

PROFITABILITY IN MEDICAL PROFESSIONAL LIABILITY INSURANCE

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I. Introduction

In the past few years significant concerns have arisen over the cost and availability of medical malpractice insurance. Additionally, a great deal of attention has been devoted to the reasons behind these increasing costs. In 2005, several groups released a report titled “Falling Claims and Rising Premiums in the Medical Malpractice Insurance Industry.” The report was commissioned by the Center for Justice and Democracy and written by Jay Angoff, an attorney and former Missouri Insurance Commissioner (Angoff, 2005).

Angoff (2005) analyzes the performance of 15 large¹ medical malpractice insurers during the period 2000 through 2004. The report claims to present evidence that physicians are being overcharged for professional liability insurance. Specifically, the findings include the following: 1) in the last five years, premiums written by the 15 insurers included in the study increased more than the amount of claims paid; 2) some of these insurers increased premiums while expected payouts were decreasing; and 3) these insurers increased the nominal amount of surplus they hold.

Due to the use of a critically flawed approach, we argue that Angoff (2005) cannot make meaningful conclusions regarding whether physicians are being overcharged for professional liability insurance. In this report, we describe some of the errors and shortcomings in Angoff’s (2005) methodology. We then present our findings on the financial performance of the medical malpractice insurance industry using a more appropriate basis for analysis of the issue. Contrary

¹ The 15 insurers analyzed in the report were the largest based on net premium written in 2004. In 2002, the St. Paul Insurance Company withdrew from the medical malpractice market. Through 2001, St. Paul was the largest (by market share of net premium earned) medical malpractice insurer in the United States. Angoff (2005) does not include this company in his analysis.

to the findings of Angoff (2005), we find no evidence that medical malpractice insurance is overpriced.

II. Insurance Company Performance

A firm's performance is often measured by comparing costs to revenues. This task is substantially more complicated for a liability insurance company because costs are uncertain at the time revenue is collected. A proper measure of insurance company performance must consider all costs and all revenues, as well as the timing of the cash flows. Costs include losses, loss adjustment expenses, and operating expenses.² Revenues include investment earnings and premiums less policyholder dividends. The performance measures presented in Angoff (2005) only include premiums and losses. This is an especially serious omission when analyzing medical malpractice insurance where loss adjustment expenses account for more than forty percent of premiums earned in some years.

Angoff (2005) begins by comparing written premiums to paid losses for the 15 large medical malpractice insurers. This measure provides little, if any, information regarding a medical malpractice insurer's performance or the price it charges for coverage. First, it does not include loss adjustment expenses and operating expenses, which together account for more than fifty percent of premiums earned by most medical malpractice insurers. Second, a substantial amount of time elapses between the time losses are reported to an insurer and when they are paid in full. Therefore, as Angoff acknowledges, "claims paid out in a given year are typically covered by policies written in previous years." To illustrate this point, in Appendix A we present the payout pattern for medical malpractice losses calculated by the IRS. Noteworthy in these data

² Loss adjustment expenses include the cost of defending and paying claims such as attorney fees, expert witness fees, claims adjustor compensation, court fees and other miscellaneous costs. Operating expenses include overhead, payroll, employee benefits, underwriting expenses, sales commissions, and premium taxes.

is the fact that for occurrence based policies by the sixth year following the policy period only one-half of all claim amounts that will ultimately be paid have actually been paid out by the insurer.³ For claims-made policies it is the fourth year following the policy period before more than one-half of all claim amounts have been paid. Further, even at year 10 for claims-made based policies and at year 12 for occurrence based policies five percent of the ultimate claim amounts remain unpaid. This illustrates the very long payout tail that exists in medical liability insurance. Comparing calendar-year premiums to losses paid in the same calendar year is simply incorrect. A more appropriate measure should include an estimate of losses incurred in a given year, rather than the amount paid. Finally, the ratio of written premium to paid losses does not account for interest earned on premiums between the time the premium is collected and the loss is paid. This is especially important given the long payout tail in medical liability insurance. Losses must be discounted to present value before performance ratios are analyzed.

The bias introduced by this measure is exacerbated by a significant event in the medical malpractice insurance market which occurred during Angoff's (2005) sample period (2000-2004). In 2002, the St. Paul Insurance Company withdrew from the medical malpractice market. Through 2001, St. Paul was the largest (by market share of net premium earned) medical malpractice insurer in the United States. Angoff (2005) does not include this company in his analysis. Considering the payout pattern described above, it is not surprising that several insurers seeking to fill the void left by St. Paul would increase premiums written in recent years without increasing claims paid.⁴

³ Approximately 70 percent of medical liability insurance is written on a claims-made basis, while the remaining 30 percent is written on an occurrence basis. Appendix A presents the payout pattern for both occurrence and claims-made policies.

⁴ The table in Appendix A implies that only 6.5% of losses incurred in 2002 would be paid out as of 2004.

The second measure Angoff (2005) offers to represent insurer performance is the ratio of premiums earned to losses incurred. The meaningful difference between this measure and the ratio of written premiums to paid losses discussed above is that it uses an estimate of losses the insurer will have to pay in the future based on incidents that occur or are reported during the policy period. Otherwise, this measure exhibits all of the same limitations as the previous ratio.

Finally, it should be noted that the 15 insurers analyzed in Angoff (2005) account for only about one-half of premiums written in 2004. The sample ignores almost one hundred insurers each writing more than ten million dollars in medical malpractice insurance premiums.

