

Surging Business Formation in the Pandemic: Causes and Consequences

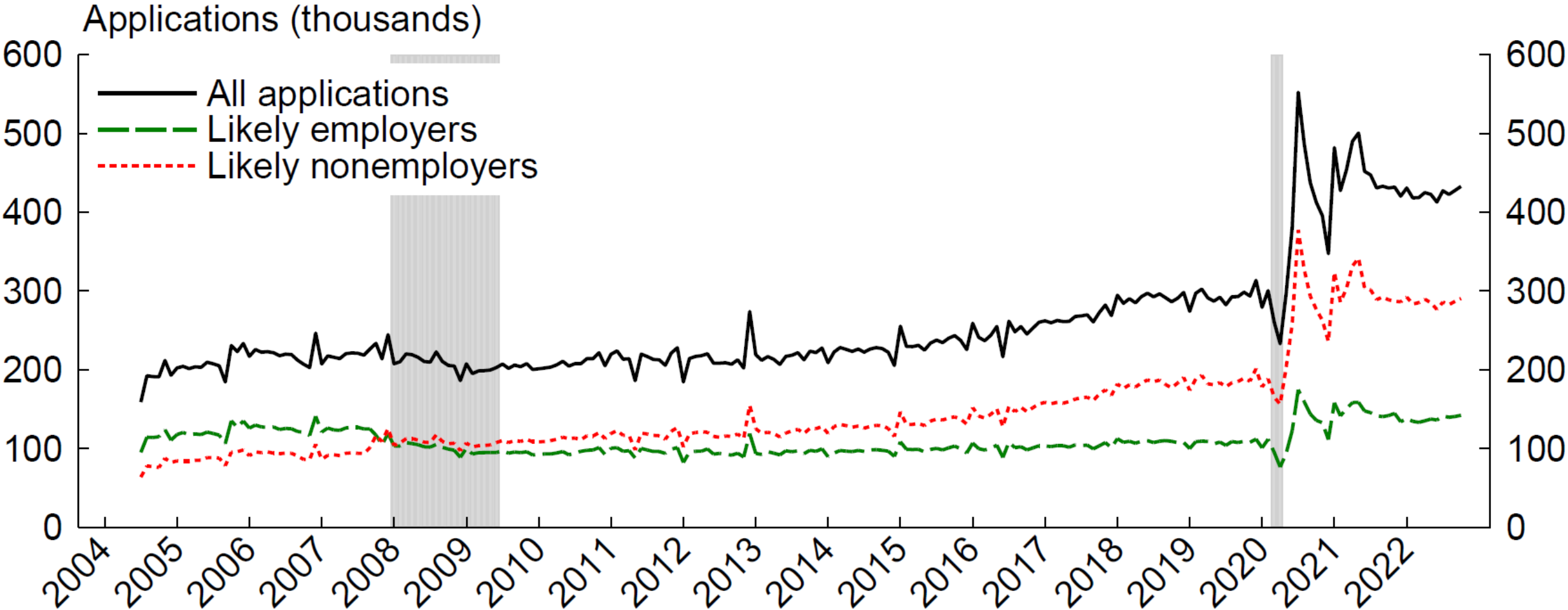
By

Ryan Decker and John Haltiwanger*

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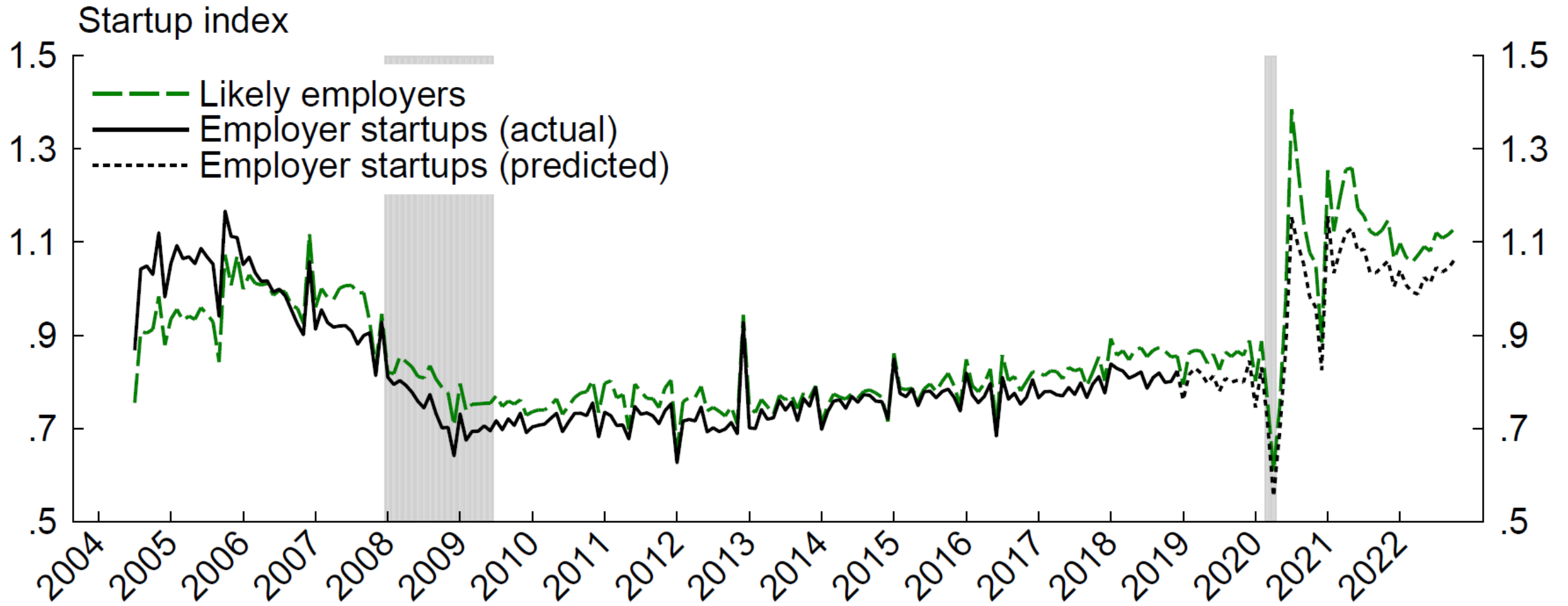
*Federal Reserve Board; University of Maryland and NBER. The analysis and conclusions set forth here are those of the authors and do not indicate concurrence by members of the Federal Reserve staff or the Board of Governors.

Growth has been resilient through October 2022. For HBA, avg monthly 2022 is about 30% higher than in 2019.



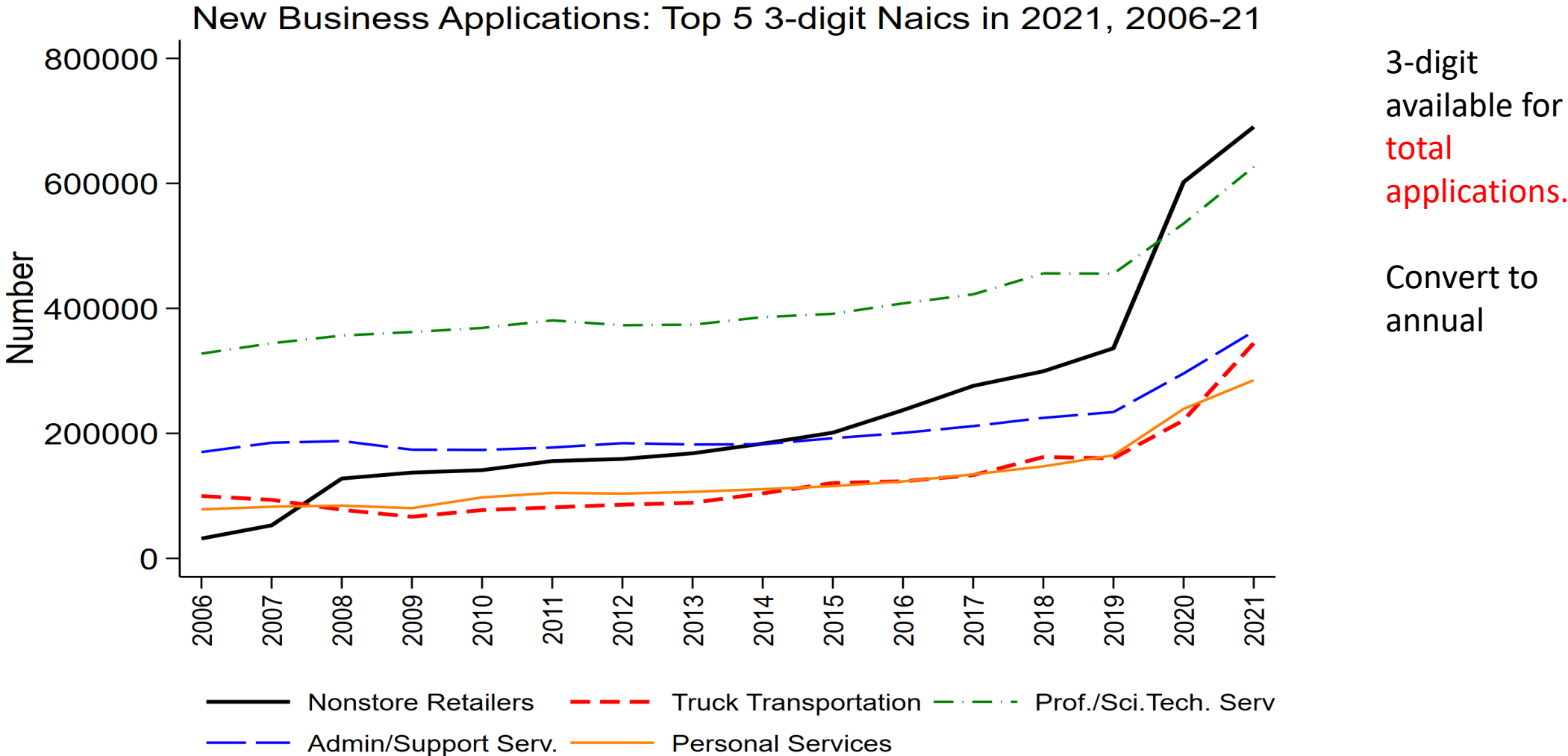
Note: Seasonally adjusted. All applications = BA series; likely employers = HBA series; likely nonemployers is residual. Shaded areas indicate NBER recession dates.
Source: Census Bureau Business Formation Statistics.

