Evolutionary Economics, Small Business Dynamics, & Economic Growth

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President, ITIF

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The Information Technology & Innovation Foundation is a Washington, D.C.-based think tank at the cutting edge of designing innovation policies and exploring how technological innovation will boost economic growth and improve quality of life. ITIF focuses on:

Innovation processes, policies, and metrics,
- Internet, big data and IT policy,
- Science and tech policy,
- Innovation and trade policy and,
- Innovation and economic theory and policy.
How Economics Conceives of an Economy

- A machine that heats up and cools down?
How Economics Conceives of an Economy

- A vast agora for exchanges?
How Do Most Economists Think About Tech and Innovation: A “Tweak”
How Do Most Economists Think About Tech and Innovation: A “Toy”
How Do Most Economists Think About Tech and Innovation: “Manna From Heaven”
How Do Most Economists Think About Tech and Innovation: “The Measure of Our Ignorance”
How Do Most Economists Think About Tech and Innovation: A “Black Box”
A More Accurate Frame is the Economy is an Evolutionary System
An Economy is an Evolutionary System

Today:

- 620 Patents Will be Issued
- 434 New Products Released
- 439 New Production Processes Adopted
An Economy is an Evolutionary System

Today:

- 3,800 Firms Will Die
- 4,000 Will be Born
An Economy is an Evolutionary System

Today:

- Non-store retail firms get bigger by 0.03%
- Data processing, hosting and related services firms shrink 0.07%
Net Rates of Firm Birth and Death by Industry, 1993 to 2012
Credit Intermediation Firms
Books, Periodical and Music Stores
Specialty Food Stores
“The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process...the fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers’ goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates.”

-Joseph Schumpeter, Capitalism, Socialism and Democracy, 82-3.
What is Evolution?

- Improvements in productivity
- Development of new welfare enhancing products, services, and business models
- Increases in global competitiveness
But Devolution Can Also Occur

- Change that makes an economy less vibrant or adaptive
Three Motive Forces for Economic Evolution

- Darwinian
- Lamarckism
- Intelligent Design
Three Drivers of Economic Evolution

Geography

- Economies are entities that evolve over both time and space.
- The U.S. used to generate new industries to replace the ones it lost to low wage nations.
- Competition for leading-edge evolutionary “replacement species” is now much stiffer.

Real output loss, 2000 to 2010 for selected U.S. manufacturing industries

Source: Bureau of Economic Analysis
Three Drivers of Economic Evolution

Technology

- Despite more resources being devoted to innovation (e.g., global R&D spending is at its peak), innovation in many areas is getting harder, not easier

- ICT, is enabling “genetic mutation” in virtually all industries, including the services

- Prime examples are the transformations in sectors like media, news, travel services, retail, banking, taxis, hotels, and others
### Technology Driving of Economic Evolution

#### Growth Due to Technology

<table>
<thead>
<tr>
<th>Industry</th>
<th>NAICS Code</th>
<th>Real Gross Output Change 1998-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet publishing and broadcasting and Web search portals</td>
<td>519130</td>
<td>1094.2%</td>
</tr>
<tr>
<td>Wireless telecommunications carriers (except satellite)</td>
<td>517210</td>
<td>699.9%</td>
</tr>
<tr>
<td>Support activities for oil and gas operations</td>
<td>21311A</td>
<td>386.1%</td>
</tr>
<tr>
<td>Biological product (except diagnostic) manufacturing</td>
<td>325414</td>
<td>137.4%</td>
</tr>
<tr>
<td>Data processing, hosting, and related services</td>
<td>518200</td>
<td>132.7%</td>
</tr>
<tr>
<td>Software publishers</td>
<td>511200</td>
<td>116.2%</td>
</tr>
<tr>
<td>Environmental and other technical consulting services</td>
<td>5415A0</td>
<td>101.4%</td>
</tr>
<tr>
<td>Computer systems design services</td>
<td>541512</td>
<td>56.7%</td>
</tr>
<tr>
<td>Primary battery manufacturing</td>
<td>511200</td>
<td>111.2%</td>
</tr>
</tbody>
</table>

