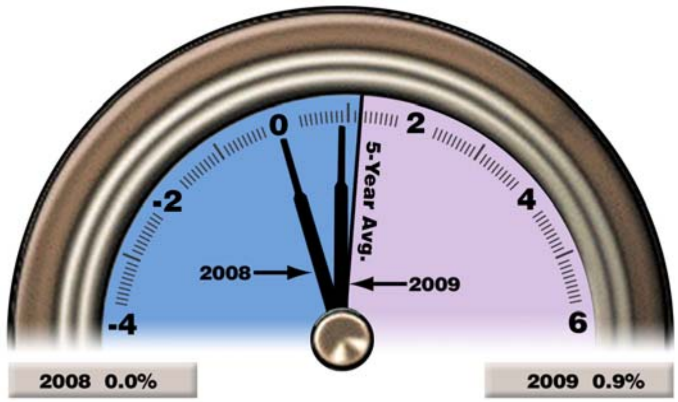
Gauging Current Conditions:

The Economic Outlook and Its Impact on Workers Compensation

The gauges below reflect the consensus economic outlook for 2008 and for 2009 for key factors that typically impact workers compensation. Each gauge also provides some context for the outlook, relative to a historical average of the previous five years.

Weak Outlook for Employment in 2008 Suggests Downward Pressure on Both Exposure and Claim Frequency

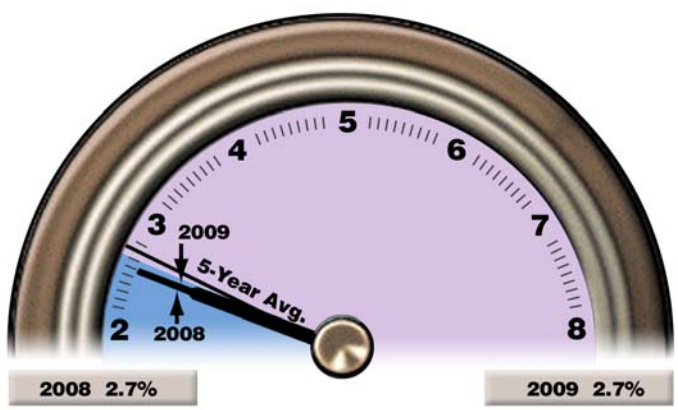
Employment is expected to be virtually unchanged during 2008, reflecting Moody's Economy.com's forecast of a mild two-quarter recession. Jobs begin to turn up gradually in the fourth quarter of 2008, with gains strengthening as an economic recovery begins to gather momentum. The weakening job prospects for this year suggest a softening in the outlook for exposure as well as some downward pressure on claim frequency (as less tenured/generally less experienced workers tend to be laid off first during recessionary periods).



Private Sector Employment Growth Slowing

Slowing Wage Gains May Constrain Increases in Indemnity Severity

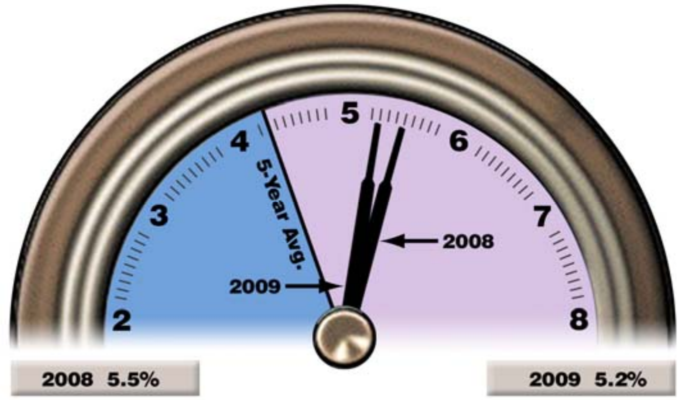
Wage gains are expected to slow in 2008–2009 from the near 3-1/2% pace seen in 2006–2007. The less rapid increases reflect a recession-related softening in labor markets, with unemployment rates rising to nearly 6% in mid-2009 according to forecasts by Moody's Economy.com. The moderation in wage increases suggests a slowing in the rate of increase of indemnity severity, since indemnity benefits are tied to wage growth in most states.



Average Weekly Wage Growth Slowing

Accelerating Medical Care Price Increases Suggest Further Upward Pressure on Medical Severity

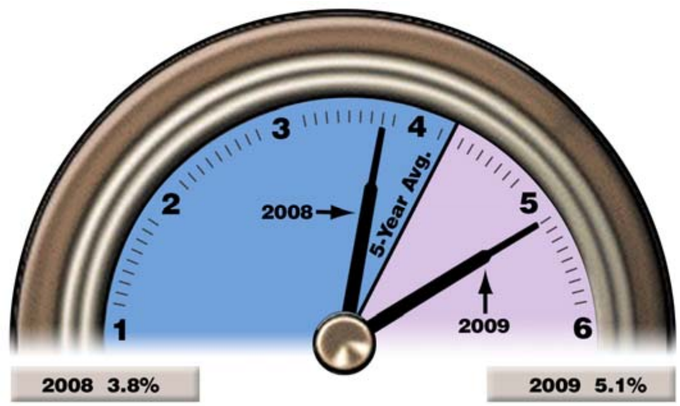
The medical care component of the Consumer Price Index is forecast to accelerate to 5.5% in 2008, from 4.4% in 2007. Some moderation is expected in 2009 (to 5.2%). Even so, medical care price increases are forecast to be near-double those of the economy as a whole. All of this suggests continued upward pressure on medical severity in coming years.



