The Global Decline of the Labor Share
(And Follow-up Thoughts)

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The Labor Share

- Stability of labor share is key foundation of macro models

- Implications for shape of production function, growth and macro dynamics, and inequality

- Labor share measurement (in levels) plagued with difficulty, largely due to “mixed income” of proprietors and farmers
What We Do and Why it Matters?

1. Document that corporate (and overall) labor shares across countries and industries experienced a pervasive decline.

   Helps with measurement concerns. Argues for focus on global, not idiosyncratic, factors.

2. Show that countries/sectors with larger declines in price of investment goods experienced larger labor share declines.

3. Evaluate hypothesis in parallel with alternatives. Demonstrate the decline and explanation are important for welfare.
What We Do and Why it Matters?

1. Document that corporate (and overall) labor shares across countries and industries experienced a pervasive decline.

2. Show that countries/sectors with larger declines in price of investment goods experienced larger labor share declines.
   
   Leads to mechanism of K-L substitution elasticity > 1. Calibrate to the cross-section, generate the time-series.

3. Evaluate hypothesis in parallel with alternatives. Demonstrate the decline and explanation are important for welfare.
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1. Document that corporate (and overall) labor shares across countries and industries experienced a pervasive decline.

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3. Evaluate hypothesis in parallel with alternatives. Demonstrate the decline and explanation are important for welfare.

Abstract (here) from inequality, but the sign and magnitude of repercussions depend on cause.
Related Literature

- **Labor Shares**: Blanchard (1997); Gollin (2002); Harrison (2002); Jones (2003); Blanchard and Giavazzi (2003); Bentolila and Saint-Paul (2003).

- **Investment-Specific Technology and Prices**: Greenwood, Hercowitz, Krusell (1997); Krusell, Ohanian, Rios-Rull, and Violante (2000); Fisher (2006);

- **Estimating the Elasticity of Substitution**: Antras (2004); Chirinko (2008); many others.
Agenda

1. Trends in Labor Shares and Investment Prices
2. Model of Labor Share
3. Elasticity of Substitution
4. Explaining the Global Decline in Labor Share
5. Conclusions and Brief Discussion of Follow-on Work
Labor Share Data

- “Detailed National Accounts” divide activity into 3 sectors:
  - Corporate (non-financial, financial)
  - Household (including non-profits)
  - Government

- We combine data from Internet, OECD/UN, physical books

- Some cross-country differences, but generally:

  \[
  GDP = GVA_C + GVA_H + GVA_G + \text{Tax}_{\text{products}}
  \]

  \[
  GVA_C = COMP_C + \text{Tax}_{\text{production,C}} + \text{Gross Operating Surplus}_C
  \]

- What is included in “Comp”?

- When possible (i.e. other than state/industry analyses and when reported), we use corporate labor share as our measure:

  \[
  s_L = \frac{COMP_C}{GVA_C}
  \]
Why Corporate Labor Share?

- Avoids need to impute wages from mixed income of proprietors and unincorporated enterprises (Gollin, 2002)

- What is “corporation”?
  - Must publish a complete set of (opening and closing) balance sheets and other corporate accounts each year.
  - Have shareholders and limited liability.

- Solves problem entirely? Not entirely, but progress.
  - Less of a fix in U.S., for example, which includes S-Corps (required to file IRS 1120 series)
  - Likely drops medium sized shops, farms, family biz elsewhere

- Other benefits/concerns?
  - Avoids difficulty in modeling government production function
  - Corporate share of U.S. and global GDPs are stable
Declining Global Labor Share

The chart illustrates the trend of global labor share over time, distinguishing between the corporate sector and the overall labor share.

