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TRACING THE CYCLE OF HEALTH INSURANCE

by Jon Gabel, Roger Formisano, Barbara Lohr, and Steven DiCarlo

Prologue: In November 1991, a new study by KPMG Peat Marwick, international accountants and consultants, documented that the cost of health benefits rose 11.5 percent between 1990 and 1991, the lowest rate of increase in three years. But, like many developments in the unpredictable world of health care finance, the news is neither as good as it might seem at first glance nor as bad as it might become in the next several years. The reason is a phenomenon largely unknown to the health policy community that the industry terms the “health insurance underwriting cycle.” Over the past several decades and largely without fail, private insurers have generally experienced three consecutive years of underwriting gains, followed by three consecutive years of losses in the group health business. The cycle holds for both commercial insurers and nonprofit Blue Cross and Blue Shield plans. Authors Jon Gabel, Roger Formisano, Barbara Lohr, and Steven DiCarlo examine the relationship between the profitability cycle of private insurance and the cyclical nature of premium increases in group health insurance. Gabel is director of employee benefits research at KPMG Peat Marwick. He formerly worked as a senior economist at the Agency for Health Care Policy and Research and as associate director of the Department of Research and Statistics at the Health Insurance Association of America (HIAA). Coauthor Roger Formisano, a professor at the University of Wisconsin’s School of Business, studied the underwriting cycle under contract to HIAA. Barbara Lohr, an associate in the Washington, D.C., office of Towers Perrin, was an intern at HIAA in 1989 while pursuing a master of business administration degree at the Wharton School in Philadelphia. Steven DiCarlo was a research associate at HIAA from 1987 to 1990.
Mr. Tresnowski [president of the Blue Cross and Blue Shield Association] said health insurance had just completed a cycle of [financial] losses, which would probably be followed by three years of gains. But Mr. Tresnowski said the cycle of surplus would last only this year and 1991. “Then we will look for another down period in 1992,” he said.¹

If the health insurance underwriting cycle were simply a profitability cycle, it would concern few parties other than insurers, insurance regulators, and investors. It is because the profitability cycle triggers a pricing cycle that it affects other parties. For employers, the cycle means periodic volatile increases in health insurance premiums. To health policymakers, the cycle spawns recurrent health care crises in which health care costs appear out of control.

This paper’s objective is to examine the nature of the health insurance underwriting cycle.² We present empirical evidence of its existence and review theories concerning it. To better understand the character of the cycle, we explore whether different product lines (that is, disability insurance versus comprehensive major medical insurance) within group business experience this six-year cycle. We then investigate the relationship between the six-year profitability cycle and the cyclical nature of premium increases in group health insurance. Two issues are beyond the scope of this essay. First, we do not empirically test alternative theories about the cycle. Second, we do not address ways for insurers, employers, or policymakers to control the underwriting cycle. Our analysis is based on data from the Health Insurance Association of America (HIAA), the Blue Cross and Blue Shield Association, the Bureau of Labor Statistics (BLS), and McKinsey and Company.

The Underwriting Cycle

The term undertiring cycle may seem a misnomer. It does not refer to cyclical changes in the process that insurers use to approve employers’ applications for insurance, although the cycle probably generates periodic changes in risk rating and selection in the small employer market. Instead, the underwriting cycle refers to the cyclical pattern of “underwriting profits,” defined as profitability exclusive of investment income.³

Most industries that set prices without full knowledge of costs experience volatile earnings. Yet for insurers, this volatility (the underwriting cycle) is attributable primarily to the pricing behavior of insurers, not just to fluctuations in claims expenses. Insurers that underwrite group health insurance experience periods of strong profits, followed by intense price competition and declining profits, leading to reduced capacity, rapid price increases, and, eventually, strong profits again.

Three phases make up the underwriting cycle. Phase I, the hard market,
is characterized by rapid price increases and rising revenue for insurance companies as financial losses turn to profits. Phase II, stabilization, is reached as prices plateau, resulting in high underwriting profits and the flow of capital into the industry. Eventually, price competition leads to a buyer’s market, rising losses for insurance companies, and more frequent company insolvencies; this is Phase III, the soft market.

