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REGULATORY FREE CASH FLOW AND THE HIGH COST OF INSURANCE COMPANY FAILURES

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ABSTRACT

Why is the cost of resolving insurance company failures so high? Evidence in this paper suggests that the state insurance regulatory bodies in charge of the liquidation process turn over an average of only 33 cents for each $1.00 of pre-insolvency assets to the guaranty funds (the state agencies responsible for paying claims). This very low "recovery rate" could result from *ex ante* regulatory failure -- the assets of the company are not worth much, reflecting regulatory problems prior to liquidation. Or the low recovery rate could reflect *ex post* regulatory failure -- a regulatory version of the "free cash flow" theory (Jensen, 1986). In this latter case, cash-rich liquidators, who pay their own expenses out of the liquidation receipts first, are reluctant to turn over the money from asset sales to the guaranty funds. The evidence suggests that the low recovery rates arise from both types of regulatory failure.

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1. Introduction

Evidence in this paper suggests that the total cost of resolving P&C insurance company insolvencies is quite high. The net cost of resolving insolvencies (net of "recoveries" from asset sales), which are ultimately paid for by "assessments" levied against non-failed firms, is approximately $1.22 for each $1.00 of pre-insolvency assets. This estimate is even higher than a previous estimate[1] and is nearly four times higher than estimates of the costs of resolving bank failures.[2] Why are insurance company failures so costly to resolve?

The evidence in this paper points to a surprising answer. Given the high risk of P&C liabilities relative to their assets (mostly bonds and other "hard" assets), it seemed reasonable to guess that the costliness of P&C failures was driven by huge increases in claims (from disasters, large liability claims etc.), perhaps driven by moral hazard considerations.[3] That is, it seemed likely to be a liability rather than an asset problem. While this may be a significant part of the answer, the more surprising result is that state regulators recover so little from the asset sales of the failed companies. This low recovery rate is an important reason why net costs are so high. The evidence suggests a recovery rate of only 33 percent. That is, for every $1.00 of assets taken over by state regulators, liquidators turn over an average of only 33 cents to the "state guaranty

[1] The estimate in this paper, with a larger sample, is about 20 percent higher than a previous estimate by Bohn and Hall (1998), which was viewed by industry experts and academics to be surprisingly high (Schachner, 1995 and Bradford, 1998).

[2] Barth, Bartholomew and Bradley (1990), Bovenzie and Murton (1980), and James (1991) all find that the resolution cost to asset ratio is about 0.3.

[3] Indeed, this was the speculation in our earlier paper (Bohn and Hall, 1998). And for analysis of and evidence on how guaranty fund insurance affects risk-taking, see Cummins (1988), Harrington and Danzon (1994) and Bohn and Hall (1997).

funds," the state agencies responsible for paying the claims of the failed companies. As a percentage of "hard assets" – invested assets such as cash, stocks and bonds – the recovery rate is only slightly higher, about 41 percent.

The low recovery rate suggests regulatory failure of some sort. One possibility is *ex ante* regulatory failure: the problems arise prior to the liquidation process. Liquidators recover so little because the assets are essentially worthless, reflecting regulatory breakdown prior to the liquidation process. Another possibility is *ex post* regulatory failure: the liquidation process is flawed. When the liquidators sell off the assets, they pay their own expenses first, *before* turning over the proceeds to the guaranty funds. Thus, with first priority, liquidators do not have strong incentives to maximize proceeds from asset sales. Nor do they have strong incentives to terminate the liquidation proceedings efficiently and quickly; indeed, selling off assets can be a continuous source of cash flow to the liquidators and regulatory agencies who oversee the liquidation process. This view is a regulatory version of Jensen's (1986) free cash flow theory, which states that agency problems are exacerbated by large amounts of free cash. Just as managers with lots of cash are reluctant to return this money to shareholders, regulators with lots of cash are less than eager to return this money to guaranty funds. Regulators prefer to use this money on "expenses" that confer private benefits rather than turn the money over to guaranty funds.

This paper proceeds as follows. Section two provides background information on the rules and organization of the guaranty fund system and develops an agency theoretic framework for analyzing the incentives created by P&C solvency regulation. In section three, I describe the data and produce estimates of the total net costs of resolving P&C insurance company failures.

In section four, separate estimates are produced for guaranty fund payments and asset recoveries, since net costs equal the difference between these two. Section five explores the relationship between regulatory resources, regulatory regimes and recovery rates. In section six, I address the issue of how much of the low recovery rate can be explained by *ex ante* regulatory failure and how much can be explained by *ex post* regulatory failure. In section seven, I look for evidence that explains why guaranty fund payment rates are so high. Section eight includes a discussion of the policy relevance of the findings. Section nine summarizes and concludes.

2. P&C Solvency Regulation: An Agency Framework

In this section, I provide background information on the rules and organization of the guarantee fund system,[4] which is followed by an agency theoretic analysis of the incentives created by this system.

2.1 Rules and Organization

Property and Casualty (P&C) insurance companies are regulated at the state level. In the late 1960s, the federal government threatened to establish a federally-operated insurance system for policyholders similar to the insurance system for bank depositors (the FDIC). The threat of federal intrusion into an industry heretofore regulated by the states pushed the National Association of Insurance Commissioners (NAIC) to propose model legislation that established guarantee funds at the state level. The states quickly enacted legislation that established state guaranty funds, and the organization of the funds generally followed that of the NAIC's Model

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[4] Much of the discussion in the first part of this section is drawn from Epton and Bixby (1976), Duncan (1987) and Bohn and Hall (1998).

Act. By 1971, more than two-thirds of the states had established guarantee funds, with all of the other states following by 1982.

Guaranty funds are non-profit associations consisting of all companies licensed to write insurance in that state (in lines covered by the guarantee fund). Insurance companies are required by law to be a part of the state's guaranty fund system. The guaranty funds are governed by boards composed of insurance company representatives and representatives from the state insurance commissioner's office.

The state guaranty funds are distinct from the state insurance departments, who are responsible for the detection and prevention of insurance company insolvencies. Once an insurance company has been deemed by the state court to be insolvent, the state insurance department takes over the company. Rehabilitations are rare, although evidence by BarNiv and Hathorn (1997) suggests that regulators are successful in facilitating mergers of financially weak companies into healthier ones. The state insurance department turns over the claim file of the insolvent company to the guaranty fund, who then pays the claims of the policyholders in the same way that such claims would be paid by solvent insurance companies. Guarantee funds pay the full amount of an insured's claims up to a certain cap, except for a small deductible that ranges from 0 to $200. The cap on the funds' liability per claim is typically in the range of $300,000 to $500,000, although some states maintain caps as low as $100,000. While the guaranty fund pays most of the claims of the failed insurance companies, the liquidators (which are typically appointed by, or a part of, the state regulator's office) are in charge of selling off the assets of the failed insurance companies. The liquidators use the proceeds of the asset sales to pay their own expenses (i.e. those expenses associated with the liquidation proceedings). Then, after paying any employee wages[5] and taxes that are owed, the liquidators turn over the remaining funds from the asset sales, which are called "recoveries," to the guaranty funds. All other creditors, including claimants not covered by the guaranty funds, have last priority in the distribution process, which typically means that they receive nothing (since recoveries are not usually large enough to cover guaranty fund payments.)

