
Stanford Conf. on Restoring Prosperity

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Outline

1. Financial Health Economics
2. Restoring Prosperity via Optimal Government Reform
3. Conclusion
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Financial Health Economics


- Question there: why do health stocks have “alpha”?
  - **Answer**: government risks. I.e., “alpha” is the investor reward for holding government intervention risk (“socialized medicine”).

- Cruz-Sanders CNN Debate, "Future of Obama Care", Tue Feb-7.

- Without gov. interv. risk (partial government reform):
  - doubling of medical R&D by now.
  - additional 3% of GDP would be spent on health care.
  - long-run health share: 30 to 40 percent.

- Model in **KPU ’16**: lots of distortions. Gov. interv. risk is just one.

- **Issue**: Is reducing intervention risk a step in the right direction?
  - **Benchmark**: optimal government reform.

- Today: long run social planner solution in **KPU ’16**. Comparison.
Trump Election Day Returns

Trump Election Day Returns

Harald Uhlig (University of Chicago)
Cumulative Abnormal Returns vis-a-vis “beta” 60 days prior.
Trump Policy and Hospital Shares

Trump Win Sends Hospital Shares Into Cardiac Arrest; Drug Wholesalers Rise

Shares of Tenet lost a quarter of their value as it appeared Obamacare would be dismantled by incoming President Trump. (Kris Triplaar/Sipa USA/Newscom)

Russ Britt | 11/09/2016

The coming presidency of Donald Trump and the near-certain prospect he will try to unravel President Obama’s Affordable Care Act sent shares of hospital stocks into cardiac arrest in Wednesday trading, while major insurers were mixed and drug wholesalers enjoyed a revival.
Trump Policy and Drug Stock Prices

Drug Stocks Tumble After Trump Vows to Pressure Prices

By CHRIS DIETERICH AND PETER LOFTUS
Dec 7, 2016 6:20 pm ET

While most U.S. stocks rallied on Wednesday, shares of biotechnology and pharmaceutical companies retreated after President-elect Donald Trump vowed in a magazine article to crack down on drug prices.

Drug stocks fell after Mr. Trump was quoted in a Time Person of the Year article as saying "I’m going to bring down drug prices."

Pfizer Inc., Johnson & Johnson and Merck & Co. were the only three stocks in the 30-member Dow Jones Industrial Average to lose ground, though each repaired the worst of early-day declines. The $2.8 billion SPDR S&P Biotech exchange-traded fund, which tracks a basket of stocks including Celgene Corp. and Biogen Inc., tumbled 4%. 
Health Share, R&D Share: Model Versus Data

Health spending share: data vs model

R&D spending share: data vs model
Health Share, R&D Share: Counterfactual

Health spending share

R&D spending share

Percent of GDP

Harald Uhlig (University of Chicago)
Health Share, R&D Share: Long Run

Health spending share: long-run

R&D spending share: long-run

Harald Uhlig (University of Chicago)
KPU ’16: the model

$t = 0, 1, 2, \ldots$ Two types: households, entrepreneurs. HH utility:

$$U = E \left[ \sum_{t=0}^{\infty} \beta^t \left( c_t^\xi h_t^{1-\xi} \right)^{1-\eta} - 1 \right]$$

cons.: $c_t + \kappa e_t = \gamma^t L_{c,t}$

health: $h_t = \gamma^t h + m_t$ (with $h$: health endowm.)

medic. cons.: $m_t = \left( \int_0^1 m_{jt}^{1/\phi} dj \right)^\phi$

variety $j$: $m_{jt} = q_{jt}^t L_{m,j,t}$

quality of $j$: $q_{j,t+1} = (q_{j,t}^\nu + d_{j,t}^\nu)^{1/\nu}$

R&D for $j$: $d_{j,t} = \gamma^t L_{d,j,t}$

labor market: $1 = L_{c,t} + \int_0^1 L_{m,j,t} dj + \int_0^1 L_{d,j,t} dj$
KPU ’16: the distortions

- **Asset market distortion:** Households cannot save or borrow.
- **Markup distortion:** $m_{j,t}$ is produced in monopolistic competition. Thus, the price is at a markup over marginal costs, generating profits.
- **Knowledge spillover distortion:** Firm $j$ does R&D $d_{j,t}$ in $t$ anticipation of these profits in $t + 1$. It then dies, leaving the new quality level $q_{j,t+1}$ “for free” to next generation of firms. (Note: $t$ counts decades.)
- **Medical care subsidy:** The government subsidizes the medical spending of HH.
- **R&D subsidy:** The government subsidizes firms’ R&D spending.
- **Government intervention risk:** The government may impose that all future markups are zero. Firms take this risk into account, when making their R&D choice today.
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Restoring Prosperity via Optimal Government Reform

