Economic Structural Change in Rural America and the Potential Role of Energy Development

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Disclaimer

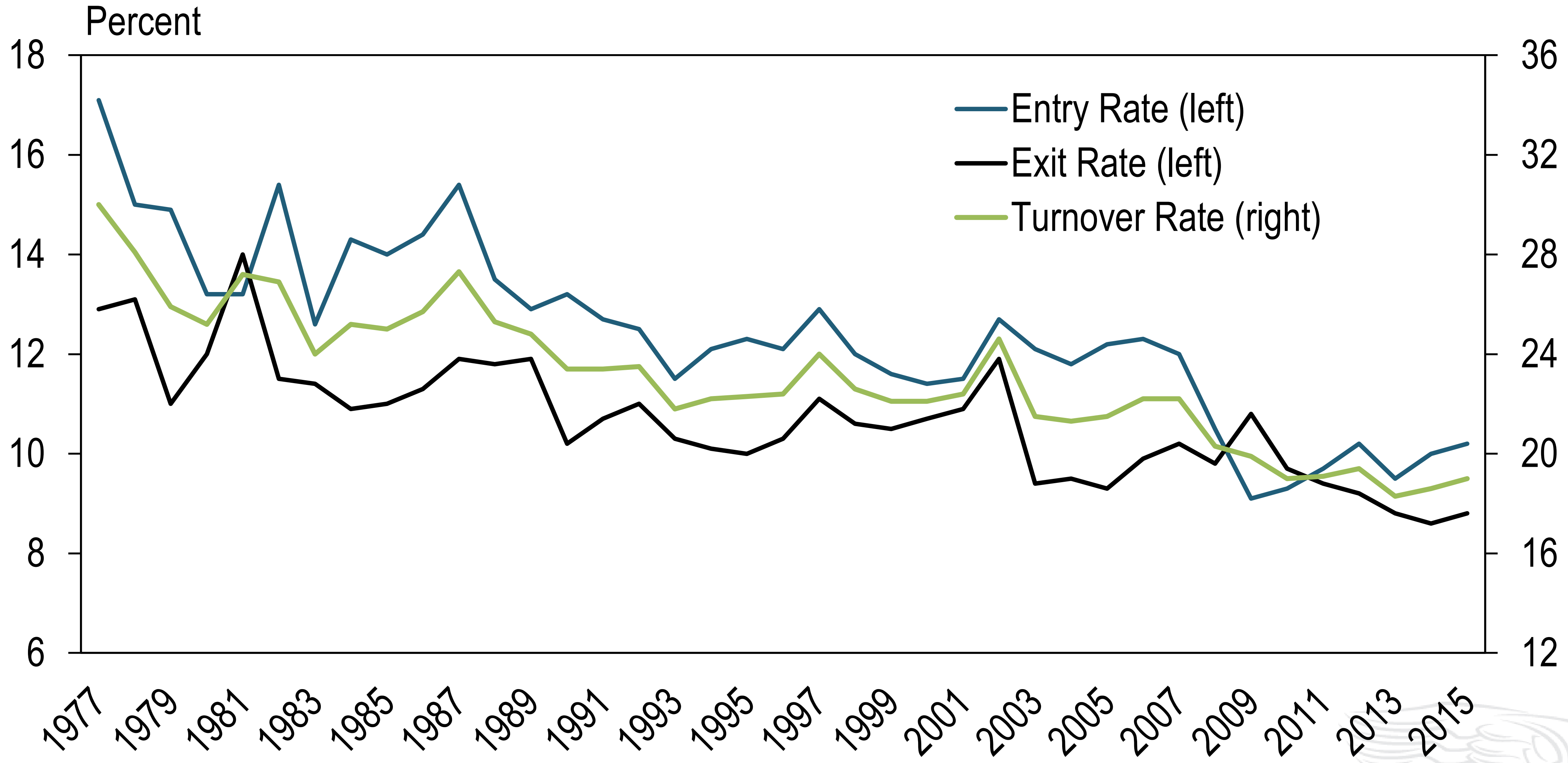
- The views expressed here are those of the presenter and do not represent the views of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

