Business creation during COVID-19

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78th Economic Policy panel meeting

The surprising resilience of business creation during COVID-19

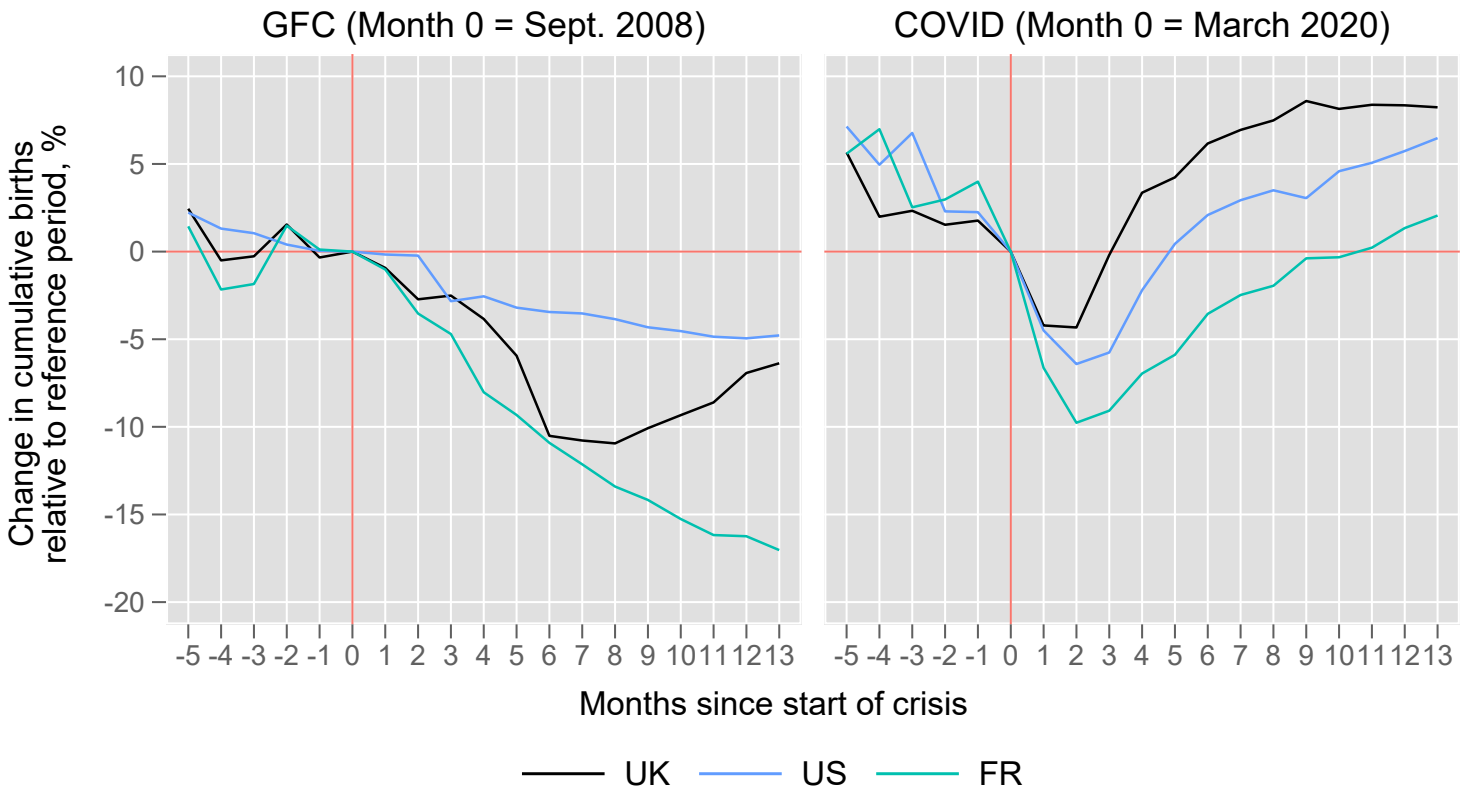
Resilience in firm entry during COVID-19 has already been noted by Haltiwanger (2021) for the US and OECD (2020) for a larger number of advanced economies.

Surprising in historical terms: entry of employer-firms is usually procyclical (Lee and Mukoyama, 2015; Tian, 2018)
$\rightarrow$ declined during the Global Financial Crisis (GFC) and past recessions;
$\rightarrow$ counter-cyclical only in 'extreme events' recessions (WWI, WWII, pandemic).

$\Rightarrow$ This paper: understanding the drivers and macroeconomic impacts of this resilience as a way to inform us on how rapidly does the economy react to a large shock.

Cross-country evidence

Figure: Cumulative business registrations, Global Financial Crisis (GFC) vs. COVID, for UK, United States, France
Source: Authors' calculations using Companies House, BvD-FAME, US Census and INSEE.



Note: registrations of corporations or equivalent. Reference period: similar month of 2018 for COVID, 2006 for the GFC.

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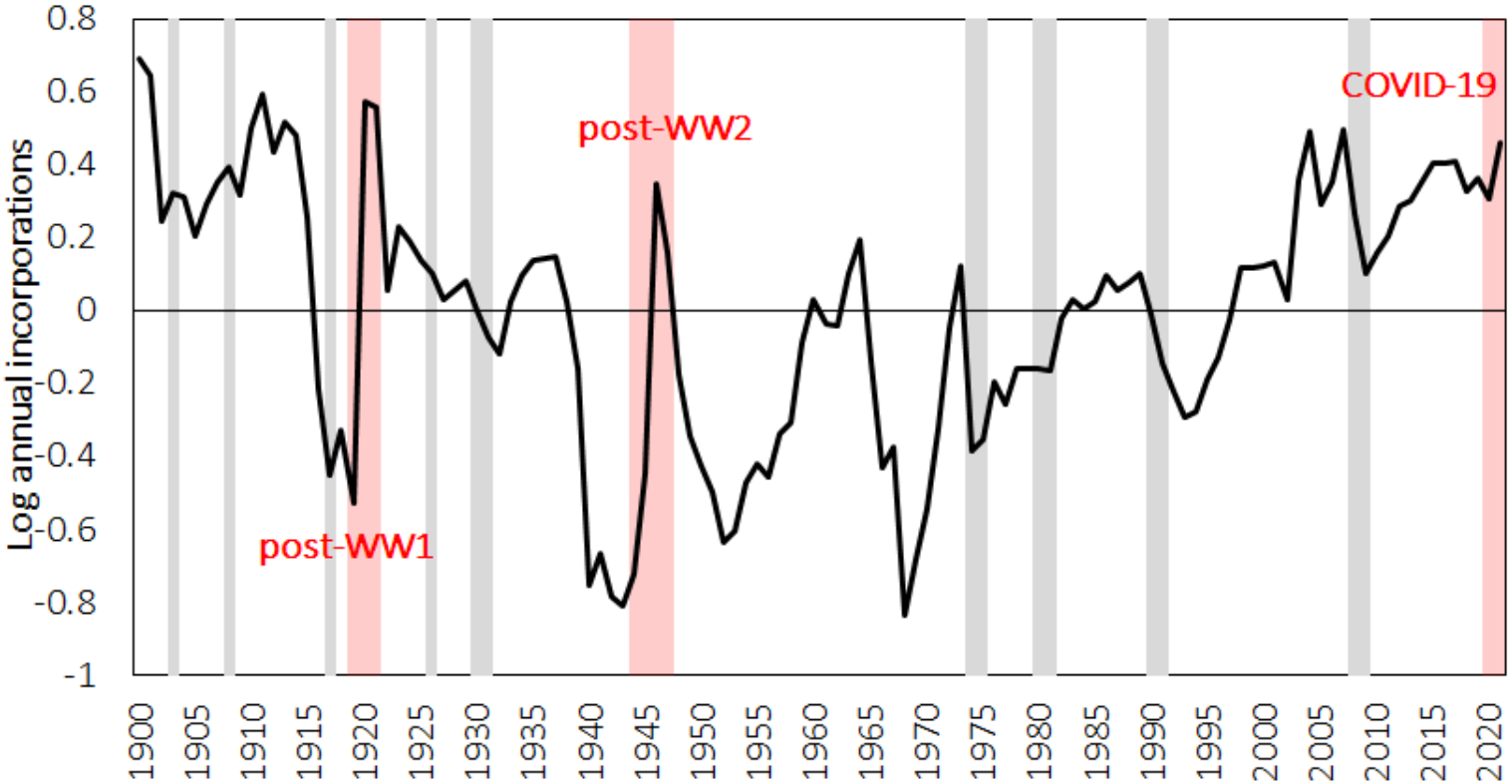
Historical evidence