Corr(Likely Employers, Actual Startups)=0.93



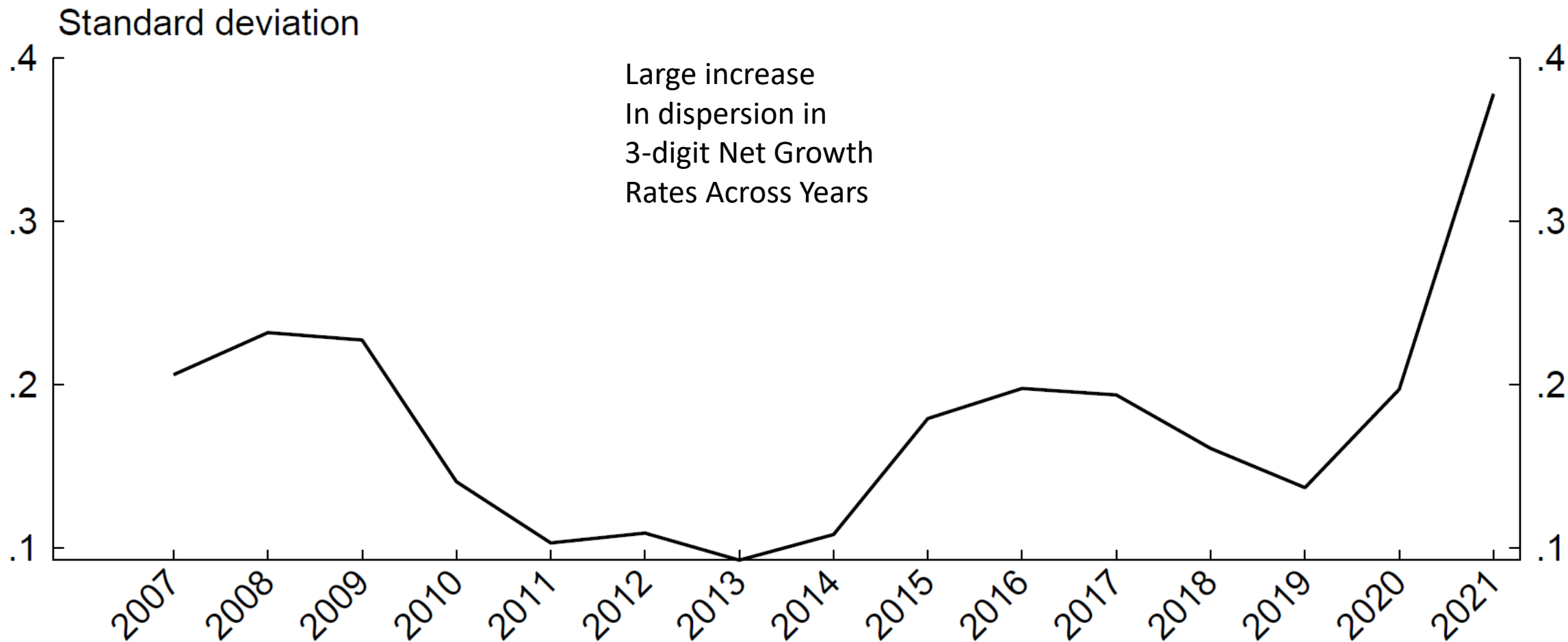
Note: Startups within 8 quarters. Seasonally adjusted. Normalized by average 2006 levels.
Shaded areas indicate NBER recession dates.
Source: Census Bureau Business Formation Statistics.

Five 3-digit (NAICS) sectors account for 50% of Surge in Overall Applications



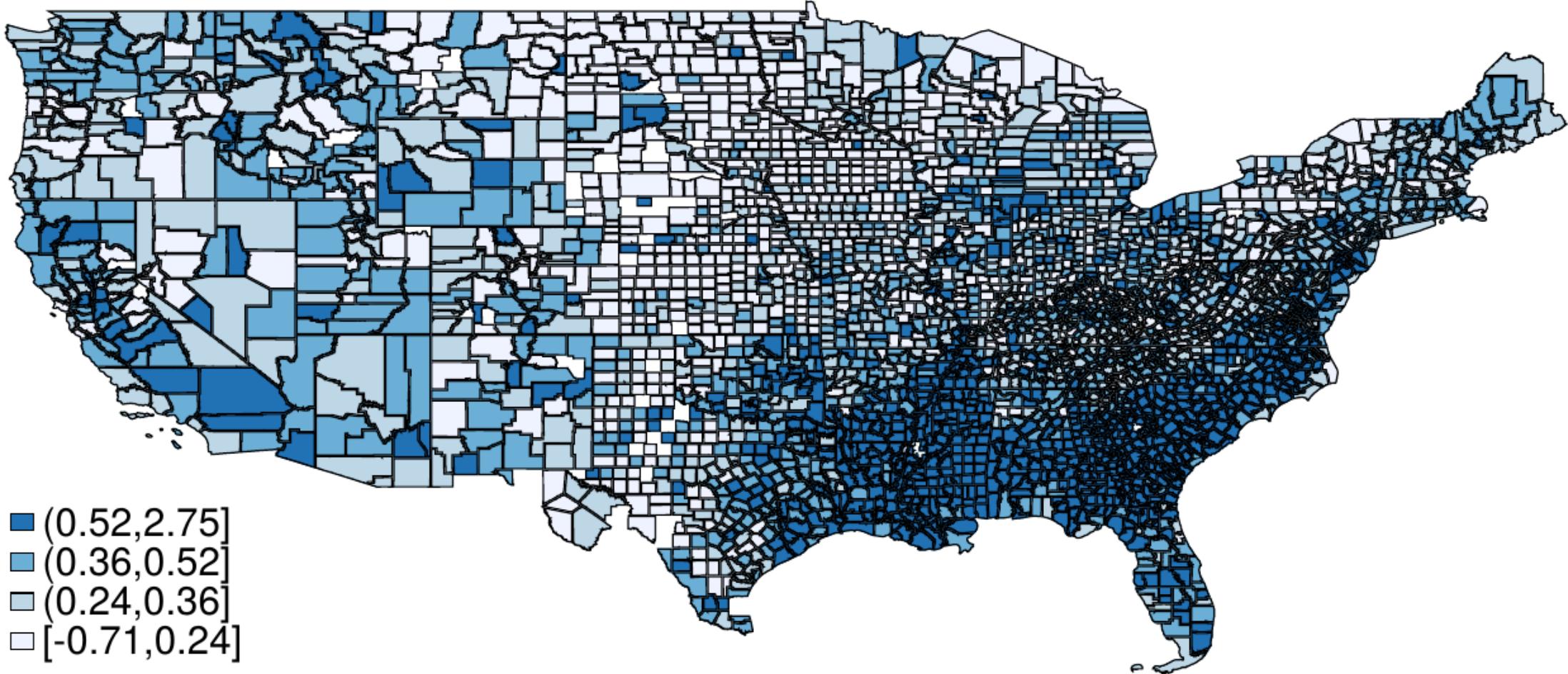
Source: Tabulations from the BFS.

Total applications: Dispersion in 3-digit sector net growth rates



Note: Standard deviation of annual growth rate of all applications at 3-digit NAICS level.
Source: Census Bureau Business Formation Statistics.

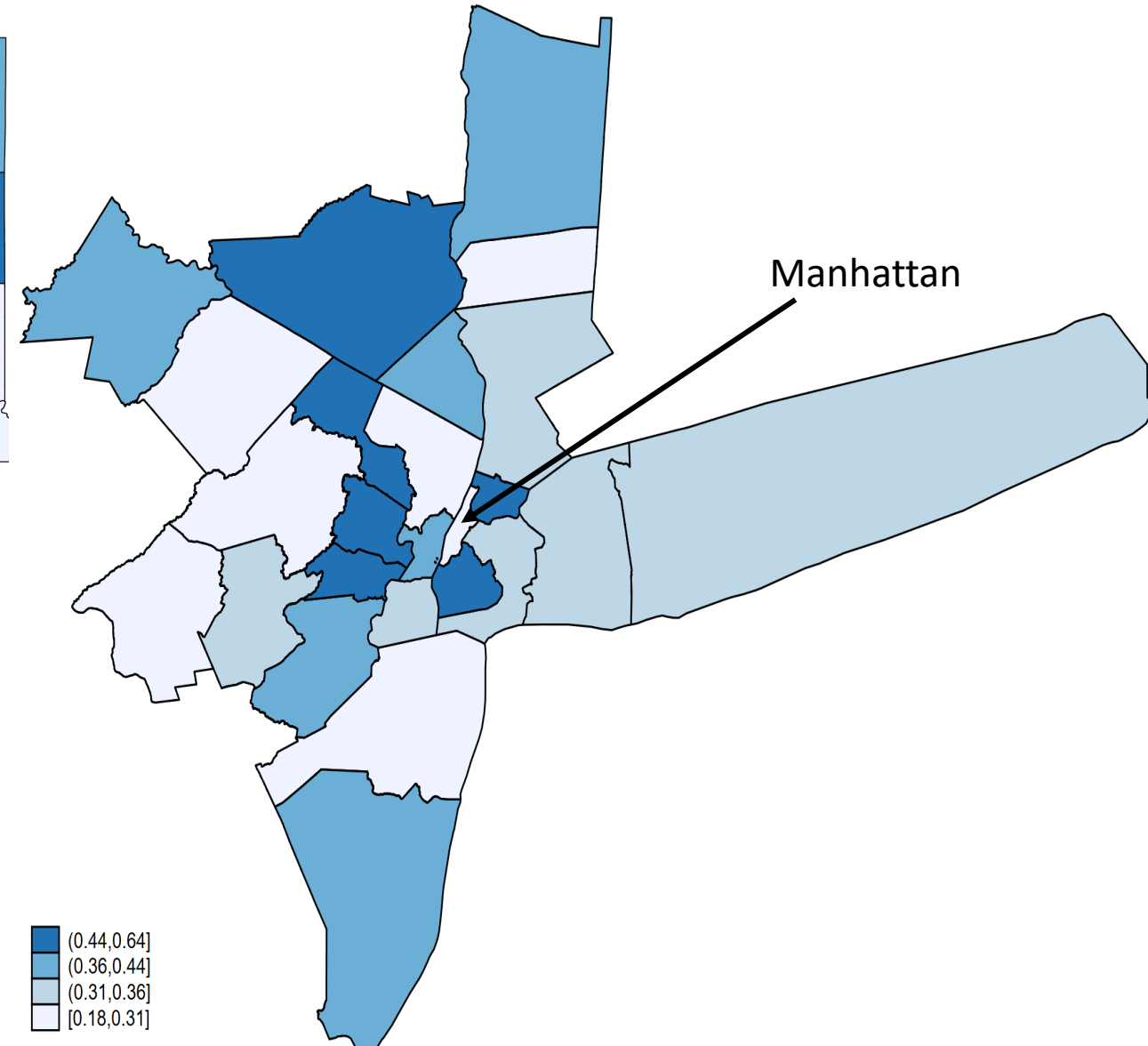
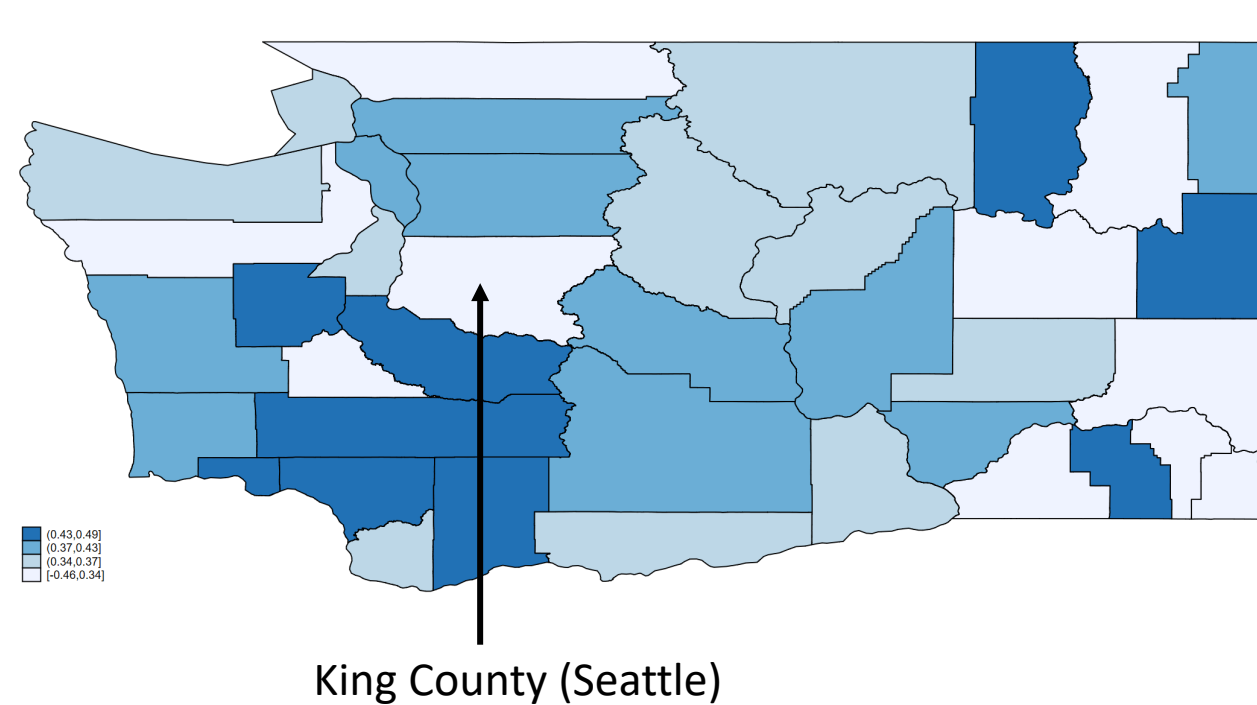
Log Differences in Applications Per (1000) Capita Between Pre-Pandemic (2010-19) and Pandemic (2020-21).