Medical Care Price Increases Continuing

Financial Markets Pose Major Challenges for P&C Portfolio Managers

Interest rates are forecast to decline in 2008, as the Fed and credit markets react to the weakening economy, and then turn higher in 2009, consistent with the quickening pace of economic activity then. Stock prices, meanwhile, have shown marked volatility in recent months and are down some 11% from their October 2007 highs as of mid-April 2008 (based on the S&P 500 stock price index). All of this suggests challenging times ahead for P&C portfolio managers. (The "gauge" shows the rate of the seven-year Treasury note because the average maturity of Treasury securities held by P&C carriers is roughly seven years.)



Interest Rates Lower in 2008 and Then Turning Higher

Behind the Gauges
Macro-Economic Conditions

The following set of charts focuses on macro-economic conditions and their implications for the P&C industry.

Real Gross Domestic Product (GDP)

- A short and mild recession—largely caused by the weakness in housing and its spillover effects on consumer spending—is being forecast by Moody's Economy.com. Their forecast calls for a two-quarter decline in real GDP (at an average annual rate of 0.4% in the first and second quarters of 2008) with growth then resuming at about trend-like rates in the second half of 2008 and in 2009. Aggressive rate-cutting by the Federal Reserve and the quick enactment of a fiscal stimulus package are the key reasons cited for the economy's projected quick turnaround.
- The accompanying Implications article details how prior recessions have impacted workers compensation, especially in terms of exposure and investment income. As discussed in the article, the impacts vary, depending on the severity of the recession. However, even in the last two recessions, which have been relatively mild, there were still noticeable impacts in terms of exposure and new money yields.

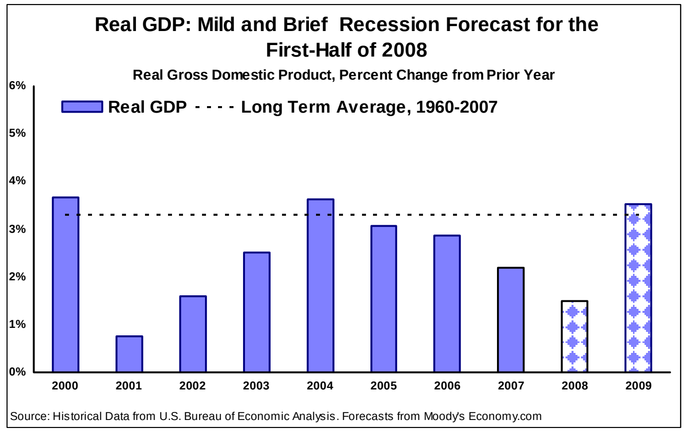


Exhibit 1

Economic Growth Drivers

- Exports and residential construction, two relatively small GDP components (12% and 4%, respectively), are forecast to play a substantial role in the outlook. Nearly half of the increase in GDP in 2008 (and roughly one-third of the rise in 2009) is expected to come from exports, reflecting both healthy economies abroad and the price competitiveness of US goods abroad due to the weak dollar (see Exhibit 6). In contrast, residential construction is expected to be a major drag on GDP in 2008, reflecting the state of that sector. A gradual improvement is expected in 2009, with that sector contributing some 20% to the rise in GDP at that time.
- Imports are expected to continue to be the largest drag on GDP, reflecting both the nation's reliance on imported oil as well as the inflow of lower-cost manufactured goods from abroad. (Spending on imports is treated as a negative factor in the GDP accounts, since GDP measures domestic production.)

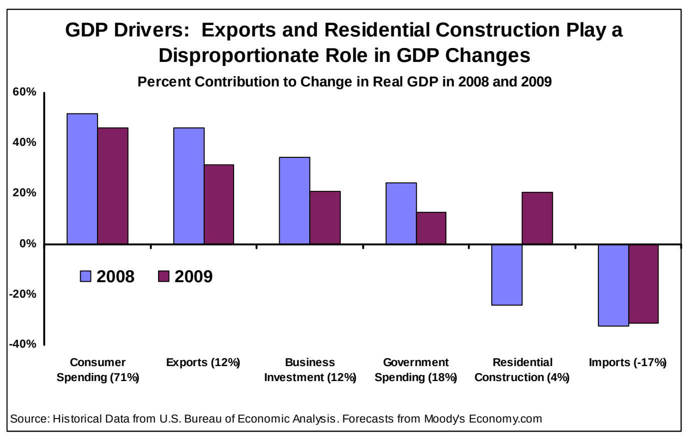


Exhibit 2

Labor Markets

- Labor markets are forecast to weaken during the recession, although the expected changes in employment and unemployment rates are far less than those seen, on average, in prior economic downturns. For example, the forecasted 1 percentage point rise in the unemployment rate (based on quarterly data) is roughly half that seen in the 1990 and 2001 recessions, both of which were relatively mild in terms of their duration and severity.
- All of this suggests only modest impact on exposure growth, although exposure in the more cyclically-sensitive manufacturing sector is likely to be more adversely affected than in the more stable office and clerical categories. On a more positive note, claim frequency may come under some additional downward pressure since the experience level of the workforce tends to increase during recessions (because the less experienced/tenured workers tend to be laid off first).