Figure: Business creation in the UK, 1900-2022
Source: Historical Companies House Register and BvD-FAME for firm entry, BoE: A Millenium of Macroeconomic Data for GDP.



Note: Logarithm of annual new business registrations, linearly detrended. Shaded areas correspond to years when UK GDP growth was negative; the area is flagged in red if firm entry increased over the period. Level

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Understanding why business creation has been so strong during COVID-19

What we show in this paper:

(1) New firms are disproportionately concentrated in the online retail sector and founded by individuals ('solo entrepreneurs') starting up their first business.

(2) Firm entry is negatively correlated with retail footfall, and it takes about 10 weeks for a decrease in footfall to have maximum effect on firm entry.

(3) New firms are less likely to post job vacancies than firms created pre-COVID.

(4) New firms are more likely to exit (dissolve) than firms created pre-COVID.

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(3) New firms are less likely to post job vacancies than firms created pre-COVID.

(4) New firms are more likely to exit (dissolve) than firms created pre-COVID.

$\Rightarrow$ The overall employment created from the average COVID cohort is smaller than employment creation for the average pre-COVID cohort, despite the COVID cohort being larger.
$\Rightarrow$ The primary contributor to limited employment creation is the shift in ownership composition of new entrants.

Facts on firm entry during the COVID-19 pandemic

(1) What are the new businesses being created?

(2) How is entry related to the pandemic and how fast did entrants react?

(3) Are these firms hiring?

(4) Are these firms exiting?

Measuring entry in the UK

Companies House:

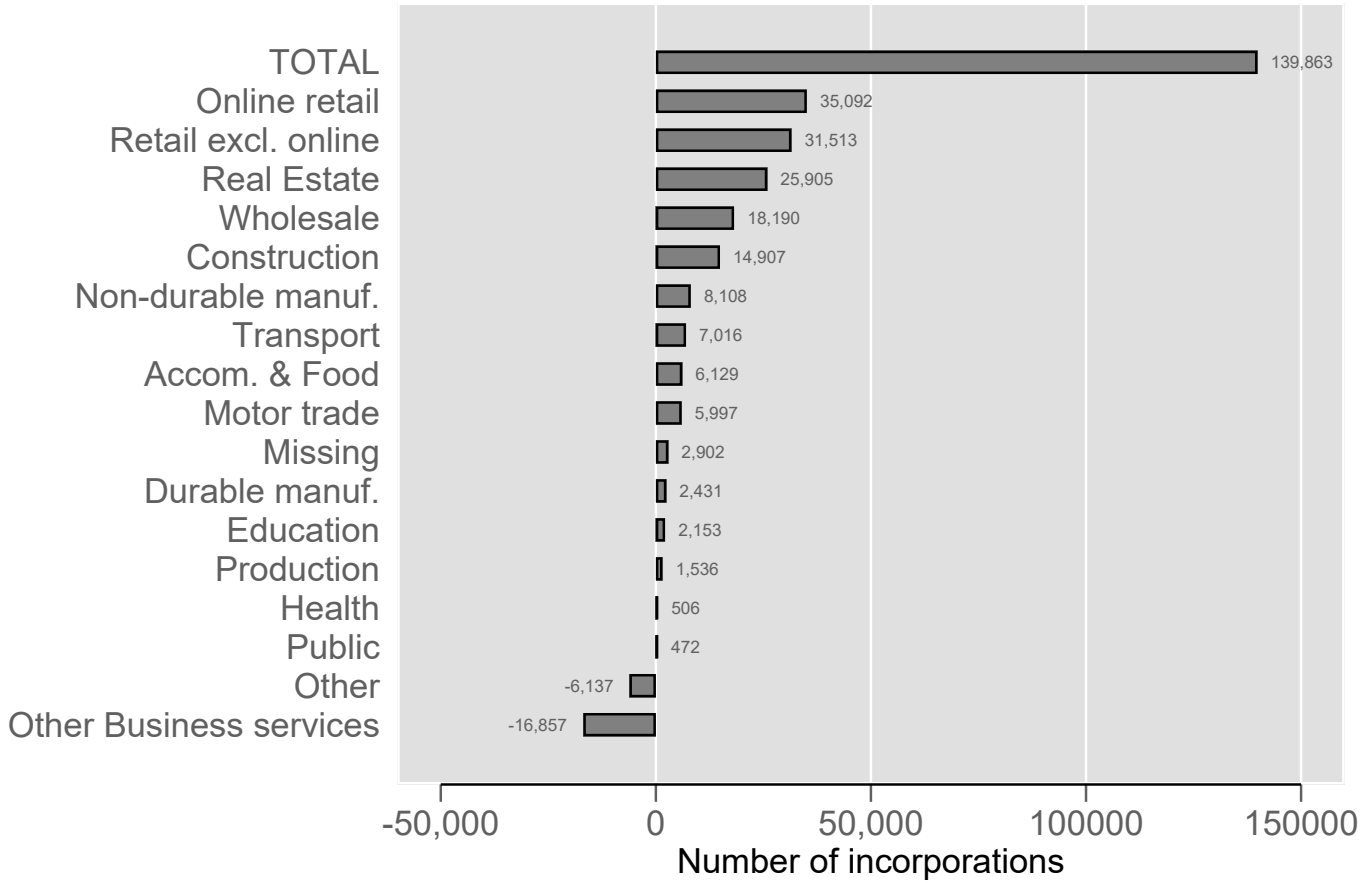
- Registry of all incorporated entities in the UK (we focus on private and public limited firms). Daily incorporations.
- Separate legal entity with their own balance sheet – needed to have any sort of separate financial arrangements (e.g. bank account, limited liability). Not necessarily to employ workers.
- Firm has to indicate a postcode for its office, the main sector of activity.
- Must declare who owns (shareholders) and runs the firm (directors).

