

## Did Investments Affect Medical Malpractice Premiums?

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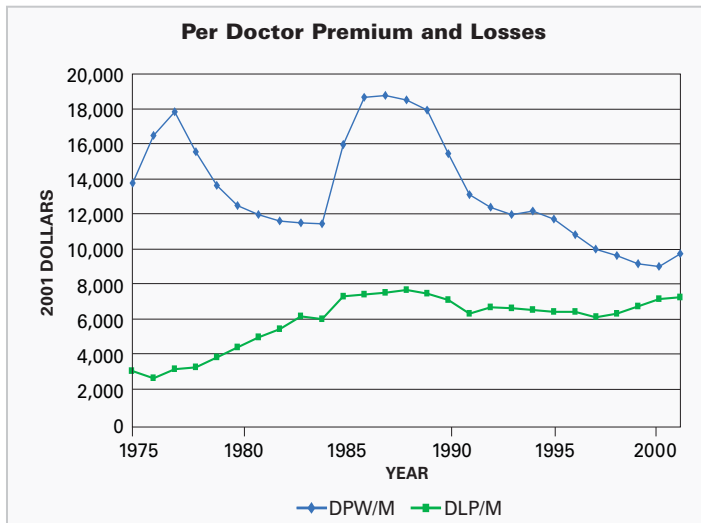
### **It's *deja vu* all over again in the medical malpractice arena.**

Last July, the only trauma center in Las Vegas was forced to close. At the beginning of this year, doctors in Pennsylvania threatened to go on strike but relented when the incoming governor promised to support legislative reforms to limit jury awards in malpractice suits. Also in January, doctors in Weirton, West Virginia went on strike, forcing patients to travel up to 40 miles to find medical care. Doctors in neighboring areas of West Virginia considered joining the strike, threatening a near complete shutdown of the medical delivery system in the region. Doctors and hospitals around the country are suspending their practices and closing their doors because they can no longer afford the huge and increasing cost of medical malpractice insurance. The situation is increasingly reminiscent of the malpractice crisis of the 1970's. What is causing this controversy and what can be done about it?

According to Americans for Insurance Reform (AIR), "... insurance companies raise rates when they are seeking ways to make up for declining interest rates and market-based investment losses."<sup>1</sup> Mainstream media, such as *The New York Times*, have picked up this argument: "The steep drop in bond yields and the stock market has also fueled the crisis."<sup>2</sup> These arguments are both misleading and inaccurate. The root causes of the problem are quite different from what is often suggested by the media, and their resolution is far less simplistic than the pundits imply.

In this paper, we will analyze several variables to demonstrate that asset allocation and investment returns have had little, if any, correlation to the development of the current malpractice problem. The crisis is rather the result of a generally unconstrained increase in losses and, over several years, inadequate premium income to cover those losses. Given that conclusion, we will then examine several possible solutions and attempt to gauge the magnitude of changes necessary to resolve this problem.

AIR uses the following graph to demonstrate that losses have tracked inflation and that premiums vary because of the economy. The graph attempts to compare two key trends underlying the medical malpractice controversy: premiums per doctor (DPW/MD) and paid losses per doctor (DLP/MD). Both of these variables are expressed in *constant medical dollars*.<sup>3</sup>



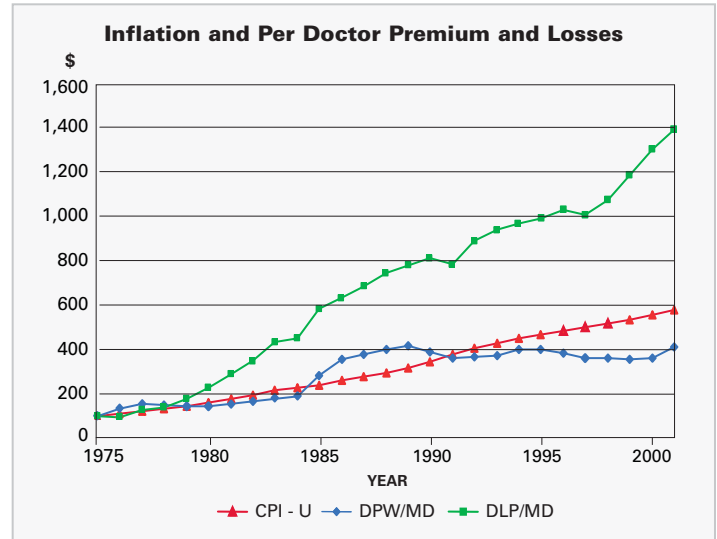
**Loss Inflation**

AIR claims this shows “that since 1975, medical malpractice paid claims per doctor have tracked medical inflation very closely.” In fact, the graph and the underlying data suggest exactly the opposite.