- **Global Labor Share**
  - **Corporate Sector**
  - **Overall**

<table>
<thead>
<tr>
<th>Year</th>
<th>Corporate Sector</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>0.70</td>
<td>0.70</td>
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<tr>
<td>1980</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td>1985</td>
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<td>0.50</td>
</tr>
<tr>
<td>1990</td>
<td>0.50</td>
<td>0.45</td>
</tr>
<tr>
<td>1995</td>
<td>0.45</td>
<td>0.40</td>
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<tr>
<td>2000</td>
<td>0.40</td>
<td>0.35</td>
</tr>
<tr>
<td>2005</td>
<td>0.35</td>
<td>0.30</td>
</tr>
<tr>
<td>2010</td>
<td>0.30</td>
<td>0.25</td>
</tr>
<tr>
<td>2015</td>
<td>0.25</td>
<td>0.20</td>
</tr>
</tbody>
</table>

The chart shows a clear trend of declining labor share for both the corporate sector and the overall economy, with the corporate sector consistently showing a higher labor share compared to the overall economy.
Declining Labor Shares in Largest Economies

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>.55</td>
<td>.6</td>
<td>.65</td>
<td>.7</td>
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<tr>
<td>Japan</td>
<td>.35</td>
<td>.4</td>
<td>.45</td>
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<td>China</td>
<td>.55</td>
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<td>Germany</td>
<td>.55</td>
<td>.6</td>
<td>.65</td>
<td>.7</td>
<td>.7</td>
</tr>
</tbody>
</table>
Distribution of Labor Share Trends

Labor Share Trends, Percentage Points per 10 Years

CHN  GER  ITA  FRA  CAN  JPN  USA  GBR
U.S. State Level Labor Shares

Labor Share Trends, Percentage Points per 10 Years
Labor Share Declines Across Industries

![Bar chart showing labor share trends across various industries.](chart.png)
\[ \Delta s_{Li} = \sum_k \bar{\omega}_{i,k} \Delta s_{Li,k} + \sum_k \bar{s}_{Li,k} \Delta \omega_{i,k} \]

\( \bar{\omega}_{i,k} \) and \( \bar{s}_{Li,k} \) are weights. The equation represents the decomposition of the change in the labor share into within-industry and between-industry components.
Relative Price of Investment Data

1. World Bank World Development Indicators:
2. EU KLEMS (country-sector level):

\[ \xi_i = \frac{\text{Fixed investment deflator}}{\text{HH Consumption or VA price index}} \]

3. Penn World Tables (using ICP data):
   - Find relative prices *in levels* of similar goods with U.S. in each year, then multiply by NIPA relative price:

\[ \xi_i = \frac{\left( \frac{P_{I,i}^{\text{PPP}}}{P_{I,US}^{\text{PPP}}} \right) p_{\text{BEA}}^{I,US}}{\left( \frac{P_{C,i}^{\text{PPP}}}{P_{C,US}^{\text{PPP}}} \right) p_{\text{BEA}}^{C,US}} \]

   - Relies only on hedonic adjustment made by U.S. BEA
Declining Relative Price of Investment

Log Relative Price of Investment (1980=0)


PWT WDI KLEMS
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Basic Idea

- Two sectors, consumption and investment.

- Exogenous sectoral technology shocks drive fluctuations in relative price of investment.

- Movements in relative price affects rental rate of capital.

- Inputs produced with CES technology combining capital and labor. Inputs are then aggregated into final goods.

- Changes in relative price of capital change optimal $K/L$ ratio. This and other factors (like $\mu$ or $A_K$) affect the labor share.
Final Goods Producers Minimize Cost

- Production of final **consumption** good:

\[
C_t = \left( \int_0^1 c_t(z) \frac{\epsilon_t - 1}{\epsilon_t} \, dz \right)^{\frac{\epsilon_t}{\epsilon_t - 1}}.
\]

\[
P_t^c = \left( \int_0^1 p_t(z)^{1-\epsilon_t} \, dz \right)^{\frac{1}{1-\epsilon_t}} = 1. \tag{1}
\]