Because the recoveries from asset sales typically fall short of the money needed by the guaranty funds to pay policyholders (called "payments"), the guaranty funds make up the shortfall between payments and recoveries by levying assessments against the healthy insurance companies operating in the state. The size of an assessment is proportional to the company's share of direct premiums written in the state.[6] Thus, assessments are not risk-based. Guaranty funds also levy assessments to cover their own administrative and legal expenses associated with their operations.

In 49 states, guaranty funds operate on a post-assessment basis. (The exception is New York state.)[7] Thus, the guaranty funds are not really funds since they maintain no reserves and only assess member insurers after an insolvency occurs. Assessments are typically capped at 2

[5] Typically, this includes only non-officer wages due for services rendered within the last three months; and the wages paid out are usually capped (e.g. $1,000 per employee).

[6] More specifically, the assessments are based on the proportion of premiums in a specific line within the state. Many guarantee funds are organized into separate accounts covering broad lines of insurance. Typically, a guaranty fund has three separate accounts -- workers compensation, automobile and "all other" types of insurance. However, different states operate as few as one or as many as six different accounts.

[7] New York operates on a pre-assessment basis. The state maintains a fund of $150 to $200 million for the resolution of insurance failures. Firms writing insurance in the state are assessed whenever the fund balance falls below the lower bound.

percent of premiums written per year, although some states maintain lower caps.(NCIGF, 1997)

2.2 Agency Theory Framework

A schematic of the people and organizations involved in solvency regulation is contained in Figure 1. Importantly, the arrows indicate the flow of funds between the groups. When an insolvency occurs, the guaranty funds make the payments to the policyholders. Guaranty funds receive their funds from the state-regulator-appointed liquidators who sell off the assets. After paying their own expenses, including their own salaries, the liquidators turn over recoveries to the guaranty funds. The shortfall, which will be shown to be substantial in most cases, is made up by assessments, which flow from the solvent insurance companies to the guaranty funds. Although insurance companies actually pay the assessments, their cost is borne by insurance companies and two other parties: 1) policyholders (since insurers are allowed to include the cost of assessments as a factor in determining premium prices), and 2) taxpayers (since some states allow insurance companies to use assessments as credits ["tax offsets"] against premium taxes).[8]

The incentive misalignments in this system can be analyzed straightforwardly through the lense of agency theory (Jensen and Meckling, 1976), which is the starting point for most economic analysis of organizational incentives and behavior. Agency problems are caused by incentive misalignment between principals and agents. From an agency perspective, there are three main characteristics about solvency regulation that suggest potential problems. First, the principals are a diffuse combination of insurance companies, taxpayers and policyholders (those who bear the assessment costs), all of which, in turn, are comprised of thousands of

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[8] See Barrese and Nelson (1994) for a nice analysis of who bears assessment taxes.

individuals/groups themselves. Under such circumstances, any one individual has limited incentives (because of the free-rider problem) to ensure that the solvency regulatory system operates efficiently. In addition, the fact that it requires complicated academic studies to determine the incidence of the assessment tax suggests that it is even difficult to identify the principals. That is, not only is each group of principals diffuse, but the groups themselves may not even understand the degree to which they are principals.

Second, it is not clear that the two agents (the state regulators and the guaranty funds) have incentives that are aligned with each other or with the principals. The boards of the guaranty funds are comprised of both representatives of the industry and the state regulatory agencies. Although the industry puts pressure on the guaranty funds to keep assessments low, the guaranty funds do not have control over solvency regulation or the asset liquidation process, which vastly limits their ability to keep assessments at an efficiently low level. These duties fall to the state regulatory agencies, whose commissioner has different incentives since he or she is accountable to a different group – taxpayer citizens in the case of election and the governor in the case of political appointment.

Third, and perhaps most important, the separation between the duties and accountabilities between the two agents -- guaranty funds and state regulators (who in turn appoint liquidators) – is especially problematic from an agency perspective since such a system leaves all of the proceeds of the asset sales in the hands of a group (liquidators) with virtually no liabilities other than their own expenses. This has the potential to create a regulatory version of Jensen's (1986) free cash flow problem. The evidence from the corporate finance literature suggests that agency problems are the most severe when corporate managers have lots of free cash flow (Shleifer and

Vishny, 1997). And just as corporate executives are reluctant to turn over profits to shareholders under such conditions, liquidators may be reluctant to part with the money generated from asset sales. Indeed, the free cash flow problem may be even worse in regulatory agencies, given the opportunities for rent seeking and opportunistic behavior by politicians and government employees.

This analysis raises several important questions. First, how large are the net costs of insolvencies? The degree of the agency problem is directly related to the size of the costs of resolving insolvencies. Second, what drives these costs? High costs can be driven by *ex ante* regulatory failure (poor regulation before the insolvency resolution process) or *ex post* regulatory failure (the free cash flow problem inherent in the liquidation process). Third, are there regulatory characteristics that mimimize the agency problems associated with the regulatory process? For example, one might expect elected commissioners, who are arguably more accountable to taxpayers, to be more efficient regulators than appointed commissioners. In what follows, I explore the empirical relevance of these important issues.

3. The Cost of Insolvencies

In this section, I first describe the data and then produce estimates of the total cost of resolving P&C insurance company failures. The cost estimates are total costs, net of recoveries from asset sales, scaled by the size of the company measured by pre-insolvency assets.

3.1 Data Description

The cost data in this study come from the National Conference of Insurance Guaranty Funds *Assessment and Financial Information Reports* (NCIGF 1993, 1994, 1995). The reports produce cumulative and annual payments, recoveries and net cost data for each P&C insurance company insolvency that triggered guaranty fund payments since 1969. Note that payments are made by the guaranty funds to claimants, and recoveries represent funds turned over by the liquidators from the proceeds of asset sales. Net costs are the difference between payments and recoveries and represent the total costs of resolving an insolvency. Thus, except for differences in timing, the net cost of an insolvency is equal to the total amount of assessments levied against healthy firms for that insolvency.

Liquidation dates for each insolvency were found in Best's Insurance Reports, Best's Solvency Report, documents provided by the NCIGF or, as a last resort, by newspaper searches in Lexis-Nexis. The financial data for each firm was obtained from the National Association of Insurance Commissioners (NAIC) *Annual Statement Database*. The data for each firm was drawn from the annual statement filed by the firm in the year prior to failure (and in some cases, which are noted, two years prior to failure). Because the NAIC machine readable financial data is not available prior to 1984, the analysis was confined to firms that failed after 1986.[9] A small number of (mostly very small) firms were excluded from the sample because we could not find liquidation dates or because financial data was not available. The final data set includes 154 insolvencies representing about 80 percent of guaranty fund payments. All financial and cost data were adjusted for inflation using the CPI. New York was excluded from the analysis since it did not submit data to the NCIGF for two of the three reports.[10] Summary statistics for the

[9] In some cases (e.g. to calculate pre-insolvency growth rates), it was necessary to have two years of data prior to insolvency.

[10] For the small number of companies (not domiciled in New York) that write some premiums in

variables used in the empirical tests that follow are included in Table I.