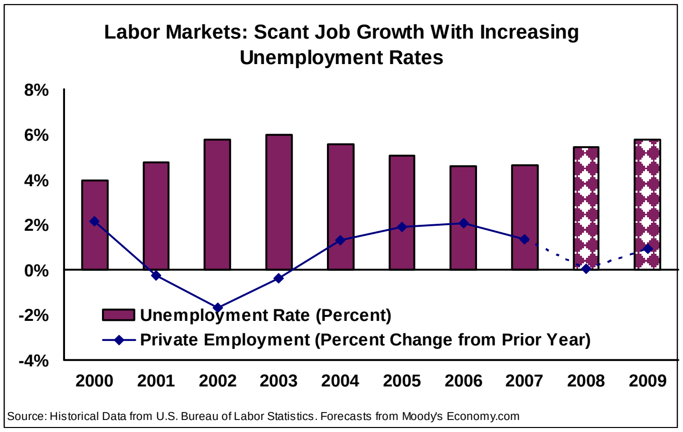


Exhibit 3

Inflation

- The Consumer Price Index (CPI) increased 2.9% in 2007, down slightly from 2006. That decline masked substantial volatility in the CPI last year related to large swings in energy prices. Overall price increases are expected to decline somewhat by 2009, reflecting expectations of moderating energy and other commodity prices.
- In contrast to the deceleration in overall inflation, the medical care component of the CPI is expected to increase 5.5% in 2008 and 5.2% in 2009, after a 4.4% rise in 2007. Although not ideally suited as a measure of medical care inflation in workers compensation, the forecasted increases in the medical CPI suggest ongoing upward pressure on medical severity in the years immediately ahead.

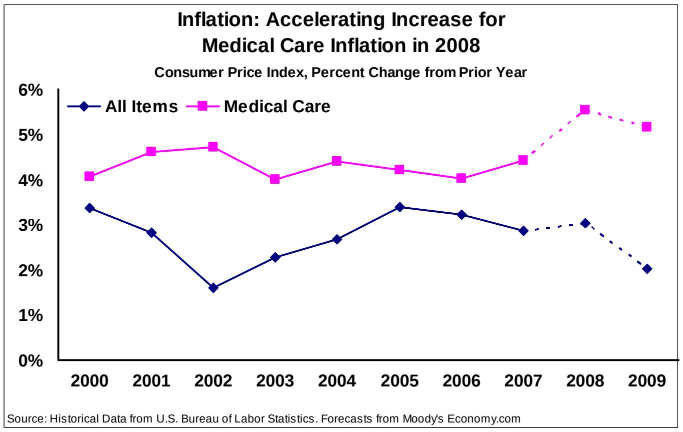


Exhibit 4

Interest Rates

- The Federal Reserve acted aggressively in reducing short-term interest rates in the face of the sub-prime meltdown and signs of a faltering economy. Moody's Economy.com expects further easing in 2008 as the economy continues to weaken, followed by a mild firming as the recovery gathers steam. Long-term interest rates, meanwhile, have fluctuated in a narrow range, declining recently as investors sought the safety of government bonds in the face of a volatile and declining stock market. Long-term rates are expected to edge higher later this year and in 2009, reflecting both rising credit demands and increasing inflationary expectations.
- The first half of 2008 is likely to be an especially challenging time for P&C portfolio managers, as declining yields and possibly further weakness in the stock market place downward pressure on investment income. An improving economic situation may develop in 2009, although the current uncertainties in financial markets, both here and abroad, suggest a low level of confidence in any financial forecast.

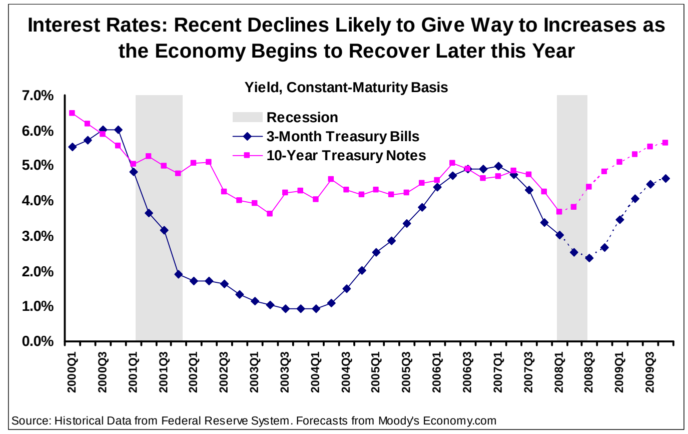


Exhibit 5

Dollar Exchange Rate

- The dollar's slide intensified during 2007 and has continued into 2008 (shown here on a trade-weighted and inflation-adjusted basis). Subsequent dollar movements will depend on a number of factors, including differences in anticipated rates of return as well as shifting mixes of assets and liabilities in portfolios abroad. So far, the European Central Bank has not followed the Fed in reducing its key short-term rate, suggesting the possibility of additional downward pressure on the dollar should the Fed ease rates further in the months ahead.
- From a workers compensation perspective, changes in the dollar's value are likely to most directly impact exposure in trade-intensive manufacturing industries. In addition, to the extent that changes in foreign asset holdings impact US interest rates, there likely will be additional pressures on overall economic growth and employment.

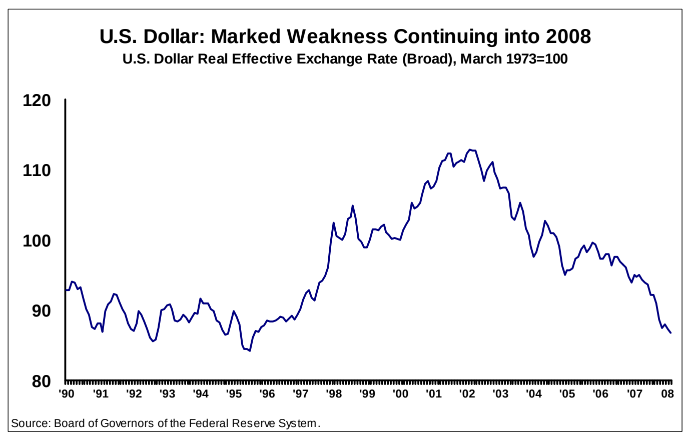


Exhibit 6

Implications

What a Recession Would Mean for Workers Compensation—While exposure and investment income may be adversely affected, a recession, if it occurs, is likely to place additional downward pressure on claim frequency. Recessions may also place downward pressure on indemnity and medical severity, although the evidence here is less clear.