Note: Difference of average (log) all applications per capita, 2020-2021 vs. 2010-2019.
Source: Census Bureau Business Formation Statistics and population estimates.

Top counties increase by 52 log points up to 275 log points. Caution: All applications not just HBA.

“Donut” effects in cities? (Darker = more apps)



Log difference in applications, pandemic versus pre-pandemic.

- Similar patterns for Los Angeles, San Francisco, Atlanta
- Some regression evidence for “donut” relationship between density and applications

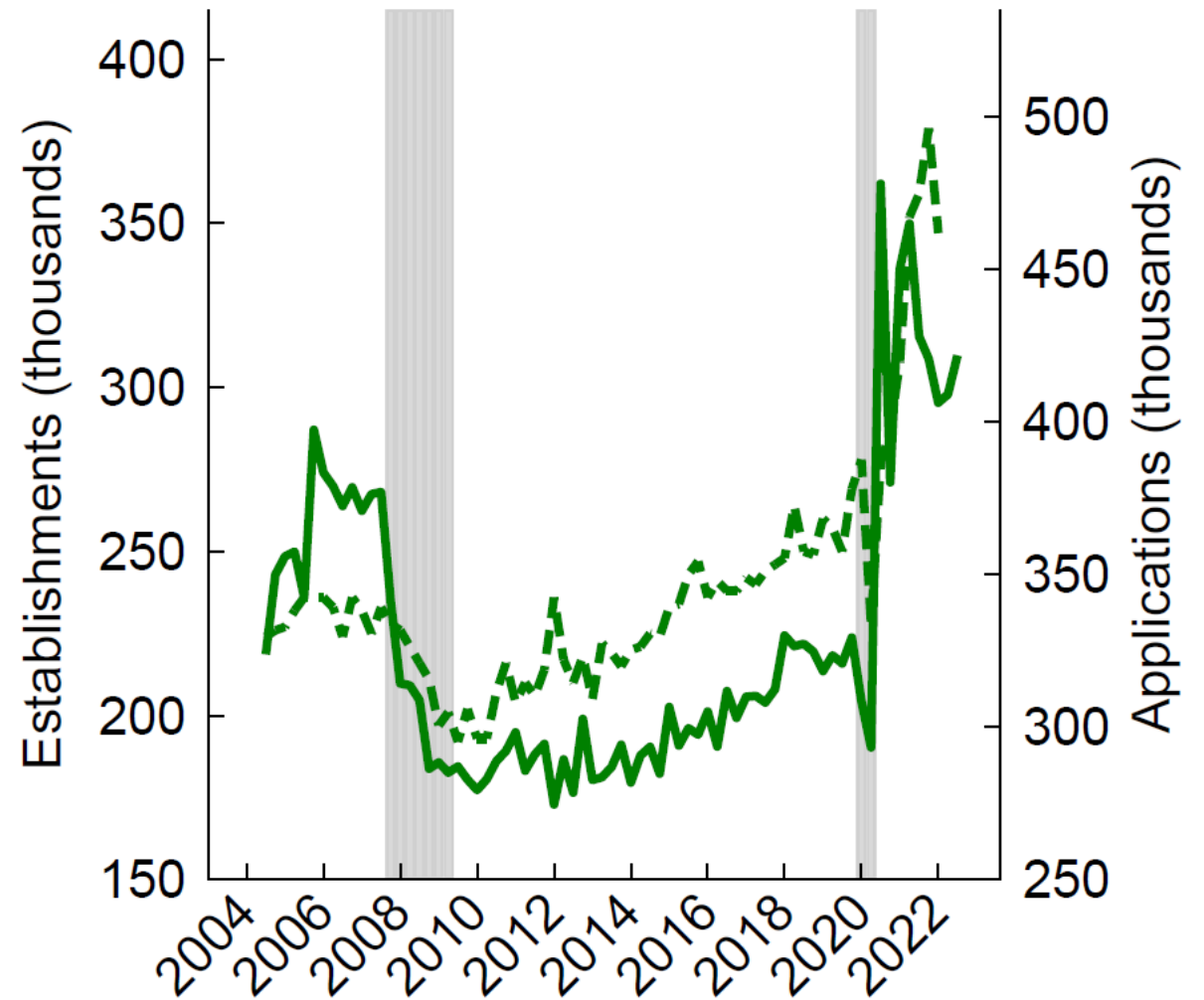
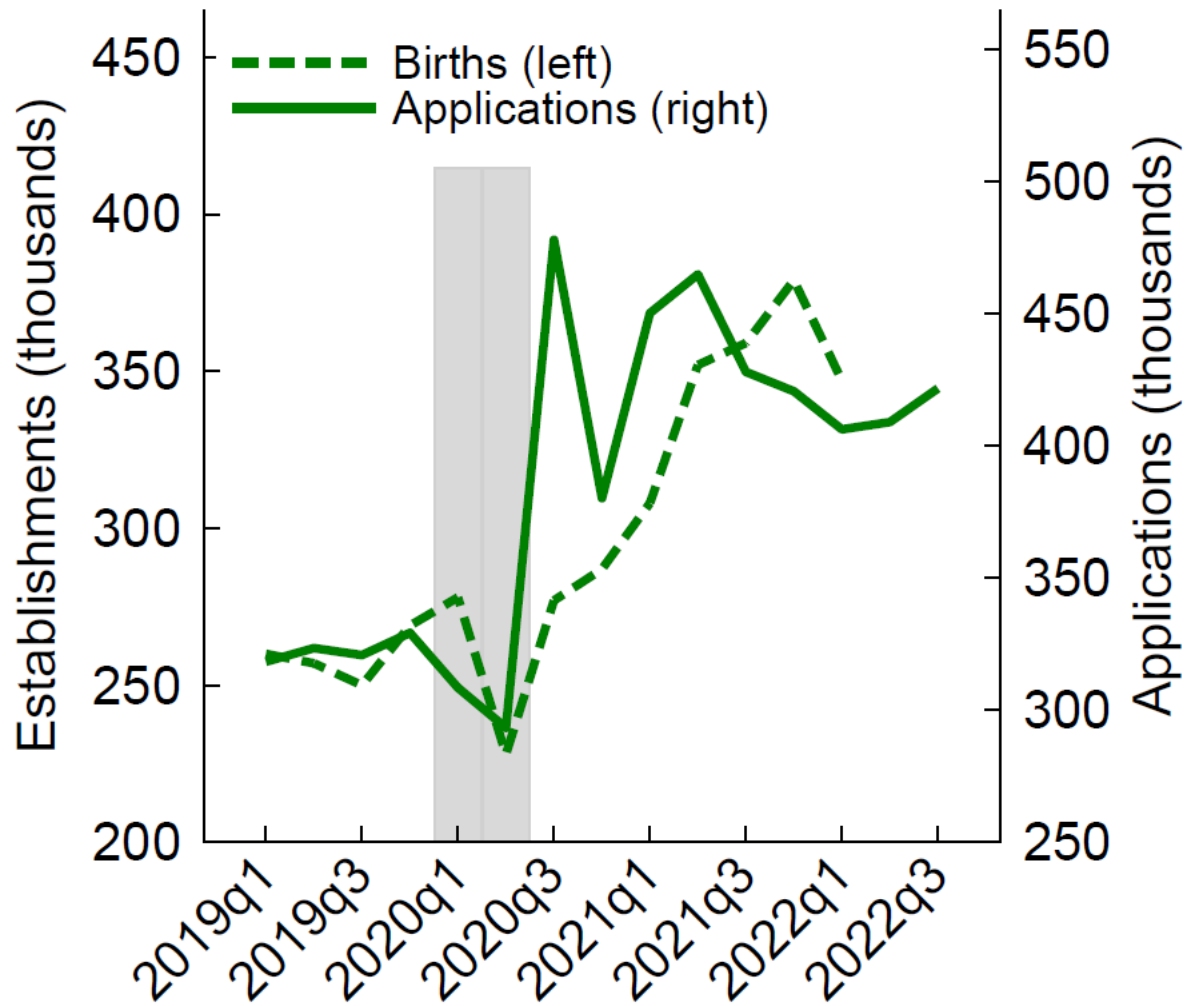
Open questions

What has been and will be the impact on firm, job and worker turnover?

- Have we observed a surge in actual firm and establishment births?
- Has there been sectoral and spatial reallocation of jobs and workers?

Focus here:

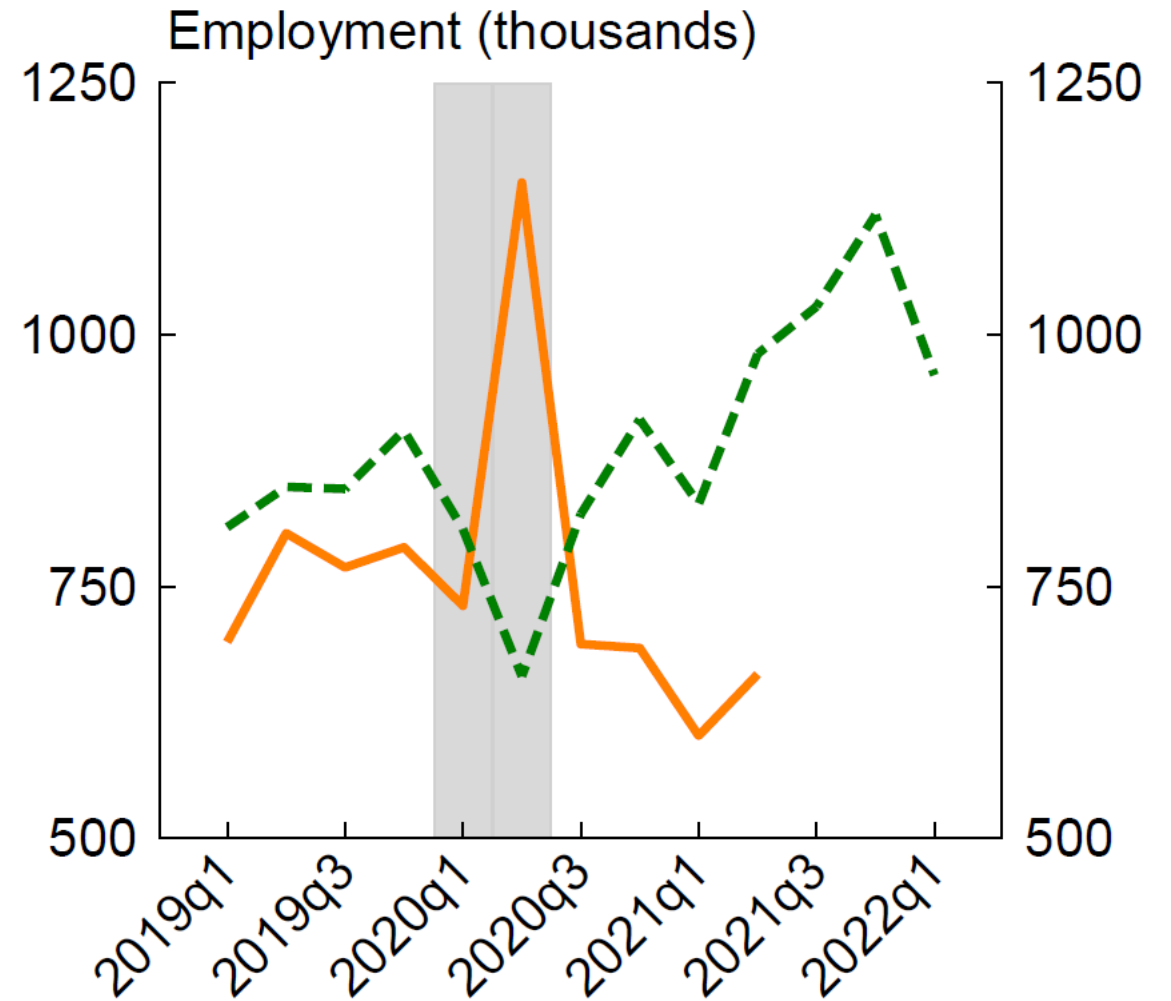
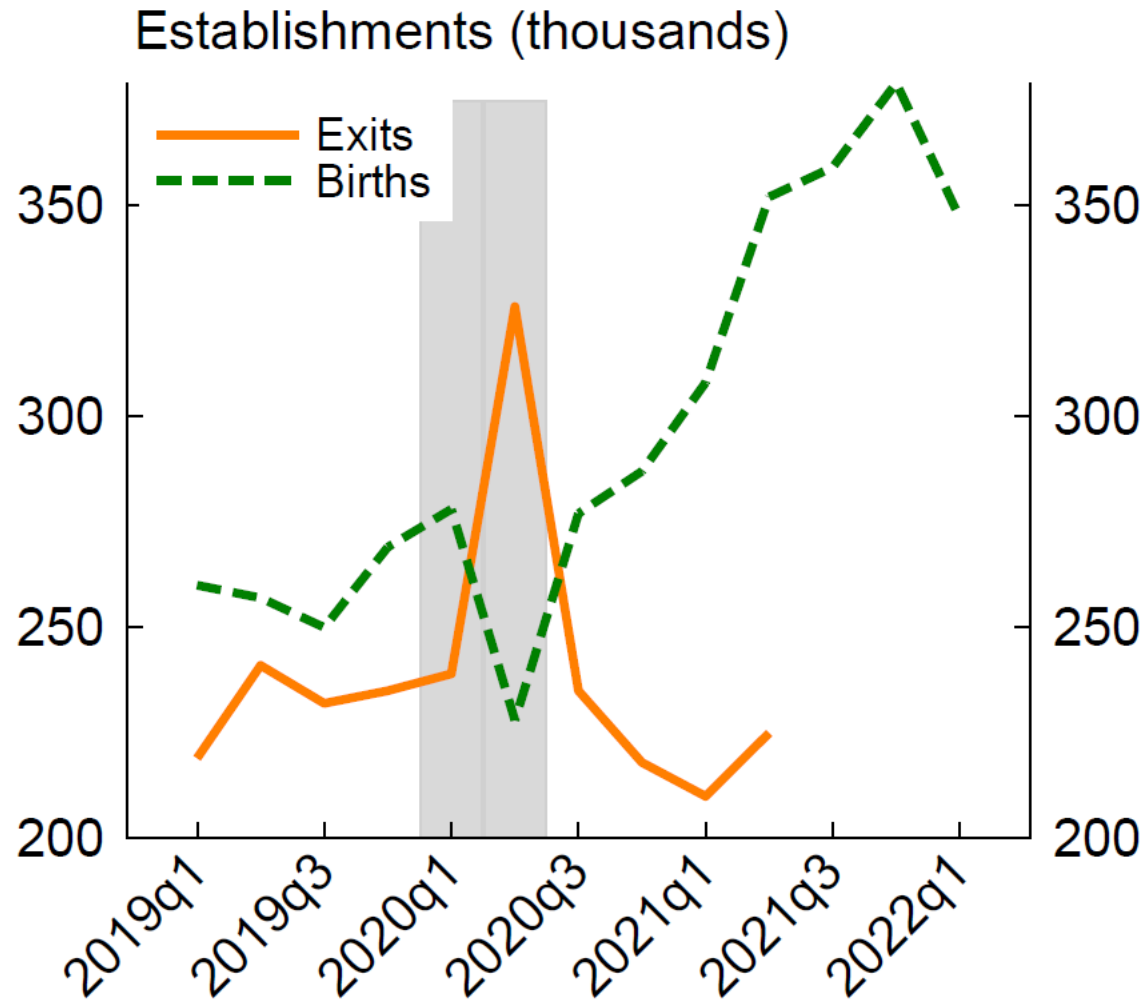
- Gold standard databases tracking firm, **establishment**, **job**, and **worker** turnover emerge with a lag. Now data through **2022:3** from **JOLTS**, through **2022:1** from **BED and QCEW**, and through **2021:3** for the **QWI**.
 - Establishment births and deaths at the aggregate level.
 - Establishment openings at 3-digit industry level.
 - Net establishment growth and excess separations at county level.
 - Job reallocation at detailed cell level (e.g., sector, location, firm age, firm size).



Note: High-propensity business applications. Seasonally adjusted. Y axes may not start at zero. Shaded areas indicate NBER recession dates.

Source: Business Employment Dynamics (BED) and Business Formation Statistics (BFS).

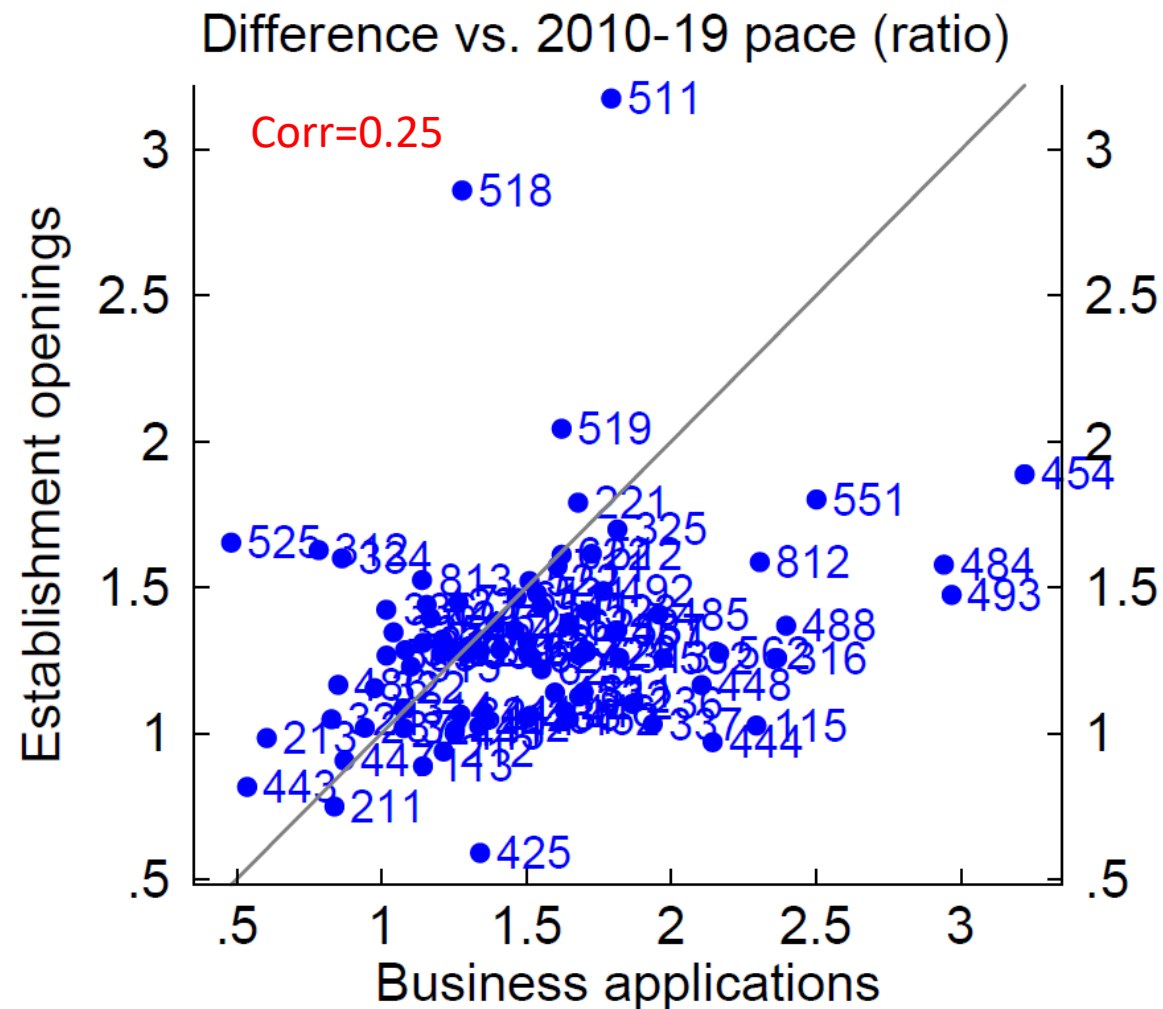
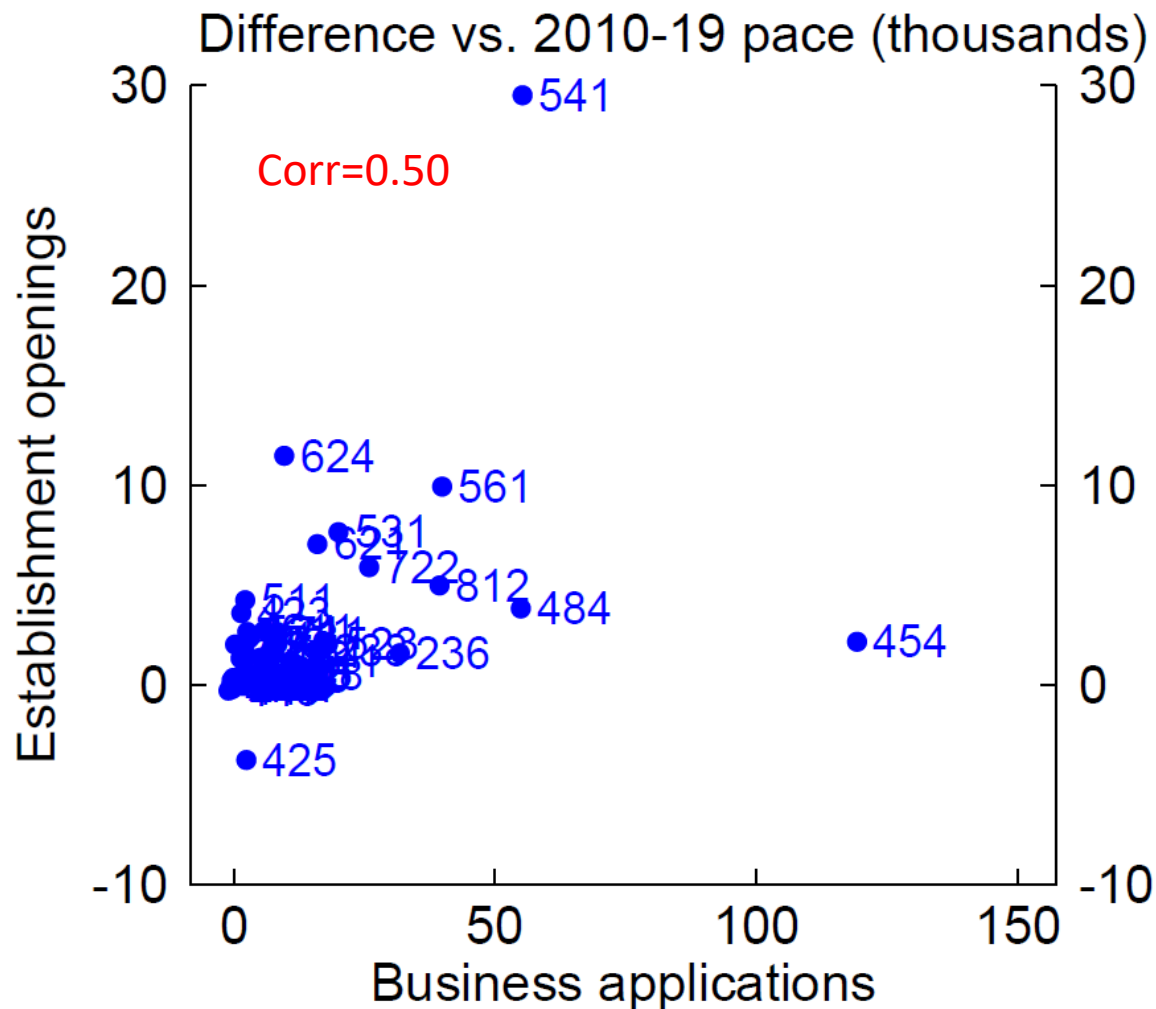
BED Establishment Entry and Exit (true entry/exit – not just reopenings and closings)