3.2 Measuring Net Costs

In earlier work, Bohn and Hall (1998) showed that the net cost of resolving insolvencies, scaled by size, was very high -- approximately $1.00 of net costs for every $1.00 of (pre-insolvency) assets. Their method used annual net cost numbers and premium information to estimate typical net-cost time paths, which was then combined with cumulative net costs and assets to produce net cost to asset ratios. While this method has its advantages, it has the problem of using relatively noisy annual net cost numbers and volatile premium numbers[11] to produce the cost to asset estimates.

In this study, I attempt to improve on these estimates in two ways. First, a different, simpler methodology is used that does not rely on the annual cost or premium data. Instead, only cumulative cost data, which averages out year to year fluctuations, are used to produce the estimates. Second, the data are updated to include net costs from the NCIGF's 1995 report, which has cost data for 1994.

The most straightforward method for calculating total cost to asset ratios is simply to divide the cumulative costs for each insolvency by pre-insolvency assets.[12] The problem with this method is that insolvencies take time to resolve. That is, the payments and the recoveries

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New York, we scaled down the size of these firms by the percentage of premiums written in New York. None of the results are sensitive to the scaling procedure used, or to exclusion of these firms.

[11] In recent work, Bohn and Hall (1997) show that pre-insolvency premium growth can be very volatile.

[12] This is the assets in the year before failure. As a robustness check, in order to minimize any noise resulting from any pre-insolvency fluctuations in assets, I reran the results using the average of assets in the two years prior to failure. The results are very similar.

occur over time, implying that cumulative costs in a specific year do not necessarily represent the total resolution costs of the insolvency. Thus, in order to determine average cost to asset ratios, and the pattern of these costs over time, the cumulative net cost to asset ratio is regressed on a set of time dummies. The year one time dummy represents the average cum cost to asset ratio for all firms that failed one year ago and the year 2 dummy is the ratio for firms that failed two years ago etc.[13]

The results are reported in the first columns of Table II.[14] Each coefficient represents the average cumulative cost to asset ratio for each time period. White (1980) standard errors are in parenthesis and shown below the coefficients, which is the case for all of the regressions that follow. Although uneven since I am estimating a time path from cross sectional data, the costs rise over time, showing a rough time pattern of costs. The results indicate that cum costs rise over time from year one to year three. No such pattern emerges in years that follow, where the cost to asset ratio fluctuates around an average slightly above one. The fact that costs do not rise in the years subsequent to year three suggests that it is reasonable to conclude that the vast majority of net costs occur in the first four years. This is not too far from the net cost time-path estimate of Bohn and Hall (1998), who found that about 82 percent of net costs are realized in the first four years.[15] The bottom row is the mean of the net cost to asset ratio for all insolvencies

[13] More specifically, it represents the cost to asset ratio of any firm that failed within the last year (i.e. from 1 to 365 days ago). The year 2 dummy is the ratio for companies that failed between one and two years ago etc.

[14] To reduce noise, the two largest and two smallest outliers were omitted. The removal of these outliers from the dataset tended to reduce, by a modest amount, the average cost to asset ratio.

[15] See the first column of table 5 in Bohn and Hall (1995).

that occurred at least four years prior to the end date (1994). The numbers in the bottom row represent estimates of total resolution costs, assuming that all costs occur in the first four years following insolvency. It is noteworthy that the estimated cost to asset ratio is 1.22, which is about 20 percent higher than the Bohn-Hall estimate.

For the sake of comparison, it is also instructive to produce cost estimates that are conceptually similar to those of Bohn-Hall. In order to do this, each cumulative cost estimate for firms that failed at least four years ago are scaled according to the Bohn-Hall estimate of the time-path. For example, since the estimated time-path implies that 82 percent of the costs are resolved by year four, each net cost figure for year four is scaled up by 1/.82. That is, there is an "add-on" cost of 0.22 for these firms and a smaller "add-on" for year 5 firms etc., which decline over time according to the Bohn-Hall estimated time-path. After the net cost data is adjusted in this way, analogous net costs regressions are run, which are shown in the third and fourth columns of table 1. Likewise, the mean is shown in the last row. Using this procedure, the estimate of the net cost to asset ratio is 1.38.

These results corroborate the finding of Bohn and Hall that the total costs of resolving insolvencies are quite high. In fact, using this more straightforward methodology (along with the updated data) produces a slightly higher estimate of the resolution cost to asset ratio. The more conservative estimate, which seems reasonable given the time path of cumulative costs, suggests that total resolution costs are approximately $1.22 per dollar of pre-insolvency assets. Allowing for add-on adjustments, the cost to asset estimate is even higher.

4. Recoveries and Payments

The key question that is raised by this finding is why net costs are so high. To shed light on this issue, it is necessary to distinguish between two possibilities: either the liquidators (who are responsible for selling off the assets) are turning over little money to the guaranty funds or the guaranty funds (who are responsible for paying claimants) are paying out huge sums to claimants (or some combination of the two). In this section, the time path of recoveries and payments are examined separately to help answer this question.

4.1 Recoveries

In the first columns of table III, the time path of cumulative recoveries is shown. The ratio of recoveries to assets is regressed on time dummies in a manner analogous to that of the net cost regressions in table II.[16] The estimates indicate that the recovery to asset ratio tends to rise over time.[17] The general upward trend in the average recovery to asset ratio over time can be seen by the comparison of means, which are shown at the bottom of the table. For example, the average recovery to asset ratio for all firms that failed at least four years ago is .16. This ratio rises to .22 if the sample includes only firms that failed at least six years ago. The ratio increases further to .28 if the sample of firms is reduced to only firms that failed at least eight years ago.

The overall upward trend between even in the years between four and ten suggests that recoveries may continue to trickle over time. In order to adjust for that fact, I produce estimates

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[16] Recoveries and payment are not reported separately for some of the firms. This is the reason that the number of observations falls by about one-third in table 2 relative to table 1.

[17] Note that the first year contains some very large and some very small recoveries since it is a hybrid of firms that failed very recently (less than a few months ago) and firms that failed nearly one year ago.

of "add-ons" for the earlier years since cumulative recoveries in these early years do not represent the final recovery values for these insolvencies. Given the number of data points and the lack of smoothness in the time paths, it is not possible to estimate with any confidence anything other than a linear trend. In order to make the adjustment, the recovery data for years four through ten are first regressed on a constant and a linear time trend. This produces a predicted time path for the recovery to asset ratio, which rises over time. That time path, benchmarked against year ten, is then used to produce implied "add-on" factors for the earlier years. This was done separately for both the full sample and the cross sectional sample. For example, in the full sample, the linear time path implies that the cumulative recovery to asset ratio in year five is about one-third the size of cum recoveries in year 10. Therefore, in order to make the adjustment, the recovery to asset ratios in year five are all multiplied by three.

The results of the recovery regressions after the recoveries have been adjusted (with "add-ons") are shown in the second column of table III. Note that, because of the detrending, the recovery to asset ratios now do not rise over time. The key result, however, is that the mean of the recovery to asset ratios, shown at the bottom of the table, indicates that recoveries are only 33 percent of pre-insolvency assets. This is not surprising given that, if one examines only insolvencies that occurred ten years ago, cum recoveries average only 28 percent of pre-insolvency assets. Data limitations preclude checking to see if recoveries continue to grow significantly in time periods beyond ten years. However, it seems unlikely that there are more than a trickle of recoveries for insolvencies beyond ten years; and conversations that I have had with insurance regulators suggest that this is not the case. Either way, the result that cumulative recoveries average only about 33 percent of assets, at least through ten years, is striking.