First, they make an erroneous comparison. Since AIR uses real (or constant) medical dollars, they have already factored out the effect of medical inflation. So, *any* increase is a “real” increase in excess of medical inflation. One cannot compare real increases to inflation.

Second, the data show loss costs *have* increased significantly faster than inflation. Using data from the AIR report, we plotted medical inflation (CPI - U), premiums, and losses to show how each has grown since 1975.<sup>4</sup>

One sees that the losses per doctor have grown at a much higher rate than either medical inflation or premiums per doctor. In order for losses in 2001 to have equaled the build up created by inflation in medical care during the period 1975–2001, companies would have to reduce the amount of paid losses by approximately 60%. Therefore, losses, not inflation, are the problem.



**Economic Effect**

The other claim made by AIR is that “insurance premiums (in constant dollars) increase or decrease in direct relationship to the strength or weakness of the economy, reflecting the gains or losses experienced by the insurance industry’s market investments and their perception of how much they can earn on the investment ‘float.’” Unfortunately, they make this claim without any supporting analysis. Using the premium data from AIR, we found no correlation between premiums and the economy.

The standard measure of the effect one variable has on another is the coefficient of determination ( $r^2$ ); this value shows how consistently two variables move in the same direction. The coefficient of determination has values between 0 and 1. A value of 1 means that if the first variable moves up the second will move up at the same time; a value of zero means that there is no similarity in the movement of the two variables. The correlation coefficient has to be greater than 0.75 for us to claim the observed effect between the two variables is significant.

As a measure of the economy, we used the year-over-year change in GDP; as a measure of investment yield, we used the yield on a 5-year Treasury bond. In our analysis, neither the direct premiums written nor the direct premiums per doctor showed any significant correlation to either the investment yield or GDP variable. The table to the right

	GDP	Yield
DPW	0.0001	0.1255
DPW/MD	0.0104	0.0318

lists the coefficients of determination generated for the regression analysis between the economy, investment yield, and medical malpractice premiums.

Several other analyses also failed to show a correlation between premiums and the economy. To test if the premium increases are related to the economy or bond market, we analyzed the correlation of the change in premiums to GDP and investment yield. To test whether premiums go up when the investment yield goes down, we analyzed the correlation between premiums and the change in yield as well as the correlation between the change in premiums and the change in yield.

One could reasonably claim that the premiums (or increases in premiums) are dependent not upon the company's performance this year but upon the company's performance in the previous year. To test this hypothesis, we regressed both premiums and change in premiums to both the economy and investment yield in the *previous* year. For thoroughness, we also analyzed the correlation between both premiums and change in premiums with the change in yields in the prior year.

We also considered alternate measures for GDP and yield. We used industrial production as an alternate measure of the economy and the 10-year Treasury bond as an alternate measure of yield. We also analyzed the effect the slope of the yield curve and the change in slope had on premiums. We performed all of the analyses above on these new variables.

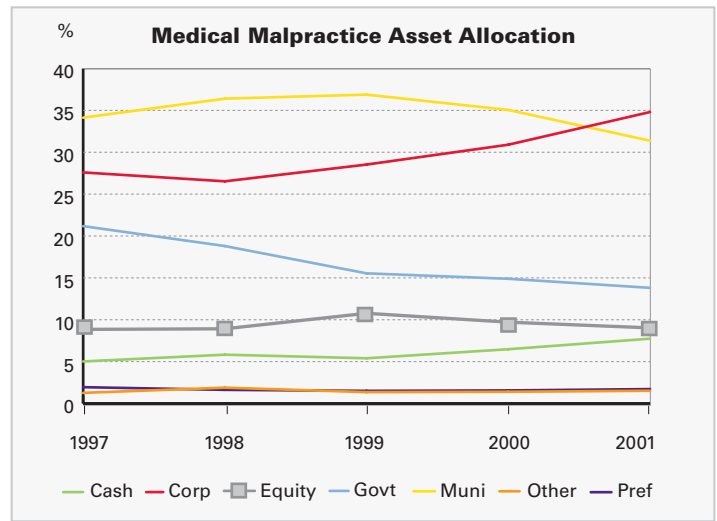
In 64 different regressions between the economy, yield, and premiums, the highest coefficient of determination was 0.1505.<sup>5</sup> Therefore, we can state with a fair degree of certainty that investment yield and the performance of the economy and interest rates do not influence medical malpractice premiums.

