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Public Option and Private Profits
What do Markets Expect?

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Abstract

Background: The debate on US healthcare reform has largely focused on the introduction of a public health plan option. While supporters stress various beneficial effects that would arise from increased competition in the health insurance market, opponents often contend that a public plan would drive insurers out of the market and potentially lead to the 'collapse' of the private health insurance industry.

Objectives: To contribute to the US healthcare reform debate by inferring, from financial market data, the effect that the public option is likely to have on the private health insurance market.

Methods: The study utilized daily data on the price of a security that was traded in a prediction market from June 2009 and whose pay-off was tied to the event that a federal government-run healthcare plan – the 'public option' – would be approved by 31 December 2009 (100 daily observations). These data were combined with data on stock returns of health insurance companies (1500 observations from 100 trading days and 15 companies) to evaluate the expected effect of the public option on private health insurers. The impact on hospital companies (1000 observations) was also estimated.

Results: The results suggested that daily stock returns of health insurance companies significantly responded to the changing probability regarding the public option. A 10% increase in the probability that the public option would pass, on average, reduced the stock returns of health insurance companies by 1.28% ($p < 0.001$). Hospital company stock returns were also affected (0.9% reduction; $p < 0.001$).

Conclusions: The results reveal the market expectation of a negative effect of the public option on the value of health insurance companies. The magnitude of the effect suggests a downward adjustment in the expected profits of health insurers of around 13%, but it does not support more calamitous scenarios.

Background

The debate on US healthcare reform has largely focused on the introduction of the so-called 'public option', a federal government-run health insurance plan. The supporters argue that the addition of a public plan would enhance competition in the health insurance market, leading to

reductions in premiums and costs, and to a larger variety of choices for citizens. On the other hand, the opponents contend that the public plan would represent an unfair competitor, which may squeeze several private health insurers out of the market and, in the longer term, potentially lead to the 'collapse' of the private health insurance industry.

National polls and surveys show that a majority of citizens and physicians favour a public option that would co-exist with private plans.[1,2] However, representatives of the health insurance industry have strongly opposed the introduction of a public plan. America's Health Insurance Plans (AHIP; the insurance industry's trade association) has argued that it would damage healthcare providers and endanger the existence of the entire private healthcare system.[3]

The impact of the public plan on private insurers is likely to depend on the extent of competition that exists in the health insurance market. Several studies indicate that the insurance market is now highly concentrated. A study by the American Medical Association shows that, in most states, between one and three providers control most of the market share.[4] Herfindahl-Hirschman Indices of concentration, which are used by antitrust commissions to decide on the viability of mergers and acquisitions, also point to high levels of market concentration in most states.[5] In recent years, health insurers seem to have increased the degree of market power they can exercise in several geographic regions.[6]

As the markets are far from perfectly competitive, the introduction of a major new player can substantially erode the market shares and profits of existing companies.

This article aims to contribute to the debate by providing empirical evidence on the impact that the 'public option' is likely to have on private health insurers. While the debate has been vigorous, no study to date has provided an estimate of the expected effect.

This study utilized data from prediction markets on a security whose pay-off was linked to the outcome of the uncertain event that a federal government-run healthcare plan, the 'public option', would be approved by the end of 2009, to investigate the effect that the public plan is expected to have on the value and profits of health insurance companies. The price of the security can be interpreted as the best estimate of the probability that the market assigns to the public option being approved. By matching data on the public option probability with the evolution of stock returns over the same period for the set of private health insurance companies quoted in the New York Stock Exchange (NYSE), the study infers whether financial markets expect healthcare companies to have significantly lower future earnings if the public option is adopted.

Methods

Sources of Data

To evaluate the effect that the public option is expected to have on private insurance companies, the study utilized daily data on the price of a security traded on a prediction market (http://www.intrade.com). The security offered a pay-off that was contingent on the outcome of the event "A federal government-run health insurance plan (a 'public option') is approved in the US by 12:00AM, 31 December 2009." The security was to pay off a determined amount only if the event was realized by the deadline, and pay nothing otherwise.