We propose a more appropriate measure of financial performance in the medical malpractice insurance industry. This measure is similar in construction to the Economic Loss Ratio (ELR) introduced by Winter (1994) and used in several other academic studies to proxy for the price of insurance.⁵ Unlike most derivations of the ELR, our measure includes underwriting and overhead expenses in the numerator to capture insurer performance rather than just the price of insurance. This measure includes the most complete set of costs and revenues reported on insurers' annual financial statements for all companies that reported these data to regulators.⁶ In contrast to the 15 insurers used by Angoff (2005), our sample ranges in size from a high of 420 firms in 1996 to a low of 341 firms in 2001. The average number of firms in our sample each year is 391. The measure of profitability that we use discounts incurred losses to present value using the method prescribed by the Internal Revenue Service. This measure, which we call the

⁵ Berger, Cummins, and Tennyson (1992), Cummins and Danzon (1997), Sommer (1996), and others have used the Economic Loss Ratio to proxy for the price of insurance.

⁶ Our sample is based on all insurers for which data are available on the NAIC Data Tapes. These data are used with permission of the NAIC. The National Association of Insurance Commissioners does not endorse any analysis or conclusions based upon the use of its data.

Economic Combined Ratio, is presented below for the period from 1996 to 2004.⁷ We introduce the results of this measure in piecemeal fashion beginning with the most complete measure used by Angoff (2005). As we augment this measure the contrast between the ratio of earned premiums to incurred losses and our complete measure of profitability, the ECR, is easily observed.⁸ This process highlights the shortcomings of the analysis presented by Angoff (2005).

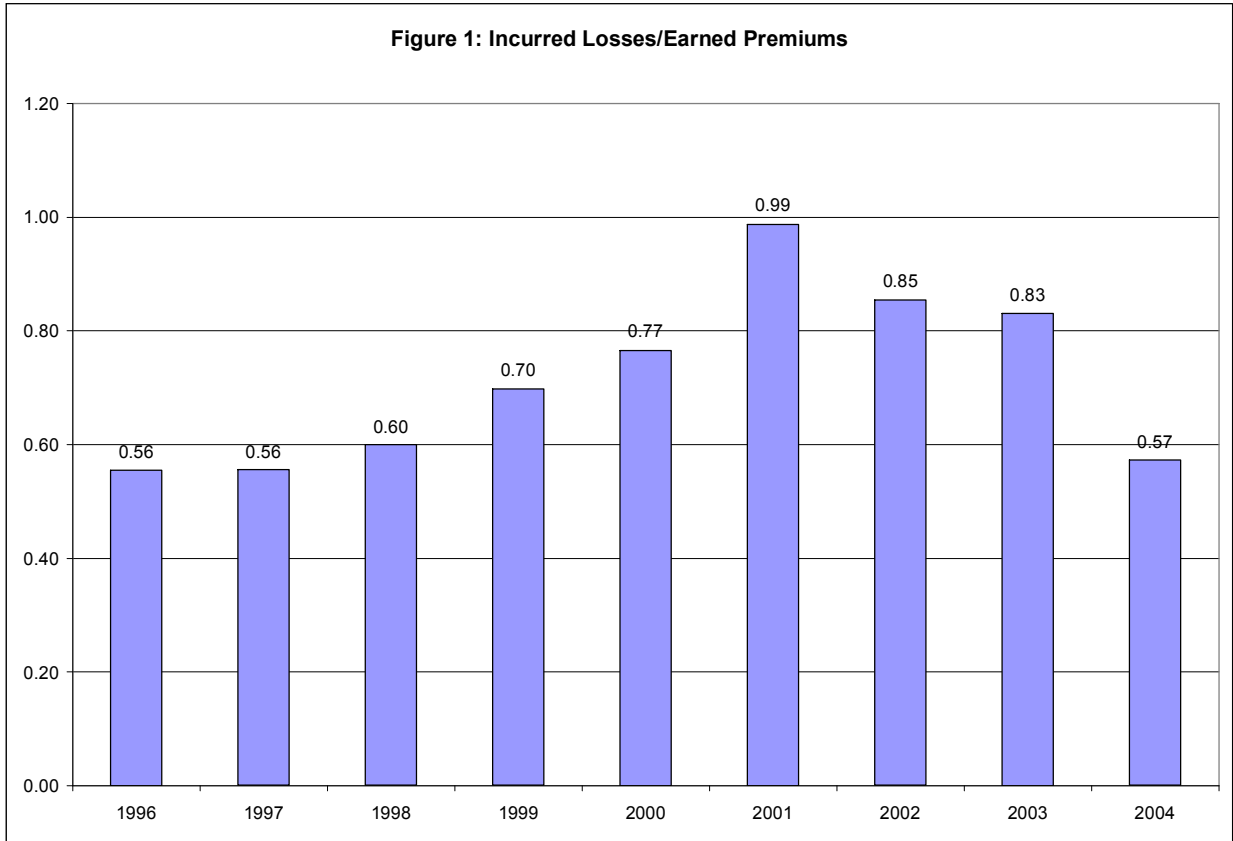
As a starting point for this analysis, Figure 1 displays the ratio of incurred losses to earned premiums⁹ for the entire industry from 1996 to 2004. While it is not a comprehensive measure of industry profitability, it is similar to the measure presented by Angoff (2005, Table 3, Page 14). Figure 1 data differ from Angoff's analysis in three ways. First, they include data from all insurers writing medical malpractice insurance. Angoff's analysis only considers 15 insurers. Second, the sample period includes years 1996 through 2004. Angoff only considers financial performance in the period from 2000 through 2004. Finally, as mentioned in footnote nine, the denominator of this measure is earned premiums net of policyholder dividends. Angoff (2005) does not make this adjustment.