Note: Seasonally adjusted. Y axes may not start at zero. Shaded areas indicate NBER recession dates.

Source: Business Employment Dynamics (BED).

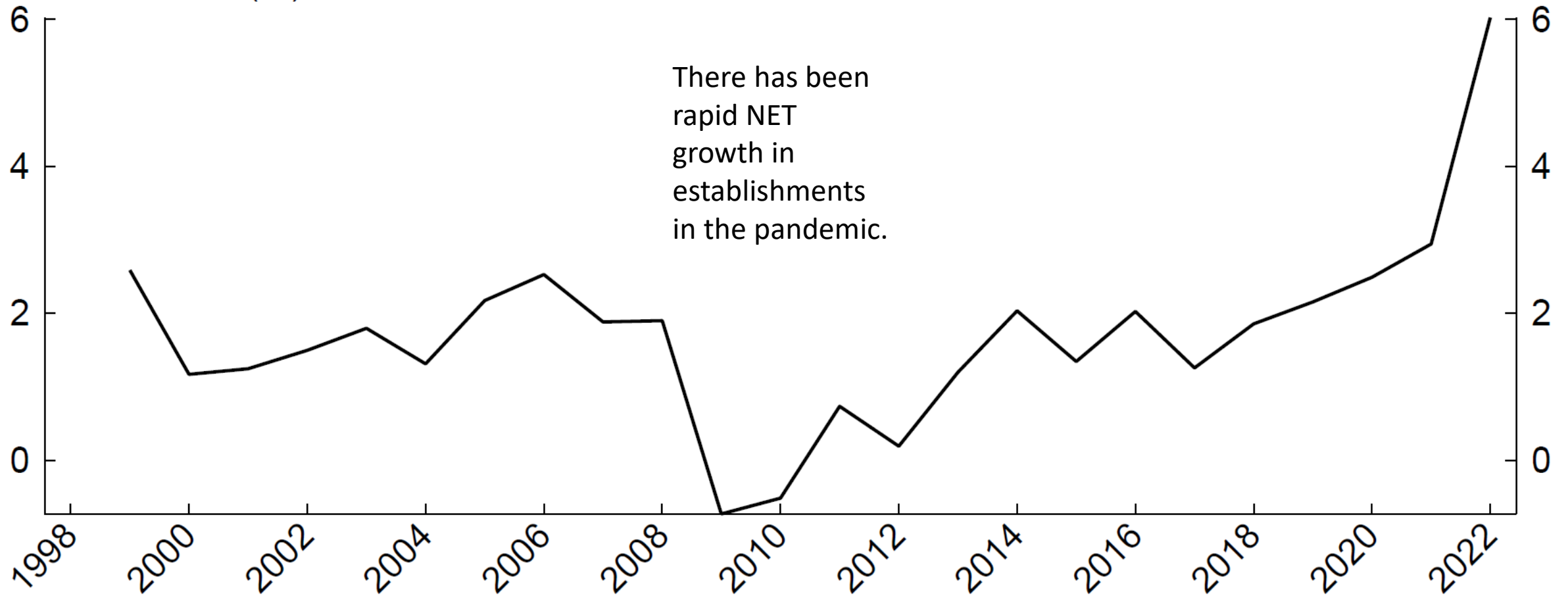
Between Industry differences in Changes in Establishment Applications and Openings: Avg(2020:4-2021:4) vs. Avg(2019) (Caution: Openings and not births. BED does not release 3-digit births)



Note: 2020:Q4-2021:Q4. Left panel expressed in average seasonally adjusted quarterly pace. Solid line is 45-degree line.

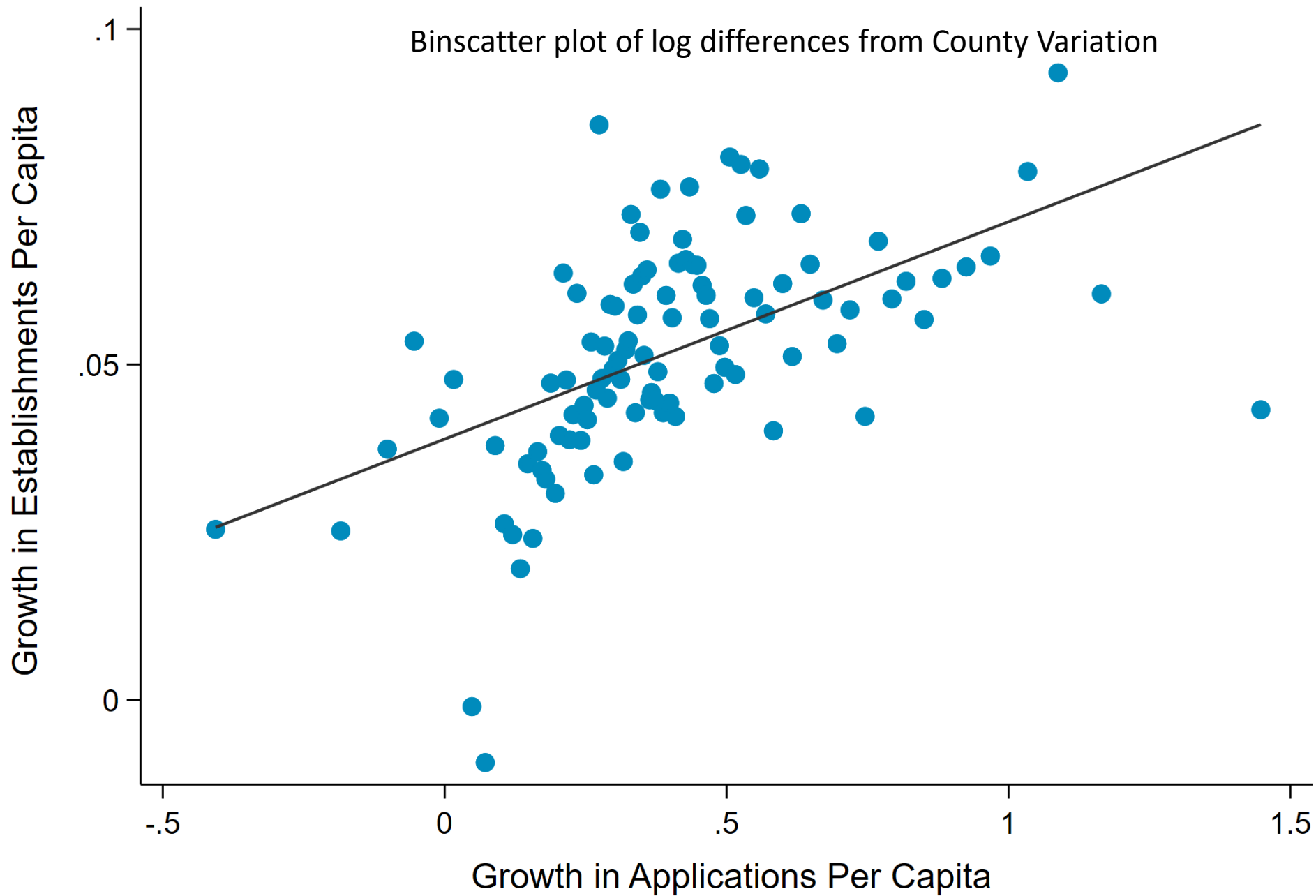
Source: Business Employment Dynamics (BED), Business Formation Statistics (BFS).

Growth rate (%) of total establishments



There has been rapid NET growth in establishments in the pandemic.

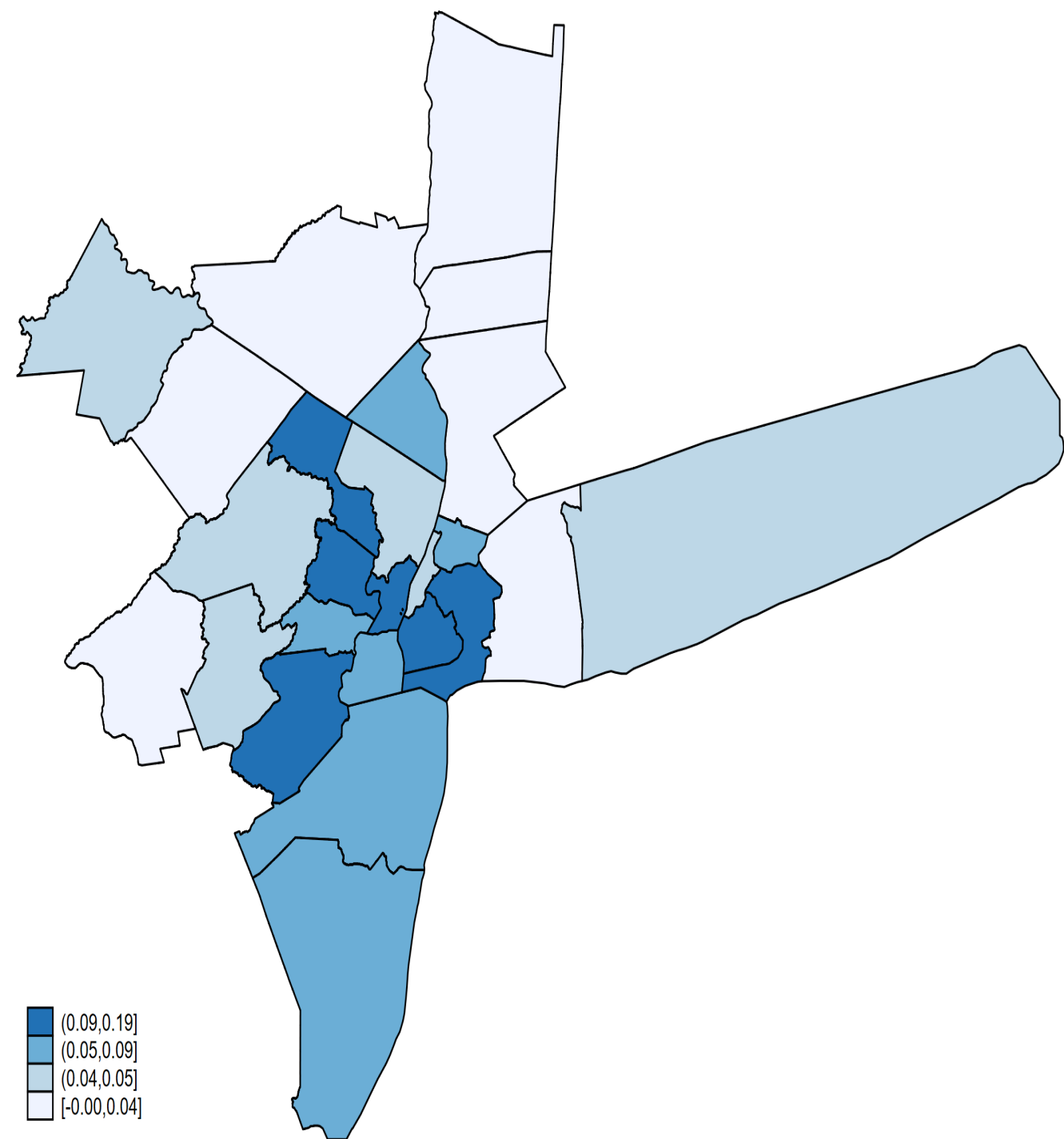
Note: DHS growth rate of total establishments, March versus year earlier.
Source: BLS QCEW.