It is also interesting to examine how recovery rates change when expressed as a percentage of invested assets ("hard assets" such as cash, stocks and bonds) rather than total assets (which include hard assets as well as agent balances and other non-invested assets). In order to explore this issue, analogous regressions are run with total assets replaced by invested assets. The results, shown in the next two columns, show that the recovery rates rise as expected. The recovery rate rises from 33 percent to 41 percent, which is a significant 25 percent increase. However, a 41 percent recovery rate is still low in absolute terms, suggesting that recovery rate for invested assets is also strikingly low.18

4.2 Payments

In order to determine the magnitude of guaranty fund payments, the cumulative payment to asset ratios are regressed on time dummies in a manner similar to the net cost and recovery regressions. The results are reported in the last columns of table III. With the exception of the first few years, there is no upward trend in the means over time. After year three, the numbers fluctuate around 1.5 or so with a fairly large range. For consistency with earlier tables, the mean of the ratios for the years four through ten are reported in the bottom rows. The analysis suggests that there are about $1.40 worth of payments for every dollar of assets on average. To the extent that some of the cumulative payments in the earlier years are incomplete, this $1.40 figure represents an underestimate of the true ratio of (fully realized) payments to assets. However, the

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[18] The results were also rerun without the CPI adjustment. Since recoveries come in many years after an insolvency, recoveries are deflated by more than assets. When such an adjustment is made (not shown in the table), the recovery rate increases by 19 percent, from 33 percent to 39 percent. However, the CPI adjustment seems reasonable. Indeed, since most of the assets are invested assets, which collect interest over time, a case can be made for deflating everything by the interest rate rather than the

lack of any general upward trend, at least for the years four through ten, makes any upward adjustment questionable; and so it was not done.

4.3 Analysis

In earlier work (Bohn and Hall (1998)), my coauthor and I speculated that the high cost of insurance company insolvencies was driven by liability rather than asset problems. Given the relative riskiness of P&C insurance company assets relative to their liabilities, it seemed reasonably to suspect that, to a first approximation, insurance company failures were driven by liability increases. These results do not support that contention. While guaranty fund payments are indeed high -- approximately $1.40 per dollar of assets -- the more surprising result is that recoveries are so low. Liquidators turn over only about one-third of the pre-insolvency (book) value of assets. This suggests that an important element in understanding why insurance company failures is so high is understanding why liquidators turn over so little money to the guaranty funds. This issue is addressed in the next section.

5. Recoveries and Regulation

The low rate of recoveries suggests regulatory failure of some sort. An important question, therefore, is whether various factors that are thought to improve the stringency of state regulation are associated with better recovery performance. Thus, in this section, I investigate whether various characteristics of state regulatory regimes are correlated with a high or low rate of recoveries. The recovery rate, defined as before as cumulative recoveries divided by assets, is

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inflation rate, which would make the recovery rate lower instead of higher. In this respect, the CPI adjustment is a conservative one, which seems prudent given the findings in this paper.

regressed on a constant, a year indicator (i.e. a linear time path) and various regulatory variables, defined below. As a check for robustness, since the year indicator imposes a linear trend on the time profile of recoveries, a less restrictive specification is used that replaces the year indicator with year dummies. In addition, the specification is run with and without a control for mutual (equals 1 if the firm is a mutual rather than stock firm).

The first two regulatory variables are meant to capture the amount of resources, appropriately scaled, that a state puts into regulation. The two proxies for "amount of resources" are the total budget of the state insurance office and the total number of state insurance examiners, both scaled by the dollar value of direct premiums written in the state. The variables were scaled by premiums rather than number of insurance companies since the average size of insurance companies can differ dramatically by state. The third regulatory variable is a dummy variable equal to one if the insurance company is domiciled in one of the ten largest states, measured by population.[19] This variable is meant to capture any economies of scale in regulation. Some industry experts believe that larger states generally do a better job of regulating insurance companies than smaller states. Fourth, a regulatory variable is included to capture differences in the corporate governance structure of the state insurance offices; a dummy variable equal to one if the state insurance commissioner is elected rather than appointed is included in the regression. It is sometimes argued that elected regulators do a better job than appointed ones since the former are more accountable than the latter. Finally, a dummy variable is included if the state allows guaranty fund assessments to be offset against taxes. To the extent that state

[19] With the exception of one state, the ten largest states by population were also the ten largest states by total state insurance regulatory budget.

regulators are made accountable to taxpayers, a tax offset would give regulators an incentive to be efficient in resolving insolvencies.

The results, with each of the five regulation variables included sequentially in the specifications, are shown in table IV. While one could discuss interpretations of the variables that are different from the ones I have offered above, such discussion seems unnecessary. The striking fact that comes from this table is that, with two minor exceptions, none of the coefficients are statistically significant. The coefficient on large state is negative and significant, implying that large states have a worse recovery record (the opposite of the predicted result), but this result is a fragile one since it is not significant in the second specification. The tax offset variable is also negative and significant, which is evidence against the view that taxpayers are successful in raising recovery rates. Indeed, taken at face value, the results suggest the opposite. One interpretation of this result is that regulators are responding to pressure from insurance companies and policyholders (who would push for better handling of insolvencies when there is no tax offset) rather than taxpayers.

The more important conclusion of this analysis, however, is the more general low correlation between the regulatory variables and the recovery performance. These results should be interpreted with some caution. For example, this low correlation may be explained by lack of discretion of the regulators (e.g. the regulators are restricted to choose liquidators from a NAIC approved list.) Or the low correlation could be the result of a low statistical power of the tests. Nevertheless, taken at face value, the results suggest that low average rate of recoveries is pervasive in that it is relatively independent of regulatory resources and regulatory regime.

6. *Ex Ante* or *Ex Post* Regulatory Failure

The pervasively low rate of recoveries could be the result of poor *ex ante* regulation or poor *ex post* regulation. Put another way, the low recovery rate could reflect the fact that insufficiently stringent regulation enables companies (that subsequently fail) to hold assets with greatly inflated values. In this case, even with a very efficient liquidation process, recoveries would be expected to be low. This is the case of poor *ex ante* regulation.

Conversely, the problem may lie in the liquidation process. In particular, when liquidators begin to sell of the assets, they first pay their own expenses (and the expenses of lawyers and other subcontracted groups involved in the liquidation process) before turning over the money to the guaranty funds. Thus, the incentives for liquidators to keep liquidation costs low are not strong. Indeed, there are incentives for those profiting from the liquidation process to drag it out for as long as possible. This is the case of poor *ex post* regulation -- the regulatory version of Jensen's (1986) free cash flow theory, whereby cash-rich regulators, like cash-rich managers, are not eager to part with money once they get their hands on it.

6.1 Tests

In order to distinguish between these two hypotheses -- poor *ex ante* and poor *ex post* regulation -- I regress the recovery rate on a series of pre-insolvency balance sheet variables. If there is poor *ex ante* regulation, then various balance sheet variables are likely to be correlated with subsequent recovery rates. For example, if recoveries are low because lax regulation enables insurance companies to hold inflated assets, then a (good) proxy for low asset quality will be correlated with low recoveries, suggesting that at least some of the low recoveries are the result of poor *ex ante* regulation. Conversely, if asset quality is uncorrelated with recoveries, then poor *ex post* regulation is the likely culprit.