- Production of final **investment** good:

\[
X_t = \left( \frac{1}{\xi_t} \right) \left( \int_0^1 x_t(z) \frac{\epsilon_t - 1}{\epsilon_t} \, dz \right)^{\frac{\epsilon_t}{\epsilon_t - 1}}.
\]

\[
P_t^x = \xi_t \left( \int_0^1 p_t(z)^{1-\epsilon_t} \, dz \right)^{\frac{1}{1-\epsilon_t}} = \xi_t. \tag{2}
\]
Producers of Intermediate Varieties Maximize Profits

• Monopolist/producer of variety $z$:

$$\max_{p_t(z), y_t(z), k_t(z), n_t(z)} \Pi_t(z) = p_t(z)y_t(z) - R_t k_t(z) - w_t(z)n_t(z)$$

$$y_t(z) = c_t(z) + x_t(z) = p_t(z)^{-\epsilon_t}(C_t + \xi_t X_t) = p_t(z)^{-\epsilon_t} Y_t$$

• Optimal capital and labor demand:

$$p_t(z)F_{k,t}(z) = \mu_t R_t$$

$$p_t(z)F_{n,t}(z) = \mu_t w_t(z)$$

$$\mu_t = \frac{\epsilon_t}{\epsilon_t - 1}$$
Households Maximize Utility

- Household's problem:

\[
\max \left\{ C_t, \{n_t(z)\}, X_t, K_{t+1}, B_{t+1}\right\}_{t=t_0}^\infty \sum_{t=t_0}^\infty \beta^{t-t_0} V (C_t, N_t; \chi_t)
\]

subject to \( K_0, B_0 \), the law of motion for capital:

\[
K_{t+1} = (1 - \delta) K_t + X_t,
\]

and the intertemporal budget constraint:

\[
C_t + \xi_t X_t = \int_0^1 (w_t n_t(z) + R_t k_t(z) + \Pi_t(z)) \, dz
\]

- Optimality condition with respect to capital:

\[
R_{t+1} = \xi_t (1 + r_{t+1}) - \xi_{t+1} (1 - \delta),
\]

where \( 1 + r_{t+1} = V_{C,t}/(\beta V_{C,t+1}) \).
Income Shares

- Symmetric equilibrium: $k_t(z) = K_t$, $n_t(z) = N_t$, $x_t(z) = \xi_t X_t$, and $y_t(z) = Y_t = F(K_t, N_t) = C_t + \xi_t X_t$

- We can then define labor, capital, and profit shares as:

$$s_{L,t} = \frac{W_t N_t}{Y_t} = \left( \frac{1}{\mu_t} \right) \left( \frac{W_t N_t}{W_t N_t + R_t K_t} \right)$$

$$s_{K,t} = \frac{R_t K_t}{Y_t} = \left( \frac{1}{\mu_t} \right) \left( \frac{R_t K_t}{W_t N_t + R_t K_t} \right)$$

$$s_{\Pi,t} = \frac{\Pi_t}{Y_t} = 1 - \frac{1}{\mu_t},$$

with: $s_{L,t} + s_{K,t} + s_{\Pi,t} = 1$. 

Production Function

- CES production function with elasticity of substitution $\sigma$:

\[
Y_t = F(K_t, N_t) = \left( \alpha_k \left( A_{K,t} K_t \right)^{\frac{\sigma - 1}{\sigma}} + (1 - \alpha_k) \left( A_{N,t} N_t \right)^{\frac{\sigma - 1}{\sigma}} \right)^{\frac{\sigma}{\sigma - 1}}
\]

- Firms’ first-order conditions:

\[
F_{K,t} = \alpha_k A_{K,t}^{\frac{\sigma - 1}{\sigma}} \left( \frac{Y_t}{K_t} \right)^{\frac{1}{\sigma}} = \mu_t R_t
\]

\[
F_{N,t} = (1 - \alpha_k) A_{N,t}^{\frac{\sigma - 1}{\sigma}} \left( \frac{Y_t}{N_t} \right)^{\frac{1}{\sigma}} = \mu_t W_t
\]
The Labor Share

- Using capital’s FOC:

\[ 1 - s_{L,t} \mu_t = \alpha_k^\sigma \left( \frac{A_{K,t}}{\mu_t R_t} \right)^{\sigma-1} \]

