Biophysical and Social Determinants of Economic Stagnation and Degrowth

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Energy and Economic Growth

![Graph showing World GDP, Oil Consumption, and Energy Consumption Growth Rates from 1968 to 2010.](image)
Growth Theory is in Shambles

- Dynamic Stochastic General Equilibrium Theory
- Fantasy land of perfect competition
- Frictionless adjustment
- Predicts steady-state growth
- Evolution of Solow model
- What came before Solow?
- Keynesian Tradition
- Harrod, Domar, & Hansen
“But Mill’s writing on the stationary state were forgotten, and most economics Ph.Ds from the past two decades have never heard of the concept because their teachers, who had heard of it, rejected it as unworthy of transmission.”

Herman Daly. *Beyond Growth*
Return of the Debate on Secular Stagnation

- Saltwater Economists
  - Endogenous and demand side
  - Krugman, Summers—liquidity trap
  - Reinhart and Rogoff—debt overhang
- Freshwater Economists
  - Exogenous and supply side
  - Glaessner—labor market dysfunction
  - Taylor—Anti business climate
  - Gordon—reduced impact of technological change
Michal Kalecki
Josef Steindl
Baran and Sweezy

Paul M. Sweezy
&
Paul A. Baran

Monopoly Capital
an essay on the American economic and social order
Paul A. Baran
and Paul M. Sweezy
Basics of Kalecki

- Degree of Monopoly
- Ability to mark up prime costs
- Inverse of labor’s share
- Growth of large firms generates tendencies towards exploitation (of labor), oversaving and underinvestment
- “The tragedy of investment is that it causes a crisis because it is useful.”
- Excess capacity limits potential investment
Basics of Steindl

- Kalecki’s student
- Emergence of imperfect competition and oligopoly emerge from process of capital accumulation
- Increasing profit margins, decreasing growth rates of capital stock, increase in excess capacity.
- Shift of potential income of workers to waste and excess capacity
- Decrease in price competition leads to excess capacity, underinvestment, oversaving, underemployment
Basics of Baran and Sweezy

- Monopoly Capitalism generates enormous economic surplus
- Lack of spending outlets (surplus absorption)
- Invest, consume, waste
- Unabsorbed surplus leads to tendency to slow growth
- Stagnation is the normal state of the economy
- What explains prosperity? What propped up the economy during the “Golden Age of the 1940s-1960s?"
- What fell apart during the “Leaden Age” of the 1970s and beyond?
Drivers of Economic Growth

- Conspicuous consumption
- Investment
- Military spending
- Expansion of FIRE
- Energy availability and price
Evidence of Monopolization
Chart 3.2. Revenue of Top 200 U.S. Corporations as a Percentage of Total Business Revenue

Sources: Data for the top 200 corporations (see notes) were extracted from COMPUSSTAT, “Fundamentals Annual: North America” (accessed February 15, 2011). Total revenue was taken from “Corporate Income Tax Returns” (line item “total receipts”) Statistics of Income (Washington, DC: Internal Revenue Service, 1950–2008).

Notes: “Total revenues” (COMPUSSTAT) and “total receipts” (SOI) are equivalent. Since the COMPUSSTAT dataset contains only conglomerate-level data all foreign companies—defined as those not incorporated in the United States—were dropped. In this Chart, as well as for Charts 3.3, 3.4, and 3.5, a robust linear smoother was used so the line approximates a five-year moving average. COMPUSSTAT data was extracted from Wharton Research Data Services (WRDS). WRDS was used in preparing this article. This service and the data available thereon constitute valuable intellectual property and trade secrets of WRDS and/or its third-party suppliers.
Chart 3.4. Net Value of Acquisitions of Top 500 Global Corporations* as a Percentage of World Income (GDP)


Notes: The COMPUSTAT North America dataset does not technically cover all global corporations, only those required to file in the United States or Canada. Therefore, the value of acquisitions, as well as total revenues (Chart 3.5), are understated to some degree. In 2009, revenues for the top 500 global corporations operating in the United States totaled $18 trillion; in comparison, Fortune’s “Global 500,” which includes the top corporations operating inside and outside North America, gives a total of $23 trillion (Chart 3.5 compares the two series on revenues). The COMPUSTAT series is incomparable in terms of its length and consistency of measurement, however, which is why we report it here.