In tables V and VI, recovery rates are regressed, sequentially, on seven balance sheet variables using the same basic specifications as before. The first variable is the fraction of assets that are "hard assets," where hard assets are defined to be invested assets (cash, Treasury bills etc.), bonds and stocks.[20] The fraction of assets in real estate, the second balance sheet variable, is included since liquidators may have trouble selling risky real estate assets. The third and fourth variables are the proportion of reinsurer receivables and agent balances. Distressed companies often fail because of problems with receivables from agents and reinsures, making it difficult for liquidators to collect on these assets.

The fifth balance sheet variable is the capital to asset ratio. The relationship between pre-insolvency capital and recoveries should be, if anything, positive. But this relationship is likely to be small in magnitude since guaranty funds have a higher priority than most creditors in the distribution of funds from the liquidation proceedings (the exception being that they must pay all taxes due and some wages due, which are probably small), breaking most of the link between a firm's pre-insolvency capital position and the distribution of recoveries to guaranty funds.

The sixth balance sheet variable is a proxy for bond risk -- the proportion of bonds that are industrial, measured at book value.[21] The final balance sheet variable is fast premium growth, a dummy variable equal to one if premium growth in the year before failure of greater than 25

[20] Definitions that broadened or narrowed what is included in "hard assets" were also tried. These alternative definitions produced the same basic regression results and therefore are not reported.

[21] The results for bond quality (which will be shown to be insignificant) are robust to various definitions of bond quality (e.g. using market rather than book values, adding utility bonds to industrial bonds etc.) I also tried the proportion of bonds in the lowest two quality classes in Schedule D, although this variable was only available for about half of my sample, and obtained similar results.

percent. Best's Insolvency Study (1991) lists this variable as a potential indicator of excessively risky behavior. In addition, Bohn and Hall (1996) provide evidence that insurance companies may "game" the guaranty fund system through fast premium growth. To the extent that fast premium growth indicates that companies are gaming the system, this may imply that they are also gaming in other ways, such as by holding risky assets. Thus, fast premium growth may capture the some of the effects of poor asset quality not captured by "hard assets," which is likely to be an imperfect proxy for asset quality. The fast premium growth variable is also interacted with premium growth to see if there is a positive relationship between premium growth and recovery rates for the potential gamers. In addition, mutual and size dummies[22] are added as control variables.

The results are shown in tables V and VI. Two of the balance sheet variables are significant. The percentage of hard assets is positive and statistically significant at conventional confidence levels, although its statistical significance falls off in the second specification. Moreover, the point estimates imply an effect that is non-trivial. For example, using specification one and assuming a basically fully realized insolvency (i.e. one that occurred ten years ago[23]), the coefficient on hard assets implies that moving from an average fraction of hard assets (.60 in this sample) to a very high level (.90, which is .10 above the industry average of .80) increases the recovery rate from 37 percent to 45 percent. The coefficients on the next five balance sheet variables are all insignificant, although several (real estate, agent balances and

[22] Firms are put into quartiles by asset size. Thus, there are four dummies (one dropped). They are only occasionally statistically significant, but are included as a robustness check.

[23] This necessitates multiplying the year indicator by six since the year indicator equals the

bond quality) have the predicted sign. Note that the coefficient on the capital to asset ratio is negative, the opposite of the expected sign, but is not even close to being significant. The lack of a link between the pre-insolvency capital surplus and subsequent recoveries is probably not surprising given that creditors have a lower priority in the distribution process than the guaranty fund.

The coefficient on fast premium growth is negative and statistically significant in all specifications; thus, potential gamers, companies with fast premium growth, have a lower recovery rate on average. The interaction term, however, is insignificant, suggesting no difference between the high growth gamers and the very high growth gamers. Using the point estimates in specification five and same assumptions as above, non-gaming firms have an average recovery rate of 41 percent while gamers have recovery rate of only 27 percent, suggesting a non-trivial difference between the two types of firms.

6.2 Analysis

The basic conclusion of these results, therefore, is that the recovery rate is influenced by the quality of pre-insolvency assets and by a proxy for "gaming." The fact that there is a correlation between these balance sheet items and recovery rates suggests that at least some of the low recovery problem can be explained by the poor financial condition of the firm *prior* to the liquidation process. There is thus some support for the poor *ex ante* regulation hypothesis.

However, poor *ex ante* regulation does not preclude poor *ex post* regulation. It may be the case that the low recovery rate is caused by both poor asset quality and by inefficiencies (or

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number of years ago that the company was liquidated minus four.

worse) in the liquidation process. The method used to investigate this possibility is to estimate the "predicted" recovery rate of a non-gaming firm with a very high percentage of hard assets. If companies with high quality assets (defined to be non-gaming companies with a high percentage of hard assets) also have low recovery rates, then this suggests that the liquidation process has eaten up much of the assets. However, companies with high quality assets also have high recovery rates, this suggests that virtually all of the problem of low recovery rates stems from poor ex ante regulation — that is, the poor the asset quality of the companies.

Table VII shows the results of specifications that include both hard assets and fast premium growth as right hand side variables. The coefficients on both variables are statistically significant in each specification. In addition, the coefficients seem fairly stable across specifications. The estimates of the coefficients do not imply that a non-gaming company with a high percentage of hard assets has a high recovery rate. For example, the coefficients in specification one imply that a ten-year old insolvency of a non-gaming company (the fast premium growth dummy is set to zero) has a recovery rate of 42 percent if the hard assets are set at 80 percent, which is approximately the P&C industry average. Under the same assumptions, moving the percentage of hard assets to 90 percent implies a recovery rate of only 45 percent. Even taking the polar case whereby all assets are hard assets implies a recovery rate of only 48 percent. The fact that even a (hypothetical) non-gaming company with 100 percent hard assets produces low recovery rates suggests that a problematic liquidation process is at least part of the story.

Note that the specification used to do this analysis does not include mutual as a control variable. As shown in specification three, mutual is significant and positive. Thus, it seems reasonable to do the same analysis with specification three to determine the predicted recovery rate of a non-gaming, mutual with a high percentage of assets. There are two reasons to believe that a financially sound mutual is not the appropriate benchmark. First, although the coefficient on mutual is large and statistically significant, there are only eight mutuals in the sample.

Second and more important, as will be shown in the next section, mutuals have higher payments as well as higher recoveries. In fact, the coefficients suggest an implausibly high rate of payments for mutuals. Taken at face value, this suggests that mutuals are more expensive to resolve (on net), making them not a very good candidate for a benchmark "best financial condition company." There is no obvious explanation for the high rate of recoveries and payments for mutuals. Nevertheless, if one ignores these caveats and sets mutual equal to one (in specification three, for example), the recovery rate of a firm with 80 percent hard assets is still only 64 percent. Moreover, the recovery rate rises to only 70 percent under the extreme assumption of 100 percent hard assets.

