To Augment Or Not To Augment?
A Conjecture On Asymmetric Technical Change

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Abstract. Recent empirical evidence for the U.S. points to a non-increasing share of labor in income and complementarity between capital and labor. According to standard macroeconomic theory, these facts imply that past productivity growth should be labor-augmenting. Analyzing post-war U.S. data, we however find that technical progress is rather evenly distributed across capital- and labor-intensive industries. To reconcile standard theory with the evidence, we stress inflation measurement errors in the data. If aggregate inflation is annually overstated by as little as a third of a percentage point, technical progress is already over 50 percent higher in labor-intensive industries than in capital-intensive industries.

1. Standard Economic Theory

Technical progress should be high in labor intensive industries

\[
Y_t = \left( \gamma_1 Y_{1,t}^{\epsilon_1} + (1 - \gamma_1) Y_{2,t}^{\epsilon_2} \right)^{\gamma_{2,t}}
\]

\[
Y_{1,t} = A_1jK_{1,t}^{\alpha_1}L_{1,t}^{1-\alpha_1}, \quad \text{and} \quad Y_{2,t} = A_2jK_{2,t}^{\alpha_2}L_{2,t}^{1-\alpha_2}
\]

2. Empirical Evidence

Technical progress is rather evenly distributed across industries

3. Our Explanation

Removing the output inflation bias tilts productivity toward the labor intensive industries

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<td>adj. (pp)</td>
<td>(\tau_t)</td>
<td>(K_{1,t})</td>
<td>(L_{1,t})</td>
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<td>1.98</td>
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<td>1.75</td>
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</table>

A. No adjustment

B. Capital intensive 0.0pp, Labor intensive 0.5-0.9pp

Notes: The table presents the authors’ calculations based on data drawn from the U.S. Bureau of Economic Analysis (BEA) and U.S. Bureau of Labor Statistics (BLS). A suffix \(j\) denotes inflation of real output for capital- or labor-intensive industries. Technical progress is already over 50 percent higher in labor-intensive industries than in capital-intensive industries.