Comparing Figure 1 to Angoff's analysis shows the importance of using all available data. For the complete sample of medical liability insurers during the period 2000 to 2004 incurred losses as a percentage of premiums earned were higher in four of the five years (2000, 2002, 2003, and 2004) than the results presented in Angoff (2005).

⁷ The combined ratio is defined as the ratio of losses and expenses to premiums. It is commonly reported as a measure of underwriting profitability in property-liability insurance. It does not consider the impact of investment earnings. As describe in the text, our measure, the ECR, does consider the time value of money.

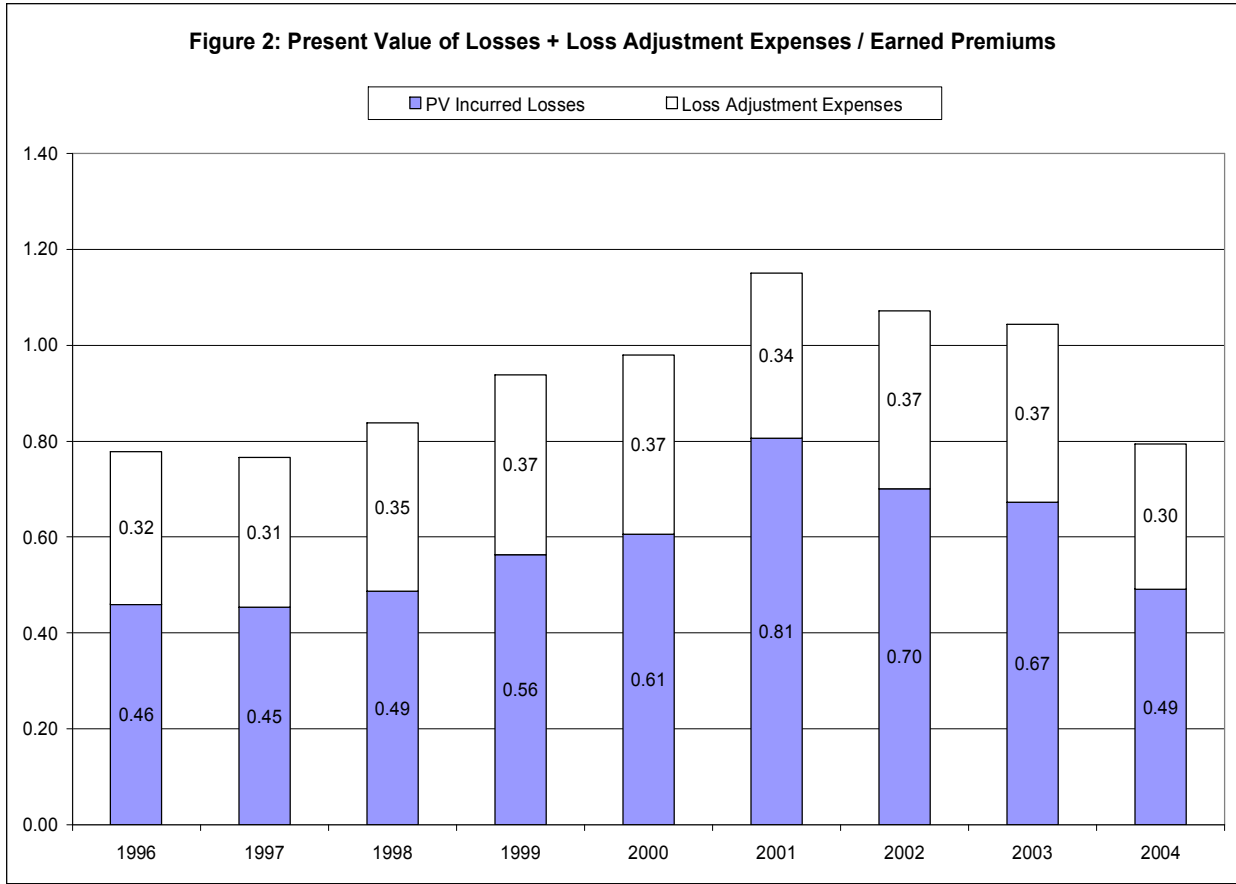
⁸ Incurred losses include estimates by the insurer for claim amounts that have been reported and not yet paid, as well as amounts for losses that have occurred but have not yet been reported (so-called incurred but not reported or IBNR reserves). While these amounts are estimates, they are computed in accordance with generally accepted actuarial principles, are certified by the insurer's actuaries, are subject to review by the insurer's auditors, and are submitted as part of the insurer's annual financial filings to the responsible insurance regulator and the NAIC.

⁹ Throughout our analysis earned premiums are calculated net of policyholder dividends paid.