James Reed and his colleagues have observed that Blue Cross/Blue Shield Association member plans experienced three consecutive years of underwriting gains, followed by three consecutive years of losses, without exception, over the twenty-five-year period 1965 through 1990 (Exhibit 1). Large HIAA member companies appear to follow a similar cycle. Underwriting results, as a percentage of premiums for HIAA’s twenty largest member companies in the group insurance business, exhibit a six-year cyclical pattern. Exhibit 2 depicts a pattern of three years of improving results followed by three years of declining results during 1976–1989. Although the data in Exhibit 2 reflect the experience of only twenty companies, they represent approximately 55 to 65 percent of commercial insurers’ total group health insurance premiums and clearly support the existence of a recognizable six-year cycle.

**Cycle Theories**

There are many explanations for the underwriting cycle. For purposes of discussion, it is helpful to group them into three broad categories: supply and demand, industry pricing actions, and externalities.

**Supply and demand.** Some have explained the underwriting cycle as

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**Exhibit 1**
Blue Cross/Blue Shield Underwriting Results, 1965–1990

<table>
<thead>
<tr>
<th>Underwriting gain or loss as percent of net revenue</th>
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<tbody>
<tr>
<td><img src="image" alt="Graph showing underwriting gains and losses from 1965 to 1990" /></td>
</tr>
</tbody>
</table>

**Sources:** Plan Financial Services; Blue Cross and Blue Shield Association; and Milliman and Robertson, Inc.
the outgrowth of basic economic principles of supply and demand in a competitive market. Classical pricing theory maintains that prices move toward equilibrium determined by industry supply and demand functions. In a competitive market with relatively homogeneous products and free entry, economic profits signal firms to enter the market, thus increasing supply. Increased supply lowers profits, until eventually some firms experience losses and exit the market. Exit reduces supply, prices increase, and profits return.

Paul Samuelson offers the classic example of the dynamic "cobweb" model, in which farmers plan the quantity that they will produce next year based on today’s prices. When prices are high, farmers produce more, so that prices fall in the next period. When prices are low one year, farmers plant fewer crops the next year, so prices rise in the next period. The lag between this year’s production decision and next year’s prices is particularly relevant for understanding the underwriting cycle.

The market for group-purchased health insurance is competitive. More than a million employers purchase group products from over 1,000 insurers and health maintenance organizations (HMOs), not to mention numerous third-party administrators. Health insurance products are relatively homogeneous (especially indemnity policies without utilization management), and few barriers exist to the exit and entry of firms. Generally, the demand for health insurance is much more stable than is its supply. By cataloging articles in The National Underwriter and Business Insurance, Roger Formisano has documented the extent to which insur-
ance companies left the health insurance market during the hard market of 1986–1988. This implies that the underwriting cycle is linked to changes in the supply of insurance, rather than to unanticipated changes in demand. Because the demand for group health insurance is relatively price inelastic, modest shifts in the supply of health insurance result in dramatic price increases (or reductions) in health insurance, which in turn affect profits. (While the market demand curve is relatively price inelastic, individual firms—particularly small employers—are quite sensitive to changes in price.)

Forces outside the group insurance market, such as wage/price freezes or an altered regulatory environment, could change the supply of insurance. There is little evidence, however, that such changes occur with the regularity needed to produce the cycle. Instead, supply shifts are more likely caused by the industry’s willingness to supply capacity. Capacity reflects both surplus (the resources to bear risk) and the willingness to commit available surplus. Since individual insurers’ financial resources and management perceptions are largely the result of the industry’s current position in the underwriting cycle, cyclical changes in supply are constantly occurring. In this manner, one cycle would appear to generate the next.

Industry pricing actions. Another explanation of the cycle comes from the experience of the property and casualty insurance industry. The essence of this analysis is that insurers’ pricing behavior generates the underwriting cycle.

To increase market share in a highly competitive market, insurers reduce prices, then later raise them to compensate for past underpricing of business. Since all companies sell a substitutable product, many companies feel that the only way to take sales from competitors is to add benefits or cut prices. Furthermore, the competitive marketplace allows employers to shop for lower prices, also putting downward pressure on premiums. Ultimately, the desire to obtain market share leads to underpricing and to the eventual price increases that must follow.