Prediction markets are structured in a way that the price of the security at each point in time can be interpreted as the probability that the market assigns to the event being realized (previous work has outlined the sufficient conditions under which prices can be taken to correspond to the market's mean beliefs).[7] These markets are a valuable tool for analysing the expected effect of a future policy in real time, since they work as efficient aggregators of disperse information and diverging opinions by market participants and, being based on actual transactions rather than stated opinions, they alleviate cheap-talk problems and facilitate the revelation of true beliefs.[8,9]

Moreover, under the efficient market hypothesis, the price would be the best indicator of the

likelihood of the event at a certain point in time. Even if the efficient market hypothesis is not taken at face value, prediction markets remain useful as they have a remarkable track record in forecasting uncertain events; for example, they have been shown to outperform polls data in correctly predicting the winner and the percentage of popular vote in past Presidential elections.[10] Information from prediction markets has also been used in other contexts; for example, to investigate the influence of alternative policy platforms by Presidential candidates on different industries,[11,12] or the expected impact of the war in Iraq on oil prices and global stock markets.[13]

Information on the daily open, minimum, maximum and closing price for the public option security, along with the daily trading volume, is shown in the Supplemental Digital Content 1 (http://links.adisonline.com/APZ/A17). Figure 1 shows the evolution of daily changes in the probability that the public option is approved.

Note that data from prediction markets may also have important limitations. First, the data used here appear noisy; significant spikes in the daily fluctuations are noticeable in figure 1 and that may be hard to reconcile with the existence of an efficient market. The probability changes series shows a slight negative correlation (the first-order autocorrelation coefficient is –0.15). In an efficient market, the correlation should be close to zero. However, to test the efficiency of the public option security, an augmented Dickey-Fuller test was performed, which failed to reject the hypothesis that prices follow a random walk; therefore, the test suggests that one of the most commonly used criteria of pricing efficiency is met.

Contracts from intrade.com often have large bid-ask spreads compared with other financial contracts; a larger bid-ask spread indicates a relatively more illiquid market. The larger bid-ask spread may be responsible for an increased volatility and for the observed negative correlation (as a result of the 'bid-ask bounce' phenomenon).[14]

The major limitation of using data from prediction markets is that these markets are often characterized by a low trading volume. Although trading in the public option contract in the study

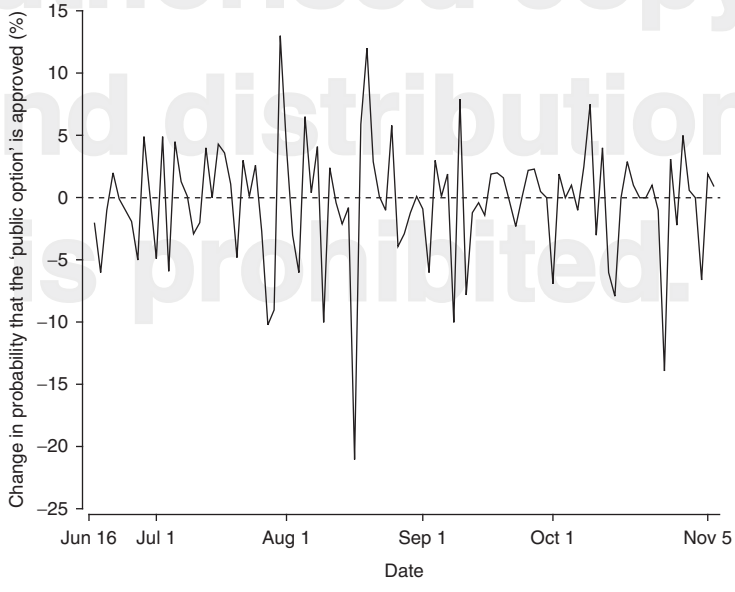

Fig. 1. Daily changes in the probability that the public option is approved. The figure shows the daily changes in the price of the prediction market security linked to the outcome of the event "a federal government-run health plan (a 'public option') is approved in the US by 12:00AM, 31 December 2009," over the period June–November 2009. The price can be interpreted as the market's mean belief about the probability that the public option is approved.

period was more intense than trading in other intrade.com contracts, it remains extremely small compared with financial markets' standards. Table A1 in the Supplemental Digital Content shows that there are few days in the sample in which the contract was not traded and several days in which only few contracts were traded. The daily volume in the period goes from a minimum of 0 to a maximum of $US1512. However, the monthly trading volumes are not dissimilar to those that are usually observed in the widely used Iowa Prediction Markets and to those related to the securities utilized to study Presidential elections and the impact of the Iraq war. Moreover, previous research has shown that, despite modest volumes, these securities are still characterized by fairly efficient prices.[15] Nonetheless, the low volume should be taken into consideration when interpreting the results.