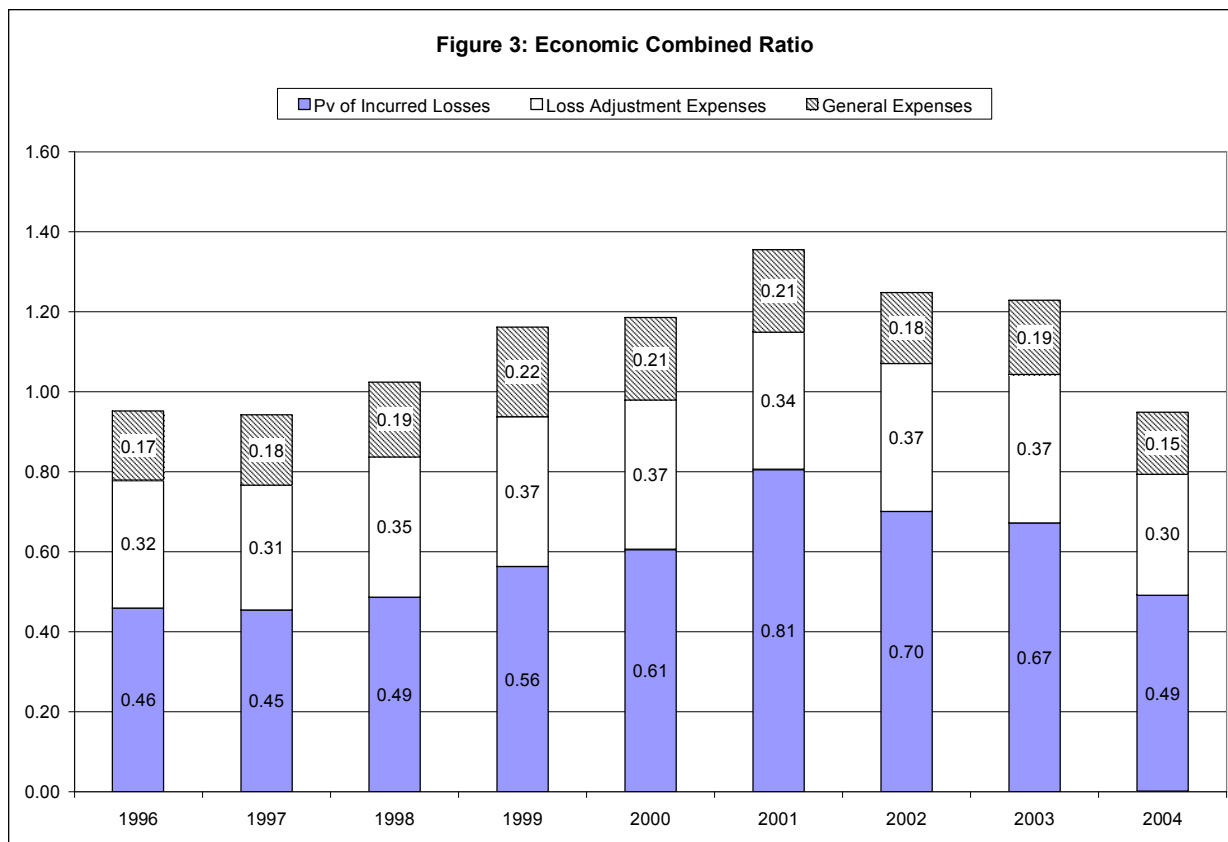
Source: NAIC Data Tapes, 1996-2004

The ratio of the present value of incurred losses and loss adjustment expenses for the same period is displayed in Figure 2. This measure illustrates that the medical malpractice insurance industry sustained net losses as a percentage of earned premiums in three years (2001-2003) before paying for any general expenses such as taxes, payroll, and overhead expenses.



Source: NAIC Data Tapes, 1996-2004

Figure 3 displays the Economic Combined Ratio which includes general expenses, loss adjustment expenses, and the present value of incurred losses.