The economic expansion, which began at the end of 2002, appears to be succumbing to the combined effects of the ongoing bust in housing, the sub-prime meltdown and its spillover into the broader financial markets,[1] and the sharp escalation in energy prices. That's certainly the message implicit in the latest economic readings. For example:

- Private sector employment, which had been increasing at an average of nearly 160,000 a month in 2006, slowed to just 65,000 a month in the second half of 2007, and has been declining in each of the past four months (through March).
- Real growth in Gross Domestic Product slowed to a meager 0.6% in the 4th quarter of 2007, driven lower by weakness in residential building and a recession-signaling fall-off in inventory investment.
- The unemployment rate, which had averaged 4.5% in last year's first half, averaged nearly 4.8% in the second half. The March reading was 5.1%.
- Consumer expectations, retail sales, and a host of housing indicators are signaling a weak and weakening economic environment—as is the stock market, which at mid-April was down 11% from its October 2007 high.[2]

Fed Chairman Bernanke has emphatically indicated his concerns by easing borrowing requirements and through reductions in both the discount rate and the federal funds interest rate, the key short-term rate to which other market-based rates are benchmarked. Such concern has also been evidenced by the Administration and Congress in terms of the rapid enactment of a stimulus package to spur consumer spending. Clearly, if the economy is not now in recession, it is headed either toward a downturn or toward a period of extremely sluggish growth.

What would a recession mean for workers compensation? As discussed below, a recession would likely reduce exposure and premium because of reduced employment and downward pressure on wage gains. Investment income would also decline, both from the stock market and fixed-income instruments. However, a recession would place downward pressure on claim frequency as well as medical and indemnity severity (although the latter two impacts are less well established). Closer to home, employment in the P&C industry is likely to hold up far better than overall employment, based on the experience in past recession periods.

Reduced Exposure

The softening in labor markets associated with recessions would adversely affect growth in payrolls and, hence, premium (since payroll is the rating base and the measure of exposure in workers compensation). As shown in Chart 1, private sector wages and salaries tend to either decline in recessions or markedly slow their rate of growth. The comparison in the chart is between the rate of change in private wages and salaries during the year before the start of a recession and the rate of change during the recession period (expressed at an annual rate). The years shown are the starting years of the eight major recessions since the early 1950s.[3]

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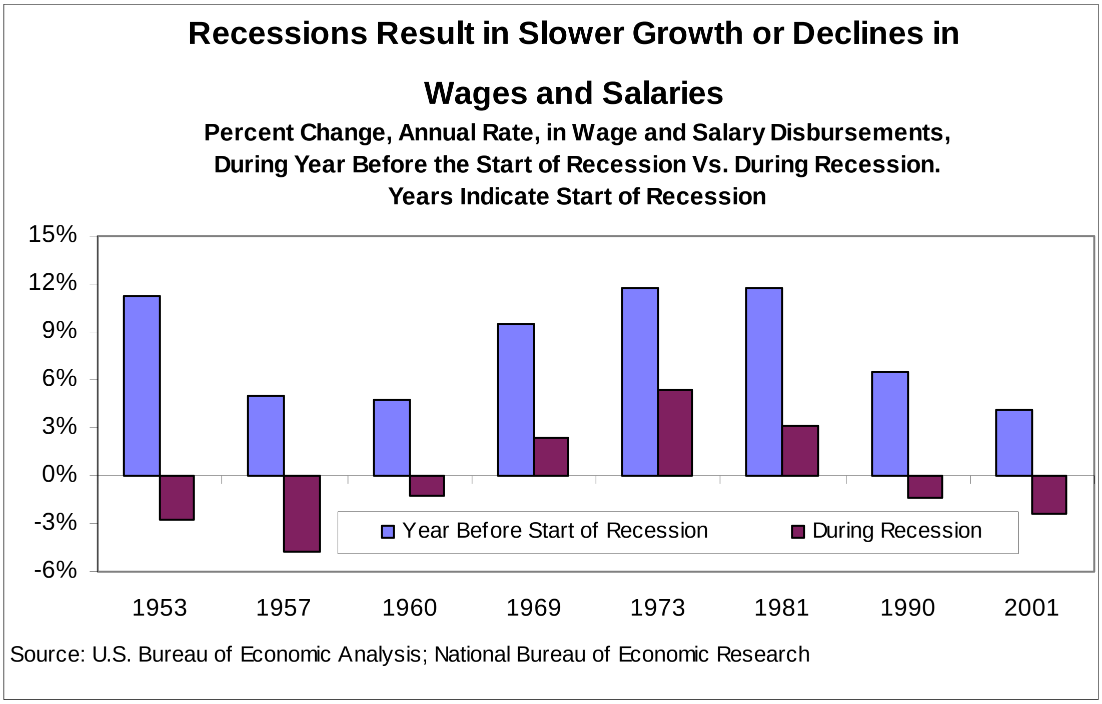
[1] Recent news reports suggest that the effects of the sub-prime meltdown are spreading throughout the financial markets and affecting a wide swath of investors—including those in the P&C industry. At this juncture, the scope of the impact on P&C carriers is unclear, suggesting that nothing definitive can be said until markets and valuations have had sufficient time to adjust.

[2] Percent change in the S&P 500 stock price index from its closing value on October 9, 2007 to its reading as of April 21, 2008.

[3] Excluded is the January–July 1980 mini-recession (the recovery from which was short-lived and followed by the severe recession that began in July 1981 and ended in November 1982).