**Stock Market Effect**

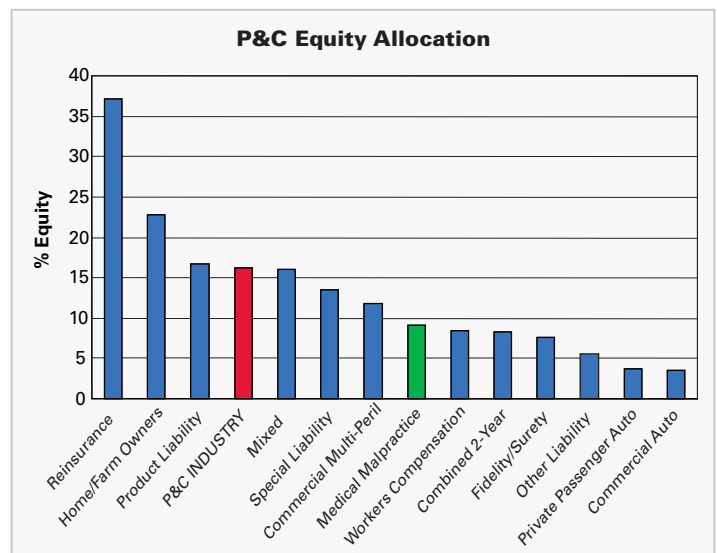
But what about the stock market? How did the drop in the equity markets affect insurance company performance? Are companies raising premiums because they lost money on Enron or MCI?

Obviously, the market decline affects insurance companies like every other investor, but the magnitude of the losses gets lost in the media hype. We analyzed the equity exposure in two stages. Stage one: Did medical malpractice companies have an unusually large amount of equities in their portfolio? Stage Two: Given their level of equity exposure, did they invest prudently in the market or did they gamble by investing in technology or telecom stocks?

Using NAIC filings, we can determine the amount of assets invested in equities.<sup>6</sup>



Over the last five years, the amount medical malpractice companies has invested in equities has remained fairly constant. In 2001, the equity allocation was 9.03%. We can also compare how the medical malpractice sector compares to other P&C sectors. The green column shows the equity allocation in medical malpractice sector and the red column shows the equity allocation for the P&C insurance industry as a whole. This graph shows that medical malpractice companies have invested less in equities than other sectors or the industry.



Even if the equity allocation is not large relative to the industry or other insurance sectors, is 10% the correct amount for medical malpractice insurers to invest in equities? Insurance companies invest their assets as a fiduciary of the policyhold-

ers. As such, they must invest according to a “prudent investor” standard. This requires the company not only to consider the risk in an individual security, but also the risk to the portfolio as a whole. Prudent investors know that diversifying across asset classes can enhance return and reduce volatility. A simple analysis shows a conservative investor will have at least 10% invested in equities.<sup>7</sup> Thus, a prudent insurance company should have some allocation to equities.

If the degree of equity exposure was not unusual, was the investing? Again using NAIC filing data, we can analyze the distribution of equity investments for medical malpractice companies and compare it to S&P performance.<sup>8</sup>

Sector	Medical Malpractice Companies	S&P Sector Return
Energy	5.6%	-11.0%
Materials	1.9%	-5.4%
Industrials	11.9%	-26.2%
Consumer Discretionary	15.9%	-23.7%
Consumer Staples	7.3%	-4.3%
Healthcare	14.1%	-18.8%
Financials	17.8%	-14.5%
Technology	17.9%	-37.4%
Telecom	6.3%	-34.0%
Utilities	1.4%	-29.5%
	100.0%	
<b>Total Return</b>	<b>-22.4%</b>	
<b>S&amp;P Return</b>		<b>-22.2%</b>

We see that medical malpractice companies had returns similar to the market as a whole. This indicates that they maintained a diversified equity investment strategy.