Background

- Structural change is an ongoing process in the U.S. economy

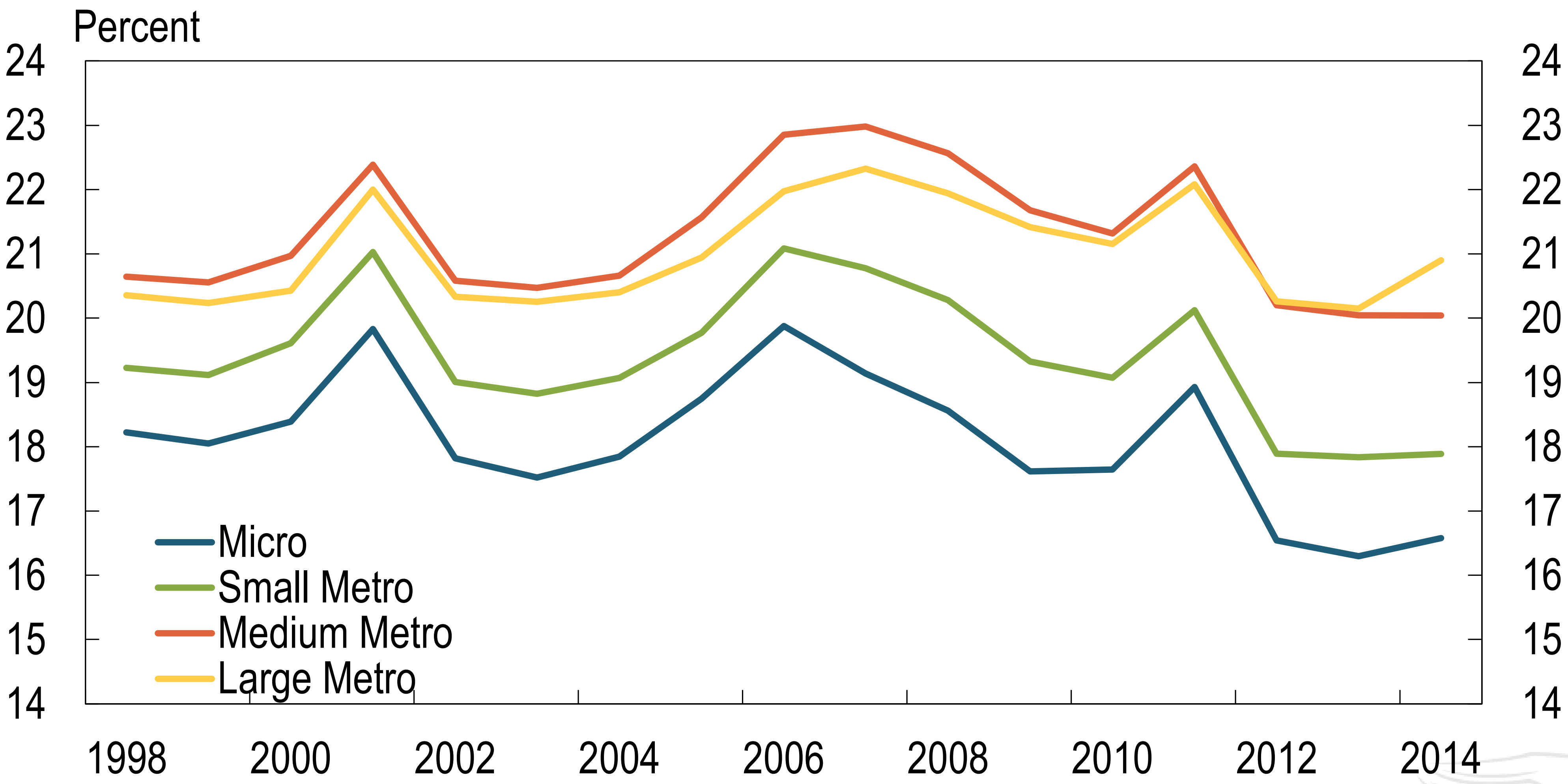
- As the name implies, structural change augments:
  - what is demanded by consumers, firms, and government
  - the way goods and services are produced
  - who produces
  - where things are produced

Firm entry and exit rates have been declining for several decades.