The effects that the public option is expected to have on the health insurance market were studied by examining how changes in the probability affect the stock returns of private health insurance companies. Data on stock returns for quoted health insurance companies in the NYSE were utilized. The companies considered in the empirical analysis were Aetna, Amerigroup, Centene, Cigna, Coventry Health Care, Health Net, HealthSpring, Humana, Magellan Health Services, Metropolitan Health Networks, Molina Healthcare, United Healthcare, Universal American, Wellcare and Wellpoint. Data on returns for the S&P 500 index were used to control for the co-movement of individual stock returns with the market.

The effects of the public option on the following hospital companies quoted on the NYSE were also assessed: AmSurg, Community Health Systems, Dynacq Healthcare, Health Management Associates, Lifepoint Hospitals, MedCath, Rehabcare Group, SunLink Health Systems, Tenet Healthcare and Universal Health Services.

Statistical Analysis

The market model was adopted, which has been widely used in event studies related to stock valuations.[16] While event studies usually examine the ex-post effect of a single event on companies' stock prices (e.g. mergers and acquisitions, new legislation), here better identification could be obtained by exploiting the varying probability that market participants assign to a new reform being approved at a future date. This approach makes it easier to control for any anticipation by the market regarding the effects of a new uncertain policy before it is actually implemented.

A panel regression was estimated to test the effects of changes in the probability that the public plan was approved by 31 December 2009 on the stock returns of private health insurance companies. The regression aims to explain stock returns of health insurance companies using the market return and the change in probability that the public option is approved as co-variates. The panel regression allows for fixed effects (i.e. the intercept is allowed to differ across companies). To control for possible heteroskedasticity in the error terms, White heteroskedasticity-consistent standard errors were computed (in the Sensitivity Analysis section, findings under more general co-variance structures are presented). The market return was added to control for the typical co-movement of the company's stock with the market, and the corresponding coefficient was allowed to vary across firms. In the baseline estimation, the panel dimension of the data was used to estimate a common effect of the public option probability on stock returns.

To inspect the heterogeneity in the expected impact of the public option, a regression was also estimated in which the effect of the public option was allowed to differ across firms (this is similar to running separate time series regressions for each individual company).

The introduction of a public plan may affect other companies in the healthcare sector, besides health insurers. Hospital companies may also see their profits diminished as the government has power to restrain hospital payments. Therefore, the estimations were repeated using stock returns for hospital companies as dependent variables.

Sample

The estimation sample spanned the period from 16 June 2009 (the first day that the security on the public option was traded) to 5 November 2009.

The largest probability change in the sample was a fall by 21% in mid-August, which occurred when both President Obama and the Health and Human Services Secretary, Kathleen Sebelius, hinted that the public option may be dropped from the healthcare proposal (''just one sliver of it''),[17] while the largest daily increase amounted to 13%. The median change in the sample was zero, with a standard deviation of 4.9 for the changes.

Figure 2 provides some intuition about the relationship between daily changes in the probability and the value-weighted abnormal stock returns for health insurance and hospital companies. The abnormal returns are calculated as the deviation of each company stock return from the portion that is explained by the market return, using the coefficients that are presented in tables I and II (however, the figures remain similar if raw returns are used); the series in the figure are constructed by weighting the individual companies' abnormal stock returns by their market capitalization.

The left panels in figures 2a and 2c show the evolution of the public option probability and stock return series over the sample. The two series display a negative co-movement: the correlation between probability changes from the public option contract and stock returns of health insurance companies is equal to –0.334, while the correlation between probability changes and

