The Impact of Health Care Spending and Reform
On United States Firms

Research Plan

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The Wharton School of the University of Pennsylvania
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Introduction

Microeconomic issues

Common belief: high health care costs $\rightarrow$ higher product prices $\rightarrow$ poor price competition or lower margins $\rightarrow$ high cost firms vulnerable to global competitors.

We know within a firm that:

- Wages + benefits = market clearing price for labor; however, increases in health care spending are usually not offset against other forms of compensation.
- Health care costs = share of benefits costs = share of labor costs $\rightarrow$ health care costs influence where firms choose to operate on the production function.
- Health care costs influence investment decisions.
- Investment decisions are flexible in the long run, but fixed in the short run.
- If firms have unrealistic expectations about health care costs (i.e., that they are controllable) then investments in fixed plant and equipment will obligate firms to pay higher than anticipated health care costs in the future.

Macroeconomic issues

Common belief: high health care spending (high consumption) $\rightarrow$ lower savings $\rightarrow$ low capital formation rate $\rightarrow$ low productivity $\rightarrow$ higher prices $\rightarrow$ all U.S. firms vulnerable to global competitors.

If there are macroeconomic effects of health care spending, they cannot be observed through per capita benefits costs. These effects could be expressed through:

- The effect of health care spending on the cost of capital, particularly the effect of personal health care expenses on savings rates.
- The diversion of productive technology away from globally competitive firms to health care delivery companies.
- The diversion of disposable income away from basic products and into health care spending.
- The effect of personal well being on consumption.
A focus on competitiveness

Therefore, health care affects competitiveness in ways beyond per capita costs, which means that:

- Unlike the cost of health care benefits, about which there is labor-management strife, a focus on competitive effects of health care creates a common value structure for labor and management.
- Macroeconomic effects of health care mean that costs are an arbitrary and misleading index of the level of concern industry should have about health care.
- Health care reform proposals take on new meanings when evaluated for their effect on competitiveness.

Project overview

There are four current activities within the Study Project on Health Care Reform and American Competitiveness:

- A review of strategies regarding location, product choice, and technology investment as they are influenced by health benefits.
- An empirical and theoretical analysis of the effects of health care spending and reform on the firm.
- A qualitative assessment of the G7 nations' health care systems, domestic economies, households, populations, and producers.
- An empirical study of the feasibility of, demand for, and role of a health care system which crosses national borders.
Phase I research plan: issues within industries

Study question

Do health care costs uniquely affect industrial competitiveness?

Theory

If health care costs uniquely affect industrial competitiveness, then industries which face global competition in the domestic market should selectively reduce health care spending. If all industries, regardless of global penetration, reduce health care spending equally, then is this attributable to macroeconomic factors or perceptions?

Method: Multiple least squares regression

Unit: Manufacturing industries by SIC code

U.S. domestic market only

Subgroups: Early versus late penetration

Level of penetration

Net exporters versus net importers

Model specification

\(1.1 \quad HC=\beta_0+\beta_1COMP+\beta_2AGE+\beta_3SEX+\beta_4A*S+\beta_5REGEXP+\beta_6DAYS+\beta_7DIS+\beta_8HERF+\beta_9UNION\)

\(1.2 \quad HC=\beta_0+\beta_1COMP+\beta_2AGE+\beta_3SEX+\beta_4UNION+\beta_5REGEXP+\beta_6DAYS+\beta_7DIS+\beta_8HERF+\psi A*S+\delta_1\Delta COMP+\delta_2\Delta HC\)

\(1.3 \quad WAGE=\beta_0+\beta_1COMP+\beta_2AGE+\beta_3SEX+\beta_4UNION+\beta_5REGEXP+\beta_6HERF+\psi A*S+\delta_1\Delta COMP+\delta_2\Delta WAGE\)

\(1.4 \quad TC=\beta_0+\beta_1COMP+\beta_2AGE+\beta_3SEX+\beta_4UNION+\beta_5REGEXP+\beta_6HERF+\psi A*S+\delta_1\Delta COMP+\delta_2\Delta TC\)