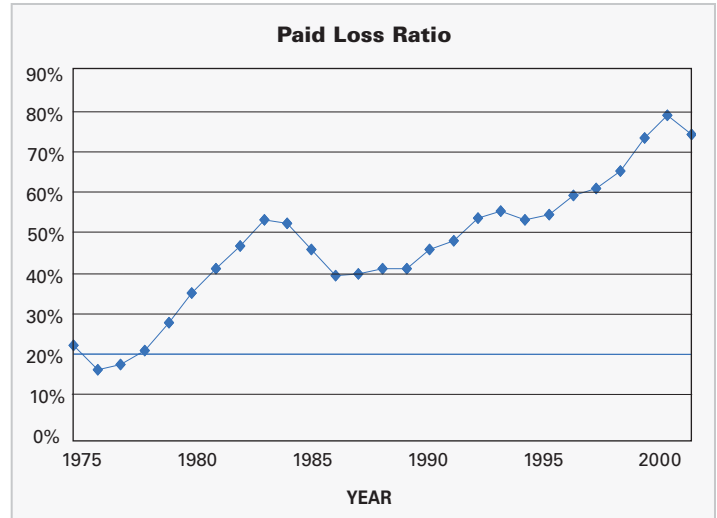
Since medical malpractice companies did not have an unusual

amount invested in equities and what they did was invested in a reasonable market-like fashion, we conclude that the decline in equity valuations is not the cause of rising medical malpractice premiums.

**Where Do We Go From Here?**

In order for any form of insurance coverage to be viable, the insurance company must receive more in premium dollars and investment income than they pay in losses and expenses. A simple measure of this is the ratio of paid losses to premiums. Over the last 27 years, and especially over the last 16, the paid loss ratio in medical malpractice coverage has steadily increased.<sup>9</sup> Without some form of relief, this is not a good sign.

Although the paid loss ratio is a good starting point, that metric excludes other expenses such as incurred losses, loss adjustment expenses, general operating expenses, etc., as well as income from investments. A.M. Best provides the combined loss ratio (paid loss + change in reserves + expenses) for the medical malpractice industry. By subtracting the paid loss



ratio found in the AIR report, from the combined ratio, we can get an estimate of the other expenses for an insurance company. The average expense ratio for medical malpractice companies was 43% when investment income is included and 74% when investment income is excluded.<sup>10</sup>

Over the last 27 years, the average paid loss ratio was 47% and the minimum paid loss ratio was 16%.<sup>11</sup> In 2001, the industry paid loss ratio was nearly 75%. In other words, for every dollar that comes in the door, 75 cents is paid out. When combined with the expense ratios cited earlier, it has been extremely difficult — if not impossible — for insurance companies to earn a profit writing medical malpractice insurance. Further, at this rate of expenditure, after the company pays its losses and expenses, there is very little “float” on which they can earn investment income.

Medical Malpractice Paid Loss Ratio 1975-2001	
Average loss ratio	46.8%
Minimum loss ratio	15.9%
2001 loss ratio	74.4%

To increase profitability, companies must effect one of three changes: reduce their losses, increase their premiums, or increase their investment income. As the industry, in aggregate, cannot control return on investments, they have only two choices. Using the methodology above, we can estimate the magnitude of the change required to restore profitability to the industry.

If losses are held constant — that is, no change in loss and expense trends — then we are left with increasing premiums to restore the industry to profitability. For premiums to have kept up with *medical inflation* for the period 1975 to 2001,

they would have to increase by 41%. For premiums to have kept up with the increases in paid losses since 1975, they would have

	\$	% Increase
2001 DPW/MD	\$9,719	
Premium required for		
Avg. loss ratio	\$15,448	59%
Min. loss ratio	\$45,478	368%

drop to its nadir during that period, premiums would have to increase by 368%.

Clearly, increases of this magnitude are intolerable, for both the industry and state regulators. In this regard, St. Paul's<sup>12</sup> experience is noteworthy. Prior to its withdrawal from the market, the company was granted 31% less in rate increases than indicated. It is little wonder that they responded as they did!

St. Paul Rate Filings				
State	Date	Indicated Increase	Increase Filed	Difference
1	1/1/2001	76.10%	25.00%	40.90%
2	3/7/2001	-34.30%	-43.00%	15.30%
3	1/1/2001	54.50%	35.00%	14.40%
4	6/1/2000	39.20%	5.00%	32.60%
5	11/1/1999	28.70%	5.00%	22.60%
6	1/1/2001	55.20%	10.00%	41.10%
7	2/1/2001	18.90%	-21.00%	50.50%
8	1/1/2001	90.80%	35.00%	41.30%
9	1/1/1999	18.50%	5.00%	12.90%
10	1/1/2002	73.00%	35.00%	28.10%
11	1/1/2001	26.80%	12.50%	12.70%
12	1/1/2002	70.20%	45.00%	17.40%
13	1/1/2002	67.30%	40.00%	19.50%
14	1/1/2001	49.30%	10.00%	35.70%
15	10/1/1999	88.10%	5.00%	79.10%
16	1/1/2002	71.00%	10.00%	55.50%
17	1/1/2002	82.60%	45.00%	25.90%
18	7/1/2000	12.50%	0.00%	12.50%
19	7/15/2000	57.00%	7.50%	46.00%
20	7/1/2000	17.10%	5.00%	11.50%
21	1/1/2000	40.90%	5.00%	34.20%
22	7/1/2000	58.90%	8.50%	46.50%
23	1/1/2001	50.70%	15.00%	31.00%
Average		48.40%	13.00%	31.60%
Average excluding #2		52.20%	15.60%	32.40%