Chart 1



Unfortunately, consistent data is not available by occupation to see how exposure varies by occupation in prior recession periods. However, there is sufficient historical detail on employment by major industry, and in Chart 2, that information is used to see the differential impact of recessions on employment by industry (based on an average of the same recession periods shown in Chart 1). The industry groups used mirror NCCI's five industry groupings. The chart shows that recessions have the greatest impact on the more hazardous manufacturing and construction sectors, with far less impact on the office and goods and services sectors.[4] The construction sector is likely to be severely affected in the current situation as a result of the unprecedented decline in housing prices and the resultant dramatic fall-off in housing-related construction. Since workers compensation premiums in construction are higher than most other categories, due to the hazardous nature of jobs in that industry, the impact on premiums will be especially pronounced.

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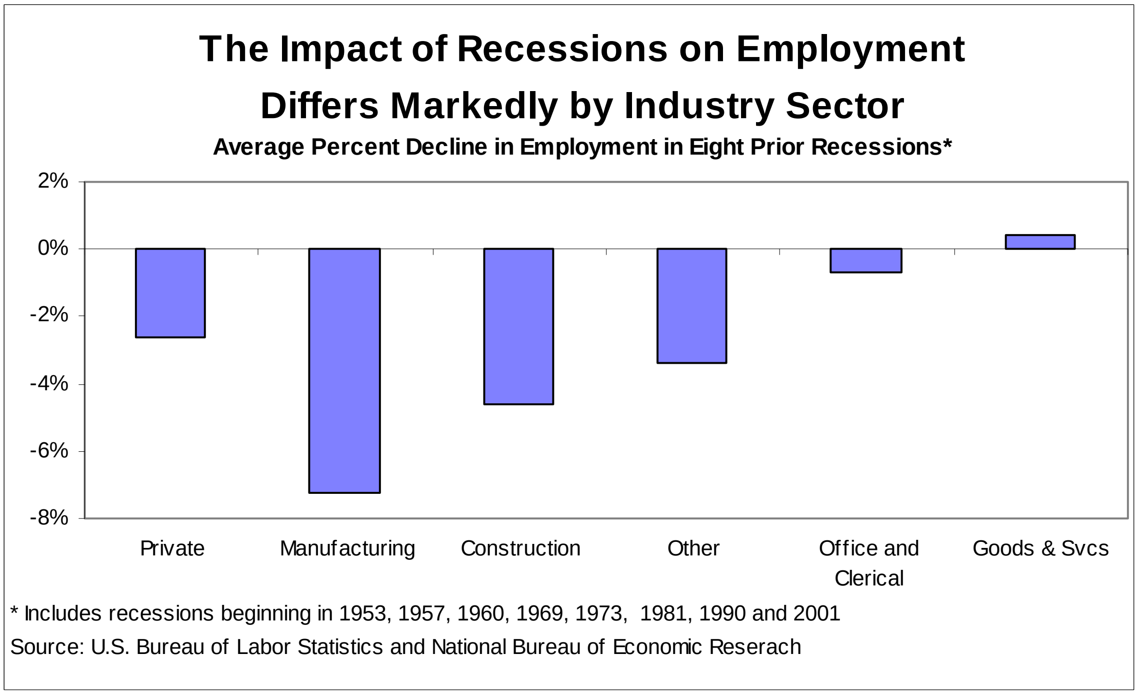
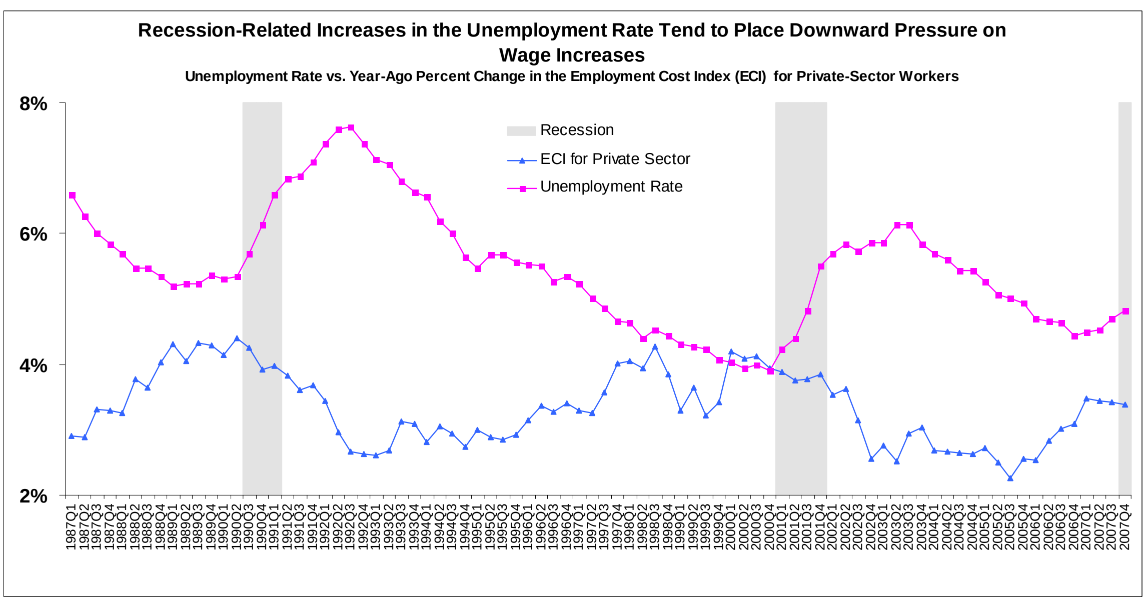
[4] The "Other" sector is largely comprised of employment in Natural Resources/Mining and Transportation/Warehousing.