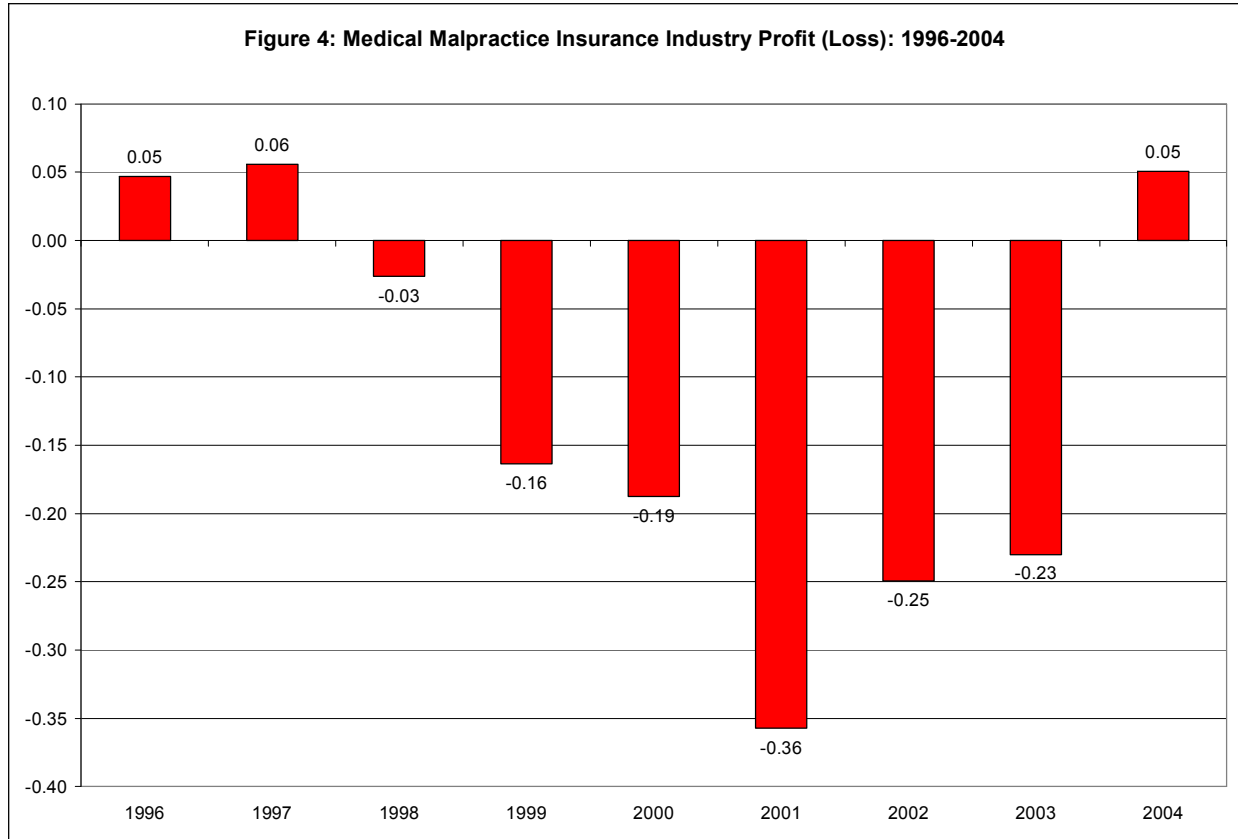


Economic Combined Ratio = (Present value of incurred losses + loss adjustment expenses + general expenses)/(premiums earned – policy holder dividends).

Source: NAIC Data Tapes, 1996-2004

Figure 4 displays industry profits and losses calculated using the Economic Combined Ratio. Based on this comprehensive analysis of insurer profitability, during the period 1996 to 2004, medical liability insurers, as a group, reported modest profitability in only three years (1996, 1997, and 2004). In contrast, these insurers sustained losses in six consecutive years from 1998 to 2003. The average profit ratio (return on net premiums earned) during the period 1996 to 2004 was -13.0%.¹⁰

¹⁰ This is the geometric mean return. The arithmetic mean was -11.8% and the median return was -16.0%.



Source: NAIC Data Tapes, 1996-2004

III. Surplus Analysis

Angoff (2005) notes that medical malpractice insurers have increased the nominal amount of surplus they hold. He then compares surplus held by the twelve mono-line medical malpractice insurers in his sample to the level of surplus that would yield a Risk Based Capital (RBC) level of 200%. Deficiencies of this analysis are two-fold. First, the nominal amount of surplus held by an insurer is not meaningful unless it is scaled by some measure of exposure. As insurers increase the amount of risk they underwrite, they should also increase the amount of surplus they hold. Second, Angoff (2005) treats any capital exceeding that required for an RBC ratio equal to 200% as excess capital. An RBC ratio of 200% is the minimum level of capital required before regulators require serious action from the insurer to improve its capitalization. It

is not a benchmark for the appropriate level of surplus. In fact, the median RBC ratio reported by all property-liability insurers for which data were available from the NAIC Data Tapes in 2004 is 833%. Only 3% of insurers maintain RBC ratios less than or equal to 200% in 2004. The highest 2004 RBC ratio in Angoff's (2005) sample was reported by First Professionals Insurance Company with 592%, more than 200 percentage points less than the industry median in that year. Medical Professional Mutual Insurance Company exhibits the lowest 2004 RBC ratio with 250%.

Table 1: Analysis of RBC Ratios: 2000-2004

Year	2000	2001	2002	2003	2004
Insurers reporting RBC	2247	2299	2359	2445	2525
Insurers with RBC<300%	167	201	249	219	228
Percentage of insurers with RBC <300%	7%	9%	11%	9%	9%
Insurers with RBC<=200%	53	53	82	69	86
Percentage of insurers with RBC <=200%	2%	2%	4%	3%	3%
Median RBC	923%	888%	813%	805%	833%

Source: NAIC Data Tapes, 2004, p. 18 – Five-Year Historical Data

For qualitative information on medical malpractice insurers' surplus we look to A.M. Best, the primary rating agency for insurance companies. A.M. Best's financial strength ratings describe the capitalization of insurance companies. Table 2 displays the breakdown of the A.M. Best ratings for the property-liability insurance industry in 2004. Table 3 describes the A.M. Best ratings for the 15 largest medical malpractice insurers in 2004 and compares those to the rating levels for insurers overall.

Table 2: A.M. Best's Ratings, 2004

Rating	Number of Insurers
A++	128
A+	364
A	775
A-	540
B++	213
B+	125
B	103
B-	43
C++	15
C+	8
C	4
C-	4
D	12
E	28
F	9

Source: A.M. Best's Key Rating Guide, 2004

The ratings data in Table 3 are not consistent with the notion that these medical liability insurers are earning extraordinary profits or are over-capitalized. In fact, overall the financial ratings of these companies, from what is arguably the most important independent rating agency of insurers in the U.S., suggest that these insurers have average to below average financial strength ratings.

The fourth column of Table 3, labeled "Rating outlook," lists the rating outlooks assigned to each insurer by A.M. Best's in 2003. Rating outlooks indicate the potential future direction of insurers' ratings over an intermediate period. Outlook indications can be positive, negative, or stable. Eight insurers in this sample are assigned negative outlooks. Seven are assigned stable outlooks. None are assigned the positive outlook. The lack of positive outlook indications suggests that insurers in this sample are neither overcapitalized, nor excessively profitable. It is

also important to note that the ratings for most of these insurers are based on the capitalization of the parent firm, which often serves to bolster the subsidiary insurer's rating.