- Given \( \sigma \) and share parameter \( \alpha_k \), labor share depends on:
  1. rental rate of capital \( R_t \)
  2. price markups \( \mu_t \)
  3. capital-augmenting technology \( A_{K,t} \)

- Cobb-Douglas production function (\( \sigma \to 1 \)):

\[ s_{L,t} = \frac{1 - \alpha_k}{\mu_t} \]
Estimating Equation

- Let $1 + \hat{x}$ denote the gross rate of growth in $x$ and take difference to write:
  $$
  \left(\frac{1}{1 - s_L \mu}\right) (1 - s_L \mu (1 + \hat{s}_L) (1 + \hat{\mu})) = \left(\frac{1 + \hat{A}_K}{(1 + \hat{\mu})(1 + \hat{R})}\right)^{\sigma - 1}
  $$

- Change form allows for some heterogeneity
- We will think of our trends as steady state to steady state transitions. Holding constant $\beta$ and $\delta$ over time, $\hat{R} = \hat{\xi}$
  - Better and more internationally comparable data on $\hat{\xi}$ than $\hat{W}$
  - Paper demonstrates robustness to trends in depreciation
  - WP considers dynamic path. Decline in $\xi$ outweights capital loss $\hat{\xi}$ (under assumptions), producing decline in cost of capital
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1. Relative Price of Investment

- For now, assume $\mu, A_K = 1$ and linearize around $\hat{\xi} = 0$ to get:

$$\frac{s_{Lj}}{1 - s_{Lj}} \hat{s}_{Lj} = \gamma + (\sigma - 1) \hat{\xi}_j + u_j$$

- We add constant $\gamma$ to ensure estimate is driven by cross-section, not global component we want to explain.

- Only consider low-frequency variation – less likely to be affected by adjustment costs, financial frictions, etc.
Labor Shares and Relative Price of Investment

(Trend in Labor Share)/(1-Labor Share)

(Trend in Log Relative Price of Investment)
### Baseline Estimates of $\sigma$

<table>
<thead>
<tr>
<th>$s_L$ Data</th>
<th>$\xi$ Data</th>
<th>$\hat{\sigma}$</th>
<th>S.E.</th>
<th>90% CI</th>
<th>Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KN Merged</td>
<td>PWT</td>
<td>1.25</td>
<td>0.08</td>
<td>[1.11,1.38]</td>
<td>58</td>
</tr>
<tr>
<td>KN Merged</td>
<td>WDI</td>
<td>1.29</td>
<td>0.07</td>
<td>[1.18,1.41]</td>
<td>54</td>
</tr>
<tr>
<td>OECD/UN</td>
<td>PWT</td>
<td>1.20</td>
<td>0.08</td>
<td>[1.06,1.34]</td>
<td>50</td>
</tr>
<tr>
<td>OECD/UN</td>
<td>WDI</td>
<td>1.31</td>
<td>0.06</td>
<td>[1.20,1.42]</td>
<td>47</td>
</tr>
<tr>
<td>KLEMS 1</td>
<td>KLEMS</td>
<td>1.17</td>
<td>0.06</td>
<td>[1.06,1.27]</td>
<td>129</td>
</tr>
<tr>
<td>KLEMS 2</td>
<td>KLEMS</td>
<td>1.49</td>
<td>0.13</td>
<td>[1.29,1.70]</td>
<td>129</td>
</tr>
</tbody>
</table>

- Note: KLEMS results only use developed countries
- Robust to: Only using countries with corporate labor shares
- Robust to: Allowing for $\hat{\delta}_j$ at country-industry level
- Robust to: Median of time series estimates for each country
2. Price Markups

- We now allow for $\mu \neq 0$. $\hat{\mu} > 0$ drives an increasing wedge between labor’s share of costs and labor’s share of revenues.

- What is concern? Imagine $\sigma = 1$, but countries with $\hat{\xi}_i < 0$ also have $\hat{\mu}_i > 0$. This would spuriously estimate $\sigma > 1$.