$\rightarrow$ Serial entrepreneurs = individuals who started a business during the pandemic + owned at least one business in the 5 years prior to the pandemic.

IDBR vs. CH

Fact #1: surge in entry driven by online retail

Figure: Change in number of cumulative incorporations, during COVID (2020q2-2021q3) vs. pre-COVID (2018q2-2019q3) and sector contributions
Source: Authors' calculations using BvD-FAME.



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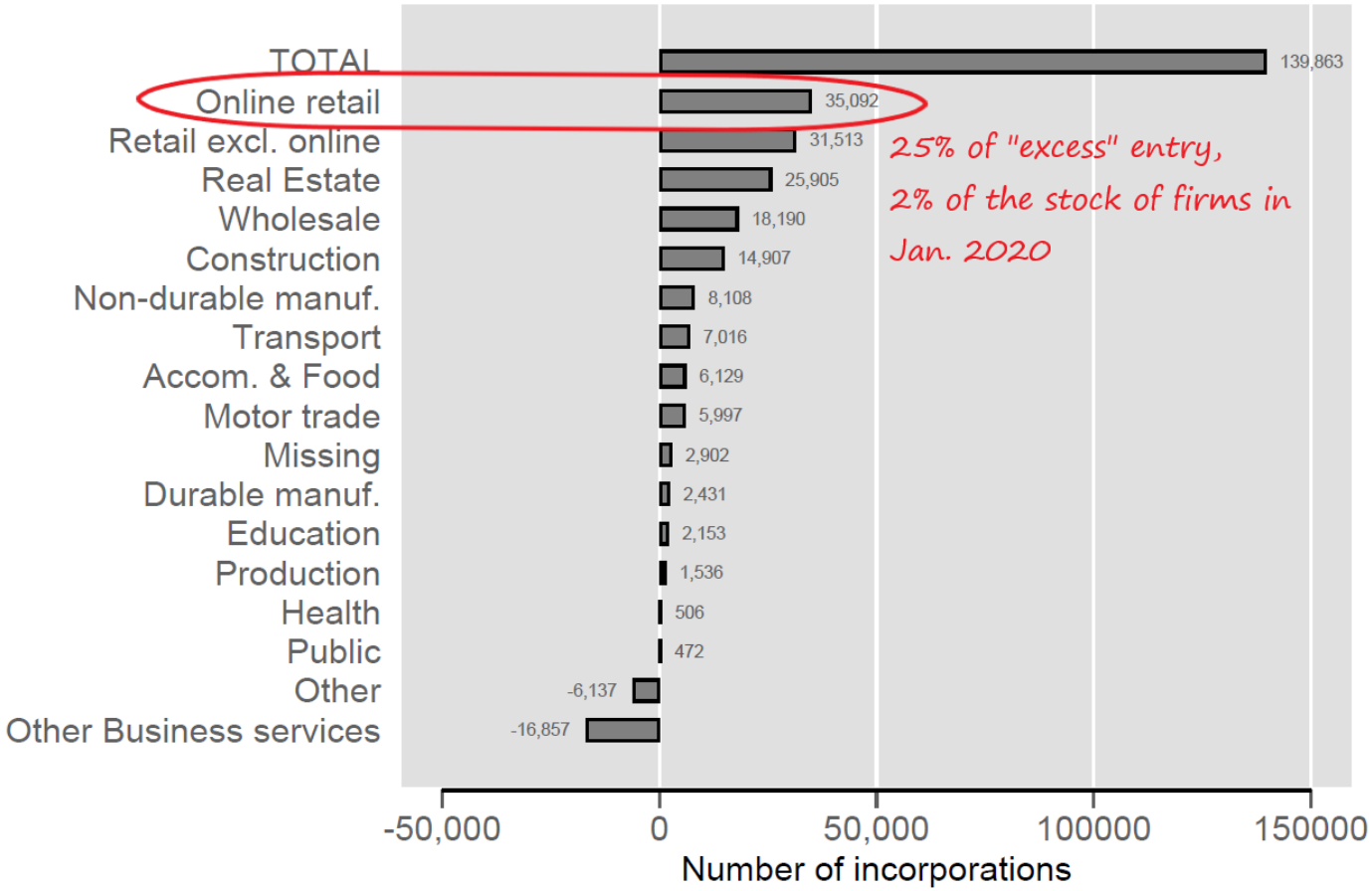
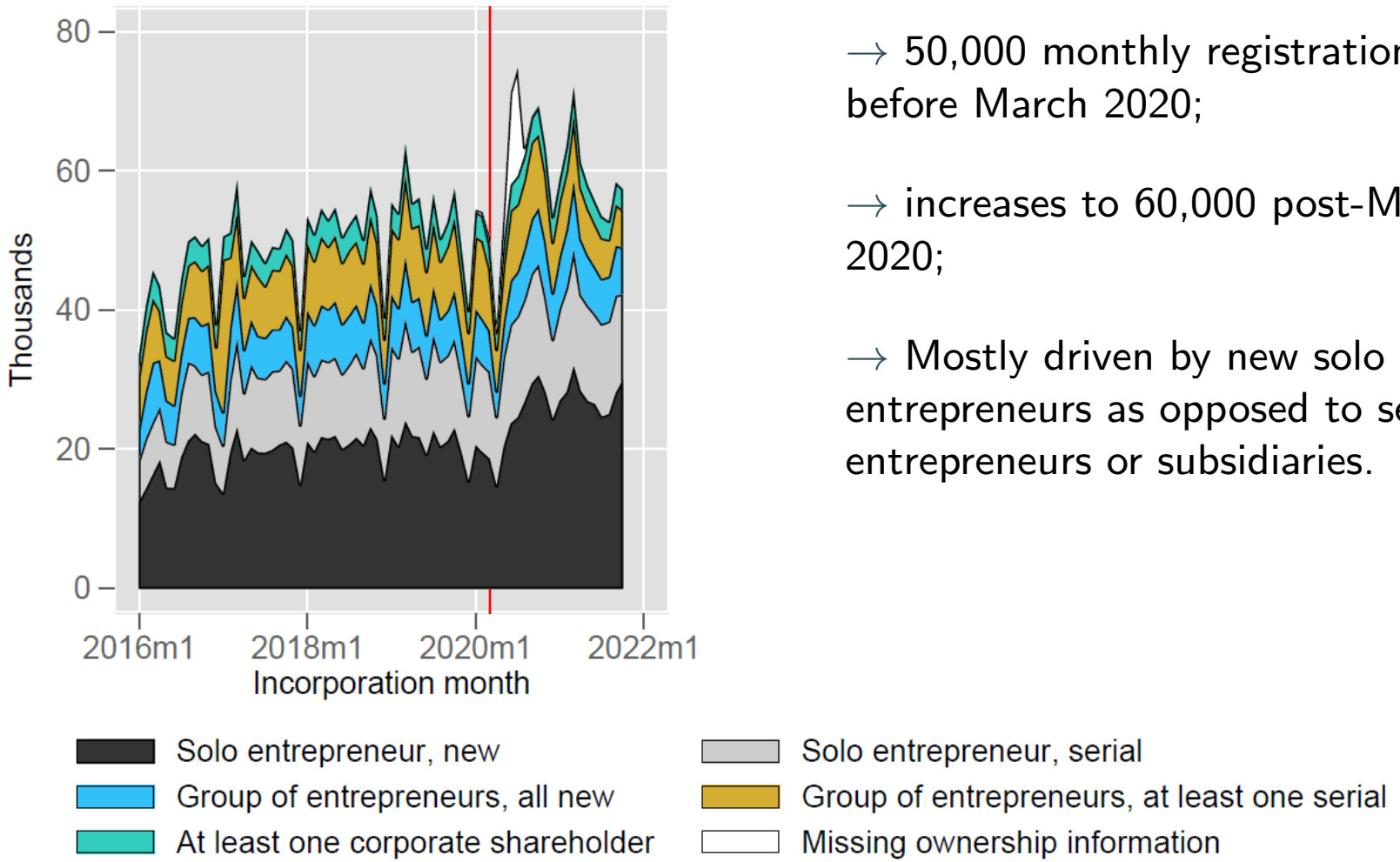