**Table 3:
Description of A.M. Best's Ratings for the 15 Largest Medical Malpractice Insurers**

Company Name	A.M. Best's Rating	Percentage of Insurers with a Lower Rating	Rating Outlook*	Rating Modifier**
American Physicians Assurance Corporation	B+	9.5%	Negative	none
Continental Casualty Company	A g	46.6%	Negative	g
Evanston Insurance Company	A g	46.6%	Stable	g
First Professionals Insurance Company, Inc.	B++p	14.8%	Stable	p
Health Care Indemnity, Inc.	A-	23.8%	Stable	none
ISMIE Mutual Insurance Company	B+ g	9.5%	Negative	g
Lexington Insurance Company	A++p	94.6%	Stable	p
MAG Mutual Insurance Company	A- g	23.8%	Negative	g
Medical Professional Mutual Insurance Company	A- g	23.8%	Negative	g
NORCAL Mutual Insurance Company	A g	46.6%	Negative	g
ProNational Insurance Company	A- g	23.8%	Stable	g
State Volunteer Mutual Insurance Company	A	46.6%	Negative	none
The Doctors Company, An Interinsurance Exchange	B++g	14.8%	Negative	g
The Medical Assurance Company Inc	A- g	23.8%	Stable	g
The Medical Protective Company	A-	23.8%	Stable	none

*A rating outlook indicates the potential future direction of a company's rating over the next 12 to 36 months. Possible rating outlooks are negative, stable, and positive.

**Rating modifier "g" indicates the rating is based on capitalization of the insurer's parent company. Rating modifier "p" indicates the rating is based on capitalization of companies with which the insurer pools liabilities.

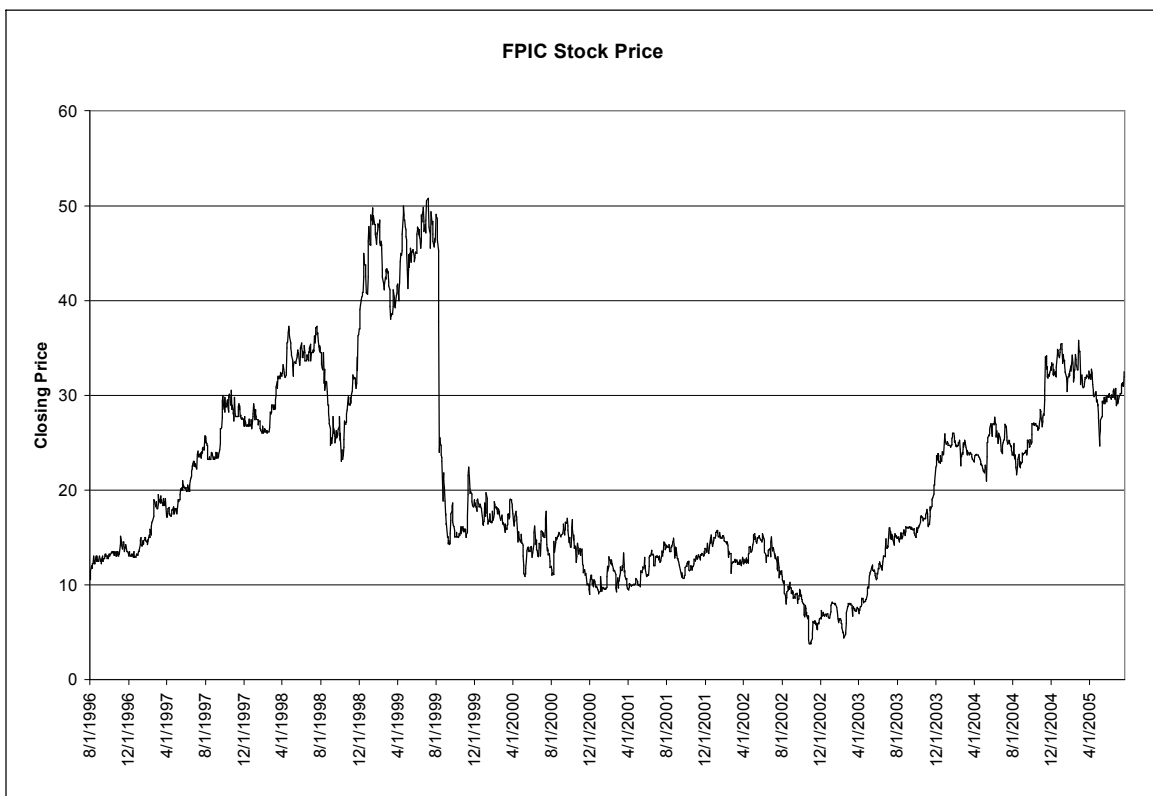
Sources: A.M. Best's Key Rating Guide, 2004, A.M. Best's Company Reports, 2003

IV. Stock Price Performance

The final piece of Angoff's (2005) analysis examines changes in the stock prices of three publicly-traded medical malpractice insurers from May 17, 2002 to May 17, 2005. During this time, prices of the three securities increase by around 100%; while the Dow Jones Industrial Average is approximately the same on these two dates. This approach of measuring financial performance is flawed for several reasons.

First, drawing conclusions about the profitability of any industry sector based on the change in value of three stocks between two arbitrarily chosen dates is ill-advised. It is noteworthy that two of the three mono-line medical malpractice insurers with publicly-traded common stock were not traded before 2001, the least profitable year for the medical malpractice insurance industry. The daily closing prices of FPIC Insurance Group's common stock are presented below in Figure 5. The extreme volatility of this stock is apparent. The figure also highlights the importance of choosing an appropriate time frame for analysis. The short-run performance of FPIC is obviously dependent on the period selected. For instance, from April 1998 to April 2001, FPIC stock price decreased by 75% from \$37.25 per share to \$9.44 per share.