Chart 2



The exposure effects shown in Chart 1 not only reflect recession-related declines in employment but also a slowing in wage gains that normally accompany a weakening economy. That is illustrated in Chart 3, which focuses on the two most recent recessions (in 1990–91 and during 2001). The chart shows the annual rate of change in the Employment Cost Index for Wages and Salaries for Private Industry Workers (a measure of wage rates), along with the unemployment rate.

Chart 3



- In both recession periods, wage increases are seen to slow as the unemployment rate rises rapidly.

- The unemployment rate continues to rise even after the “official” end to the recession (as companies delay hiring until they are certain that the economy is firmly on the road to recovery). The ongoing rise in the unemployment rate places even further downward pressure on wage increases.
- Wage gains begin to pick up only after expansions are well established, with unemployment rates at levels consistent with a tightening in labor markets.

Lower Investment Income
Financial markets are, of course, extremely sensitive to the ups and downs of the business cycle. That’s especially so near possible turning points, when uncertainty about the direction of the economy is typically highest. While each recession is different, both in its length and severity, history does provide some insights into how financial markets behave during economic downturns.

- **Stock Market.** Stock prices (in terms of the S&P 500 stock price index) are classified as a “leading” indicator. That is, they tend to change direction in advance of changes in the overall economy. Table 1 provides some insights into how stock prices behave in recessions: As shown in Column 1, stock prices, on average, turn lower 7.6 months in advance of the peak of the business cycle.[5] In the current situation, the S&P 500 index reached a peak in October 2007 (on a monthly-average basis), suggesting a relatively short lead time if the forecasts of an imminent recession prove to be correct.

Table 1

Stock Prices (as Measured by the S&P 500 Index) Before, During and After Recessions

Recession Period	(1) No. of Months Before Bus. Cycle Peak That Stock Prices Started to Decline	(2) No. of Months After Bus. Cycle Peak That Stock Prices Continued to Decline	(3) Length of Recession (No. of Months)	(4) Pct.Decline From Pre-Recession High to Recession-Period Low*	(5) No. of Months for Stock Prices to Regain Their Pre-Recession High
July 1953 - May 1954	6	2	10	11%	14
August 1957 - April 1958	13	4	8	17%	26
April 1960 - February 1961	9	6	10	10%	19
December 1969 - November 1970	12	6	11	29%	39
November 1973 - March 1975	10	13	16	43%	90
July 1981 - November 1982	3	12	16	19%	19
July 1990 - March 1991	1	3	8	15%	8
March 2001 - November 2001	7	*	8	30%	81
Average	**7.6**	**6.6**	**10.9**	**22%**	**37.0**
Median	**8.0**	**6.0**	**10.0**	**18%**	**22.5**

* In all recessions except for the 2001 recession, the S&P 500 index did not fall below its recession-low reading. In the 2001 recession, however, the index did a "double dip." It initially declined to a recession-period low six months after the recession began (a decline of 30% from its pre-recession high) and then rose during the remainder of the recession through March 2002 (4 months after the recession ended). But unlike the other recessions, the index then resumed its decline, bottoming out in February 2003 (23 months after the business cycle peak and a decline of 44% from its pre-recession high). It was not until May 2007 that the index exceeded its pre-2001 recession high (the 81 months shown in column 5).

Source: Standard and Poors, National Bureau of Economic Research

- Stock prices continue to decline after the economy enters a recession (see Column 2), but they stop declining before the recession ends and then turn higher, in almost all cases remaining above their recession lows. (The 2001 recession is the sole exception, as indicated in the note in Table 1). Column 3 shows the length of each recession, measured from the peak of the cycle to the trough.
- On average, stock prices decline 22% in recessions, measured from the pre-business-cycle peak “high” to the post-expansion-peak “low” (see Column 4). However, the range of declines is wide, ranging from a 43% decline in the 1973–75 recession to 11% in the 1953–54 downturn.[6]
- Also showing wide variability is the length of time it takes for the stock market to regain its pre-recession high (measured from that high point). As shown in Column 5, that time period ranges from more than 7 years following the 1973–75 recession to just 8 months after the brief 1990–91 downturn. On average, it takes 37 months for stock prices to fully recover (the average recovery period declines to 33 months if the high and low observations are excluded from the average and to 22.5 months based on the median).

