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**Misspecification or Misallocation?
Productivity Shocks in the Labor Wedge**
(Job Market Paper)

A necessary condition for an efficient allocation in neoclassical macroeconomic models with endogenous labor supply is that the representative firm's marginal product of labor (MPL) equal the representative household's marginal rate of substitution (MRS) between consumption and leisure. The labor wedge, defined as the stochastic gap between the MPL and MRS consistent with rational expectations, plays a large role in explaining variations in GDP. The literature has established that some inefficiencies, such as markups or financial frictions, can produce a labor wedge. This has led some to the erroneous belief that the labor wedge can only be caused by, and therefore is proof of, misallocation. I show that sector-specific productivity shocks can produce a labor wedge.

I build a three-sector DSGE model with sector specific capital and labor (allowing for sectoral labor wedges) alongside an aggregate model. I estimate the model with a Bayesian method using data on real output and hours worked. While the aggregate model labor wedge accounts for 24% of the variation in quarterly output growth from 2010-2019, in the three-sector model the labor wedges together account for 13%.

I simulate data from the three-sector model with productivity shocks but no labor wedges. When the aggregate model is estimated on the simulated data I find that the aggregate labor wedge accounts for 5% of the variation in output growth. The aggregate labor wedge is produced even though for each type of labor the MPL equals the MRS. I provide an analytic result that efficiently employed distinct labor types can produce a labor wedge if a misspecified model treats them as a single factor. I conclude that the aggregate labor wedge is, in part, the result of sectoral productivity shocks.

Finally, I document that in the data at the subsector (three-digit NAICS) level in the US, 97% of subsectors have a correlation higher than 0.6 and 73% of subsectors have a correlation over 0.8. These high correlations are consistent with TFP shocks driving variations in subsectoral output. At the aggregate level the correlation is only 0.35, suggesting a more limited role for TFP shocks.

These two discrepancies between (1) the importance of the labor wedges at the sector and aggregate levels and (2) the correlation between changes in output and changes in labor productivity, are both examples of the fallacy of composition. The aggregate labor wedge should not be interpreted as proof of an intratemporal inefficiency.

JEL: E13 E24 E37

Keywords: Business Cycles, Aggregation, Labor Wedge, Labor Productivity