Discussion of “The Power of Substitution”

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*Thanks to Christiane Baumeister (U.S. state-level weekly economic activity indexes, REStat forthcoming)
“Is Germany once again the sick man of Europe?” (Economist, Aug 17)

Level and quarterly growth rate of German real GDP. Data source: FRED.
Bundesbank weekly economic activity index for Germany


Russia invades Ukraine
Ifo survey of business conditions

Effect on price was also more modest than expected

Wholesale price of natural gas in Germany

Not due to milder winter

Monthly heating degree days in Germany

Sluggish pass-through from wholesale price to users

Reproduced from Ruhnau et al. (Nature Energy 2023).
Much of cut-off was passed on to France, Belgium, Switzerland

Monthly German natural gas imports and exports (million m$^3$)

4000 M m$^3$ = 43 Twh. Data from https://www.jodidata.org/gas/
Monthly German net natural gas imports fell from 8B m$^3$ to 6B m$^3$
Production function relating output to inputs of gas, capital, and labor

\[ Y = \left\{ \alpha^{1/\sigma} G^{(\sigma-1)/\sigma} + (1 - \alpha)^{1/\sigma} [F(K, N)]^{(\sigma-1)/\sigma} \right\} \sigma/(\sigma-1) \]
Plot $Y$ as a function of $G$ with $K, N$ fixed, $\alpha = 0.01$, and various values of $\sigma$

Reproduces Figure 4 in paper.
• But drops in employment and capital utilization are defining feature of economic recessions.
• Calculation rules this out by assumption.
• In historical oil price shocks (e.g., 1974, 1979, 1990, 2008) observed big decline in U.S. sales of less fuel-efficient autos.

• Drop in employment and capital utilization in auto sector made material contribution to these economic downturns (Hamilton, BPEA 2009).
• Bachmann et al. (2022) assumed that potentially “fiscal and monetary policies cushion potential demand-side Keynesian effects.”

• Moll et al. (2023) revisit demand effects and conclude that Keynesian-type multipliers arising from nominal rigidities played modest role in recent episode.
• But demand multipliers may arise from specialization of factors of production, not nominal rigidities (Hamilton, 2023).

• These, too, did not arise in current episode for reasons authors discuss.
  – Can lower thermostat without changing any other expenditures.
  – Adjustments limited to specific uses.