Fact #1 cont'd: entry by new solo entrepreneurs...

Figure: Monthly # of incorporations by ownership, 2016m1-2021m9, Total



→ 50,000 monthly registrations before March 2020;

→ increases to 60,000 post-March 2020;

→ Mostly driven by new solo entrepreneurs as opposed to serial entrepreneurs or subsidiaries.

... disproportionately so in online retail

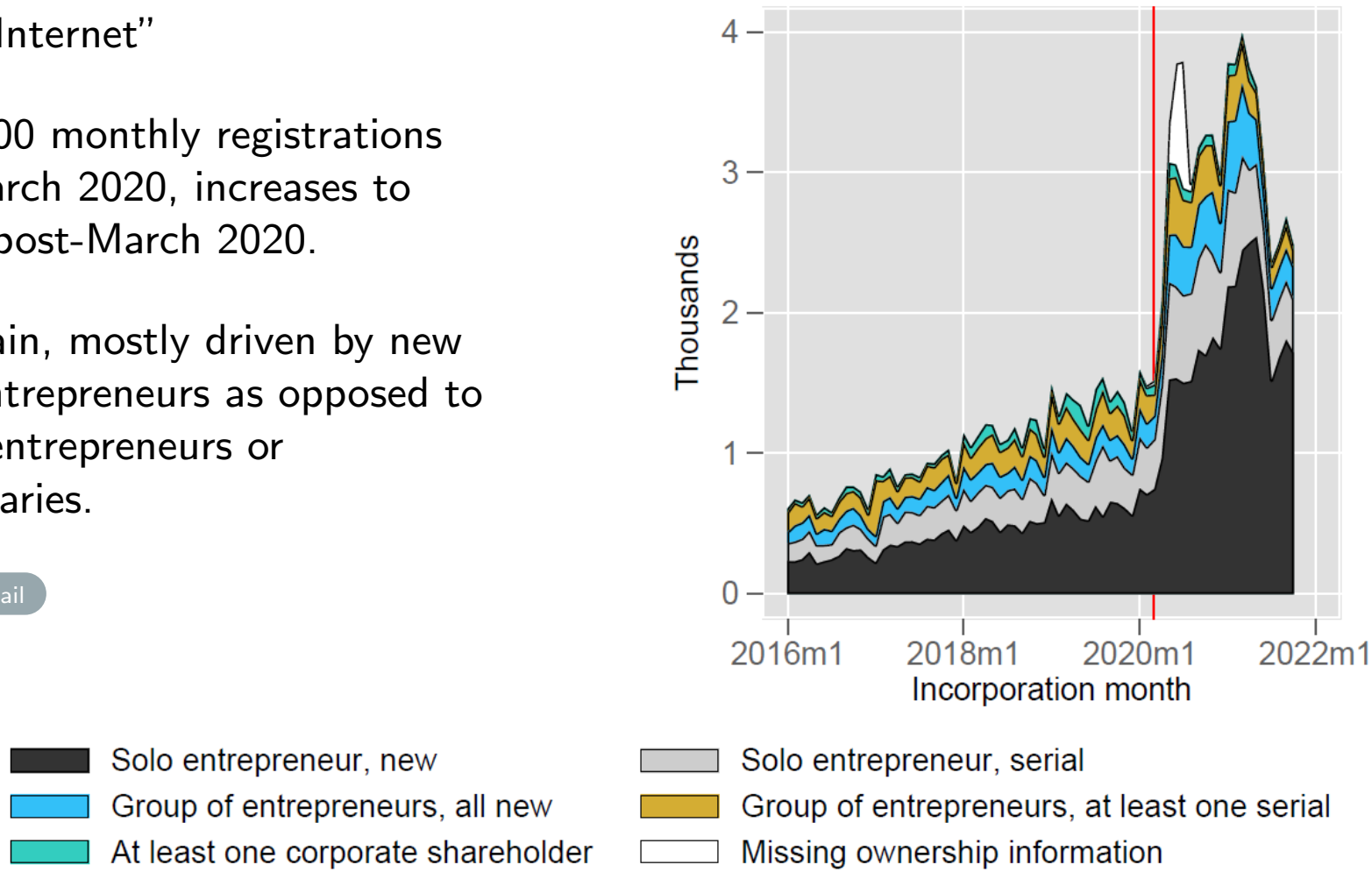
→ Online retail is 4-digit sector "Retail sale via mail order houses or via Internet"

→ 1,000 monthly registrations pre-March 2020, increases to 3,000 post-March 2020.

→ Again, mostly driven by new solo entrepreneurs as opposed to serial entrepreneurs or subsidiaries.