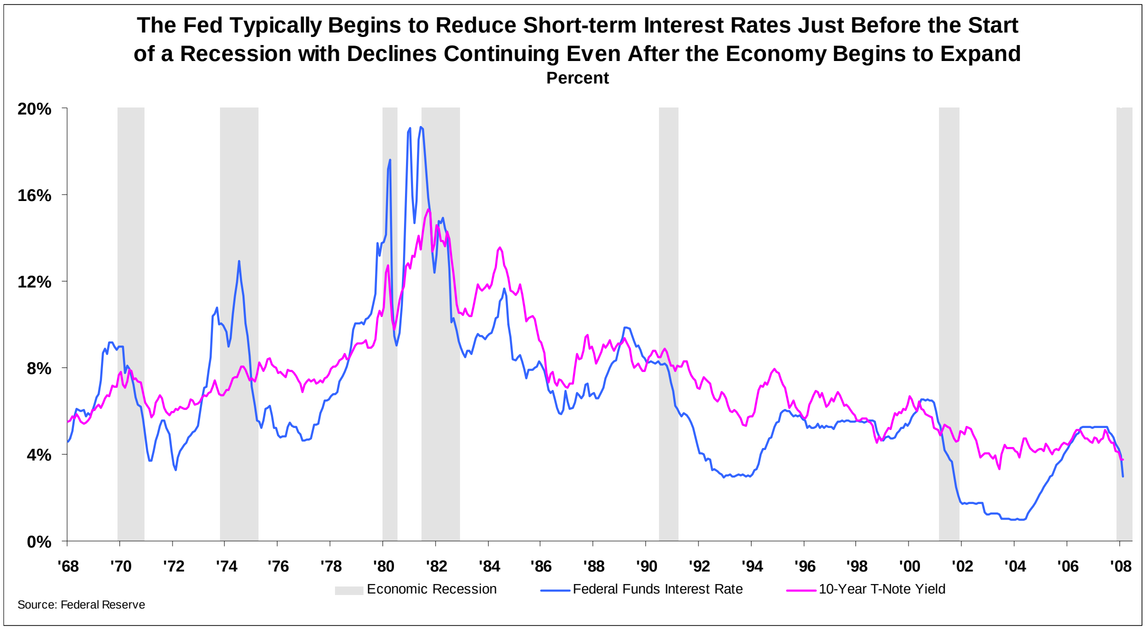
[5] Cyclical turning points are determined by a committee of economists at the National Bureau of Economic Research.
[6] The average decline across all recessions is 24% if the decline in the S&P 500 index following the onset of the 2001 recession is calculated from its pre-recession high to its low value in February 2003.

All of this suggests a period of rough sledding for P&C industry portfolio managers, and a not especially favorable environment for achieving realized and unrealized capital gains.

Interest Rates. Similar to stock prices, interest rates also tend to decline during recessions. However, unlike stock prices, they tend to continue to move lower well after the economy begins to turn up.

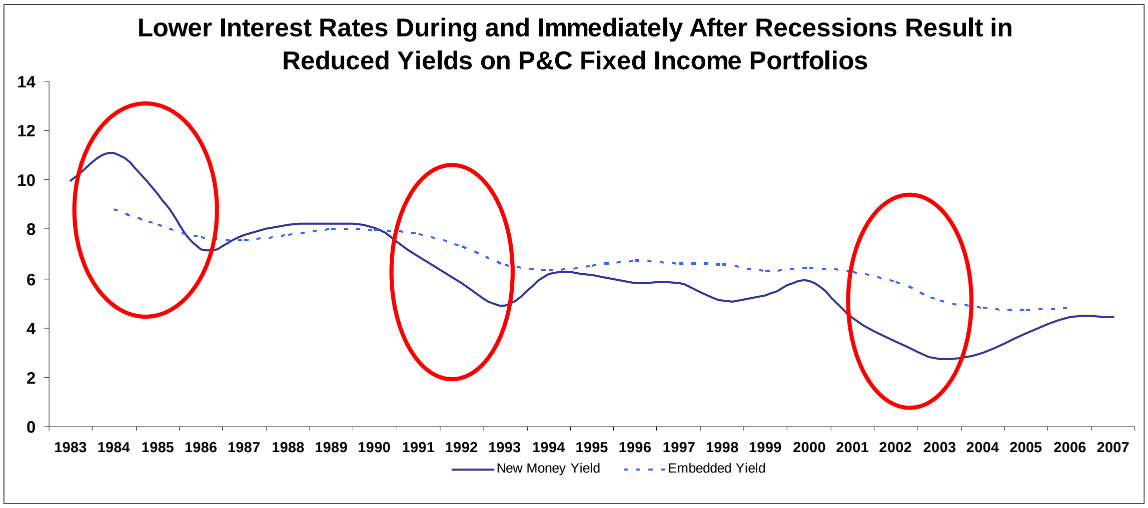
- The Federal Reserve is the determining factor in terms of the direction of short-term interest rates. The Fed has generally taken a proactive stance, lowering the key federal funds interest rate (the overnight interbank lending rate, which is a key determinant of other short-term interest rates) at the first signs of a broad-based weakening in the economy. The Fed generally continues to ease rates in the early stages of recoveries, generally until it has sufficient evidence that a recovery is, in fact, under way (Chart 4).
- As is also shown on Chart 4, long-term interest rates typically track the pattern of short-term interest rates, although with far less month-to-month volatility. Unlike the federal funds interest rate—which is reflective of the Fed's policy decisions—long-term interest rates are largely driven by market forces (i.e., the supply and demand for credit and expectations regarding future inflation).

Chart 4



Changes in interest rates translate directly into the investment returns on P&C fixed income portfolios. That's seen in Chart 5, which shows both new money and embedded yields, based on a weighting of market interest rates using as weights the fixed-income asset distribution of P&C carriers as reported in Best's Aggregates and Averages. Note that embedded yields, which reflect both new investments as well as previously acquired assets, show far less volatility on a year-to-year basis. The circled periods are periods of declining new money yields.

Chart 5



Downward Pressure on Claim Frequency

The "good news" about recessions is that they tend to place downward pressure on claim frequency because of a decrease in the number of inexperienced workers in the workforce. This "experienced worker effect" was cited some 70 years ago by the US Bureau of Labor Statistics as the primary factor explaining the pattern of claim frequency in recessions. The Bureau noted that as employment decreases, the frequency rate falls sharply as "… those most recently hired were laid off first. This generally left employed workers with long years of service … Such workers were generally thoroughly familiar with job hazards and had developed safety habits which were carried from job to job."[7]

A recent NCCI study[8] quantified the relationship between claim frequency (as measured by manufacturing incidence rates) and two explanatory variables measuring the extent to which inexperienced workers are in the workforce—the unemployment rate (which shows marked variability over the business cycle) and the share of younger workers (those aged 16–24). Both factors were seen to be statistically significant in explaining year-to-year changes in the manufacturing incidence rate. The complete study, including a detailed technical appendix, is available on NCCI's Web site.[9]

All of this suggests additional downward pressure on claim frequency should the economy weaken. (Claim frequency has declined by nearly 50% since 1991 for those states where NCCI provides ratemaking services. The decline reflects a wide range of factors including continued emphasis on workplace safety, increased use of robotics, modular design techniques, power-assisted process and cordless tools, advances in ergonomic design, more and better job training and improved fraud deterrence.)