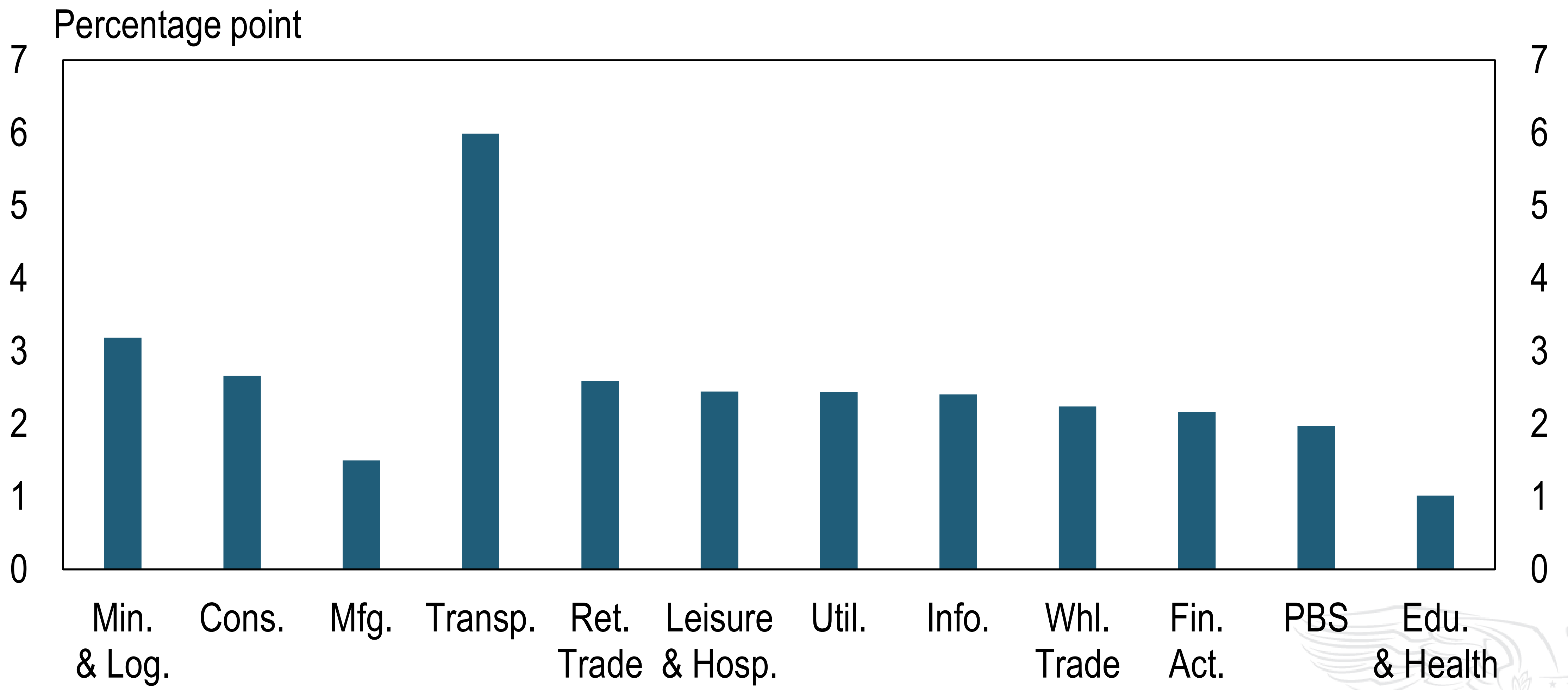
Sources: U.S. Census Bureau and author's calculations

Business turnover has declined the most in smaller urban areas.