Some theories attribute the underwriting cycle to rate-making behavior. Emilio Venezian has suggested that the property and casualty underwriting cycle is a result of actuarial pricing techniques, which extrapolate the recent past to the future from recent claims experience. He demonstrates mathematically that such pricing methods generate a cyclical pattern of experience. Group health insurance employs similar rate-making methods.

Mark Jablonowski has suggested a super-game theory to explain the underwriting cycle, claiming that the cycle may simply be the result of rational behavior among interdependent firms. This theory assumes that
the industry is composed of a few “leader” firms with market power and a large fringe of less powerful “followers” who “shadow price.” While it would be advantageous for all firms to keep prices high, firms are always tempted to reduce prices to gain market share. Once one firm defects from the cooperative equilibrium of high prices, others follow.\(^{11}\)

Yet another explanation submits that the underwriting cycle is the result of insurance companies pricing in the shadow of Blue Cross/Blue Shield. Such a hypothesis stems from research showing that Blue Cross/Blue Shield’s recurrent six-year cyclical pattern appears to lead the group insurance cycle consistently by about six months.\(^{12}\)

Finally, some industry pricing theories attribute the underwriting cycle to the industry’s delayed response to changes in the market. Such lags occur for a variety of reasons: lags in reporting medical claims (it may be six to nine months before insurance companies recognize trend changes in claims), the desire of companies to gather more data to confirm that observed changes are not statistical aberrations, and the usual rate guarantee of twelve months.\(^{13}\)

External factors. Some analysts have suggested that external factors shape the underwriting cycle. External factors include two types of events: underlying claims events and general economic conditions.

Theories attributing the underwriting cycle to underlying claims events presume that the delayed reaction of carriers to fluctuating trends in medical costs results in cyclical earnings. Reed and his colleagues observe that trends in medical care costs exhibit historical cycles similar to underwriting results. In fact, they single out trends in medical costs as the primary cause of the underwriting cycle and identify the all-items consumer price index (CPI) as a leading indicator of such health care trends.\(^{14}\) For the years 1970–1987, Formisano reports statistically significant simple negative correlations between health insurance operating results and economic factors such as the change in the overall CPI, the change in the medical care CPI, and changes in national health care expenditures.\(^{15}\) Exhibit 3 illustrates the relationship between national health expenditures, the medical care CPI, and insurers’ earnings.

Analysts have identified many general economic factors as possible causes of the underwriting cycle.\(^{16}\) These factors range from the budget deficit to national unemployment to interest rates. Interest rate theories suggest that the ability to generate investment gains sets off different phases of the cycle. These theories contend that cash flow underwriting, where underwriting losses are covered to a degree by investment income, induces changes in the pricing of group insurance policies.\(^{17}\) Historically, however, investment income represents a small share of gross income, so that insurance pricing seemingly has a far greater impact on earnings.
Exhibit 3
Group Health Insurance Performance Measured Against Changes In National Health Care Spending, 1970–1989

<table>
<thead>
<tr>
<th>Percent</th>
<th>20</th>
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<tbody>
<tr>
<td>15</td>
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<tr>
<td>10</td>
<td></td>
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<tr>
<td>5</td>
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<tr>
<td>0</td>
<td>Group operating results&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Sources: For national health expenditures, Health Care Financing Administration; for medical care CPI, Bureau of Labor Statistics; for group operating results, Health Insurance Association of America, unpublished data.

<sup>a</sup>Percent change in expenditures.

<sup>b</sup>Consumer price index.

<sup>c</sup>Percent gain or loss. Group operating results are underwriting profit plus investment income.

Examining The Underwriting Cycle More Closely

To further understand the cycle, we examined two questions. First, do we observe the six-year cycle by line of business, such as group comprehensive major medical insurance or group short-term disability business? Second, do single carriers experience the six-year cycle?