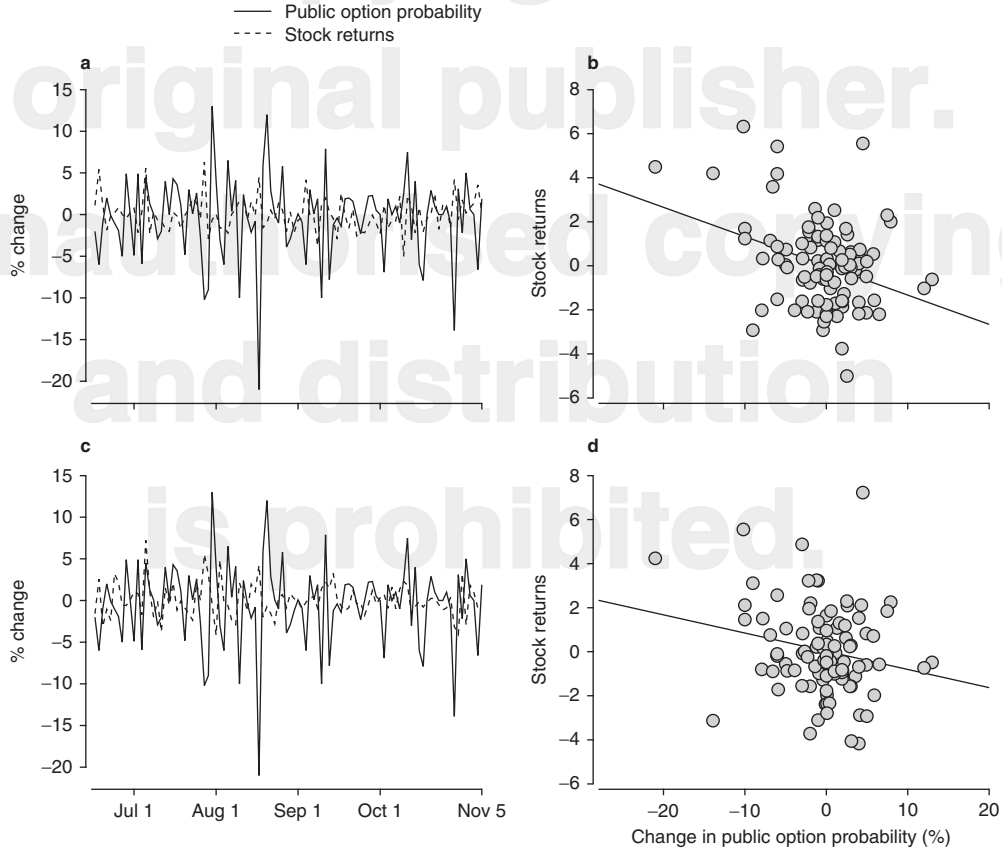

Fig. 2. Daily changes in the probability that the public option is approved and daily stock returns. The left panels show the daily changes in the probability that the 'public option' is approved by 31 December 2009 (the same as shown in figure 1) along with a value-weighted index of abnormal stock returns for (**a**) health insurance companies and (**c**) hospital companies. The right panels show the corresponding scatter plots between probability changes and stock returns (a regression line is included in the scatter plots).

Table I. Effect of changes in the probability that the 'public option' is approved on the stock returns of private health insurance companies[a]

Variable	Panel regression (total observations = 1500) [estimates (95% CI)]	Heterogeneous effects (total observations = 1500) estimates (95% CI)	p-value
Dependent variable: stock returns			
Effect across companies	–0.1277 (–0.158, –0.098) [p < 0.001***]		
Aetna		–0.197 (–0.320, –0.074)	0.002***
Amerigroup		–0.102 (–0.195, –0.009)	0.03**
Centene		–0.190 (–0.298, –0.082)	<0.001***
Cigna		–0.095 (–0.236, –0.046)	0.19
Coventry		–0.244 (–0.379, –0.109)	<0.001***
Health Net		–0.145 (–0.279, –0.011)	0.03**
HealthSpring		–0.212 (–0.325, –0.099)	<0.001***
Humana		–0.171 (–0.266, –0.076)	<0.001***
Magellan		–0.032 (–0.095, 0.032)	0.33
Metropolitan		–0.029 (–0.138, 0.080)	0.60
Molina		–0.104 (–0.204, –0.004)	0.04**
United		–0.132 (–0.219, –0.045)	0.003***
Universal American		0.019 (–0.110, 0.148)	0.77
Wellcare		–0.184 (–0.308, –0.060)	0.003***
Wellpoint		–0.097 (–0.195, –0.001)	0.05*
Market return (β)			
Aetna	0.773 (0.32, 1.23)	0.805 (0.35, 1.26)	
Amerigroup	0.718 (0.47, 0.97)	0.706 (0.45, 0.96)	
Centene	0.587 (0.26, 0.92)	0.615 (0.29, 0.87)	
Cigna	1.080 (0.63, 1.53)	1.065 (0.61, 1.52)	
Coventry	0.952 (0.52, 1.38)	1.005 (0.60, 1.41)	
Health Net	0.948 (0.46, 1.44)	0.956 (0.46, 1.46)	
HealthSpring	1.818 (1.27, 2.36)	1.856 (1.29, 2.42)	
Humana	0.917 (0.57, 1.26)	0.937 (0.59, 1.29)	
Magellan	0.312 (–0.06, 0.68)	0.269 (–0.09, 0.63)	
Metropolitan	1.058 (0.71, 1.41)	1.014 (0.68, 1.35)	
Molina	0.710 (0.41, 1.01)	0.699 (0.39, 1.01)	
United	0.728 (0.39, 1.07)	0.730 (0.38, 1.08)	
Universal American	1.296 (0.77, 1.82)	1.229 (0.71, 1.75)	
Wellcare	1.153 (0.80, 1.51)	1.179 (0.82, 1.54)	
Wellpoint	0.786 (0.49, 1.08)	0.772 (0.48, 1.07)	
R^2	0.214	0.231	