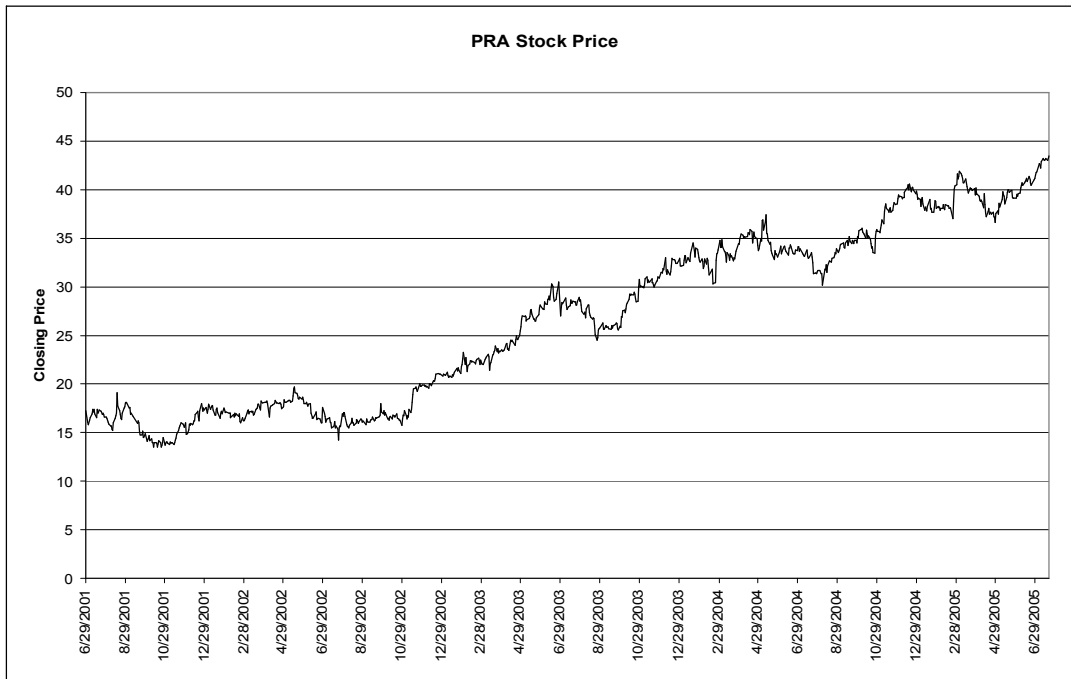
Figure 5: Closing Stock Prices for FPIC Insurance Group, 1996-2005
Ticker=FPIC Volatility = 0.03032, DJ Index volatility during same period = 0.007935



Source: <http://finance.yahoo.com>

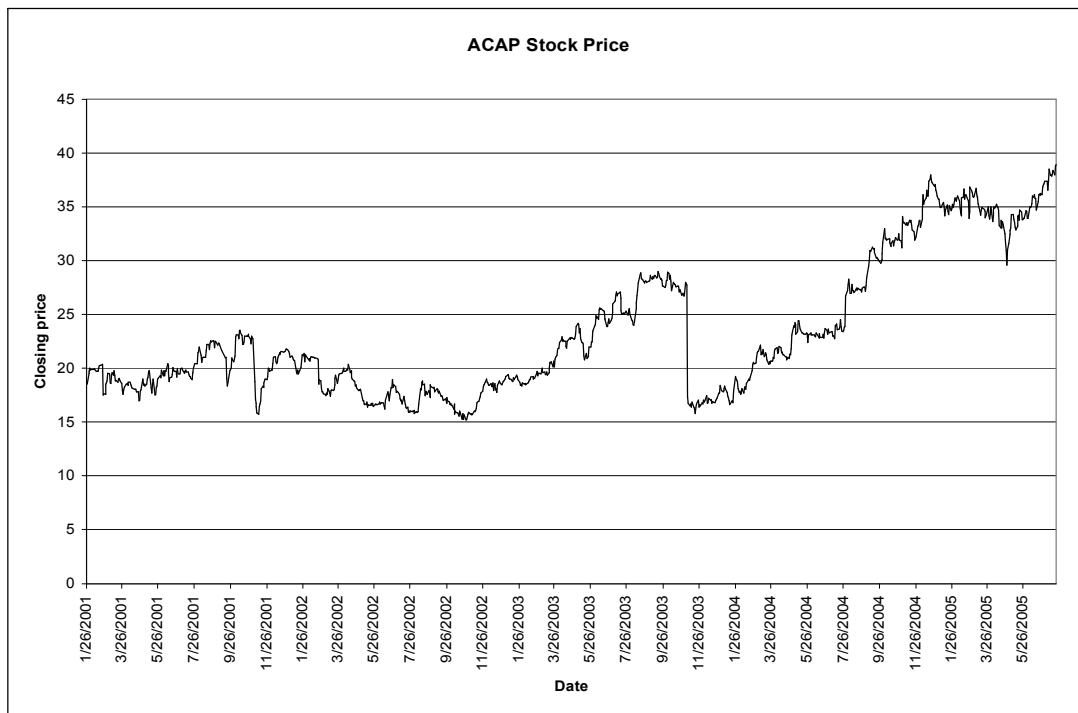
Second, in light of the improving returns in the medical malpractice insurance industry during this arbitrarily chosen time period, it is not surprising that these securities increased in value (see Figure 4 above). However, it is important to also consider the relative risk associated with these stocks. ProAssurance Corporation was first traded on the New York Stock Exchange (NYSE: PRA) in 2001. It is a holding company that includes two medical malpractice insurers: ProNational Insurance Company and The Medical Assurance Company. The volatility of its daily returns is the lowest of the three medical malpractice insurance securities at 0.014, but this is still nearly two times the volatility of the Dow Jones Industrial Average during that period. American Physicians Capital (holding company for American Physicians Assurance Corporation) has traded on the NASDAQ as ACAP since 2001. The volatility of its daily returns is equal to 0.023, substantially higher than the 0.008 volatility exhibited by the DJIA during that period. Finally, FPIC Insurance Group, which includes First Professionals Insurance, has been traded on the NASDAQ as FPIC since 1996. The volatility of its daily returns is the highest of the three securities at 0.03. During this period the DJIA's volatility was 0.008. Charts of the closing prices for the other two stocks are displayed below in Figures 6 and 7.