- Consider prediction if labor share decline was entirely driven by markups: proportional declines in L- and K- shares ($\hat{s}_L = \hat{s}_K$).

- Assuming constant $\beta$ and $\delta$ and SS to SS transition, we calculate $\hat{s}_{K,j} = (\hat{\xi}X/Y)_j$ to visualize this.
Proportional Change in Labor and Capital Shares?
2. Price Markups

- Previous plot suggests that markups played some, but not entire, role. We therefore add back $\mu$ and derive:

$$\left( \frac{s_{L,j}\hat{\mu}_j}{1 - s_{L,j}\hat{\mu}_j} \right) \left( (1 + \hat{s}_{L,j})(1 + \hat{\mu}_j) - 1 \right) = \gamma + (\sigma - 1) \left( \hat{\xi}_j + \hat{\mu}_j \right) + u_j$$

- Similar to Rotemberg and Woodford (1995), we compute the levels of capital share as:

$$s_{K,j} = \left[ \left( \frac{1}{\beta} - 1 + \delta \right) / \delta \right] \left[ \xi_j X_j / Y_j \right]$$

- With levels and changes of $s_L$ and $s_K$, we can then back out level and growth of $\mu$ for estimation.
### Estimates of $\sigma$ with Price Markups

<table>
<thead>
<tr>
<th>$s_L$ Data</th>
<th>$\xi$ Data</th>
<th>$\xi X/Y$ Data</th>
<th>$\hat{\sigma}$</th>
<th>S.E.</th>
<th>90% CI</th>
<th>Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KN Merged</td>
<td>PWT</td>
<td>Corporate</td>
<td>1.03</td>
<td>0.09</td>
<td>[0.87,1.19]</td>
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</tr>
<tr>
<td>KN Merged</td>
<td>WDI</td>
<td>Corporate</td>
<td>1.29</td>
<td>0.08</td>
<td>[1.16,1.42]</td>
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</tr>
<tr>
<td>OECD/UN</td>
<td>PWT</td>
<td>Corporate</td>
<td>1.24</td>
<td>0.11</td>
<td>[1.05,1.43]</td>
<td>46</td>
</tr>
<tr>
<td>OECD/UN</td>
<td>WDI</td>
<td>Corporate</td>
<td>1.43</td>
<td>0.08</td>
<td>[1.28,1.57]</td>
<td>44</td>
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<tr>
<td>KN Merged</td>
<td>PWT</td>
<td>Total</td>
<td>1.11</td>
<td>0.11</td>
<td>[0.93,1.29]</td>
<td>54</td>
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<tr>
<td>KN Merged</td>
<td>WDI</td>
<td>Total</td>
<td>1.35</td>
<td>0.08</td>
<td>[1.22,1.49]</td>
<td>52</td>
</tr>
<tr>
<td>OECD/UN</td>
<td>PWT</td>
<td>Total</td>
<td>1.24</td>
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<td>[1.06,1.343]</td>
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<td>OECD/UN</td>
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<td>1.42</td>
<td>0.09</td>
<td>[1.27,1.56]</td>
<td>44</td>
</tr>
</tbody>
</table>
3. Capital-Augmenting Technological Progress

- We similarly add back $\hat{A}_K$ and derive:
  \[
  \frac{s_{L,j}}{1 - s_{L,j}} \hat{s}_{L,j} = \gamma + (\sigma - 1) \hat{\xi}_j + (1 - \sigma) \hat{A}_{K,j} + u_j
  \]

- Bias from omitting capital-augmenting technology growth:
  \[
  \hat{\sigma} - \sigma = (1 - \sigma) \text{corr}(\hat{A}_K, \hat{\xi}) \frac{\text{sd}(\hat{A}_K)}{\text{sd}(\hat{\xi})}
  \]