* Includes only those corporations with operations in the United States and/or Canada.
Chart 3.3. Gross Profits of Top 200 U.S. Corporations as a Percentage of Total Gross Profits in U.S. Economy

Source: See Chart 3.2. Total gross profits (see notes for calculations) were taken from “Corporate Income Tax Returns,” Statistics of Income (Washington, DC: Internal Revenue Service, various years).

Notes: Total gross profits were calculated by subtracting “cost of goods sold” (or “cost of sales and operations” for earlier years) from “business receipts.” This follows the definition used in the COMPSTAT database. Business receipts are defined as gross operating receipts of a firm reduced by the cost of returned goods and services. Generally, they include all corporate receipts except investment and incidental income. Also see notes to Chart 3.2.
GDP Growth

EU27 Nominal GDP Quarterly Growth Rate, 2008 to 2014(f)

Source: Trading Economics
Investment
## Debt

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
<th>Total debt</th>
<th>Household</th>
<th>Financial firms</th>
<th>Non-financial business</th>
<th>Government (local, state, &amp; federal)</th>
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<tbody>
<tr>
<td>1970</td>
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<td>1.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.5</td>
<td>0.4</td>
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<td>4.5</td>
<td>1.4</td>
<td>0.6</td>
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<td>1.1</td>
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<td>1990</td>
<td>5.8</td>
<td>13.5</td>
<td>3.6</td>
<td>2.6</td>
<td>3.7</td>
<td>3.5</td>
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<tr>
<td>2000</td>
<td>9.8</td>
<td>26.3</td>
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<td>8.1</td>
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<tr>
<td>2007</td>
<td>13.8</td>
<td>47.7</td>
<td>13.8</td>
<td>16.0</td>
<td>10.6</td>
<td>7.3</td>
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</table>
Debt

Chart 6: Financial Sector Debt as a Percent of the Gross Domestic Product (GDP)

Capacity Utilization
Multiple Regression Model: 1970-2015

\[ Y_t = \beta_1 + \beta_2 X_{1t} - \beta_3 X_{2t} + \beta_4 X_{3t} + \beta_5 X_{4t} + \beta_6 X_{5t} + U_t \]

- \( Y_t \) = U.S. Economic Growth Rate (% change in Real GDP, adjusted for 2009)
- \( X_{1t} \) = % Change in the U.S. Capacity Utilization Rate
- \( X_{2t} \) = % Change in the WTI Oil Price
- \( X_{3t} \) = % Change in U.S. Fixed Investment
- \( X_{4t} \) = % Change in U.S. Personal Consumption Expenditures
- \( X_{5t} \) = % Change in Total U.S. Debt Outstanding
- \( U_t \) : Disturbance Term
## Regression Results

### Model Summary (Y)

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tr>
<td></td>
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<td>.81</td>
<td>.79</td>
<td>.88</td>
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### ANOVA (Y)

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<thead>
<tr>
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<th>Sum of Squares</th>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<tr>
<td>Residual</td>
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<td>40</td>
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<tr>
<td>Total</td>
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<td>45</td>
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### Coefficients (Y)

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<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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<td></td>
<td>B</td>
<td>Std. Error</td>
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<td>(Constant)</td>
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<tr>
<td>X5</td>
<td>.04</td>
<td>.04</td>
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</tbody>
</table>
Analysis of Results

- High R-Square Value: 81%
- High F-statistic: 33.86 (shows clear regression relationship exists)
- % Change in Capacity Utilization: Statistically significant at 5% significance
- % Change in WTI Oil Price: Statistically significant at 10% significance
- % Change in Fixed Investment and Consumption Expenditure: Statistically Significant at 1% significance
Data Sources for Model

- **Economic Growth Rate Data**: Bureau of Economic Analysis
- **Capacity Utilization Rate Data**: Federal Reserve Bank of St. Louis
- **WTI Oil Price Data**: Federal Reserve Bank of St. Louis and the U.S. Energy Information Administration
- **Fixed Investment Data**: Bureau of Economic Analysis
- **Consumption Data**: Bureau of Economic Analysis