Figure 6: Closing Stock Prices for ProAssurance Corporation, 2001-2005
 Ticker=PRA Volatility = 0.014, DJ Index volatility during same period = 0.007995



Source: <http://finance.yahoo.com>

Figure 7: Closing Stock Prices for American Physicians Capital, 2001-2005
 Ticker=ACAP Volatility = 0.02344, DJ Index volatility during same period = 0.00807



Source: <http://finance.yahoo.com>

V. Conclusions

In the past few years significant concerns have arisen over the cost and availability of medical malpractice insurance. A recent study by Angoff purports to analyze the profitability of medical liability insurers and suggests that these insurers have been very profitable. Due to limitations in his approach, we argue that Angoff (2005) cannot make meaningful conclusions regarding whether physicians are being overcharged for professional liability insurance. In our report, we describe some of the errors and shortcomings in Angoff's (2005) methodology. We then present our findings on the financial performance of the medical malpractice insurance industry using a more appropriate basis for analysis of the issue. Contrary to the findings of Angoff (2005), we find no evidence that medical malpractice insurance is overpriced.

We propose a more appropriate measure of financial performance in the medical malpractice insurance industry. This measure, which we call the Economic Combined Ratio, includes the most complete set of costs and revenues reported on insurers' annual financial statements for all companies that reported these data to regulators. Based on this comprehensive analysis of insurer profitability, during the period 1996 to 2004, medical liability insurers, as a group, reported modest profitability in only three years (1996, 1997, and 2004). In contrast, these insurers sustained losses in six consecutive years from 1998 to 2003. The average profit ratio (return on net premiums earned) during the period 1996 to 2004 was -13.0%.

Angoff also notes that medical malpractice insurers have increased the nominal amount of surplus (retained earnings) they hold, and compares surplus held by the 12 mono-line medical malpractice insurers in his sample to the level of surplus that would yield a Risk Based Capital (RBC) level of 200%. Deficiencies of this analysis are two-fold. First, the nominal amount of surplus held by an insurer is not meaningful unless it is scaled by some measure of exposure,

such as the level of premiums written. Second, an RBC ratio of 200% is the minimum level of capital required before regulators require serious action from the insurer to improve its capitalization. In fact, the median RBC ratio reported by all insurers in 2004 is 833%, far above the 250% - 592% range in Angoff's sample of 12 medical malpractice insurance companies. Further, we review the A.M. Best ratings for this sample of insurers. The ratings data are not consistent with the notion that these medical liability insurers are earning extraordinary profits or are over-capitalized. In fact, overall the financial ratings of these companies, from what is arguably the most important independent rating agency of insurers in the U.S., suggest that these insurers have average to below average financial strength ratings.

In conclusion, our comprehensive analysis of financial performance in the medical liability insurance industry over the past nine years does not suggest that medical liability insurers are earning extraordinary profits or that they are over-capitalized. We find no evidence that medical malpractice insurance is overpriced.

Appendix A:

Payout Pattern for Medical Malpractice Losses (Occurrence)

Year	Estimated losses paid each year	Cumulative losses paid	Annual payout for \$10,000 loss	Cumulative payout for \$10,000 loss
1	0.021	0.021	\$ 212	\$ 212
2	0.044	0.065	\$ 436	\$ 648
3	0.091	0.156	\$ 912	\$ 1,560
4	0.163	0.319	\$ 1,631	\$ 3,191
5	0.132	0.451	\$ 1,319	\$ 4,509
6	0.050	0.501	\$ 498	\$ 5,008
7	0.109	0.610	\$ 1,090	\$ 6,097
8	0.082	0.692	\$ 824	\$ 6,921
9	0.037	0.729	\$ 365	\$ 7,287
10	0.071	0.800	\$ 713	\$ 8,000
11	0.071	0.871	\$ 713	\$ 8,714
12	0.071	0.943	\$ 713	\$ 9,427
13	0.057	1.000	\$ 573	\$ 10,000

Source: IRS, Internal Revenue Bulletin No. 2000-43, October 23, 2000, page 412.

Payout Pattern for Medical Malpractice Losses (Claims Made)

Year	Estimated losses paid each year	Cumulative losses paid	Annual payout for \$10,000 loss	Cumulative payout for \$10,000 loss
1	0.064	0.064	\$ 639	\$ 639
2	0.176	0.240	\$ 1,761	\$ 2,400
3	0.187	0.427	\$ 1,870	\$ 4,270
4	0.154	0.581	\$ 1,536	\$ 5,806
5	0.116	0.697	\$ 1,160	\$ 6,967
6	0.059	0.756	\$ 594	\$ 7,560
7	0.063	0.819	\$ 628	\$ 8,188
8	0.060	0.879	\$ 598	\$ 8,785
9	0.017	0.895	\$ 167	\$ 8,952
10	0.048	0.943	\$ 478	\$ 9,430
11	0.048	0.991	\$ 478	\$ 9,908
12	0.009	1.000	\$ 92	\$ 10,000

Source: IRS, Internal Revenue Bulletin No. 2000-43, October 23, 2000, page 412.

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