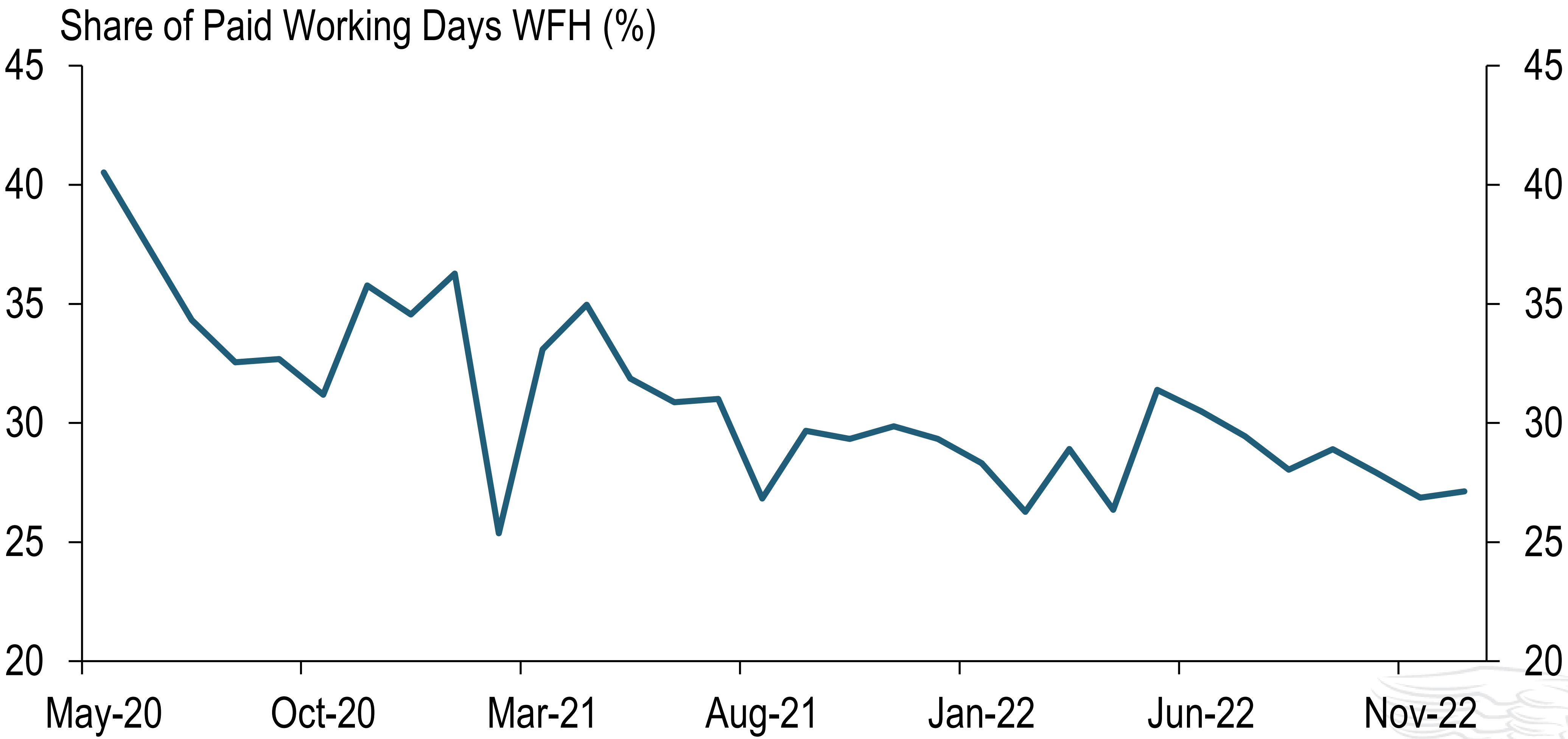
Sources: U.S. Census Bureau and author's calculations

The widening gap in business turnover between large urban and micropolitan areas is broad based.