a The data are daily from 16 June 2009 to 5 November 2009. The data on the probability that the public option is approved are from http://www.intrade.com. Data on stock returns for all health insurance companies and for the S&P 500 are obtained from http://www.finance.yahoo.com. The estimates are for a 1% increase in the probability that the public option is approved.

* p < 0.1, ** p < 0.05, *** p < 0.01.

hospital companies' stock returns is –0.206. The right panels (2b and 2d) show scatter plots between changes in the public option probability and health insurance or hospital stock returns. The scatter plots similarly reveal the existence of a negative relation in the data.

Results

Public Option and Private Health Insurers' Stock Returns

Table I shows the estimates for the regression of stock returns on the market return and on the

changes in the probability that the public option is approved by the end of 2009.

The first column reports the estimates for the panel regression that constrains the effect of the probability to be common across firms. The estimates indicate a negative relation between stock returns of health insurance companies and changes in the public option probability: any 1% increase in the probability leads to a –0.1277% decline in the stock return ($p < 0.001$). Also estimated was a different regression specification that imposed the same coefficient of co-movement with the market across companies, in which the point estimate regarding the public option probability remained identical.

The second column shows the estimates for the case in which the effect of the public option is allowed to vary across firms (to check for heterogeneous effects). All except one estimate had a negative coefficient. The negative effect from increases in the public option probability was more pronounced for Coventry (–0.244; $p < 0.001$), HealthSpring (–0.212; $p < 0.001$), Centene (–0.19; $p < 0.001$), Aetna (–0.197; $p = 0.002$), Wellcare (–0.184; $p = 0.003$) and Humana (–0.171; $p < 0.001$). The effect was also statistically significant for other major companies such as United Healthcare (–0.132; $p = 0.003$) and Wellpoint (–0.097; $p = 0.05$), while it was negative, but not statistically different from zero for Cigna (–0.095; $p = 0.19$), Magellan (–0.032;

Table II. Effect of changes in the probability that the 'public option' is approved on the stock returns of hospital companies[a]