- To assess bias we estimate following moments with PWT/WDI data on $\hat{\xi}$ and Conference Board data on TFP:
  \[
  \text{corr}(\hat{A}_K, \hat{\xi}) = -0.28, \text{sd}(\hat{A}_K) = 0.10, \text{sd}(\hat{\xi}) = 0.11
  \]
  \[
  \implies \sigma = 1.20 \text{ when } \hat{\sigma} = 1.25.
  \]

- Also back out $\hat{A}_K$ assuming it accounts for entire “residual”. Properties not unreasonable.
4. Skill Composition of Labor Force

- What if labor is heterogeneous and differentially substitutable with capital? We consider KORV (2000) production function:

\[ Y_t = \left( \phi_1 \left( \left( \phi_2 K_t^{\rho-1} + (1 - \phi_2) S_t^{\rho-1} \right) \frac{\rho}{\rho-1} \right)^{\frac{\sigma-1}{\sigma}} + (1 - \phi_1) U_t^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}} \]

- Same linearization as done earlier yields:

\[
\frac{s_{L,j}}{1 - s_{L,j}} \hat{s}_{L,j} = \gamma_c + \gamma_s + (\sigma - 1) \hat{\xi}_j + \kappa S \left( \frac{\hat{S}}{\hat{K}_j} \right) + u_j
\]

or the identical expression with \( \frac{\hat{U}}{\hat{K}_j} \) replacing \( \frac{\hat{S}}{\hat{K}_j} \) if we reverse their locations in the production function.
# Estimates of $\sigma$ with Skills (KLEMS data)

<table>
<thead>
<tr>
<th>$s_L$ Data</th>
<th>Labor Input</th>
<th>$\hat{\sigma}$</th>
<th>S.E.</th>
<th>90% CI</th>
<th>Obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLEMS 1</td>
<td>Skilled</td>
<td>1.23</td>
<td>0.08</td>
<td>[1.11,1.36]</td>
<td>100</td>
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<tr>
<td>KLEMS 1</td>
<td>Middle and Low</td>
<td>1.19</td>
<td>0.08</td>
<td>[1.05,1.33]</td>
<td>100</td>
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<tr>
<td>KLEMS 1</td>
<td>Low</td>
<td>1.19</td>
<td>0.09</td>
<td>[1.04,1.34]</td>
<td>100</td>
</tr>
<tr>
<td>KLEMS 2</td>
<td>Skilled</td>
<td>1.34</td>
<td>0.16</td>
<td>[1.07,1.60]</td>
<td>100</td>
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<tr>
<td>KLEMS 2</td>
<td>Middle and Low</td>
<td>1.31</td>
<td>0.17</td>
<td>[1.03,1.60]</td>
<td>100</td>
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<tr>
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<td>1.31</td>
<td>0.18</td>
<td>[1.02,1.61]</td>
<td>100</td>
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</table>
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Explaining the Global Decline in the Labor Share

- We now calibrate otherwise equivalent versions of the CD and CES models and solve for the GE to ask:

  - Given $\hat{\xi} = -0.25$, how much does $s_L$ decline when $\sigma = 1.25$?

  - How does this compare to same decline in $s_L$ generated by $\mu$?

  - What are the welfare effects of $\xi$ shock in CES versus in CD?