Uncertain Implications for Indemnity and Medical Severity

Unlike claim frequency, the implications of a recession on other workers compensation metrics are less well established. Indemnity severity (and its related loss ratio) is a case in point.

- To the extent that recessions result in a reduction in wage growth, that would likely place downward pressure on indemnity severity (since increases in wages are a key driver of increases in indemnity benefits).
- Moreover, recessions tend to reduce employment in the more hazardous manufacturing and construction sectors, where severe and protracted injuries may be more likely to occur.
- However, the impact of recessions on worker attitudes is less clear. For example, some workers may feel that they need to be "on-the-job" in periods of rising unemployment and will strive to get back to work quickly if injured.

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[7] "Changes in Injury Frequency Rates and Employment in Manufacturing, 1936–1941," *Monthly Labor Review*, May 1943, p. 949.

[8] Harry Shuford and Martin Wolf, "An Analysis of Factors Affecting Changes in Manufacturing Incidence Rates," *NCCI Research Brief*, August 2006.

[9] Log on to **ncci.com**. Click on the "Research and Outlook" section on the lower right side of the home page and then click on "Research Papers Archive." The paper is in the 2006 section. No password is required to obtain the study.

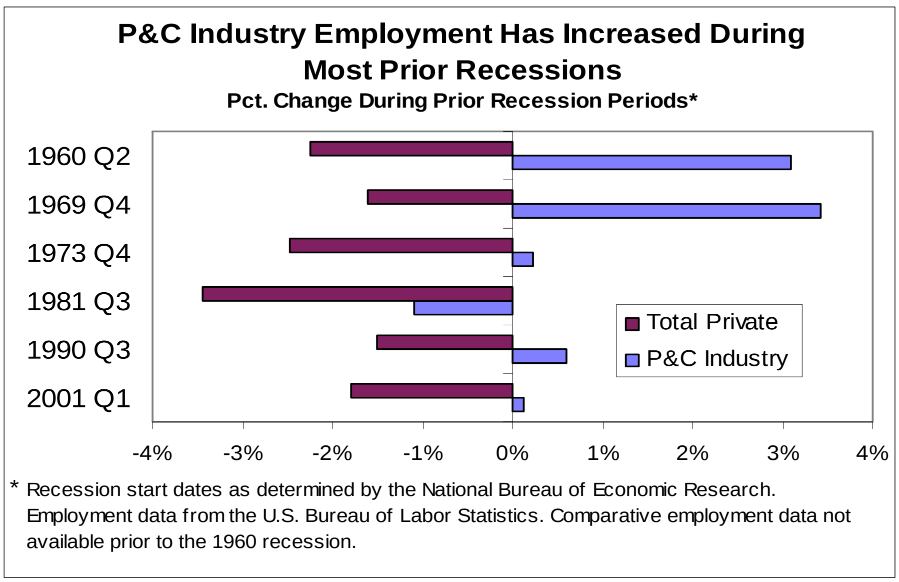
- In contrast, other workers, anticipating being laid off, may decide to file a claim to obtain benefits and would attempt to stretch out the time for which those benefits were received.[10]

As concerns medical severity (and the medical loss ratio), the relationship between changes in those measures and changes in the business cycle has yet to be determined. However, NCCI researchers did observe a direct relationship in the 1980s and early 1990s between indemnity and medical severity (as well as between the indemnity and medical loss ratios),[11] suggesting that the economy may play a role, if only indirectly.

Limited Impact on P&C Industry Employment

For those working in the P&C industry, it is encouraging that employment in the industry has generally held up during past recessions. That's seen in Chart 6, which shows changes in private industry and P&C industry employment during the six major recessions since 1960 (data for prior periods not being available for the P&C sector). On average, P&C employment has increased 1.1% during recessions, as opposed to an average decline of 2.2% for private industry. However, as the 1981 experience indicates, the industry is not always immune from developments in the economy as a whole.

Chart 6



[10] Prior NCCI research provides limited support for believing that rising unemployment rates are associated with increases in indemnity severity. However, that research also found that the downward impact on indemnity severity from lower employment tended to dominate the relationship between the two variables. In this regard, see Robert P. Hartwig et al., "Workers Compensation and Economic Cycles: A Longitudinal Approach," in *Proceedings of the Casualty Actuarial Society*, Vol. LXXXIV, Nos. 160 and 161, November 1997, pp. 685–686. At the time that this study was performed, Mr. Hartwig and his coauthors were employed by NCCI.

[11] *Ibid*., pp. 686–689.

Conclusion

It is too soon to predict whether the current period of economic weakness will indeed evolve into a full-blown recession, although a growing body of evidence suggests that may well be the case. If a recession were to occur, the previous discussion suggests the following impacts on workers compensation:

- A marked weakening in exposure/premium growth or outright declines in those measures—with declines most likely to occur in the cyclically sensitive manufacturing and construction sectors.
- Reduced investment income, because a recession would make it more difficult to achieve capital gains in the stock market and would likely reduce yields on newly invested funds.
- Downward pressure on claim frequency, reflecting the increased share of experienced workers in the workforce.

NCCI will provide updated information on the economic outlook and implications for our industry in future issues of *Gauging the Economy*.