Variable	Panel regression (total observations = 1000)	Heterogeneous effects (total observations = 1000)	
	[estimates (95% CI)]	estimates (95% CI)	p-value
Dependent variable: stock returns			
Effect across companies	–0.09 (–0.13, –0.05) [$p < 0.001^{***}$]		
AmSurg		–0.046 (–0.11, 0.02)	0.17
Community Health Systems		–0.061 (–0.17, 0.05)	0.29
Dynacq		–0.175 (–0.31, –0.04)	0.01^{***}
Health Management Assoc.		–0.073 (–0.25, –0.10)	0.41
Lifepoint		–0.101 (–0.19, –0.01)	0.03^{**}
MedCath		–0.037 (–0.13, –0.05)	0.43
Rehabcare		–0.155 (–0.30, –0.01)	0.04^{**}
SunLink		–0.062 (–0.20, 0.07)	0.37
Tenet		–0.100 (–0.26, 0.06)	0.23
Universal Health Services		–0.086 (–0.18, 0.00)	0.06^{*}
Market return (β)			
AmSurg	0.988 (0.75, 1.22)	0.968 (0.72, 1.21)	
Community Health Systems	1.389 (0.90, 1.88)	1.376 (0.86, 1.89)	
Dynacq	–0.119 (–0.81, 0.58)	–0.08 (–0.78, 0.62)	
Health Management Assoc.	1.808 (1.15, 2.47)	1.801 (1.12, 2.48)	
Lifepoint	0.736 (0.36, 1.11)	0.741 (0.37, 1.11)	
MedCath	1.539 (1.08, 1.99)	1.514 (1.06, 1.97)	
Rehabcare	1.007 (0.68, 1.33)	1.037 (0.70, 1.37)	
SunLink	0.293 (–0.38, 0.96)	0.280 (–0.42, 0.98)	
Tenet	1.646 (1.01, 2.28)	1.650 (1.00, 2.30)	
Universal Health Services	0.892 (0.49, 1.29)	0.890 (0.47, 1.31)	
R^2	0.170	0.174	

a The data are daily from 16 June 2009 to 5 November 2009. The data on the probability that the public option is approved are from http://www.intrade.com. Data on stock returns for all hospital companies and for the S&P 500 are obtained from http://www.finance.yahoo.com. The estimates are for a 1% increase in the probability that the public option is approved.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

p = 0.33) and Metropolitan (–0.029; p = 0.60). The only positive sign, although close to zero and not statistically significant, was observed for Universal American (0.019; p = 0.77).

The hypothesis that the coefficients on changes in the public option probability are the same across companies was tested. The F-test could not reject the null hypothesis that the coefficients on the public option probability are equal for all companies at the 1% significance level, but it rejected equality at the 5% level (F stat = 1.862; p = 0.026).

To check the robustness of the estimates to different specifications, the regressions were re-estimated using excess returns as the dependent variable rather than stock returns, and inserting additional explanatory variables, such as the company stock return for the previous period and a measure of risk and credit conditions in the economy (the Baa-Aaa spread). The coefficients on the additional variables were not significantly different from zero and the previous results were unchanged.

Public Option and Hospital Companies

The health insurance industry is not the only one that has fought the adoption of a public option. The Federation of American Hospitals (the national organization that represents hospitals) has also intervened in the national debate to oppose the public option. To test the effect that the public option was expected to have on hospitals, the analysis was repeated using a panel of hospital companies quoted in the NYSE. The estimates, shown in table II, again indicate a negative effect, although smaller than the effect found for health insurance companies: a 1% increase in probability reduces stock returns by 0.09% (p < 0.001). The equality of coefficients across companies could not be rejected at all conventional significance levels.

Sensitivity Analysis

This section evaluates the sensitivity of the results to a variety of robustness checks. Table III shows the new estimates. The baseline regression assumed that the residuals were independent across firms and over time. While the absence of serial correlation over time within the same cross-section unit is usually not a bad assumption in a financial panel, the assumption that residuals are uncorrelated between different cross-sectional units is unrealistic. Therefore, also reported are

Table III. Sensitivity analysis: robustness of the estimates to different assumptions

Sensitivity analysis	Health insurance companies			Hospital companies		
	estimates (95% CI)	p-value	R^2	estimates (95% CI)	p-value	R^2
Robust standard errors						
cross-correlation[a]	0.1277 (–0.20, –0.05)	<0.001**	0.214	0.09 (–0.16, –0.02)	0.01*	0.170
serial correlation[b]	0.1277 (–0.16, –0.09)	<0.001**	0.214	0.09 (–0.12, –0.06)	<0.001**	0.170
Market-cap weighted[c]	0.1254 (–0.18, –0.07)	<0.001**	0.197	0.081 (–0.14, –0.02)	0.006**	0.268
Early sample[d]	0.144 (–0.18, –0.11)	<0.001**	0.201	0.131 (–0.17, –0.09)	<0.001**	0.146
Nonlinearities[e]						
dummy probability ≥30%	0.1449 (–0.19, –0.10)	<0.001**	0.215	0.1311 (–0.19, –0.08)	<0.001**	0.173
dummy probability <30%	0.1140 (–0.15, –0.08)	<0.001**		0.0567 (–0.11, –0.002)	0.04*	
dummy probability change ≥10%	0.1786 (–0.22, –0.14)	<0.001**	0.222	0.1020 (–0.15, –0.05)	<0.001**	0.170
dummy probability change <10%	0.0725 (–0.12, –0.03)	0.003**		0.0763 (–0.14, –0.02)	0.01*	

a OLS estimates with standard errors adjusted for possible residual cross-correlation (numbers in parentheses).