The bottom line of this analysis is liquidations of firms that appear to have a high proportion of hard assets do not generally lead to high recovery rates. The possibility remains, nevertheless, that even these hard assets do not have market values anywhere close to their pre-insolvency book rates. That is, *ex ante* regulatory failure alone explains the low recovery rates. But this story would seem to require large, widespread overvaluation of even hard asset values. This would only be possible with widespread, fraudulent reporting of such values.

While this may explain some of the low recovery rates, it seems likely that a significant factor contributing to the low recovery rates is the reluctance of liquidators to turn over the proceeds from the asset sales. Although I could not obtain data on liquidation expenses (information on liquidation expenses are sometimes "filed under seal" by the courts and the regulators and receivership offices I contacted refused to disclose the data), individuals familiar with the process believe that liquidation expenses are sometimes quite high. As just one example, Macleod (1998) investigated the Transit insolvency and found that two and a half years after the company went into liquidation, the liquidators had "actually spent more administering the estate than it had distributed to its creditors." (Macleod, p. 47). His report details the very high expenses and incomes of the liquidators, the cronyism between the politicians, the judge and the liquidators, and payments of "$33.8 million to more than 150 law firms since 1985." This pattern of activity is consistent with the "free cash flow" view of the regulatory process.

7. Payments

The focus of this paper is on the magnitude of asset recoveries and the reasons for the low recovery rate. It is also interesting, however, to examine the other side of the balance sheet by investigating the reasons for the relatively high guaranty fund payment rate, which was established earlier to be on the order of 1.4. Why are payment rates so high? Do any of the regulatory or balance sheet variables help explain the high payment rate?

Table VIII reports the results of regressions of the payment rate on the same regulatory variables and two balance sheet variables. The balance sheet variables include fast premium growth, since these gaming firms might be expected to be lead to higher payments, and the percentage of premiums in long tail lines, since evidence in Bohn and Hall (1997) suggests that movement into long-tail lines is one way that firms can game the guaranty fund system. Two control variables are also included, mutual and disaster (equals one if the firm failed because of a natural disaster according to A.M. Best (1991)).

The striking fact of the table is that none of the variables are statistically significant. Indeed, in most cases, the coefficients are smaller than the standard errors. Thus, with regard to the regulatory variables, the evidence suggests that the high rate of payments is invariant to regulatory regime and regulatory resources. In addition, the lack of connection between the balance sheet variables and the payment rate suggests that, to the extent that such game playing exists, it does not seem to correlate necessarily with higher guaranty fund payments, at least relative to the non-gamers. Firms that failed because of a disaster have, perhaps not surprisingly, a much higher payment rate. And as discussed earlier, mutuals have a higher payment rate. There is no obvious explanation for this.

Some caution must be taken in interpreting these results. With only 71 observations of noisy payment data, it may be too hard to tease out correlations with these variables. Nevertheless, taken at face value, the evidence suggests that the relatively high payment rate is invariant to almost everything. Payment rates are high on average regardless of regulatory resources, regulatory regime and balance sheet characteristics.

8. Some Policy Implications

The results of this paper have a number of policy implications. The extremely high cost of insolvencies raises the issue of the capacity of the solvency funds should there be one or more large insurance company failures in a state. A 1992 GAO report (U.S. General Accounting Office, 1992) warned that the capacity of 33 to 38 state funds would be out outstripped if a large insurance P&C company failed. The findings of this GAO study have been challenged on the grounds that the assumptions are exaggerated and the methodology is flawed.[24] While these criticisms are at least somewhat valid, the analysis and findings in this paper suggest, at a minimum, that the GAO's warnings should be taken seriously.

The high cost of failures also suggests regulatory failure of some sort. But, interestingly, there is a striking lack of any correlation between the regulatory variables and outcomes (recovery rates and payment rates). Although this result should be interpreted with some caution, it does seem to indicate that the poor outcomes are pervasive and invariant to regulatory regime and regulatory resources. On this view, small changes in regulatory budgets or minor changes in governance structures (e.g. electing rather than appointing insurance commissioners) are not likely to matter very much.

Perhaps the most striking finding of this paper is that recoveries are so low. Perhaps this is not surprising, given the weak incentives for liquidators to turn over money to guaranty funds. In the liquidation proceedings, liquidators pay their own expenses first from the funds generated by the asset sales. Thus, there seems to be little incentive for them to sell off the assets in a revenue-maximizing way; and there is little incentive to turn over these funds once they have sold off the assets. Indeed, since well-paid lawyers are often hired to facilitate the liquidation process, they have every incentive to drag it out as long as possible. On this regulatory free-cash flow view, regulatory failure is the result of a classic agency problem. The regulators have better information than the principals (taxpayers, policyholders and insurance companies since they ultimately bear the cost of assessments) and the incentives of the agent-regulators are not lined

[24] See for example, Klein, Robert, "Issues Concerning Insurance Guaranty Funds," an analysis presented to the NAIC Guaranty Fund (EX4) Task Force, page 9.

up well with the goals of the principals. Real reform, therefore, requires both improved information and a closer alignment of regulator incentives and principal goals.

Modest reforms include changing the liquidation process (so that the liquidators no longer have first priority) and improving the information that liquidators must provide about their performance and expenses. A more radical reform would be to narrow the range of groups who bear the cost of insolvencies (e.g. removing the tax offset so that the industry bears most of the incidence of assessment taxes)[25] while simultaneously combining the liquidation and claim-paying responsibilities into one group (the agents) who are funded by, and made accountable to, the industry (the principals). This is all complicated by potential conflicts of interest related to the fact that the regulators also regulate the industry in other ways (e.g. rate-setting). Nevertheless, the guiding principle of regulatory reform is that the agent-regulators should be a clearly defined group made accountable to a non-diffuse group of principals -- those who bear the cost of insolvencies.

9. Summary and Conclusion

There has been a sharp increase in P&C insurance company insolvencies during the past decade. The number insolvencies increased from about 10 per year between 1970 and 1985 to more than 30 per year during the past decade. From 1993 to 1995, about the same number of P&C insurance companies failed as commercial banks, even though the total number of

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[25] Note that I am arguing that narrowing the group that pays assessment taxes is efficient (because free-riding prevents a diffuse group from having the incentives to keep insolvency costs low), not necessarily fair. Indeed, the argument that it is unfair for responsible insurance companies to foot the bill for their irresponsible competitors has merit.

commercial banks outnumbers the total number of P&C insurance companies by a factor of four to one.

Evidence in this paper suggests that it is very costly to resolve these insurance company failures. The ratio of net resolution costs to pre-insolvency assets is approximately 1.2, which is approximately four times larger than comparable estimates for banks and S&Ls. Much of the high cost of failures reflects large policyholder losses, which lead to high claims against the estate of the insolvent firm. However, the more surprising result is that much of the explanation for the high cost of insolvencies is the low recovery rate by the liquidators. On average, liquidators turn over only 33 cents for every $1.00 of pre-insolvency assets.

The evidence suggests that this low recovery rate reflects a combination of two factors. The first is that the assets are of poor quality, suggesting regulatory breakdown prior to the liquidation proceedings. The second is that liquidation process is flawed. Liquidators, who pay their own expenses out of proceeds first, are less than eager to turn over the funds generated from asset sales to the state guaranty funds. Just as agency considerations lead cash-rich managers to find creative ways to spend money, agency considerations may lead regulator-liquidators to find creative ways to spend the proceeds of asset sales. More direct evidence is needed to determine how important this regulatory free-cash flow effect is. And assuming that the effect is large, more research is needed to understand how, in practice, liquidators (and the state agencies that oversee them) manage to take such a large bite out of the pie.