Growth is measured By log differences Of Measures between Pandemic (2020-21) And Pre-Pandemic (2010-19).

Caution: Net establishment Growth are for Employer Businesses And Applications are all.

Also recall lags from Applications to startups.



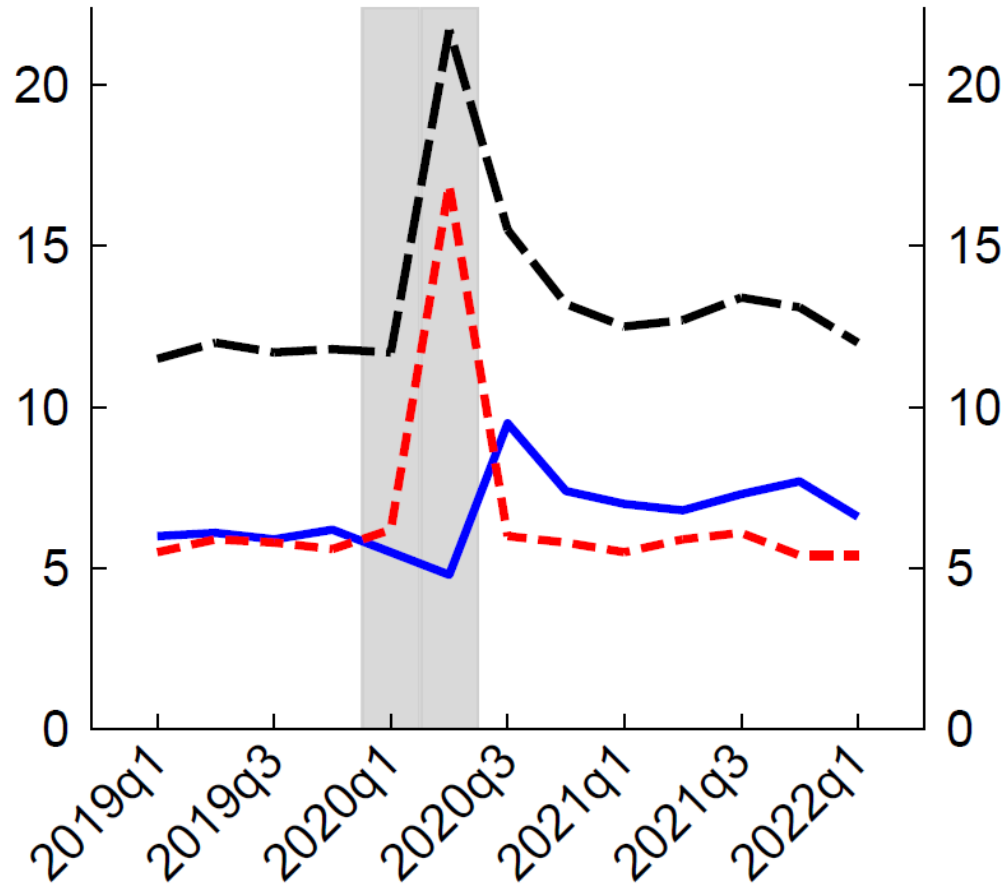
Log Differences in Establishments Per Capita Between Pre-Pandemic (2010-19) and Pandemic (2020-21).

Patterns similar to Applications Per Capita around NYC

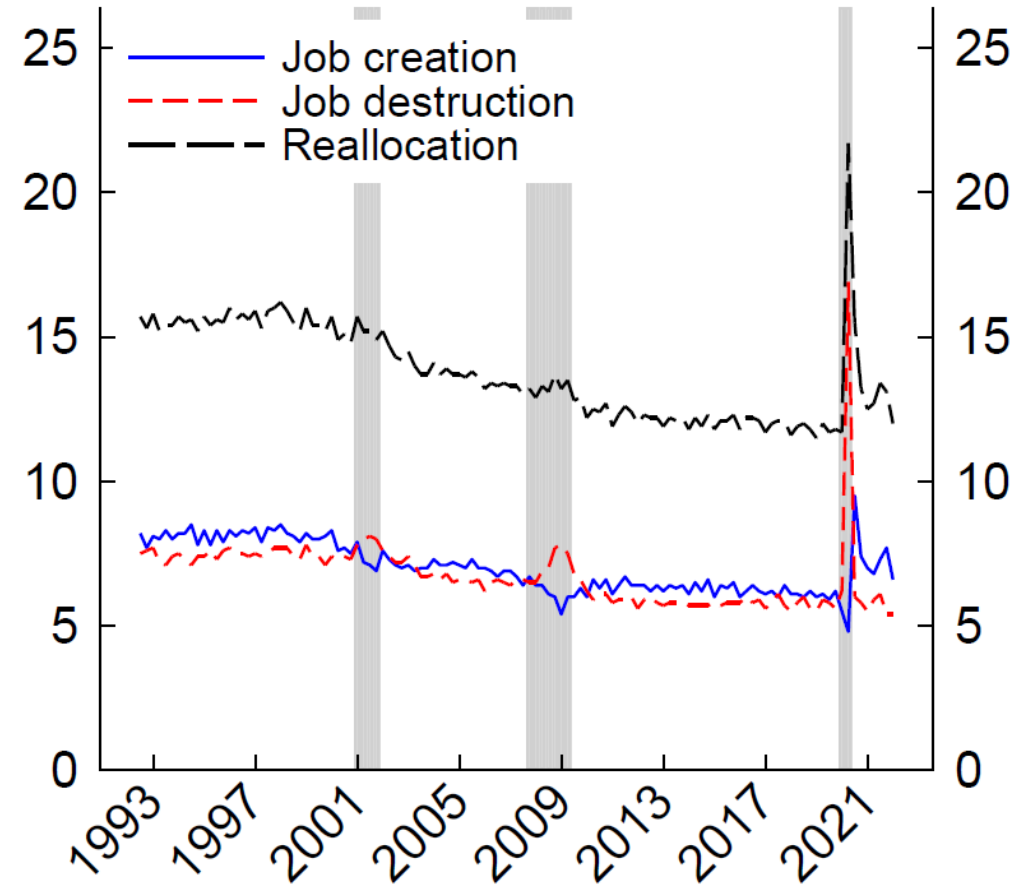
Some differences might reflect employer vs nonemployer Businesses (applications at county level are for all Applications, establishments at county level are for employer establishments)

Business formation surge part of broader increase in reallocation in pandemic. Still lower than 1990s.

Percent of employment



Percent of employment

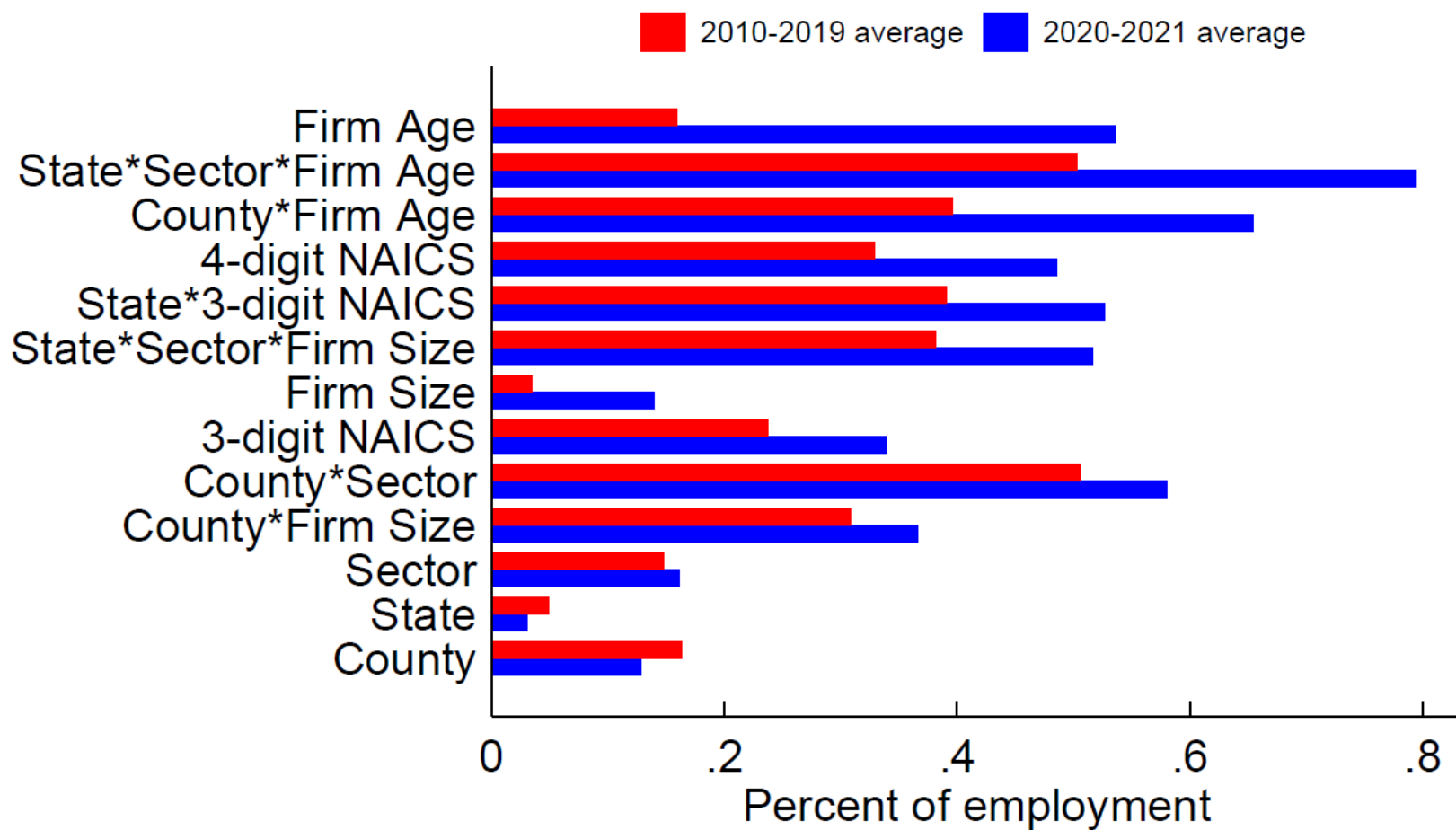


Note: Seasonally adjusted. Reallocation is $JC+JD$. Shaded areas indicate NBER recession dates.