St. Paul had the luxury of falling back on other lines of business. Unfortunately, many specialty medical malpractice companies, such as state PIAA companies, do not have other lines of business to fall back on.

### Rating Agency Response

The reaction of rating agencies to these trends is another important ingredient in the medical malpractice landscape. Principal concerns of the agencies are “solvency” and the “leverage” built into the premium and surplus structure of the industry. While agencies usually express the benchmarks for the measurements (ratios) in ranges, trends are also important. Either level or trend can result in a downgrade in a company’s rating, a serious event in the corporate life of an insurer.

In 2001, medical malpractice companies had an average premium-to-surplus ratio of 0.72.<sup>13</sup> As premiums are increased, this ratio will rise. If premiums were to rise too quickly, we would observe a spike in this ratio as it takes time for the increased premiums to show up in surplus. Unless rating agencies account for this, a company could find they cannot raise their rates by the required amount for fear of impairing their rating. In fact, several companies have been downgraded recently, with premium leverage given as the primary reason. (The situation is exacerbated by the fact that with the industry suffering from reduced capacity as a result of St. Paul-type experiences, companies are adding to their number of insureds. This puts further strain on their leverage ratios.) Fortunately, the rating agencies seem to be aware of the problem.

### Taming Losses

If companies cannot increase their premiums, then they must be able to control the burgeoning increase in losses. Our analysis suggests that the level of losses would have to decrease by 37% to achieve the *average* loss ratio and by 79% to obtain the *minimum* loss ratio observed over the past 27 years. Such reductions would require significant change in the tort environment.

	\$	% Decrease
2001 DLP/MD	\$7,232	
Losses required for		
Avg. loss ratio	\$4,549	-37%
Min. loss ratio	\$1,545	-79%

The paid loss number cited above includes both jury awards and settlements. Large jury awards have the pernicious effect of enticing more lawsuits, most of which are settled out of court but with an expense to the company. Prudent reforms, such as MICRA, reduce not only the jury awards but also reduce the amount of lawsuits filed.

## Summary

The magnitude of these changes suggests that the eventual solution to the current malpractice problem will be a blend of premium increases and tort reform. Since the financial shortfall compounds itself over time, it is imperative that the solution set be developed as quickly as possible. Without significant relief in fairly short order, the country may find itself facing an accelerating loss of available medical care.

## Notes

- <sup>1</sup> “Medical Malpractice Insurance: Stable Losses/Unstable Rates”, Americans for Insurance Reform, October 10, 2002.
- <sup>2</sup> Oppell, Jr, Richard A. “Bush Enters Fray Over Medical Malpractice”, *New York Times*, January 16, 2002.
- <sup>3</sup> Nominal values discounted using the medical inflation (CPI - U).
- <sup>4</sup> Data from AIR report, *op. cit.* Details of the analysis can be found at BBH Insurance website or by contacting the author.
- <sup>5</sup> Details of the analysis can be found at BBH Insurance website or by contacting the author.
- <sup>6</sup> See Insurance Industry Asset Allocation Study at <http://snapshot.bbh.com/aastudy/>.
- <sup>7</sup> See for example <http://www.moneychimp.com/articles/risk/portfolio.htm>.
- <sup>8</sup> Bachman, Jim, “Medical Specialty Providers’ 2001 Investment Comparative”, *The PIAA Insurer*, 4th quarter, 2002.
- <sup>9</sup> Data from AIR report, *op. cit.*
- <sup>10</sup> Greene Carolyn L., and Mize, John H, “Current Issues in Medical Malpractice Insurance,” CAS Special Interest Seminar — The Changing Insurance Market, April 2002.
- <sup>11</sup> Data from AIR report, *op. cit.*
- <sup>12</sup> Karls, Chad C., “Medical Malpractice: A Market in Transition,” Casualty Loss Reserve Seminar, September 23, 2002.
- <sup>13</sup> Hurley, James D., “Medical Malpractice — Financial Update,” Casualty Loss Reserve Seminar, September 23, 2002.

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