\(1.5 \quad COMP=\beta_0+\beta_1HC+\beta_2REGn+\beta_3HERF+\beta_4IND+\beta_5TWS\)
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Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
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<tbody>
<tr>
<td>HC</td>
<td>Health care costs</td>
</tr>
<tr>
<td>ΔHC</td>
<td>Health care costs with a one-year lag</td>
</tr>
<tr>
<td>WAGE</td>
<td>Direct cash wages</td>
</tr>
<tr>
<td>ΔWAGE</td>
<td>Direct cash wages with a one-year lag</td>
</tr>
<tr>
<td>TC</td>
<td>Total compensation</td>
</tr>
<tr>
<td>ΔTC</td>
<td>Total compensation with a one-year lag</td>
</tr>
<tr>
<td>COMP</td>
<td>Import penetration</td>
</tr>
<tr>
<td>ΔCOMP</td>
<td>Import penetration with a one-year lag</td>
</tr>
<tr>
<td>AGE</td>
<td>Average worker age in years</td>
</tr>
<tr>
<td>A*S</td>
<td>Age, sex interaction variable</td>
</tr>
<tr>
<td>UNION</td>
<td>Degree of unionization</td>
</tr>
<tr>
<td>DAYS</td>
<td>Average number of days lost to occupational injury</td>
</tr>
<tr>
<td>DIS</td>
<td>Incidence of occupation-related disease</td>
</tr>
<tr>
<td>REGEXP</td>
<td>Weighted average health care expenditures by regional concentration of the industry</td>
</tr>
<tr>
<td>HERF</td>
<td>Measure of overall industry competitiveness</td>
</tr>
<tr>
<td>TW$</td>
<td>Trade weighted dollar</td>
</tr>
<tr>
<td>IND</td>
<td>Industry growth</td>
</tr>
</tbody>
</table>

(Unless otherwise noted, all variables refer to industry i at time t.)

Data sources

1) Chamber of Commerce Benefits Survey
2) HIAA Benefits Survey
3) A. Foster Higgins Co. Benefits Survey
4) BLS Current Population Survey
5) BLS Occupational Injury and Illness Survey
6) Bureau of Commerce Database
7) Census of Manufacturers
Timetable

Timetable is relative to beginning of funding.

<table>
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<tr>
<th>Month 1</th>
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<th>Month 4</th>
<th>Month 5</th>
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→ acquire data sets

→ programming and analysis

→ preliminary draft

→ review and comments

→ reprogramming

→ final draft
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Budget

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<td><strong>Staff</strong></td>
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<tr>
<td>W.P. Pierskalla</td>
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<td>$0</td>
</tr>
<tr>
<td>D.J. Brailer</td>
<td>4000</td>
<td>5000</td>
</tr>
<tr>
<td>Research Asst 1</td>
<td>0</td>
<td>2500</td>
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<tr>
<td>Research Asst 2</td>
<td>1500</td>
<td>4500</td>
</tr>
<tr>
<td>Secretary</td>
<td>1500</td>
<td>1000</td>
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<tr>
<td>Consultants</td>
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<td>6000</td>
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<tr>
<td>Programmer</td>
<td>0</td>
<td>4000</td>
</tr>
<tr>
<td><strong>Data Acquisition</strong></td>
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<td></td>
</tr>
<tr>
<td>Benefits Data</td>
<td>0</td>
<td>800</td>
</tr>
<tr>
<td>Census Data</td>
<td>0</td>
<td>500</td>
</tr>
<tr>
<td>BLS Data</td>
<td>0</td>
<td>600</td>
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<tr>
<td><strong>Equipment and material</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer time</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Paper/printing</td>
<td>0</td>
<td>200</td>
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<tr>
<td>Telephone</td>
<td>200</td>
<td>100</td>
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<tr>
<td><strong>Travel and promotion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis trips (four)</td>
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<td>2000</td>
</tr>
<tr>
<td>Results presentation</td>
<td>0</td>
<td>1000</td>
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<tr>
<td>Promotion</td>
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<tr>
<td>University Overhead</td>
<td>2640</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$15840</td>
<td>$35640</td>
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</table>

University overhead expenses are about 20% of direct costs.
Phase II research plan: issues within the firm

Study question

How will proposed health care reform policies affect domestic competitiveness of U.S. manufacturing firms? This is a synthesis of two separable questions:

(1) How do health care costs affect firm and product performance?
(2) How do policy interventions affect these factors?

Theory

Firms can invest in labor or in labor-saving capital. If health care spending has a negative effect at both microeconomic and macroeconomic levels, then the price of both labor and labor-saving capital will increase, conferring a competitive disadvantage on domestic firms and their products. The relative degree of these effects will determine the optimal policy intervention for health care reform.