Source: Business Employment Dynamics (BED).

Open question from one-quarter rates is how much of subsequent job creation is reversing job destruction within establishments

Between-cell 6-quarter excess reallocation rate



Reallocation Rate has increased. Difficult to interpret Within Cell (within-establishment reversals within cells).

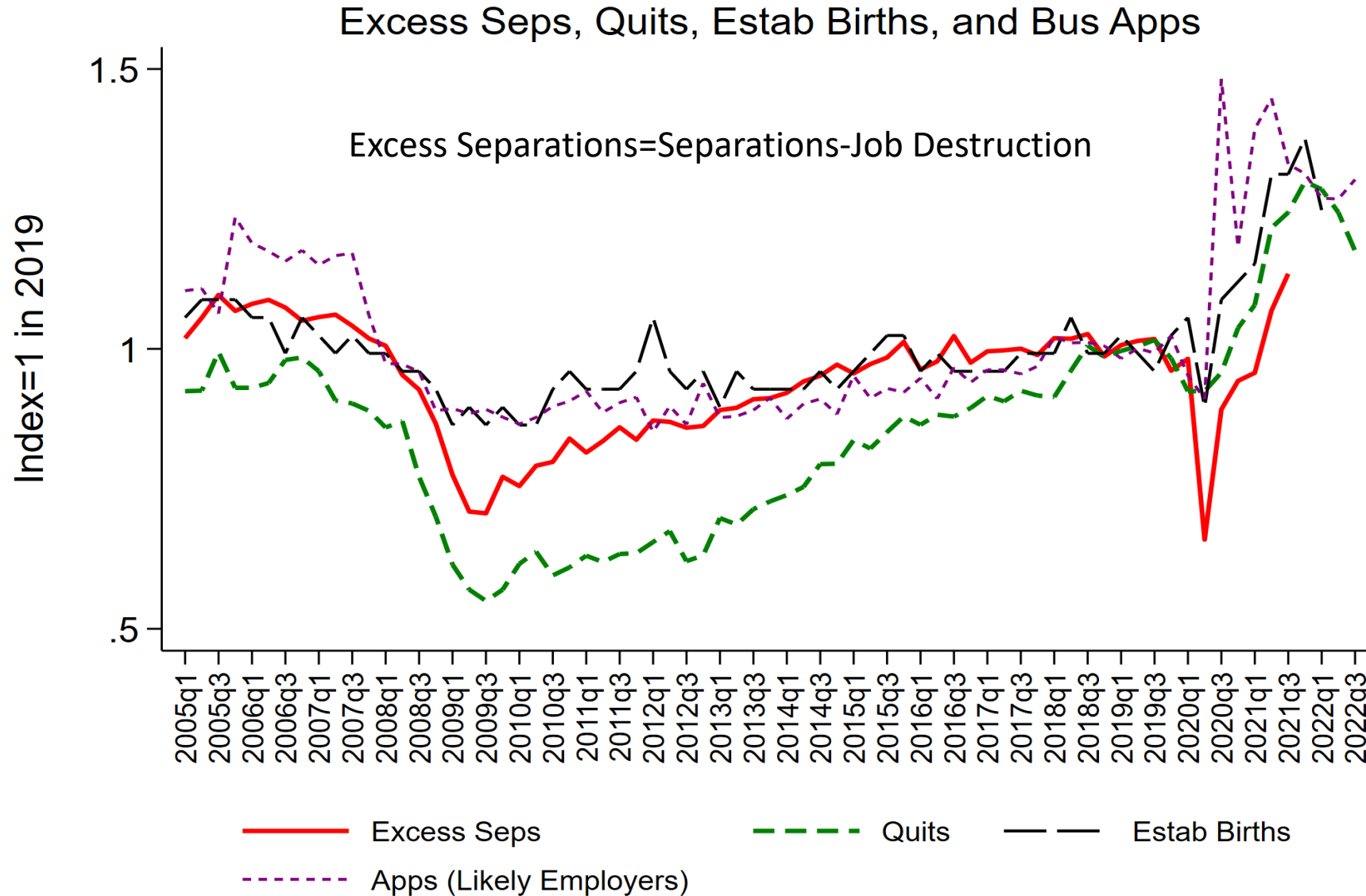
Between cell implies reallocation across groups – cannot be within-establishment reversals.

Between cell: If cell has no cumulative net change over 6-quarters it will not contribute to between cell.

State*sector*firm age has differences in cumulative net growth rates across cells have seen largest increase.

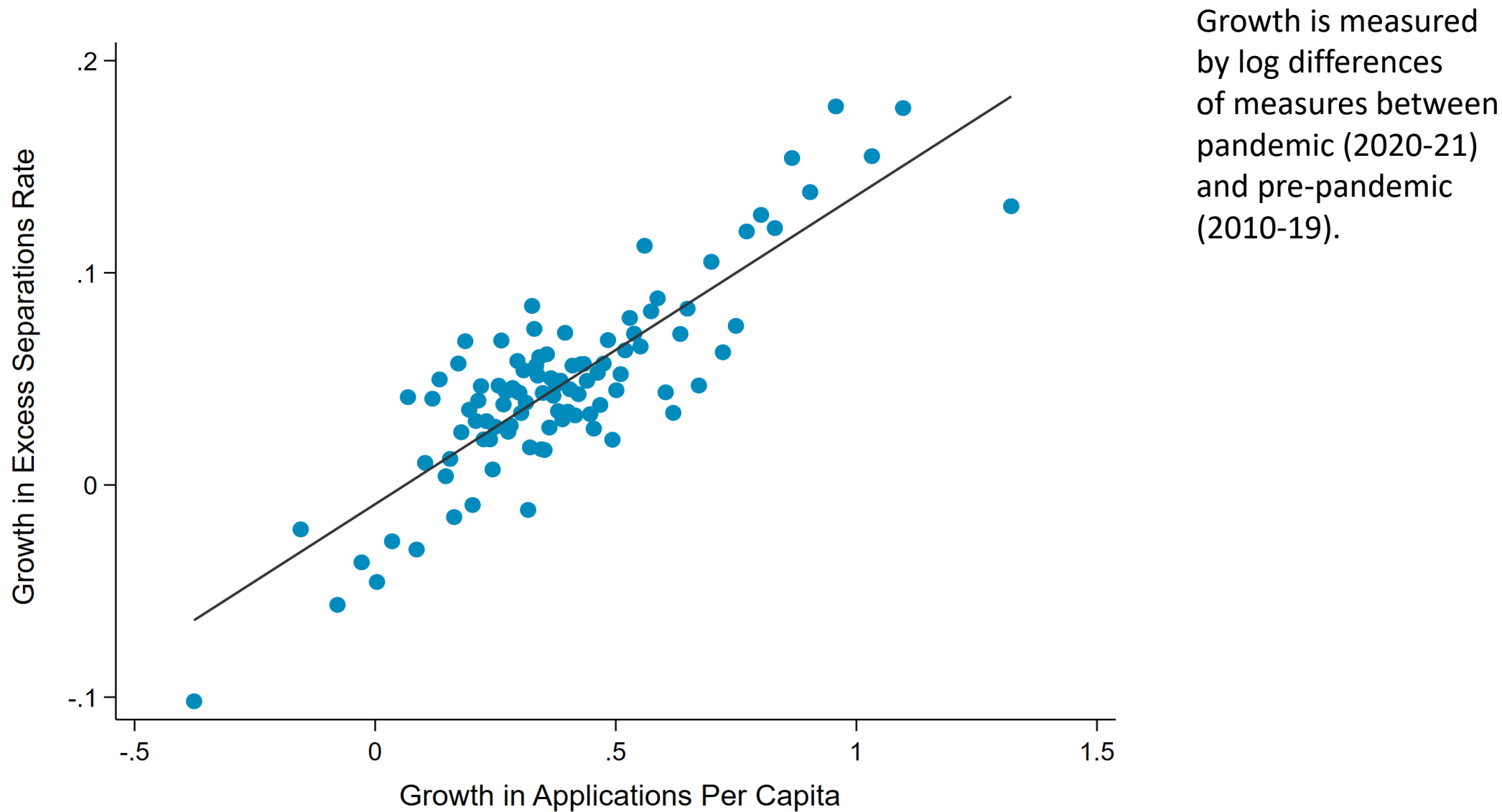
Note: Averages of quarterly seasonally adjusted data through 2021q3.
Sorted (descending) by change 2010-2019 to 2020-2021.
Source: Census Bureau Quarterly Workforce Indicators (QWI) and author calculations.

Quits and Worker Churning Very Procyclical. Is there a connection between surge in applications and quits?



“Excess separations” are conceptually and empirically closely related to quits

Counties with surges in New Business Applications Have Also Seen a Surge in Excess Separations (“Quits”)



Taking stock

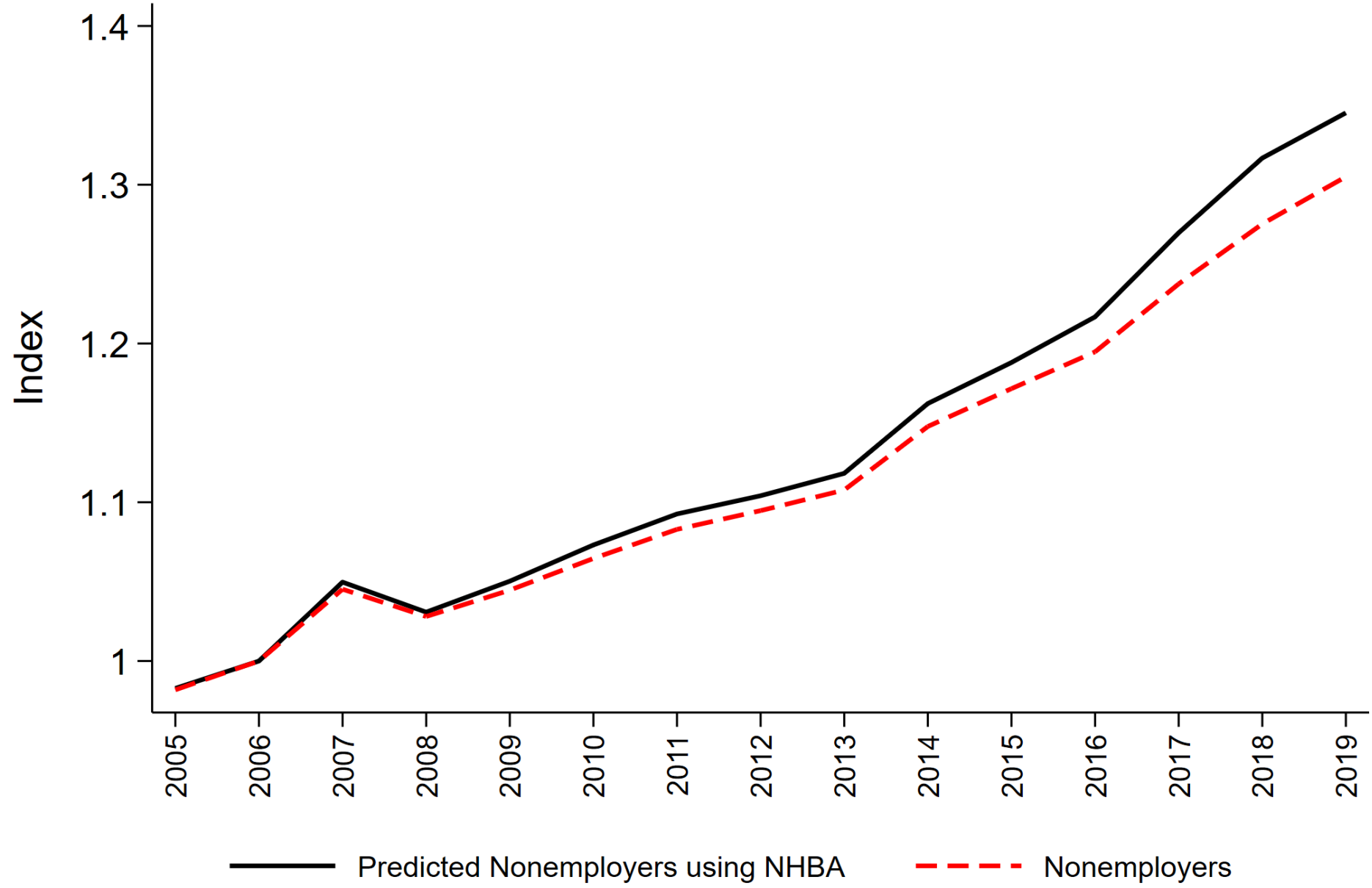
- Striking surge in business applications during the pandemic, concentrated in industries oriented to changes in work and lifestyles induced by the pandemic
- Historically, a tight relationship between applications and business creation—both nonemployers and job creators
 - But with a lag
- Sectoral reallocation implied by dispersion of growth rate of applications across sectors
- Geography of business applications: outer rim of cities. Also movement away from major cities.
 - Highly nonlinear
- Has this surge in applications yielded surge in new businesses?
 - Surge in establishment births
 - Sectoral mix of establishment openings similar to sectoral mix of applications.
 - Surge in establishment formation in tandem with surging business applications, with roughly similar geography
- What about overall reallocation?
 - Surge in between-cell excess reallocation, particularly across state, sector and firm age categories.
 - Surge in quits and excess separations especially in locations with surge in applications.