Online retail

Figure: Monthly # of incorporations by ownership, 2016m1-2021m9, Online Retail



Facts on firm entry during the COVID-19 pandemic

(1) What are the new businesses being created?

$\Rightarrow$ Mostly novice solo entrepreneurs starting new businesses in online retail.

(2) How is entry related to the pandemic and how fast did entrants react?

(3) Are these firms hiring?

(4) Are these firms exiting?

Investigating how firm entry responds to footfall changes

$\Rightarrow$ Substantial variation in footfall during the pandemic in response to lockdown policies. At a weekly-frequency, given lags in starting a business and finding a premises, it is unlikely that footfall changes were caused by new entrants. Footfall

$\Rightarrow$ Run local projections (Jordà, 2005) of the birth rate on the decline in retail footfall over a 20-week horizon (h):

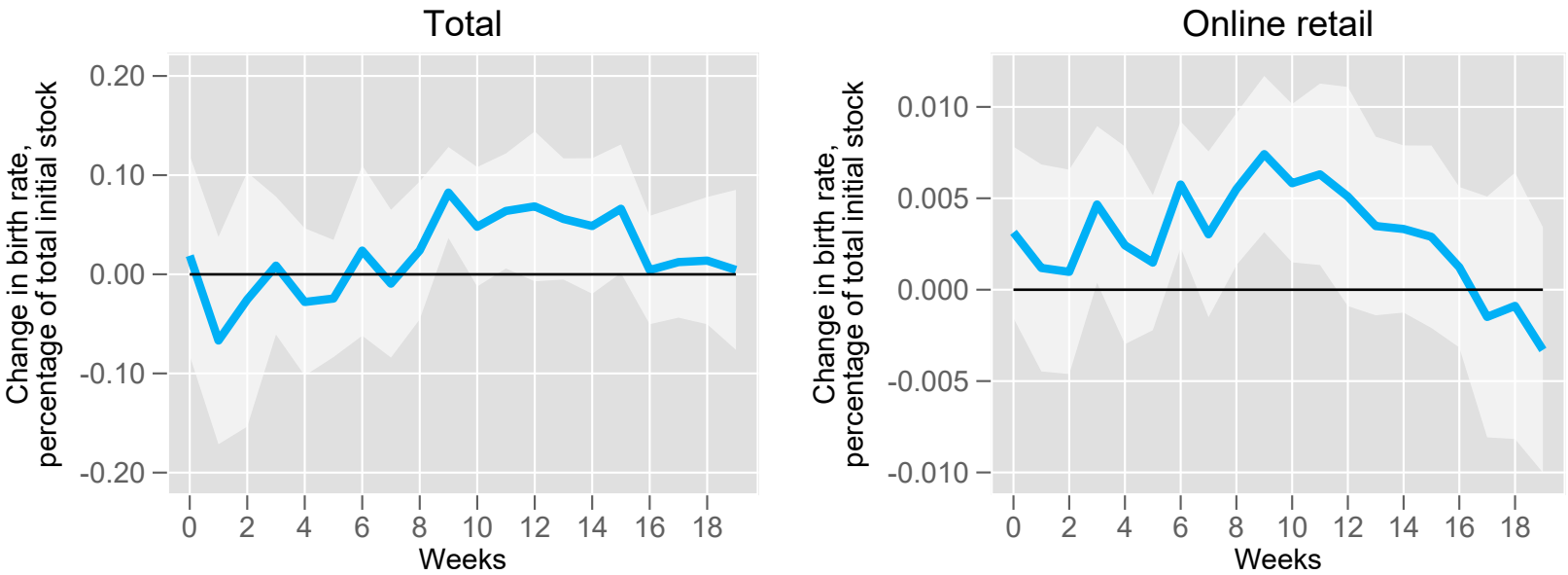
$$\text{Birth rate}_{t+h} = \sum_{j=0}^{4} \gamma_j^h \text{Footfall}_{t-j} + \sum_{j=1}^{4} \eta_j^h \text{Birth Rate}_{t-j} + \varepsilon_t$$

- with week (t) and lags (j),
- footfall (Google mobility) defined as the percentage deviation of visits to retail and recreation locations versus the baseline calculated over Jan 3 – Feb 6, 2020,
- and birth rate is entry relative to the total number of active firms in January 2020 (i.e. initial stock of firms).

Extra

Entry responds to a decline in footfall in about 10 weeks

Figure: Estimated coefficient following a 1% decline in footfall

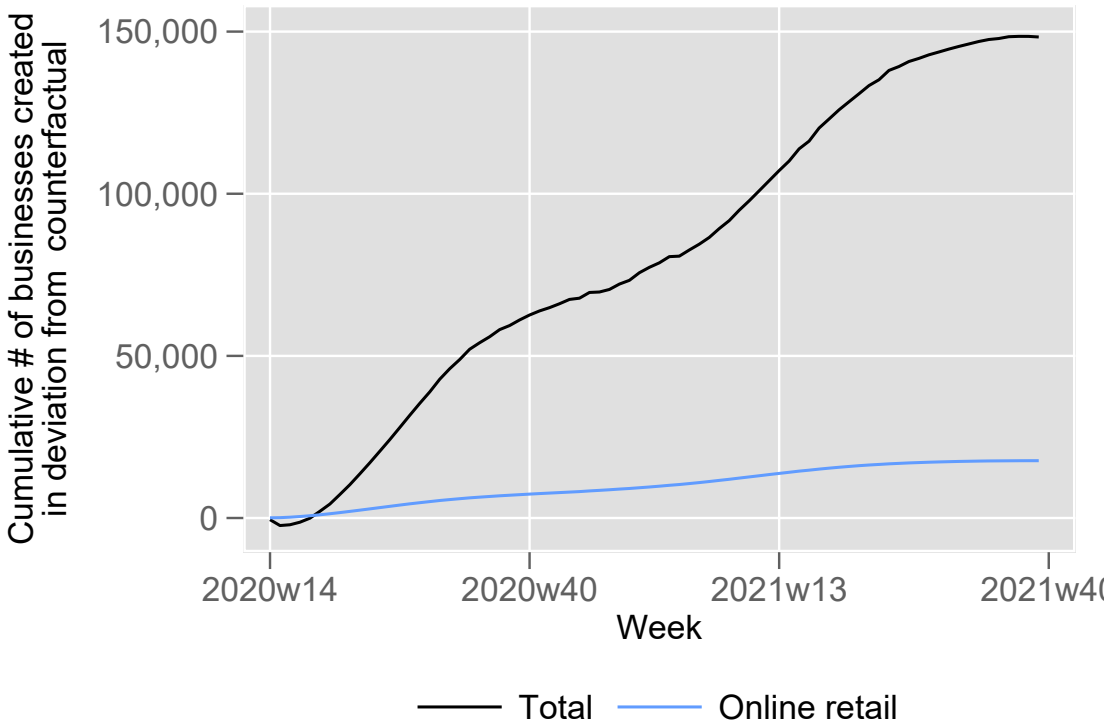


Note: impulse response of the annualized weekly birth rate to a 1% footfall shock. Response in online retail expressed as contribution to total. A 0.082% increase in the birth rate corresponds to about 0.082%*4 million / 52 weeks = 63 more firms. Standard errors are clustered at the week level. The light shaded area shows the 90% confidence interval.