Method and hypotheses

Multi-period simulation model
Data requirements

Single business unit (SBU) data is required to achieve the highest predictive power of this simulation model. The following is a list of data requirements organized by the simulation relationship names described above. The variables listed are in the Strategic Planning Institute's Profit Impact of Marketing Strategies (PIMS) format unless otherwise indicated.

(1.4) Output cost --> Product performance (price elasticity)

- Industry sales growth
- Industry concentration ratio
- Gross margin/revenue
- Relative price
- Market share
- Product quality
- Relative image
- Market segment demographics (non-PIMS)
- Price elasticity (non-PIMS)

(1.5) Corporate strength --> Capital investment (firm performance)

- Return on investment
- Working capital
- Gross book value
- Net book value
- Total assets
- Market position index
- Stock price performance (non-PIMS)

(1.6) Capital investment --> Non-labor input (technology productivity)

- Mechanization
- Gross book value
- Working capital
- Capital intensity

(1.9) Non-labor cost --> Non-labor input (technology elasticity)

(1.10) Labor cost --> Labor input (labor elasticity)

(1.11) Labor cost --> Non-labor input (labor substitutability)

(1.12) Non-labor cost --> Labor input (technology substitutability)

(2.6) Health benefits --> Wages, other benefits, training (internal subsidy)
• Process research and development expenses
• Total research and development expenses
• Newness of plant and equipment
• Mechanization
• Employee productivity
• Compensation: wages, health benefits, retirement (non-PIMS)
• Training and education (non-PIMS)

(1.16) Retirement benefit liability --> Corporate performance (FASB)

• Working capital
• Return on investment
• Retirement liability
• Total assets (non-PIMS)

(2.2) Personal health care spending --> Product performance (consumption)
(2.4) Aggregate health status --> Product performance (well-being)

• Weight of price purchase decision
• Product importance end user
• Number of competitors
• Industry concentration ratio
• Relative types of customers
• Relative market share
• Relative price
• Market share

(2.5) Global penetration --> Product performance (global advantage)

• Exports
• Imports
• Relative price
• Product quality
• Market share
• Number of competitors
Outputs

The simulation model can evaluate the following policy reform proposals, including:

**Current expenses**

- Model validation

**Health care reform proposals**

- Benefits extensions
  - Mandated coverage
  - Termination coverage
  - Insurance consolidation
  - Non-worker coverage
- Behavioral controls
  - Copays
  - Deductibles
  - Catastrophic losses
- Provider restrictions
  - Volume limits
  - Expenditure targets
  - Practice guidelines
- Optimal policy designs

**Strategic decisions**

- Location
- Labor mix
- Technology investment

The following elements will be reported for each policy analysis:

- Predicted average wage, health benefits
- Predicted average training investment
- Predicted product-specific market share
- Predicted capital investment
- Predicted productivity
- Predicted return on investment
Budget

The budget for this project is determined by the availability of formatted data and the number of reform packages which are to be analyzed. If data are readily available and a small number of policies are to be analyzed, then the estimated budget will be as follows, for one-year and two-year scenarios:

<table>
<thead>
<tr>
<th></th>
<th>Two-year</th>
<th>One-year</th>
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</thead>
<tbody>
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<tr>
<td><strong>Staff</strong></td>
<td></td>
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</tr>
<tr>
<td>W.P. Pierskalla</td>
<td>$20000</td>
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</tr>
<tr>
<td>D.J. Brailer</td>
<td>35000</td>
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<tr>
<td>Research Asst 1</td>
<td>22000</td>
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<tr>
<td>Research Asst 2</td>
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<tr>
<td>Secretary</td>
<td>6000</td>
<td>6000</td>
</tr>
<tr>
<td>Consultants</td>
<td>15000</td>
<td>15000</td>
</tr>
<tr>
<td><strong>Equipment and material</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer time</td>
<td>1000</td>
<td>1000</td>
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<tr>
<td>Computer equipment</td>
<td>5000</td>
<td>2000</td>
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<td>Paper/printing</td>
<td>1000</td>
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<td>Telephone</td>
<td>500</td>
<td>500</td>
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<tr>
<td><strong>Travel and promotion</strong></td>
<td></td>
<td></td>
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<tr>
<td>Data trips (four)</td>
<td>4000</td>
<td>4000</td>
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<tr>
<td>Results presentation</td>
<td>3000</td>
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<tr>
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<td>1000</td>
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<tr>
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<tr>
<td><strong>Grand Totals</strong></td>
<td>$136,200</td>
<td>$132,600</td>
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</tbody>
</table>

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