Implications for the future?

- It will take some time for impact of this surge in new businesses to be understood (not just data lags):
 - Cohorts of new businesses highly volatile over first 10 years
 - Most fail, many don't grow, small fraction grow rapidly
- Two views?
 - Innovative activity given surge in high-tech sectors like information processing, computer systems design.
 - Possibly taking advantage of and developing technology for remote work and changing lifestyles
 - Restructuring of activity to support new spatial allocation of activity given rise of remote work
 - Restaurants, gyms, service industries to support changing spatial allocation of daytime population
- Adding to uncertainty?
 - Contractionary monetary policy
 - Young businesses amongst the most vulnerable to contractions and deteriorating financial market conditions

Extra Slides

Actual and Predicted Nonemployers (using NHBA) (norm=1 in 2006)



Use Davis et al. (2009) analysis to predict nonemployers along with NHBA.

Tight relationship: Correlation of 0.97.

In large CBSAs, highly nonlinear relationship between change in applications and population density

Dependent Variable: Change in (log)
Applications Per Capita Pre Pandemic to
Pandemic

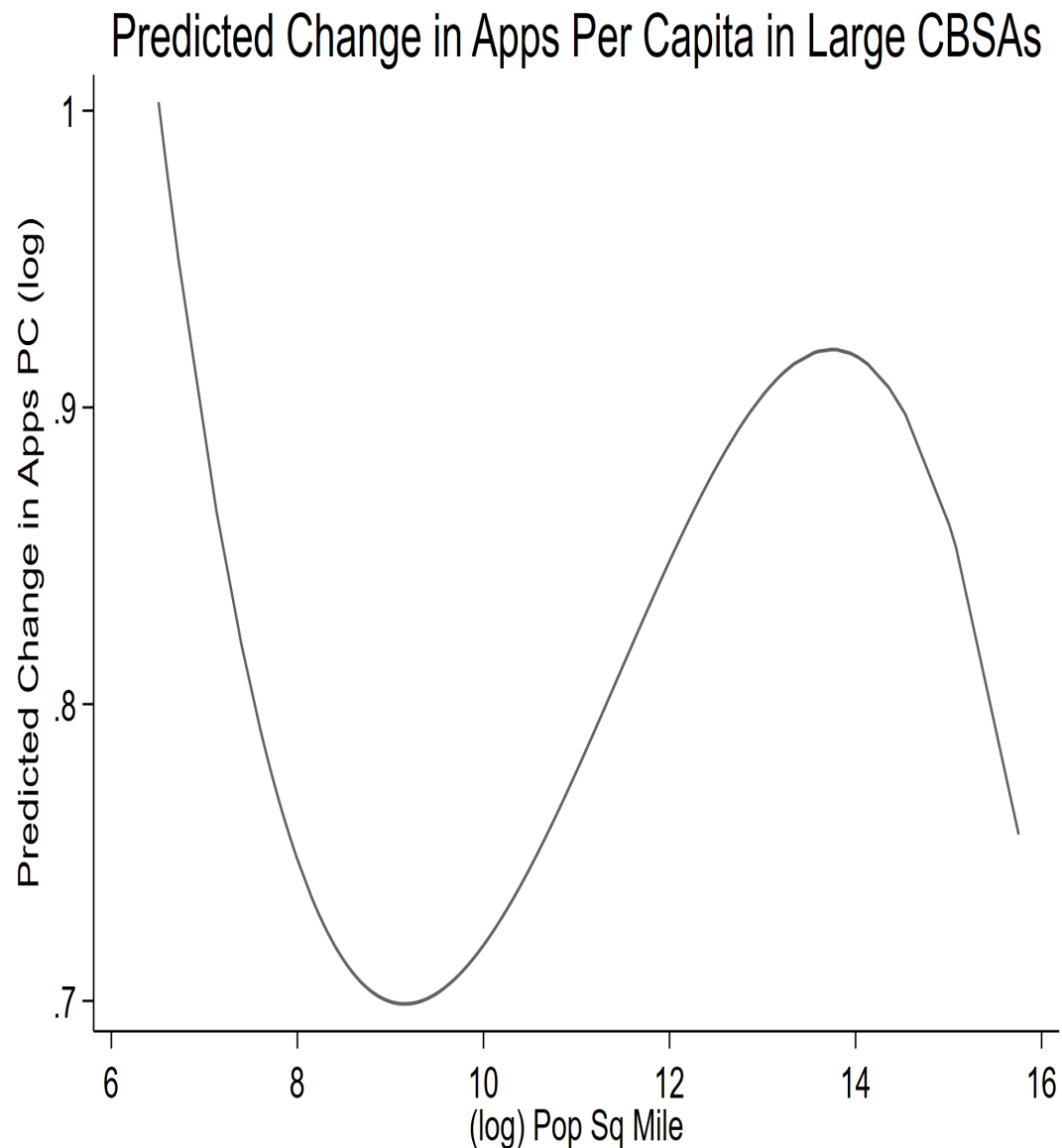
Covariate:

Log Pop Density	-1.719
	(0.364)
Log Pop Dens Sq	0.156
	(0.034)
Log Pop Dens Cu	-0.005
	(0.001)

Controlling for CBSA fixed effects

R-Squared 0.55 (within Rsq 0.13)

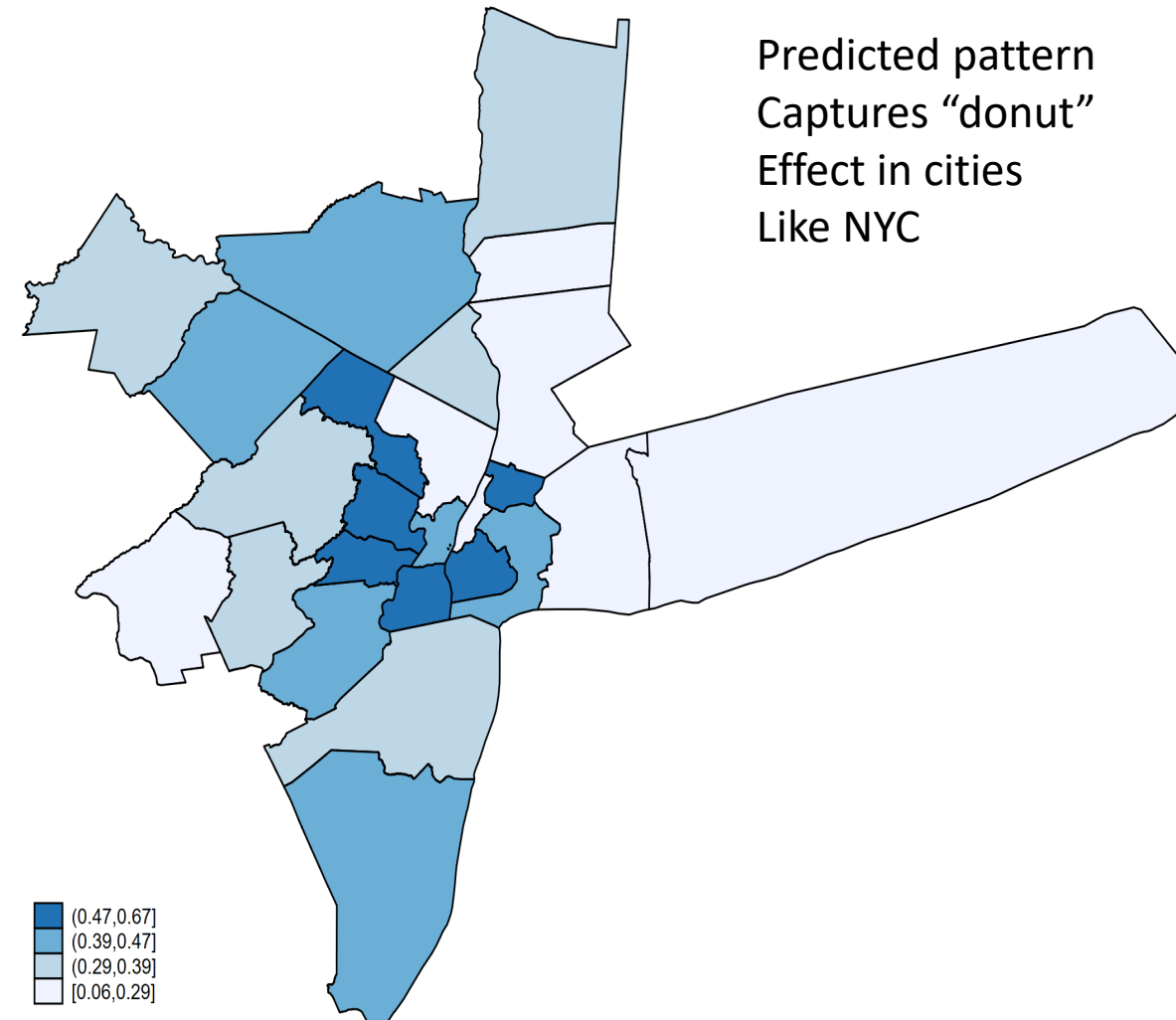
For counties in CBSAs > 1M Pop. Population
Density measured in 2019.



Spatial Model that incorporates characteristics of adjacent counties along with establishment density (estabs per sq mile)
Does Much Better

	Own county Direct Impact	Adjacent county Indirect Impact
$\ln(\text{population density})$	-1.678** (0.668)	-1.237** (0.549)
$\ln(\text{population density})^2$	0.180*** (0.064)	0.163*** (0.053)
$\ln(\text{population density})^3$	-0.005** (0.002)	-0.006*** (0.002)
$\ln(\text{establishment density})$	0.100 (0.351)	1.10* (0.620)
$\ln(\text{establishment density})^2$	-0.042 (0.038)	-0.150** (0.066)
$\ln(\text{establishment density})^3$	-0.001 (0.001)	0.005** (0.002)

Notes: Estimated for CBSAs with Population > 1M. R-squared: 0.73



Densities measured in 2019. Observe estab density much more important for adjacent counties. Higher Rsquared comes mostly from adjacent county effects (not own county estab density).

Productivity Growth During the Pandemic