- Initial dip in births, but increase with peak at around 9 weeks.
- Faster reaction in online retail. Placebos

Fact #2: about 150,000 more firms created during the pandemic in response to the decline in footfall

Figure: Cumulative firm creation in deviation from counterfactual entry with no footfall shock, 2020w14-2021w39



Note: the counterfactual is estimated at horizon 0. We compute an annualized counterfactual birth rate assuming no footfall shock over 2020w14-2021w39. We then convert the annualized birth rate in weekly firm creation. The Figure shows the difference between observed cumulative business creation and counterfactual cumulative business creation absent any footfall shock.

Facts on firm entry during the COVID-19 pandemic

(1) What are the new businesses being created?

⇒ Mostly novice solo entrepreneurs starting new businesses in online retail.

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⇒ It took on average about 10 weeks for businesses to be created in reaction to pandemic-driven demand shifts.

(3) Are these firms hiring?

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Job postings

$\Rightarrow$ Track probability to become an employer-firm by age, and investigate whether the probability has changed for cohorts of firms born during the pandemic relative to cohorts of firms born pre-pandemic.

Indeed data: 30m+ daily online job postings gathered by Indeed (directly posted on their website + scraped from companies' websites) for the period covering Jan. 2018 to Sept. 2022.

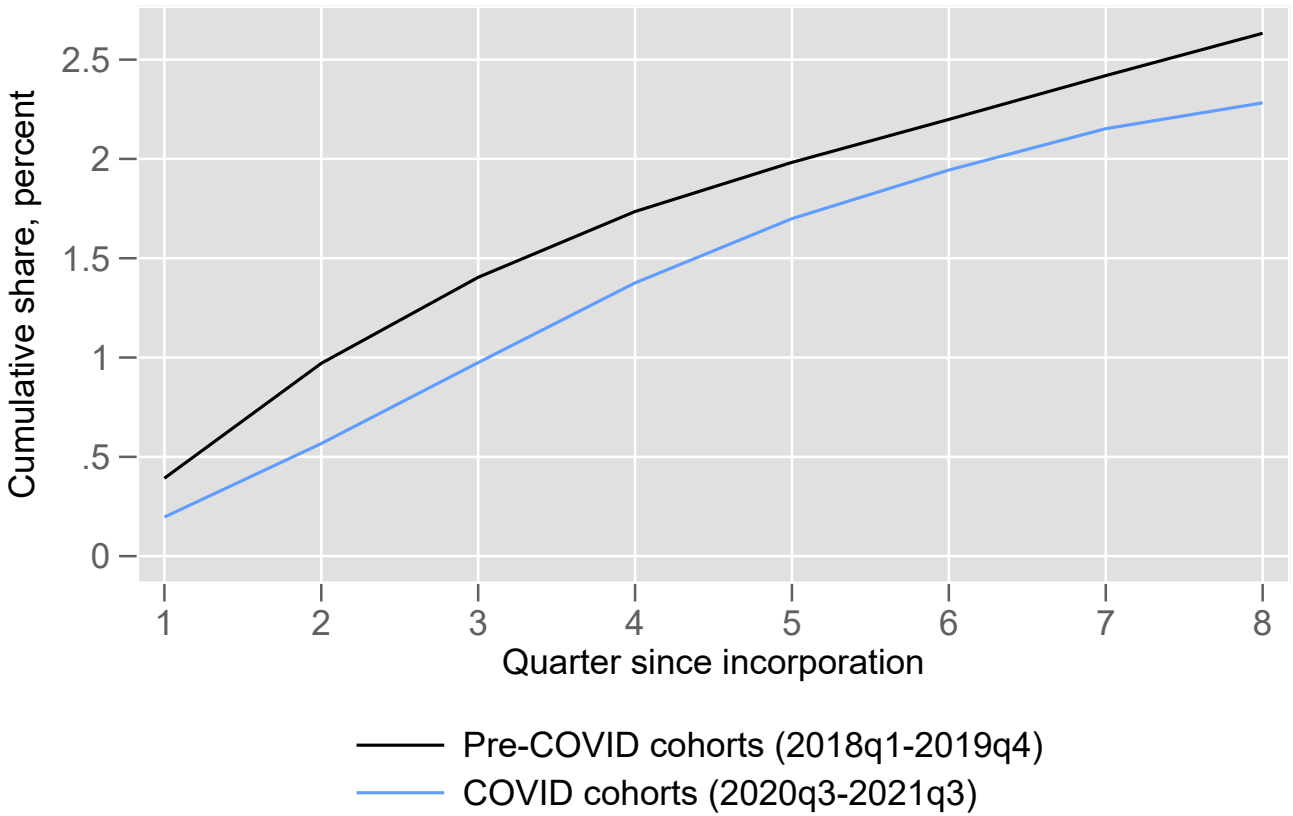
Matching with incorporation information: Indeed does not include the firm's registration number but only the firm name. Use algorithm to match firms based on names (Van Dijcke et al., 2021).

Coverage: Indeed is a sample of job vacancies with 13% (450k) of the total number of employer-firms in the ONS Census (IDBR). Aggregate postings follow closely ONS Vacancy Survey and is representative at the industry-level.

Coverage

Fact #3: firms created during COVID post less on Indeed than firms created pre-COVID.

Figure: Cumulative share of firms posting a vacancy by quarter since incorporation: average over cohorts born pre-COVID and during COVID