#### Decline Due to Technology

<table>
<thead>
<tr>
<th>Industry</th>
<th>NAICS Code</th>
<th>Real Gross Output Change 1998-2012</th>
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</thead>
<tbody>
<tr>
<td>Electron tube manufacturing</td>
<td>33441A</td>
<td>-54.7%</td>
</tr>
<tr>
<td>Software, audio, and video media reproducing</td>
<td>334611-2</td>
<td>-51.6%</td>
</tr>
<tr>
<td>Magnetic and optical recording media manufacturing</td>
<td>334610</td>
<td>-42.4%</td>
</tr>
<tr>
<td>Video tape and disc rental</td>
<td>532A00</td>
<td>-39.0%</td>
</tr>
<tr>
<td>Electronic and precision equipment repair and maintenance</td>
<td>811200</td>
<td>-33.9%</td>
</tr>
<tr>
<td>Postal service</td>
<td>491000</td>
<td>-30.2%</td>
</tr>
<tr>
<td>Directory, mailing list, and other publishers</td>
<td>5111A0</td>
<td>-26.0%</td>
</tr>
<tr>
<td>Couriers and messengers</td>
<td>492000</td>
<td>-19.6%</td>
</tr>
</tbody>
</table>

Changes in real industrial output by industry and cause. *1998-2011 data

Source: Bureau of Economic Analysis
Three Drivers of Economic Evolution

Changes in Demand

- Changes in the types of goods and services demanded by consumers (whether these are businesses, governments or individuals) drive evolution.

- Various factors can alter the composition of demand, including demographics, culture, and government.
Three Drivers of Economic Evolution: Demand

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<th>Industry</th>
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<tr>
<td>Growth Due to Societal Changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military armored vehicle, tank, and tank component manufacturing</td>
<td>336992</td>
<td>294.9%</td>
</tr>
<tr>
<td>Tortilla manufacturing</td>
<td>311830</td>
<td>103.4%*</td>
</tr>
<tr>
<td>Wineries</td>
<td>312130</td>
<td>102.7%</td>
</tr>
<tr>
<td>Medical and diagnostic labs and outpatient and other ambulatory care services</td>
<td>6214-5, 6219</td>
<td>78.4%</td>
</tr>
<tr>
<td>Securities, commodity contracts, investments, and related activities</td>
<td>523400</td>
<td>69.4%</td>
</tr>
<tr>
<td>Fitness and recreational sports centers</td>
<td>713940</td>
<td>62.8%*</td>
</tr>
<tr>
<td>Offices of physicians, dentists, and other health practitioners</td>
<td>6211-3</td>
<td>53.3%</td>
</tr>
<tr>
<td>Home health care services</td>
<td>621600</td>
<td>43.3%</td>
</tr>
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<th>Real Gross Output Change 1998-2012</th>
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<tbody>
<tr>
<td>Decline Due to Societal Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newspaper publishers</td>
<td>511110</td>
<td>-46.7%</td>
</tr>
</tbody>
</table>

Changes in real industrial output by industry and cause.
* 1998-2011 data

Source: Bureau of Economic Analysis
Policies to Maximize Evolutionary Growth

- We need to move beyond the neoclassical and neo-Keynesian playbooks
- Markets alone are not enough
- Resistance to evolution is neither effective nor welfare enhancing
- Using evolutionary economics as a guide, the principles of more effective economic policies become clearer. To maximize evolution, policymakers should:
Policies to Maximize Evolutionary Growth

Darwinian and Lamarckian Policies

- Support global integration;
- Get out of the way of natural evolutionary gain & loss;
- Foster a culture that embraces evolution, including natural evolutionary loss; and
- Limit government barriers to evolution.
Policies to Maximize Evolutionary Growth

Intelligent Design Policies

- Slow down traded sector rate of loss;
- Enact policies to support organizations to support evolution;
- Support policies to accelerate economic evolution, especially from technological innovation; and
- Develop a deeper understanding of the evolution of the U.S. economy.
Small Business and Evolution

- Not all small businesses drive evolution.

- “Entrepreneurship” is not a synonym for “small business”

- SB entry can help drive evolution, in part by responding to changes in evolutionary conditions.

- SB entry disciplines evolution (“it disciplines before it attacks”: Schumpeter.)
Thank You!

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