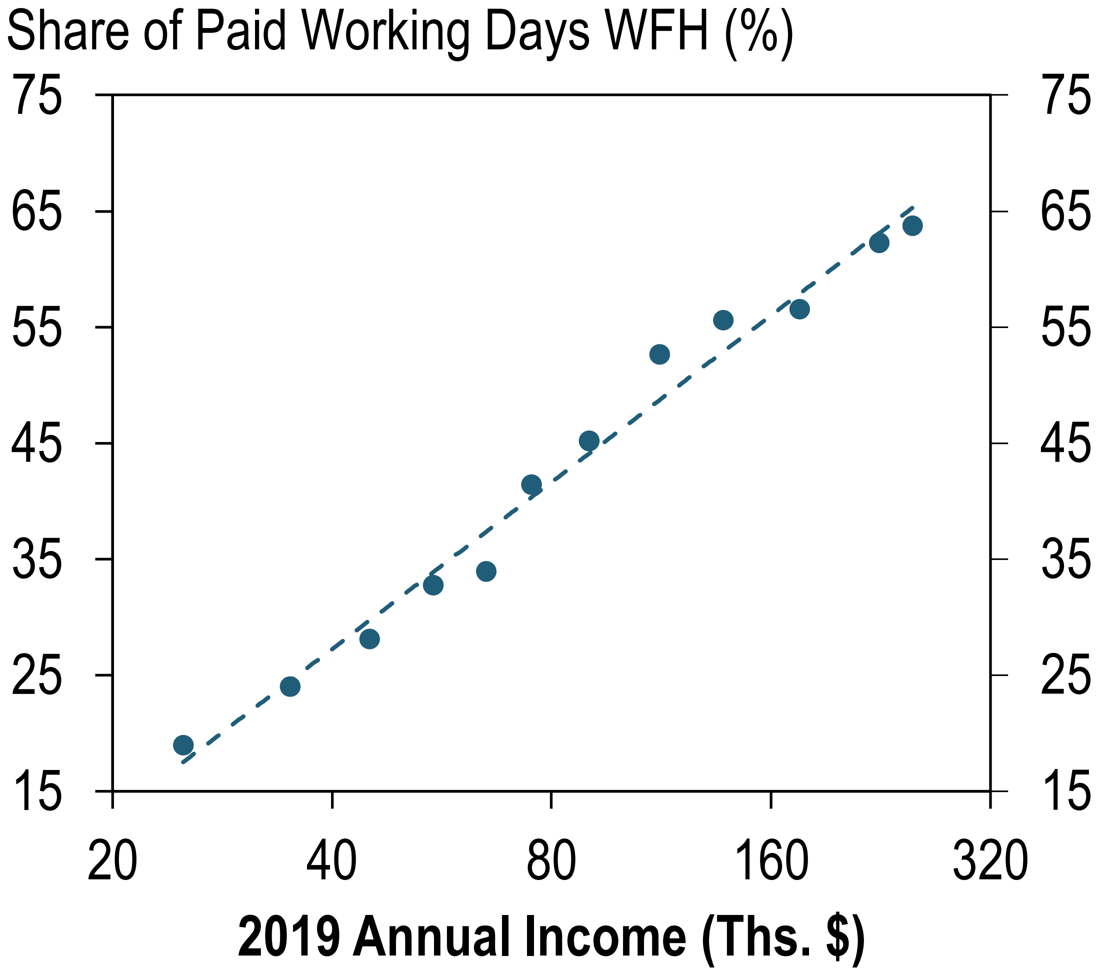
Sources: U.S. Census Bureau and author's calculations

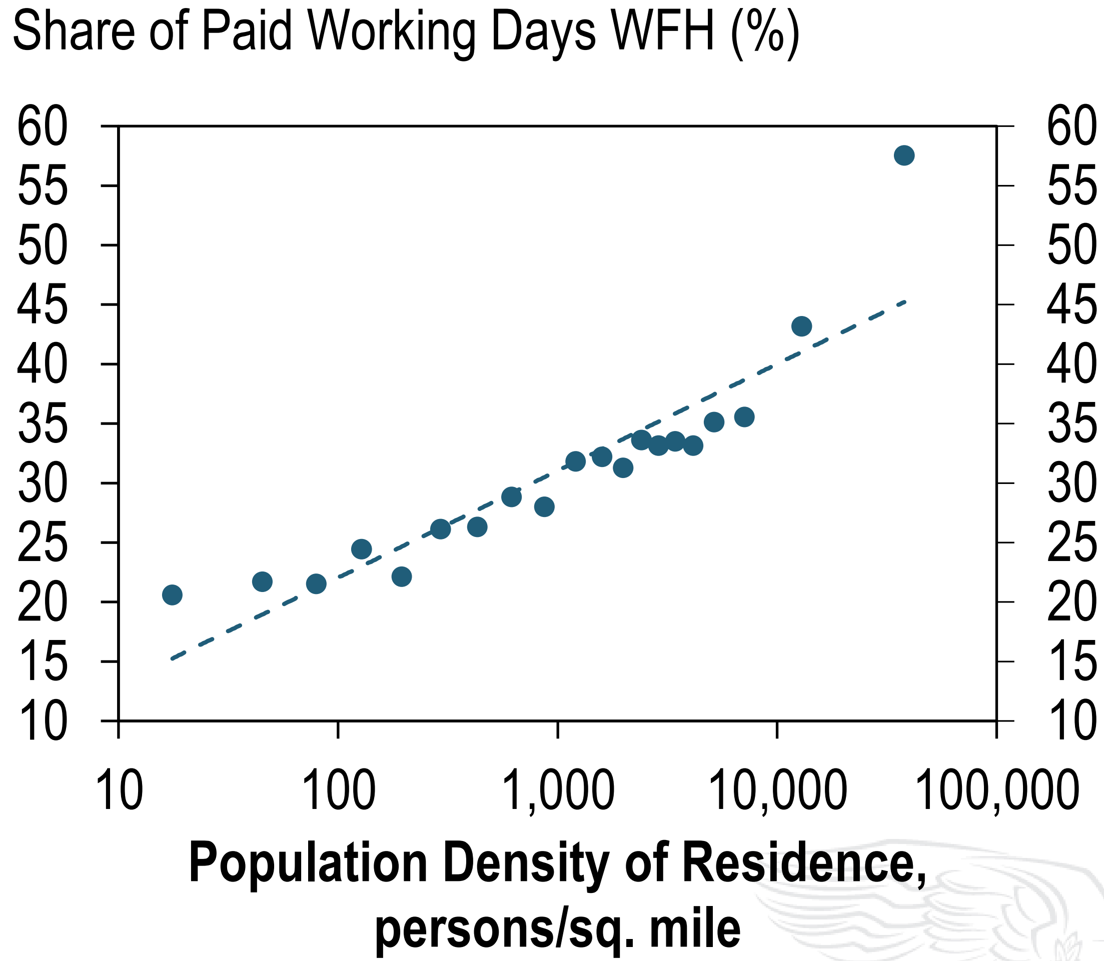
A hybrid working model appears to be a lasting feature in the economy, but…