b OLS estimates with standard errors adjusted for possible residual serial correlation (numbers in parentheses).

c Regression in which companies were weighted by their market capitalization.

d Regression restricted to the first half of the sample (16 June 2009 to 31 August 2009).

e Two different nonlinear specifications: the public option effect was allowed to differ depending on whether the probability was above or below 30% in the first, and depending on whether the daily probability increase or decrease was above or below 10% in the second.

OLS = ordinary least squares; * p < 0.05, ** p < 0.01.

the results obtained by adjusting the standard errors to correct for cross-correlation. The 95% confidence interval for the effect of the public option probability on insurers' stock returns expanded from (–0.158, –0.098) to (–0.20, –0.05) [the standard error increased from 0.015 to 0.038]; however, the estimated effect was still strongly significant ($p < 0.001$). For the hospital companies' regression, the confidence interval became (–0.16, –0.02) and the p-value increased to 0.01, which still indicates a significant effect at conventional significance levels. The F-tests still indicate that the null of equal coefficients across hospital companies cannot be rejected, while there was more evidence of heterogeneity in the health insurance regression.

The table also shows the confidence intervals obtained when computing standard errors that are robust to serial correlation: these are only marginally larger than the original ordinary least squares (OLS) standard errors, confirming that serial correlation is not a major concern in this panel. Therefore, the findings remain valid, even after controlling for serial and cross correlation of the errors.

To better gauge the impact of a public plan on the value of the health insurance and hospital industries, the panel regressions were re-estimated with weighting of the companies by market capitalization. The estimated effects remained similar (–0.1254 for health insurance [$p < 0.001$]; –0.081 for hospitals [$p = 0.006$]).

A drawback of the analysis was that the public option contract used did not incorporate the probability that healthcare reform would be passed at any other date following December 2009. One way to examine the potential impact of this limitation on the results is by repeating the estimation, but restricting the sample to its early part (e.g. 16 June–31 August). The estimates for the early sample period indicate that the expected effect of the public option was somewhat larger (–0.144 for health insurers [$p < 0.001$]; –0.131 for hospitals [$p < 0.001$]), although roughly of a similar order of magnitude as that found in the baseline estimation.

Finally, the relationship between returns and the health reform probability may be nonlinear. First, stock values may be more responsive to changes in the probability when the likelihood that the public option is passed is above a certain level. This hypothesis was tested in the regression by adding an interaction term with a dummy that allowed the effect to differ when the total probability was above or below 30%.

Second, large daily changes in the probability may have a larger impact than more modest adjustments; again, a dummy interaction was used to estimate potentially different coefficients depending on whether the daily probability change was above or below 10% in absolute value. The estimates provided some evidence that changes in the probability had a larger effect when the total probability was relatively large and when the daily movement was substantial. For example, changes in the probability of ≥10% were associated with an effect equal to –0.1786 ($p < 0.001$) for health insurance stock returns, while changes of <10% were associated with an effect equal to –0.0725 ($p = 0.003$). Notably, this was the only case for which equality of the two effects may not be rejected at the 5% significance level (it was not rejected when OLS standard errors were used, but it was rejected with cross-correlation-adjusted standard errors).

Discussion

The health insurance and hospital industries have strongly opposed the public option. These findings suggest that financial markets expect future profits of private health insurers and hospital companies to be significantly reduced if the public option is approved. In fact, the daily stock returns of health insurance companies appear to be affected by the day-to-day changes in the expectation that the public option will pass. On average, an increase in the probability of 10% is associated with a 1.28% reduction in the stock return. Looking at company-specific regressions, both large and small companies are expected to be worse off under a new public option. However, some heterogeneity exists in the expected effect. The stock prices of Aetna, Centene, Coventry, HealthSpring, Humana and Wellcare, in particular, appear to have been more responsive to

changes in probability. Hospital management companies also appear to be affected by changes in probability, but the effect is smaller than the one estimated for private health insurers (a 10% increase in the probability implies a reduction in stock returns equal to 0.9%).

