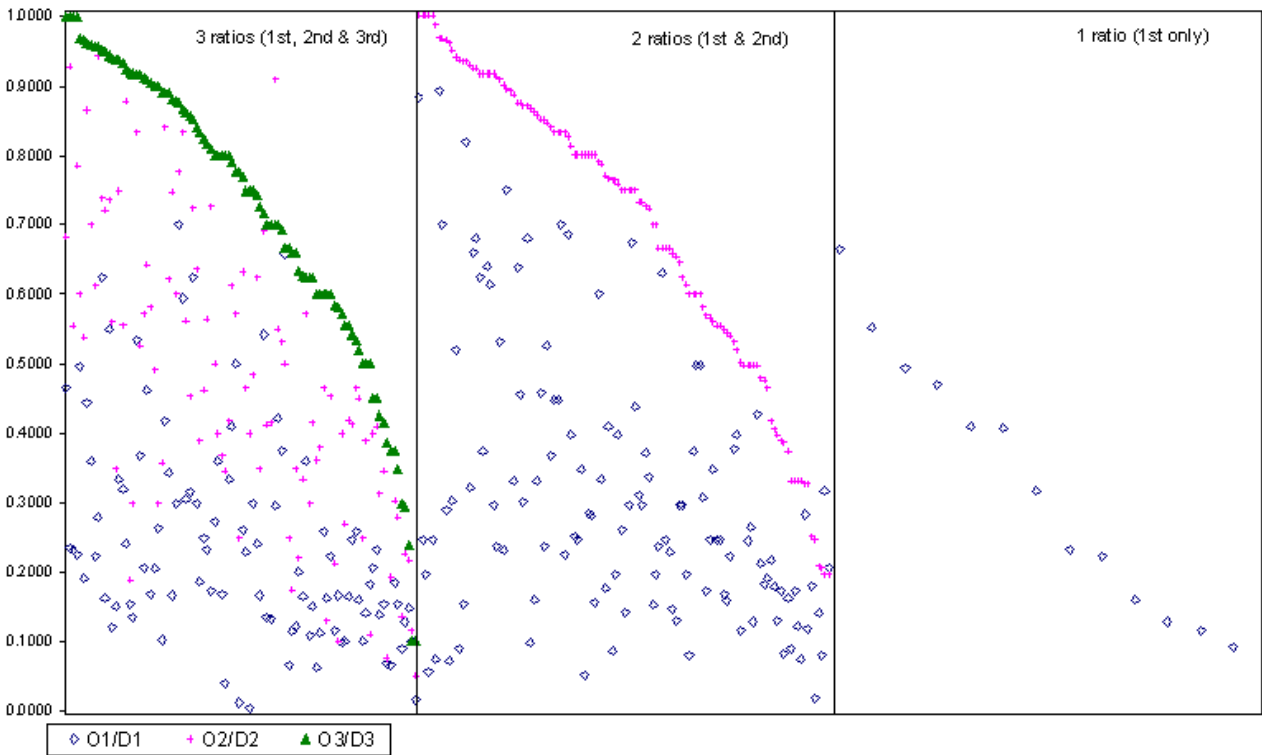
The negotiation process to reach auto bodily injury claim liability claim payment settlements has been highlighted as being an important determinant of the size of claims. Insurers are not in a position to dictate claim settlement amounts unilaterally and so the process to reach those amounts deserves some analysis and attention.

An approach to the negotiation process based upon the initial demands (“anchoring”) and subsequent adjustments favorably reflects the behavioral aspects of the process without the complication of an (unverifiable) utility function framework. One could think of the analogy of using non-parametric statistical procedures rather than imposing analytic distributional assumptions. Our quantification of the process consists in tracking the ratios of offers to demands until the final agreed upon amount becomes the settlement value and claim payment.

¹⁰ Derrig and Weisberg, 2004, Table 9, Negotiation Model reproduced here as Table 3.

The use of a unique Massachusetts bodily injury liability claim data set of offers and demands allow us to highlight the process with some numerical values. We find some structural regularity; higher demands are met with relatively lower offers, but with wide dispersion among claims.

Offer / Demand Ratios (Sorted by Descending Pre-Settlement Ratio) – Figure 3



More needs to be done to illustrate the actual procedure used to generate demands and offers. Armed with such information, the numerical values shown here with wide dispersion may obtain further structure without the need for a complicated axiomatic system. Table 10 begins the process of associating other information-type variable, especially suspicion of fraud and build-up, with the offer/demand cycle. Figure 3 displays the offer/demand sequence ordered by the final offer/demand ratio. Further results will be forthcoming as the strength of the data permits.

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