Sources: Survey of Working Arrangements and Attitudes, authors' calculations

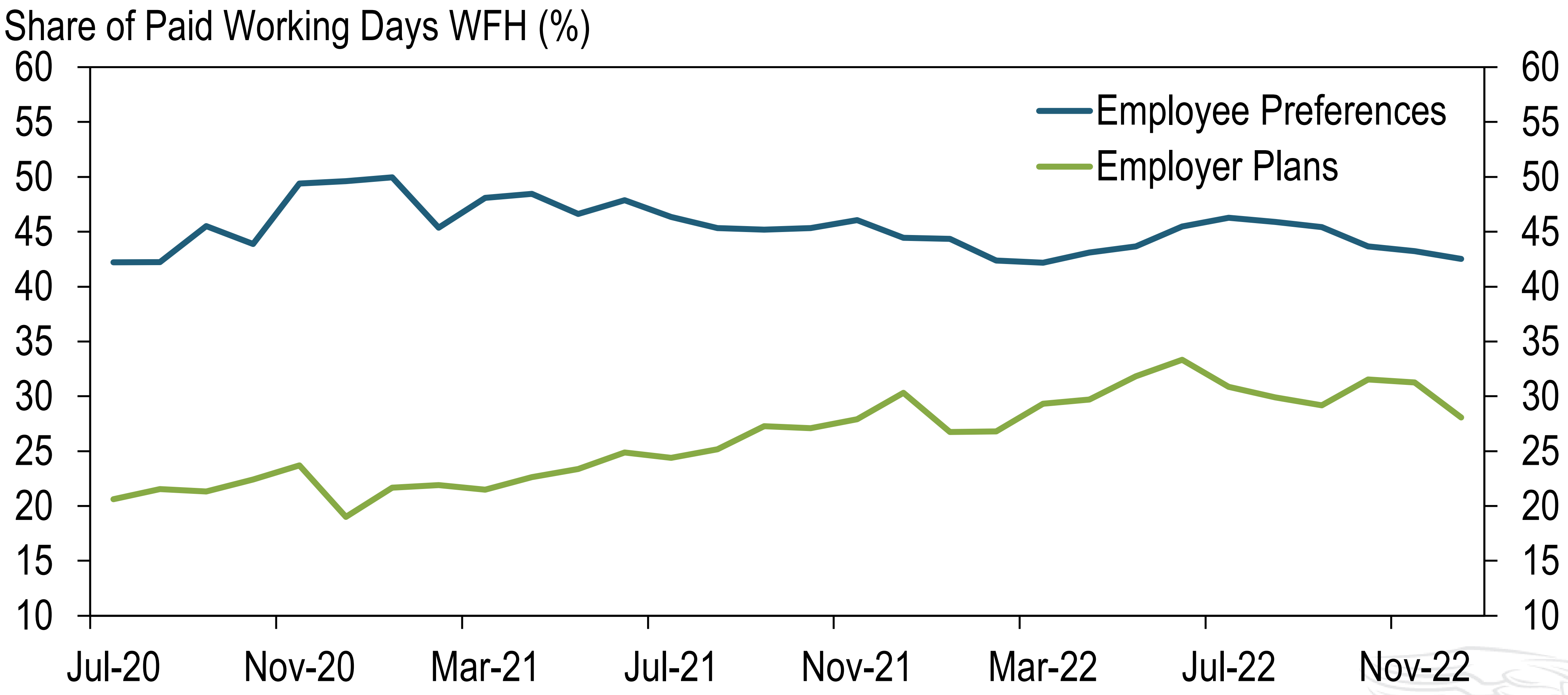
Higher income workers and those who live in more densely populated areas tend to work from home more often.