Another way to interpret the estimates is by noticing that if the public option is approved (which we can take to correspond to an increase in the probability from 0 to 100%) the stock prices of health insurance companies would be expected to be revised downward by roughly 13%, on average, likely as a result of the anticipated increase in competition in a market that is currently considerably concentrated. While this number is given for the sake of intuition, it should be noted that, in the sample, the public option probability changes only within the 7% to 50% range and, therefore, extrapolating the estimates to a change between 0 and 100% that is not observed in the sample is not entirely appropriate and should be interpreted with caution.

This study has some important limitations. While the public option probability changed considerably over the sample, it was never above 50%; therefore, the status quo was always more likely than a future scenario with the public option. As a consequence, the results may underestimate the expected impact of reform: the same probability changes may be perceived in a different way if probabilities are above rather than below 50%. The probability shows a decreasing trend over the sample. Large negative revisions in the public option probability were more common than large positive revisions. The effect of revisions may be asymmetric; stock prices may be more reactive to negative news than to news that confirms the status quo. Similarly, the reaction to major changes in the probability may be much more pronounced than the reaction to modest revisions (these hypotheses were rejected in the sample, but this is only indicative, since it does not contain changes larger than 21%). The article has already discussed how a larger trading volume in the contracts offered in prediction markets would give more confidence that the price efficiently reflects all the available information at each point in time.

Overall, the evidence suggests that the profitability of health insurance companies would decline if a new public plan entered the market. A decline of 13% in value indicates that a company such as Humana, for example, which has a market capitalization of around $US8 billion, would lose roughly $US1 billion in market value as an effect of the entry of a new public competitor (a similar loss is obtained if the company-specific coefficient is used). The total loss in value in the health insurance industry would amount to roughly $US15 billion. If compared with the total cost of healthcare reform, which, according to Congressional Budget Office (CBO)[18,19] estimates, falls not far from $US1 trillion dollars, the cost that would be incurred by health insurance companies seems limited overall.

It is hard to produce an estimate of the loss that does not use financial markets' data to judge whether the numbers are realistic. The expected loss is likely to depend on the extent to which public insurance would lead to the crowding-out of private insurance and, more generally, on the number of people who would be covered by the public plan. Previous research has focused on public insurance expansions over the 1990s, such as Medicaid expansions or the introduction of the Children's Health Insurance Program (CHIP), and found significant crowd-out rates: the median estimate from numerous studies seems to lie around a crowd-out of 60%, but the variability of results in the literature is substantial.[20] Large crowd-out rates may probably justify reductions in the market value of health insurance companies even more sizeable than the one that has been suggested.

However, besides widespread disagreement on the magnitude of the crowding-out effect, disagreement also exists on whether the public insurance expansions considered in the literature carry similarities with the current situation. Calculations about expected coverage also vary: the CBO predicts 12 million insured people in the public plan, while an estimate by the Lewin Group, a private research firm, predicts it will cover more than 100 million people.[21,22] The latter estimate would likely have an impact that is much larger than 13%. The estimated reduction of around 13% in market value obtained here

using financial market data is suggestive of coverage rates that lie in between the two extremes, but probably significantly closer to the estimate by the CBO.

Overall, the magnitude of the estimated negative effect indicates that financial markets do not believe in the ruinous scenarios that have been evoked by trade organizations and by various opponents of the public option. The reduction in market value is certainly a large one from a single piece of legislation, but not exceptional given that in the past, on several occasions in earnings announcements, stock valuations for the same companies were revised by 20% or more in a single day (e.g. Cigna –38% on 25 October 2002, Wellpoint –28.3% on 10 March 2008, Aetna –20.3% on 27 April 2006), without any major event in the insurance market. Therefore, it seems that expectations extracted from financial markets indicate that private insurers will be able to compete with the public plan.

Conclusion

The results of this study suggest that the market expects the public option would have a negative effect of around 13% on the profits of health insurance companies. While this represents a sizable impact on the industry, it does not support the claims of more calamitous scenarios.

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