Extensions to this paper have the potential to lead to more general theories about regulatory behavior.[26] If regulatory free cash-flow effects are important, then regulatory inefficiency should increase, ceteris paribus, as regulatory free-cash flow increases. While asset sales are one way to generate cash-flow for regulators, there are others. Some regulatory agencies collect tolls and fees.[27] Are these regulatory agencies plagued by free-cash flow problems? Evidence about this issue could make an important contribution to our understanding of regulatory behavior.

[26] And also to the behavior of non-regulatory agencies of the government.

[27] For example, there was a recent expose about a state agency that collects highway tolls. The agency was found to be purchasing outrageously expensive buildings, paying huge salaries and spending money in other dubious ways rather than returning the money to taxpayers or to automobile drivers (by lowering tolls).

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Figure 1

P&C Solvency Regulation
(Arrows indicate flow of funds)

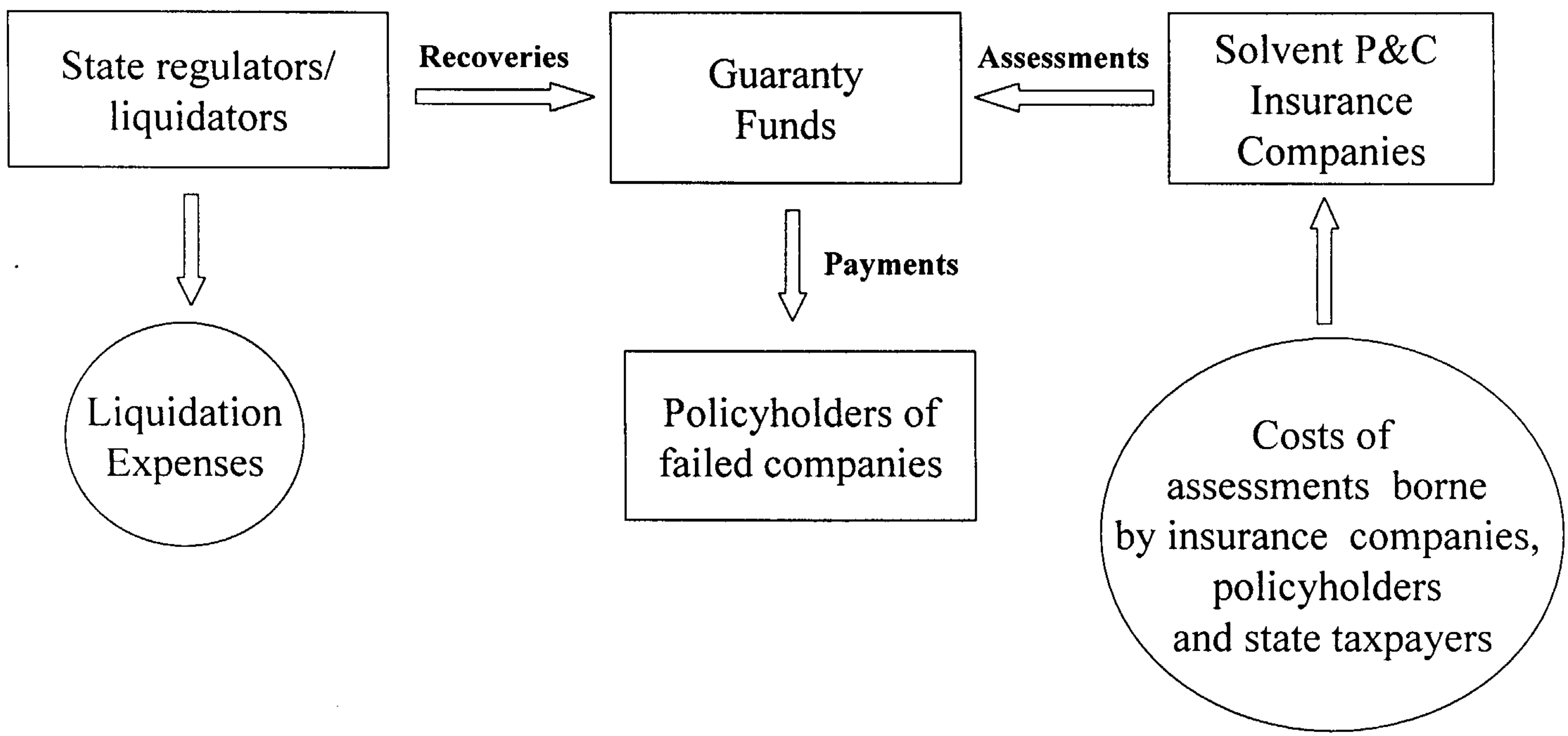

TABLE I

DESCRIPTIVE STATISTICS: MEANS AND STANDARD DEVIATIONS

Variable	Mean	Standard deviation
Net costs / assets	1.22	1.69
Payment / assets	1.40	2.13
Recoveries / assets	0.165	0.23
Recoveries / invested assets	0.249	0.32
Budget / premiums [1]	.221	.108
Examiners / premiums [2]	.071	.062
Large state	.59	.49
Elected commissioner	.23	.42
Tax offset	.41	.49
Mutual	.11	.30
Hard assets / assets	.60	.28
Real estate assets / assets	.046	.14
Reinsurer receivables / assets	.005	.06
Agent balances / assets	.094	.19
Capital / assets	.177	.33
Long tail line	.483	.31
Disaster	.056	.23
Industrial bonds / total bonds	.196	.28
Fast premium growth	.489	.50
Sample size	71	

[1] Divided by 100
[2] Divided by 10,000

TABLE II

CUMULATIVE NET COSTS AS A FRACTION OF PRE-INSOLVENCY ASSETS

Year 1	.031 (.827)	
Year 2	.566 (.355)	
Year 3	.993 (.290)	
Year 4	.701 (.430)	.855 (.562)
Year 5	.631 (.430)	.757 (.562)
Year 6	1.958 (.364)	2.389 (.475)
Year 7	.993 (.462)	1.132 (.604)
Year 8	.702 (.555)	.733 (.726)
Year 9	1.540 (.462)	1.540 (.604)
Year 10	1.688 (.527)	1.688 (.689)
Number of Observations	154	96
With Add-On Costs?	No	Yes
Adj. R^2	.30	.29
Mean of Years 4-10	1.22 (.19)	1.38 (.22)

1. Year indicates the number of years since insolvency. Note that Year 1 indicates 0-1 years, Year 2 indicates 1-2 years, and so on.

2. Add on costs include "projected future costs." The procedure for making such projections is explained in the text and in Bohn and Hall (1998).