We used two data sources to address these questions. To explore whether there is a cycle by line of business, we used HIAA’s annual survey of premium income and benefit payments for the nation’s commercial insurers. To examine whether individual insurance companies experience a six-year cycle, we used data from McKinsey and Company’s 1989 Health care Payor Annual. The data from the HIAA survey are from HIAA members and nonmembers but do not include Blue Cross/Blue Shield plans. Insurance companies’ HMO business is not included in the survey. Approximately 45 to 50 percent of the targeted companies respond to the survey each year. These companies represent about 85 percent of U.S. total commercial group business premium dollars.

The survey collects detailed information on direct premiums earned and claims incurred for both individual and group-purchased health insurance. For our analysis, we examined the direct premiums earned and claims incurred for group-purchased business only. We further split this business into six product lines: (1) comprehensive major medical, (2)
supplementary major medical, (3) dental, (4) short-term disability, (5) long-term disability, and (6) total.

We limited the sample to companies for which we had at least seven years of data for the years 1980 through 1988. We applied this criterion separately to each product line that a company reported. The sample size for individual product lines ranged from twenty-five to fifty-three companies. In our analysis, we did not weight by company size; the sample includes large, medium, and small insurers.

The data from McKinsey and Company were gathered from published data on indemnity carriers from 1979 to 1988. The loss ratios are for fully insured group health products and are calculated by adding benefit claims plus changes in aggregate reserves, then dividing this total by premium income. Hence, as the loss ratio declines, underwriting profits increase.  

**Profitability by line of business and carrier.** The more aggregated the information on insurer profits, the more strongly one observes the profitability cycle. Conversely, the more disaggregated the level of observation, the less likely is one to observe the underwriting cycle. This generalization holds when examining lines of business in the commercial health insurance industry and when inspecting the experience of single carriers.

Exhibit 4 shows the underwriting cycle for commercial insurers in all lines of business for firms in our sample. For the fifty-three firms in the sample from 1980 to 1988, we observe a pattern of profitability consistent with the six-year cycle. When we examine individual lines of business, some appear to follow a similar cycle, some approach it, and some experience a pattern of profitability that bears little resemblance to the six-year cycle. Exhibit 5 displays the loss ratio experience of individual

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**Exhibit 4**


<table>
<thead>
<tr>
<th>Loss ratio (claims payments/premium income)</th>
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<tbody>
<tr>
<td>0.95</td>
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<td>0.90</td>
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<tr>
<td>0.85</td>
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<tr>
<td>0.80</td>
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<td>0.75</td>
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Source: HIAA Annual Survey of Commercial Health Insurers.
Note: Based on survey sample of fifty-three insurance companies.
Exhibit 5
Loss Ratios, Dental, Comprehensive, And Supplemental Major Medical Insurance, Commercial Insurers, 1980–1988

Loss ratio (claims payments/premium income)

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<tbody>
<tr>
<td>Dental</td>
<td>0.75</td>
<td>0.80</td>
<td>0.85</td>
<td>0.90</td>
<td>0.95</td>
<td>1.00</td>
<td>1.00</td>
<td>0.95</td>
<td>0.90</td>
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<td>Comprehensive major medical</td>
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<td>Supplemental major medical</td>
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Source: HIAA Annual Survey of Commercial Health Insurers.

comprehensive major medical, supplemental major medical, and dental insurance business. Their experience is similar to that we observed for the collective industry. Exhibit 6 shows the loss ratio record of short- and long-term disability insurance. The cycle for short-term disability insurance approaches the traditional cycle, whereas that for long-term disability insurance does not resemble the industry six-year cycle.

Exhibit 7 illustrates the loss ratio experience for three selected carriers:

Exhibit 6
Loss Ratios, Short- And Long-Term Disability Insurance, 1980–1988

Loss ratio (claims payments/premium income)

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</thead>
<tbody>
<tr>
<td>Short-term disability</td>
<td>0.65</td>
<td>0.70</td>
<td>0.75</td>
<td>0.80</td>
<td>0.85</td>
<td>0.90</td>
<td>0.95</td>
<td>1.00</td>
<td>0.95</td>
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<tr>
<td>Long-term disability</td>
<td></td>
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</table>

Source: HIAA Annual Survey of Commercial Health Insurers.
Aetna, Jefferson-Pilot, and Empire Blue Cross/Blue Shield. Jefferson-Pilot appears to experience the classical cycle, with its profitability peaking in 1984 and 1985. At the opposite position is Empire Blue Cross and Blue Shield, which fails to follow classical patterns. Aetna’s loss ratio experience lies somewhere in between. Why should we observe the cycle for some carriers but not others? One hypothesis is that firms that follow the cycle price more aggressively during the “soft cycle.” This question certainly calls for further research.