- **Optimal Government Reform** = Social Planning Problem.
- Let’s run with the model in KPU ’16.
- Solve a social planner (SP) problem, who **only** cares about households.
- SP: chooses optimal allocation, subject to equations above and $e_t \geq 0$.
- Symmetry: $m_{j,t} \equiv m_t$, $q_{j,t} \equiv q_t$, $d_{j,t} \equiv d_t$.
- **Long run only:**
  - Set $h = 0$. Note that $h$ “fades” as $q_t \to \infty$.
  - Characterize balanced growth path.
- Quantitatively compare to market outcome in **KPU ’16**.
Results 1: balanced growth.

Proposition

Along the balanced growth path,

1. \( q_{t+1}/q_t = \gamma \).
2. Thus, \( m_t = h_t \) grows twice as fast as consumption,

\[
m_t = h_t = h_0 \gamma^{2t}
\]

while

\[
c_t = c_t \gamma^t, \quad q_t = q_0 \gamma^t, \quad d_t = d_0 \gamma^t
\]

3. The ratio of R&D to the quality level is

\[
\left( \frac{\bar{d}}{q} \right) = (\gamma^\nu - 1)^{1/\nu} = 0.0084 \quad \text{with KPU '16 calibration}
\]
### Results 2: parameters.

<table>
<thead>
<tr>
<th>Param.</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>10-yr growth</td>
<td>$1.35 = 1.03^{10}$</td>
</tr>
<tr>
<td>$\nu$</td>
<td>Curvature R&amp;D production function</td>
<td>0.42</td>
</tr>
<tr>
<td>$\xi$</td>
<td>Weight non-health consumption in $U$</td>
<td>0.54</td>
</tr>
<tr>
<td>$\phi$</td>
<td>Markup</td>
<td>3</td>
</tr>
<tr>
<td>$\chi$</td>
<td>R&amp;D subsidy</td>
<td>50%</td>
</tr>
<tr>
<td>$\sigma$</td>
<td>Medical care subsidy</td>
<td>50%</td>
</tr>
<tr>
<td>$R$</td>
<td>10-yr benchmark return</td>
<td>$1.48 = 1.04^{10}$</td>
</tr>
<tr>
<td>$Q$</td>
<td>10-yr ret. on health R&amp;D, if no interv.</td>
<td>2.37</td>
</tr>
</tbody>
</table>

These matter in **KPU ’16** and here:

These only matter in **KPU ’16**:

These only matter here:

<table>
<thead>
<tr>
<th>Param.</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>$\beta$</td>
<td>HH or SP discount factor</td>
<td>benchm.: $1/R$</td>
</tr>
<tr>
<td>$\eta$</td>
<td>utility curvature</td>
<td>benchm.: 1</td>
</tr>
</tbody>
</table>
Results 3: numerical results, benchmark parameters.

Benchmark parameters: $\beta = 1/R, \eta = 1$. Results:

<table>
<thead>
<tr>
<th></th>
<th>Market, i.e. KPU ’16</th>
<th>Optimal, i.e. here</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>w. gov. risk</td>
<td>no gov. risk</td>
</tr>
<tr>
<td>R&amp;D spending/GDP</td>
<td>1.5%</td>
<td>2.3%</td>
</tr>
<tr>
<td>health spending/GDP</td>
<td>32%</td>
<td>32%</td>
</tr>
</tbody>
</table>

Decentralization in original KPU ’16 model

<table>
<thead>
<tr>
<th>Medical care subsidy $\sigma$</th>
<th>Market, i.e. KPU ’16</th>
<th>Optimal, i.e. here</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>w. gov. risk</td>
<td>no gov. risk</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>
Results 4: large sensitivity to parameter variation.

Optimal share of labor force in medical R&D:
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Conclusions

- Health expenditures: large and rising share of GDP.
  - doubling of medical R&D by now.
  - additional 3% of GDP would be spent on health care.
  - long-run health share: 30 to 40 percent.

... but is this a step in the right direction?

- **Restore prosperity with optimal government reform.**
- Social planner problem, long run, in **KPU ’16. Results**:
  - For benchmark parameters, triple R&D ...
  - ... and results are **very** dependent on choice for $\beta, \eta$.
  - Decentralizable with subsidies and taxes.

- Appropriate model?
- This is of first-order importance. More research truly is needed.