Sources: Survey of Working Arrangements and Attitudes, authors' calculations

The average gap between employee preferences for WFH and employer plans has narrowed.



Sources: Survey of Working Arrangements and Attitudes, authors' calculations

Implications of structural changes?

- Smaller places are becoming more static relative to large places
- If these trends persist, rural areas may find it difficult to adjust to future downturns in the economy and risk lagging further behind
- While a hybrid model of work may provide greater flexibility, it seems the potential gains are more likely to accrue in larger urban areas
- Despite the challenges of structural change, some rural areas have experienced longer-term growth

Why do some rural areas prosper while others don't?

- Isserman et al (2009) focus on "prosperity" versus growth:
  - prosperous areas have lower unemployment rates, lower poverty rates, lower school dropout rates, better housing conditions

- Prosperous counties tend to have:
  - more educated populations, more diverse economies, more private non-farm jobs, more farmers and government farm payments, more creative class occupations, and more equal income distributions.

Why do some rural areas prosper while others don't?

- Rural growth in the knowledge economy is dependent on the ability to utilize new knowledge
- McGranahan et al (2010) document rural growth trifecta
- They find faster growth in areas with
  - greater prevalence of entrepreneurship
  - higher prevalence of creative class occupations
  - particularly in those rural counties endowed with attractive outdoor amenities

Energy development can be viewed an asset-based approach.

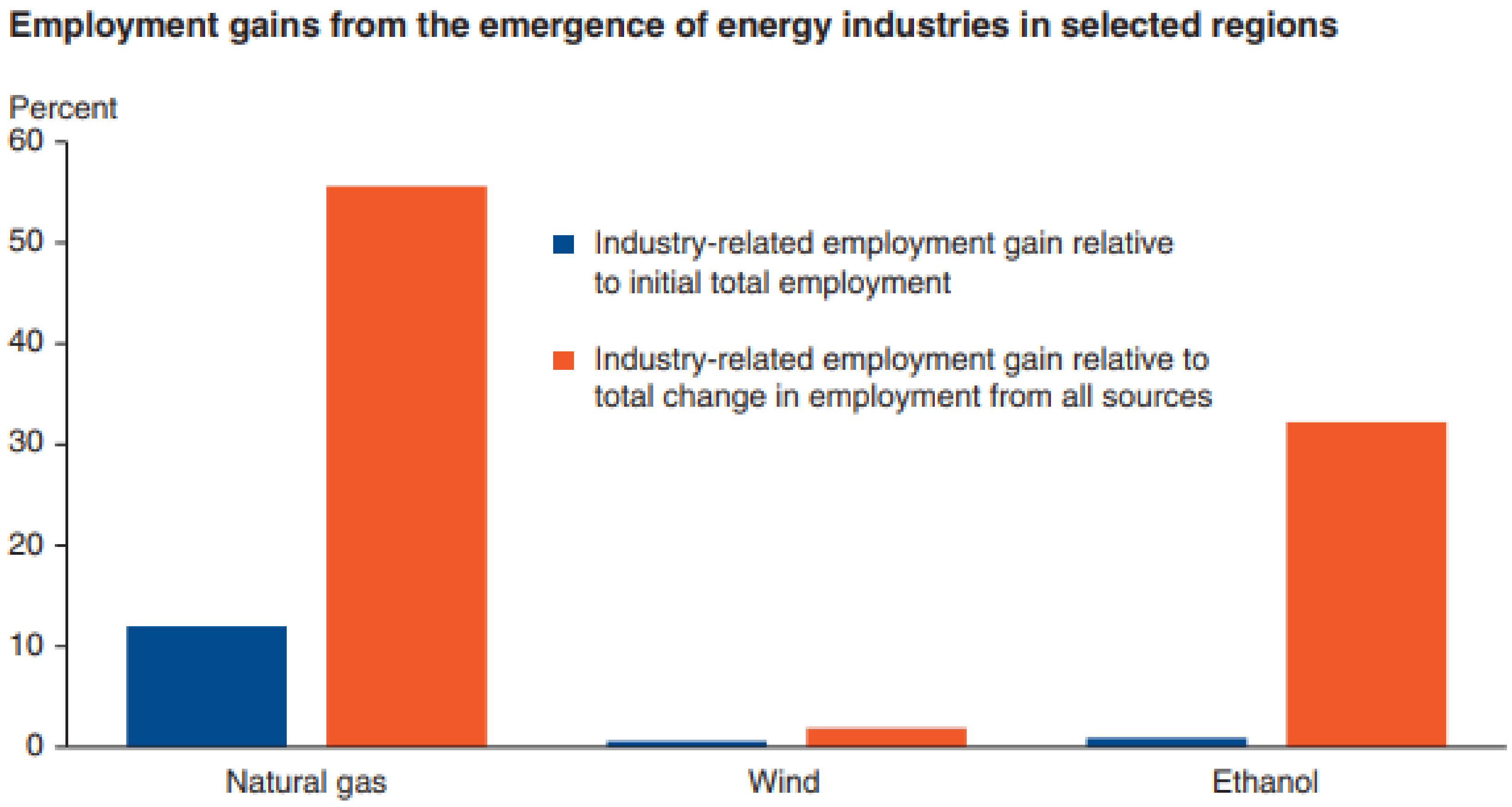
- Asset-based development focuses:
  - on utilization of local resources
  - and areas of comparative advantage