Profitability and price. If pricing policies of the insurance industry are a root cause of the profitability cycle, then there should exist a close relationship between the profitability and pricing cycles. Perhaps because of the lack of data on premium increases, to our knowledge, no previous research has explored this issue. To measure average annual increases in premiums, we use unpublished BLS data from their annual employer cost index. We have chosen to use BLS data because they are the most consistent national data available for an eleven-year period. Based on a survey of 3,700 establishments, these data are available from 1980 to 1990. The sample includes small, medium, and large firms from the public and private sectors.

Figures for the BLS employer cost index represent average increases in employers’ cost for health coverage for firms that offer and do not offer health insurance coverage. Hence, these figures do not represent the total cost of coverage, since they do not include the employee’s contribution. Since workers have assumed an increasing share of the cost of health benefits during the past decade, rates of increase are less than those reported in other surveys. In using BLS data to examine the relationship between the profitability and price cycles, however, one should focus on

the trend rather than on absolute figures.

Exhibit 8 depicts the relationship between industry profitability (measured as underwriting results for the leading twenty commercial insurers) and yearly increases in health benefit premiums. We have correlated industry profitability with premium increases two years hence. Thus, 1978 profitability is linked with 1980 premium increases.

Exhibit 8 illustrates an important lag relationship: as the profitability of the commercial health insurance industry declines, premiums increase two years hence. Similarly, as health insurance profits improve, rates of increase in premiums drop. Two years—1982 and 1989—do not fit this pattern. For 1989, this may be attributable to an aberrant measurement by the BLS that year. For example, the HIAA survey of over 2,000 employers reported an 18 percent rate of increase between spring 1988 and spring 1989, and a 14.6 percent increase between spring 1989 and spring 1990.\(^{21}\)

The two-year lag between profitability and premiums is intuitively plausible. It may take six to nine months to identify new trends in claims and profits and then negotiate new rates. These new rates are usually guaranteed for twelve months. The two-year lag is also consistent with Samuelson’s “cobweb” model, in which there is a lag between today’s production decisions and tomorrow’s prices.

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**Exhibit 8**

Relationship Between Health Insurance Industry Profitability And Premium Increases, 1980–1990

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</tr>
</thead>
<tbody>
<tr>
<td>-6</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>-2</td>
<td>-4</td>
<td>-6</td>
<td>-6</td>
<td>-6</td>
</tr>
<tr>
<td>Underwriting profit(^b)</td>
<td>Health insurance premium increase(^a)</td>
<td>Percent underwriting profit</td>
<td>Percent health insurance premium increase</td>
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<td></td>
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</table>

**Sources:** Bureau of Labor Statistics and Health Insurance Association of America.

**Note:** In this exhibit, values for underwriting profit are actually those of two years prior to the year shown, reflecting the two-year lag between profits and premium increases.

\(^a\)Relates to right y axis.

\(^b\)Results for top twenty commercial insurers; relates to left y axis.
The Cycle And The Future

Between 1980 and 1989, employers’ spending for health insurance rose from $65 billion to $172 billion. This translates into an annual rate of increase in spending of 11.4 percent per year. Business spending for health insurance far outpaced inflation in the rest of the economy. In constant 1989 dollars, business spending for health insurance grew at an annual rate of 6.7 percent from 1980 to 1989. Almost as troubling as the average rate of increase was its volatility. Some years’ premium increases exceeded 20 percent, whereas in other years, premiums increased less than 6 percent. Real premium increases ranged from 17 percent to 2 percent.

This essay has attempted to demonstrate that much volatility in the health insurance market is attributable to the underwriting cycle. Although we did not empirically test which theory best explains the cycle, it seems implausible that the cycle is set off by external factors, such as a claims cycle or external economic events. We are aware of no analysis of hospital and physician utilization and price data that suggests a six-year cycle of price and utilization of health care services. Neither do changes in interest rates, economic growth, and inflation conform to a six-year cycle. Thus, it would appear that the cycle’s root cause can be traced to the pricing, forecasting, and market exit and entry practices of the insurance industry.