TABLE III

GUARANTY FUND RECOVERIES AND PAYMENTS

	Recoveries/ Assets	Recoveries/ Assets	Recoveries/ Invested Assets[1]	Recoveries/ Invested Assets	Payments/ Assets
Year 1	.003 (.258)		.020 (.232)		.094 (2.06)
Year 2	.034 (.061)		.047 (.088)		.878 (.653)
Year 3	.076 (.047)		.097 (.068)		1.792 (.487)
Year 4	.035 (.056)	.558 (.125)	.106 (.081)	.615 (.166)	.671 (.596)
Year 5	.087 (.065)	.279 (.145)	.111 (.090)	.273 (.192)	1.027 (.688)
Year 6	.112 (.050)	.219 (.112)	.199 (.072)	.331 (.149)	2.583 (.516)
Year 7	.198 (.061)	.282 (.137)	.307 (.089)	.405 (.182)	.935 (.653)
Year 8	.299 (.065)	.355 (.145)	.393 (.093)	.449 (.192)	1.010 (.688)
Year 9	.287 (.073)	.306 (.164)	.437 (.106)	.457 (.218)	1.111 (.730)
Year 10	.254 (.073)	.252 (.164)	.328 (.106)	.329 (.218)	1.868 (.730)
With Add-On	No	Yes	No	Yes	No
Adj. R2	.38	.35	.38	.31	.32
Number of Observations	101	71	101	71	101
Mean Years 4-10	.16 (.033)	.33 (.05)	.25 (.04)	.41 (.07)	1.40 (.26)
Mean Years 6-10	.22 (.04)		.32 (.05)		
Mean Years 8-10	.28 (.05)		.39 (.07)		

1. Invested assets include all cash, bonds and stocks.

TABLE IV
RECOVERY RATES AND REGULATORY VARIABLES

Dependent variable is cumulative recoveries as a percentage of assets (N=71).

	1	2	3	4	5	6	7	8	9	10
Constant	.111 (.092)		.069 (.067)		.151 (.068)		.058 (.061)		.153 (.066)	
Year Indicator	.052 (.017)		.053 (.017)		.052 (.017)		.054 (.017)		.046 (.017)	
Budget/ Premiums[1]	-.165 (.303)	-.168 (.294)								
Examiners/ Premiums[2]			.031 (.523)	-.083 (.515)						
Large State					-.131 (.064)	-.095 (.066)				
Elected Comm.							.044 (.079)	.094 (.084)		
Tax Offset									-.141 (.065)	-.147 (.063)
Mutual		.295 (.101)		.296 (.102)		.276 (.101)		.322 (.104)		.292 (.097)
Year Dummies	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R-squared	.10	.46	.10	.46	.15	.47	.10	.46	.16	.50

[1] Divided by 100
[2] Divided by 10,000

TABLE V
RECOVERY RATES AND BALANCE SHEET VARIABLES

Dependent variable is cumulative recoveries as a percentage of assets (N=71).

	1	2	3	4	5	6	7	8
Constant	-.063 (.081)		.085 (.060)		.062 (.058)		.082 (.059)	
Year Indicator	.045 (.017)		.051 (.017)		.055 (.017)		.052 (.017)	
Hard Assets[1]	.265 .118	.196 (.131)						
Real Estate[1]			-.190 (.282)	-.138 (.289)				
Reinsurer Receivables[1]					.081 (.122)	.141 (,123)		
Agent Balances[1]							-.087 (.132)	-.008 .141
Mutual		.288 (.107)		.301 (.108)		.312 (.107)		.303 (.108)
Size Dummies	No	Yes	No	Yes	No	Yes	No	Yes
Year Dummies	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R^2	.16	.46	.11	.45	.13	..45	.11	.45

1. Variables are expressed as a proportion of total assets.

TABLE VI
RECOVERY RATES AND BALANCE SHEET VARIABLES CONTINUED

Dependent variable is cumulative recoveries as a percentage of assets (N=71).

	1	2	3	4	5	6	7	8
Constant	.077		.037		.157		.100	
	(.058)		(.079)		(.070)		(.070)	
Year Indicator	.052		.065		.042		.054	
	(.017)		(.020)		(.018)		(.025)	
Capital to Asset Ratio	-.023	-.020						
	(.099)	(.102)						
Bond Quality[1]			.078	.085				
			(.151)	(.146)				
Fast Premium Growth Dummy					-.138	-.172	-.176	-.183
					(.069)	(.070)	(.083)	(.089)
Fast Premium Growth Dummy * Premium Growth							.040	.051
							(.046)	(.048)
Mutual		.291		.213		.307		
		(.107)		(.120)		(.103)		
Size Dummies	No	Yes	No	Yes	No	Yes	No	Yes
Year Dummies	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R^2	.09	.44	.14	.51	.15	.49	.09	.38

1. Bond quality is the proportion of total bonds that are industrial, all measured at book value. The results were similar for alternative definitions of bond quality (e.g., adding utility bonds, using market value, etc.).

TABLE VII
RECOVERY REGRESSIONS

Dependent variable is cumulative recoveries as a percentage of assets (N=71).

	1	2	3	4	5	6
Constant	-.012 (.079)		-.010 (.075)		.020 (.104)	
Year Indicator	.032 (.017)		.030 (.016)		.033 (.016)	
Hard Assets	.301 (.107)	.295 (.113)	.257 (.102)	.236 (.108)	.259 (.107)	.234 (.112)
Fast Premium Growth	-.141 (.064)	-.137 (.067)	-.141 (.060)	-.139 (.063)	-.154 (.062)	-.154 (.065)
Mutual			.271 (.089)	.282 (.092)	.289 (.092)	.306 (.096)
Size Dummies	No	No	No	No	Yes	Yes
Year Dummies	No	Yes	No	Yes	No	Yes
Adj. R-squared	.23	.46	.31	.52	.31	.52

TABLE VIII

PAYMENT REGRESSIONS: REGULATORY AND BALANCE SHEET VARIABLES

Dependent variable is cumulative payments as a percentage of assets (N=71).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Constant	.711 (.590)		1.367 (.427)		1.237 (.454)		1.268 (.397)		1.888 (.618)				2.09 (.65)	
Year Indicator	-.074 (.110)		-.084 (.110)		-.087 (.110)		-094 (.110)		-.020 (.106)				-.028 (.107)	
Budget/ Premiums[1]	1.896 (1.926)	2.097 (1.921)												
Examiners/ Premiums[2]			-2.904 (3.328)	-4.002 (3.351)										
Large State					-.108 (.432)	.117 (.442)								
Elected Comm.							-.321 (.515)	-.568 (.551)						
Long-Tail Lines									.138 (.419)	.156 (.444)				
Fast premium Growth											-368 (.447)	-.417 (.456)		
Tax Offset													-.113 (.438)	-.110 (.446)
Disaster	4.634 (.961)	4.502 (1.019)	4.663 (.963)	4.473 (1.017)	4.606 (.974)	4.493 (1.033)	4.692 (.969)	4.476 (1.020)	4.762 (.982)	4.505 (1.049)	4.566 (.964)	4.292 (1.024)	4.631 (.981)	4.35 (1.056)
Mutual	1.441 (.693)	1.441 (.699)	1.444 (.694)	1.465 (.698)	1.420 (.701)	1.469 (.708)	1.349 (.710)	1.285 (.718)	1.481 (.680)	1.490 (.697)	1.474 (.673)	1.510 (.693)	1.457 (.676)	1.479 (.700)
Year Dummies[3]	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Adj. R-squared	.32	.52	.31	.52	.31	.51	.32	.52	.39	.56	.39	.56	.32	.56

Notes: 1) Divided by 100 2) Divided by 10,000 3) Size dummies are included in all regressions