Cohorts

Facts on firm entry during the COVID-19 pandemic

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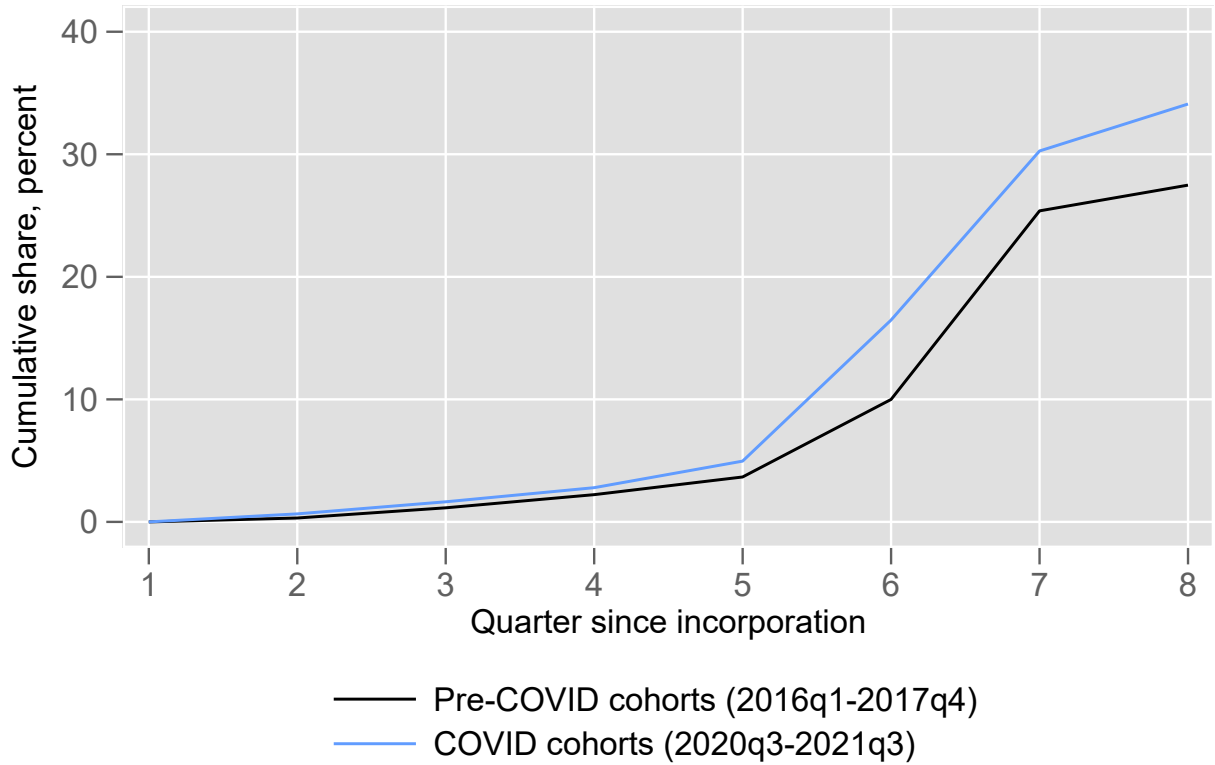
(3) Are these firms hiring?

⇒ New businesses have a lower probability to become employer-firms in their first two years since incorporation than those created pre-COVID.

(4) Are these firms exiting?

Fact #4: firms created during COVID dissolve more than firms created pre-COVID.

Figure: Cumulative share of firms dissolving by quarter since incorporation: average over cohorts born pre-COVID and during COVID
Source: Authors' calculations using BvD-FAME data.



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(1) What are the new businesses being created?

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(3) Are these firms hiring?

⇒ New businesses post vacancies but at a lower rate than those created pre-COVID.

(4) Are these firms exiting?

⇒ New businesses are more likely to being dissolved in the first few quarters since incorporation than those created pre-COVID.

⇒ What overall employment impact of booming entrepreneurship?

Simple statistical framework to measure employment impacts

Focus on the effects of new firm creation on employment, use simplified version of Pugsley and Şahin (2018):

$$E_a^i = \overbrace{N_0^i \cdot (1 - \delta_a^i)}^{\text{extensive margin}} \times \overbrace{p_a^i \cdot s_a^i}^{\text{intensive margin}}$$

- $i \in \{\text{pre}, \text{covid}\}$ and E_a employment that register in period i by the time they reach age $a = 4, 8$ (quarters);

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- δ_a^i is the dissolution rate (Fact 4);
- $p_{a,t}^i$ the probability of becoming an employer (Fact 3, rescaled using ONS Census);
- $s_{a,t}^i$ the average size conditional on being an employer (use ONS Census for $a = 4$, and project to $a = 8$ using BvD).

Estimated job creation by new firms before and during the pandemic

Weighting:	-	-
Horizon:	a=4	a=8
E_a^{pre}	1,268,322	1,565,397
E_a^{COVID}	1,105,597	1,335,024

Estimated job creation by new firms before and during the pandemic

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E_a Difference	**-162,725**	**-230,373**
	(-13%)	*(-15%)*

$\Rightarrow$ 15% reduction in the number of jobs created within 2 years.

Estimated job creation by new firms before and during the pandemic

Weighting:	-	-	Industry	Ownership
Horizon:	a=4	a=8	a=4	a=4
E_a^{pre}	1,268,322	1,565,397	1,281,340	1,225,954
E_a^{COVID}	1,105,597	1,335,024	1,124,738	763,267
E_a Difference	**-162,725**	**-230,373**	**-156,602**	**-462,688**
	(-13%)	*(-15%)*	*(-12%)*	*(-38%)*

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⇒ Ownership composition matters more than industry composition. Details

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	(-13%)	*(-15%)*	*(-12%)*	*(-38%)*
No change in $s_{j,a}^i$	**-115,741**	**-144,254**	**-69,750**	**-154,259**
	(-9%)	*(-9%)*	*(-5%)*	*(-13%)*

⇒ 15% reduction in the number of jobs created within 2 years.

⇒ Ownership composition matters more than industry composition. Details

⇒ Results qualitatively unchanged if holding firm size constant (most uncertain parameter).

Concluding remarks

Booming firm registration during the pandemic did not translate into booming employment creation by entrants.

- Suggests ex-ante characteristics of entrants, in particular ownership composition, helps explain their small contribution to employment creation.
- Result consistent with evidence that firms entering during recessions have less growth potential (Sedláček and Sterk, 2017; Sterk et al., 2021).
- Adds a business cycle perspective to research that shows that ownership structure at start-up affects subsequent firm performance (Felix et al., 2021).

$\Rightarrow$ Highlights the lack of data and need for future research on who starts firms, how that changes over the cycle, and how that affects employment recoveries.

$\Rightarrow$ All the more important that entrants are significant drivers of agregate job creation (Haltiwanger et al., 2013) and productivity growth (Li and Klenow, 2021).

To sum-up

Firm entry has been countercyclical during the COVID crisis, and this is at odds with nearly all recessions over the last century in the UK.

- Concentrated in online retail, and driven by new solo entrepreneurs rather than serial ones or groups of entrepreneurs/corporations.
- Closely related to shifting patterns in demand, and more specifically collapse in social consumption captured by footfall indicator.
- Firms created during the pandemic are less likely to become employers and more likely to dissolve.

$\Rightarrow$ Overall new firms generated fewer jobs in their first two years than firms born pre-pandemic.

$\Rightarrow$ This is driven by the change in ownership composition more than industry composition.

Thank you!