When one accepts the authenticity of the underwriting cycle, one’s interpretation of simple economic statistics changes from “The weather is becoming warmer” to “It is a cool spring.” Annual increases in premiums must be assessed by their position in the cycle. The rapid rise in premiums from 1988 to 1990 was predictable, given the major financial losses suffered by insurers from 1986 to 1988. The deceleration in the rate of increase in health insurance premiums in 1991 (12 percent among mid-sized and large firms) can be linked to the improved profitability of the industry in 1989.

Managed care effect. Managed care’s effectiveness in controlling health care costs also needs to be evaluated in the context of the cycle. Managed care grew rapidly from 1985 to 1987. At the same time, the cost of health insurance premiums was accelerating. Some have interpreted this correlation as evidence of managed care’s inability to contain costs. Others have attributed the deceleration of premium increases during the past two years to the effectiveness of managed care. Of course, both the “failure” and “success” of managed care were predictable events in the context of the cycle.

What about tomorrow’s outlook? There is cause for optimism that the price cycle will ease in the future. First, more insurers are cognizant of the
cycle, as evidenced by the number of recent articles in the trade press on the subject. Second, as more firms choose to self-fund without reinsurance, the pricing of group insurance will become more closely linked to the claims experience of individual employers. Hence, the price volatility that develops from the forecasting, pricing, and exit and entry patterns of the insurance industry will diminish.

If the past predicts the future, increases in premiums will be relatively modest in 1992 and 1993. On the other hand, premium increases from 1990 to 1991 were nearly six percentage points higher than six years ago, at a similar stage of the cycle. For analysts who see the proverbial cup as half full, the six-percentage-point spread may indicate that insurers now understand the cycle better than before. For analysts who see the cup as half empty, the six percentage points indicate that underlying trends in health care costs have increased substantially since 1985.

Whatever the case, employers, insurers, and policymakers need not be lulled into complacency. The underwriting cycle’s message is simple: When times are good, they really aren’t that good! When times are bad, they really aren’t that bad!

The authors thank Richard Adams, Charles Eby, Gregory de Lissovoy, Gail Jensen, Rik Lindahl, Jon Meyer, Thomas Rice, Ann Stuchiner, and Gary Ward for their helpful comments. We thank Sarah Glover for her excellent secretarial support.

NOTES

3. In this paper, we use three different measures of insurer profitability. The loss ratio is the ratio of benefit payments to premium income. Net underwriting results refers to premium income minus administrative costs minus benefit payments, divided by premium income. Operating results are investment income plus underwriting profits, divided by premium income. The availability of data often determines which measure we use. However, based on an analysis of available data, we find that the three measures are highly correlated.
4. Reed et al., “Health Profit/Loss Cycles Hold on the Market.”
7. Formisano, “Cyclic Behavior of Health Insurance Results.” As Formisano notes, “Entry
and exit can be accomplished in insurance markets by insurers intensifying or reducing their marketing and distribution efforts in particular markets. In fact, new firms need not ‘enter’ the market, nor existing sellers exit the market for the phenomena to occur.”


13. Formisano, “Cyclic Behavior of Health Insurance Results.”

14. Reed et al., “Health Profit/Loss Cycles Hold on the Market,” 4. Reed observes that many of the cycles were driven by both medical inflation trends and exogenous factors. The latter include the wage/price freeze of the Nixon administration in 1971, the Carter administration’s Council on Wage and Price Stability, and the launching of the diagnosis-related group (DRG) system of hospital payment in 1983.

15. Formisano, “Cyclic Behavior of Health Insurance Results.”

16. General economic events will subsequently affect the performance of the health care sector. Hence, the distinction between “underlying claims events” and general economic conditions is one of initial stimulus.

17. Formisano, “Cyclic Behavior of Health Insurance Results.”


19. One explanation of why the cyclical pattern for long-term disability insurance differs from other lines of business is that there is often a long delay in the payment of claims. The erratic payment patterns may make the cycle more difficult to measure.