  - How does welfare differ if decline in $s_L$ is due to $\xi$ shock vs. $\mu$ shock vs. both?
## Results (Percent Changes from Initial Steady State)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\hat{\xi}$</th>
<th>$\hat{\xi}$</th>
<th>$\hat{\mu}$</th>
<th>$\hat{\mu}$</th>
<th>$(\hat{\xi}, \hat{\mu})$</th>
<th>$(\hat{\xi}, \hat{\mu})$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CD</td>
<td>CES</td>
<td>CD</td>
<td>CES</td>
<td>CD</td>
<td>CES</td>
</tr>
<tr>
<td>Labor Share (PP)</td>
<td>0.0</td>
<td>-2.6</td>
<td>-3.1</td>
<td>-2.6</td>
<td>-3.1</td>
<td>-4.9</td>
</tr>
<tr>
<td>Capital Share (PP)</td>
<td>0.0</td>
<td>2.6</td>
<td>-1.9</td>
<td>-2.4</td>
<td>-1.9</td>
<td>-0.1</td>
</tr>
<tr>
<td>Profit Share (PP)</td>
<td>0.0</td>
<td>0.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Consumption</td>
<td>18.1</td>
<td>20.1</td>
<td>-5.2</td>
<td>-5.4</td>
<td>10.7</td>
<td>12.7</td>
</tr>
<tr>
<td>Nominal Investment</td>
<td>18.1</td>
<td>30.8</td>
<td>-11.1</td>
<td>-12.7</td>
<td>3.7</td>
<td>11.9</td>
</tr>
<tr>
<td>Output</td>
<td>18.1</td>
<td>22.8</td>
<td>-6.3</td>
<td>-6.8</td>
<td>9.4</td>
<td>12.3</td>
</tr>
<tr>
<td>Welfare Eq. Consumption</td>
<td>18.1</td>
<td>22.1</td>
<td>-3.0</td>
<td>-3.4</td>
<td>13.2</td>
<td>15.8</td>
</tr>
</tbody>
</table>
Agenda

1. Trends in Labor Shares and Investment Prices
2. Model of Labor Share
3. Elasticity of Substitution
4. Explaining the Global Decline in Labor Share
5. Conclusions and Brief Discussion of Follow-on Work
Conclusions and Next Steps

- Document large and widespread decline in global labor share
- Declining relative price of investment drove shift to capital
- Our follow-on work evaluates implications for:
  - Corporate Saving and Labor Shares
  - Labor Shares and Inequality
- On inequality:
  - This paper has nothing to say
  - With homogenous labor and concentrated capitalists, labor share fully captures changes in inequality
• If divided into capital and labor income, total income inequality can be decomposed (Shorrocks 1982):

\[ CV(y) = s_L \rho(y^l) CV(y^l) + (1 - s_L) \rho(y^k) CV(y^k) \]

• “Naive” view: 

\[ s_L \text{ sufficient (} CV(y^K) - CV(y^L) = C > 0) \]

• KORV: Shocks can change labor inequality and income share

• Aiyagari: Generates capital inequality given wage process

• AKN: Single shock may produce joint movements in all terms
Inequality Decomposition

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  \[ CV(y) = s_L \rho(y_l) \cdot CV(y_l) + (1 - s_L) \rho(y_k) \cdot CV(y_k) \]

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Corporate Sector’s Share of Economic Activity is Stable

[Graph showing the proportion of Corporate GDP to Overall GDP from 1975 to 2015 for the World and the United States. The trend is relatively stable with minor fluctuations.]
What’s in Compensation of Employees?

- Compensation Includes:
  - **Wages and salaries in cash.** Examples: Overtime, housing allowances, holidays, sickness, bonuses, commissions, and tips.
  - **Wages and salaries in kind.** Examples: Meals, housing services, transportation to/from work, and parking.
  - **Employers’ social contributions** for sickness, accidents, and retirement (whether to social security or insurance firms).

- Compensation excludes unfunded benefits such as maternity leave and medical services not related to work.

- Most developed countries try to account for value of stock options granted to employees, but treatment and quality unlikely to be of high quality in developing countries.
Implications of CES > 1

- We don’t have opinion on what will happen moving forward, but can’t rule out LR trends in factor shares (measurement gets quite tricky if $s_L \to 0$)

- But even the upper bound of $\sigma = 1.4$ is reasonable in historical context of medium run movements. Example:
  - Taiwan 7.1% annual growth in $K/N$ over 1966-1990
  - CRS and Hicks-neutral tech growth: 10pp decline in $s_L$
  - Big, but not unusual relative to other countries in our dataset
Difficulties with Simple trade Story

What is mechanism linking imports and labor share?:

- Outsourcing? If so, then where to?

Notes: Labor shares from Karabarbounis and Neiman (2013). Brazil, not shown, had labor share increase. China plots scaled total labor share to smooth 2000 reclassification-jump.