- Energy development is an example based upon resource endowment

- Recent studies have investigated various aspects of local economic impact from wind power, biofuels, and oil and gas development

The employment magnitude of energy development varies by type.

- Over 10 years development phase oil and gas created more local jobs (Brown, Weber, and Wojan 2013)



How does wind power development influence local growth?

- Local income and employment effects from wind development are modest (Brown et al 2012)

- Increase in county-level personal income and employment of approximately $11,000 and 0.5 jobs per megawatt of wind power capacity installed

- Translates to a median increase in total county personal income and employment of 0.2% and 0.4% for counties with installed wind power

- No significant changes to housing values after placement of wind turbines (Hoen et al 2015)

Oil and gas development increases wages and consumer debt.

- Increases in drilling activity act as a local demand shock (Marchand and Weber 2018)
- Numerous studies have found
  - positive employment and wage effects in short to medium-run
  - some find negative effects over a much longer time period, so called “resource curse”
- Increases in local wages from drilling also induce an increase in consumer debt (Brown 2021)
- Relative to areas with oil and gas development experience, the marginal propensity to borrow was 2x larger in previously undeveloped areas

Royalties from oil and gas development are economically significant.

- The largest oil and gas plays generated $39 billion in private royalties in 2014 (Brown, Fitzgerald, and Weber 2016)

- Mineral owners benefit from resource abundance primarily through a quantity effect

- Market power and uncertainty of resource endowments explain limited pass-through of greater productivity into royalty rates

Local income effects from O&G development are mainly royalties.

- Royalty income and its multiplier effect accounted for 70% of the total income gain from extraction between ‘00-’14 (Brown, Fitzgerald, and Weber 2019)

- Each royalty dollar generated an additional 49 cents of local income

- Counties where residents own the subsurface captured 28 cents more of each dollar in production than one with absentee ownership

- Average ownership shares vary widely across US counties, 3.2 to 67%

Oil and gas development medium-run response to taxation is inelastic.

- Drilling response to changes in severance tax is frequently debated (Brown, Maniloff, and Manning 2020)

- The response to a one dollar increase in tax per unit of production has an effect at least 8x as large as the effect of an equivalent decrease in output price

- However, the tax response is inelastic, 1% increase in severance tax rate reduces drilling 0.4%

- Implies that an increase in state severance tax rate would increase revenue in short to medium-term

There are many aspects of energy development that are unknown.

- Data challenges are present in assessing other channels
  - Wind leases
  - Solar development
- Outcomes of revenue being redistributed and invested in areas of extraction
- Energy transition from non-renewable to renewable
- Understanding the local implications of electrification of the economy
  - Rising demand for electricity
  - Electrification of transport

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