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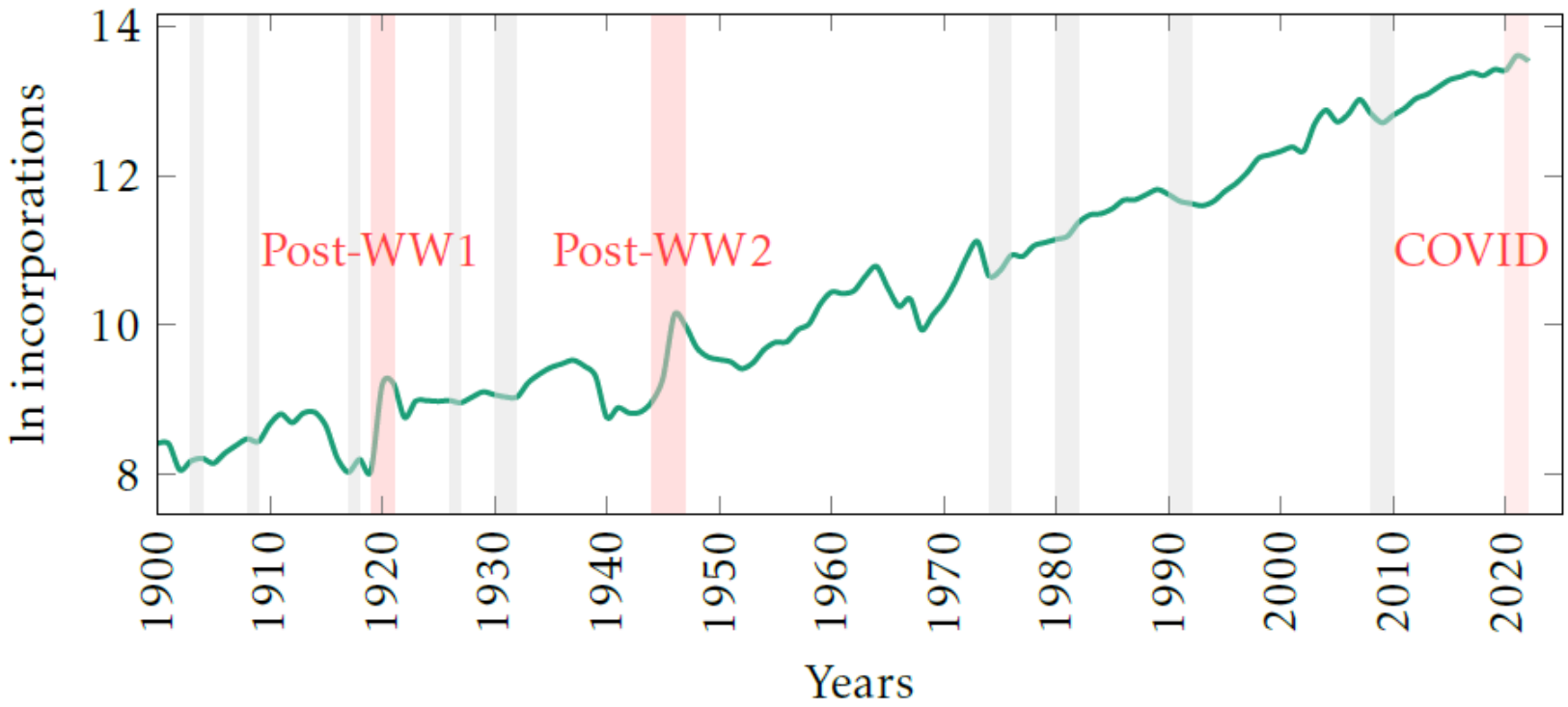
Appendix

Historical evidence

Figure: Business creation in the UK, 1900-2022
Source: Historical Companies House Register and BvD-FAME for firm entry, BoE: A Millenium of Macroeconomic Data for GDP.



Note: Shaded areas correspond to years when UK GDP growth was negative; the area is flagged in red if firm entry increased over the period.

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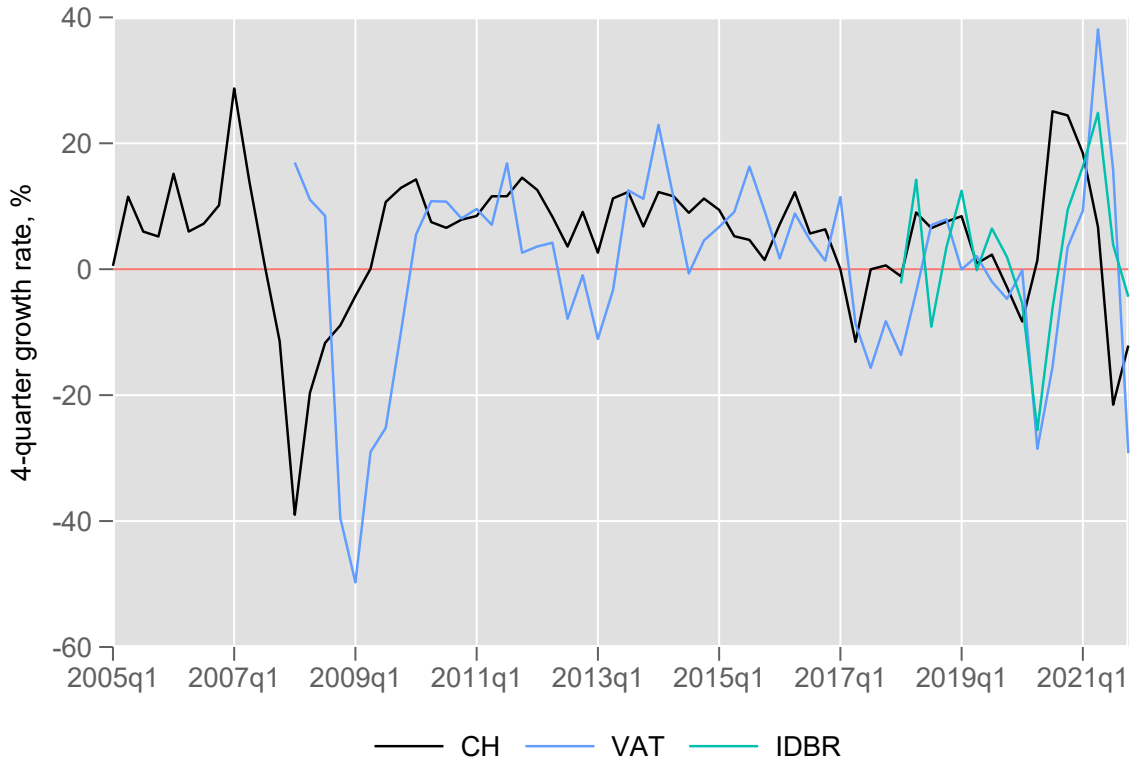
Entry captured with a lag in ONS data

Figure: Entry by data source, 4-quarter growth rate 2005q1-2021q3, %



Source: Authors' calculations using Companies House and ONS.

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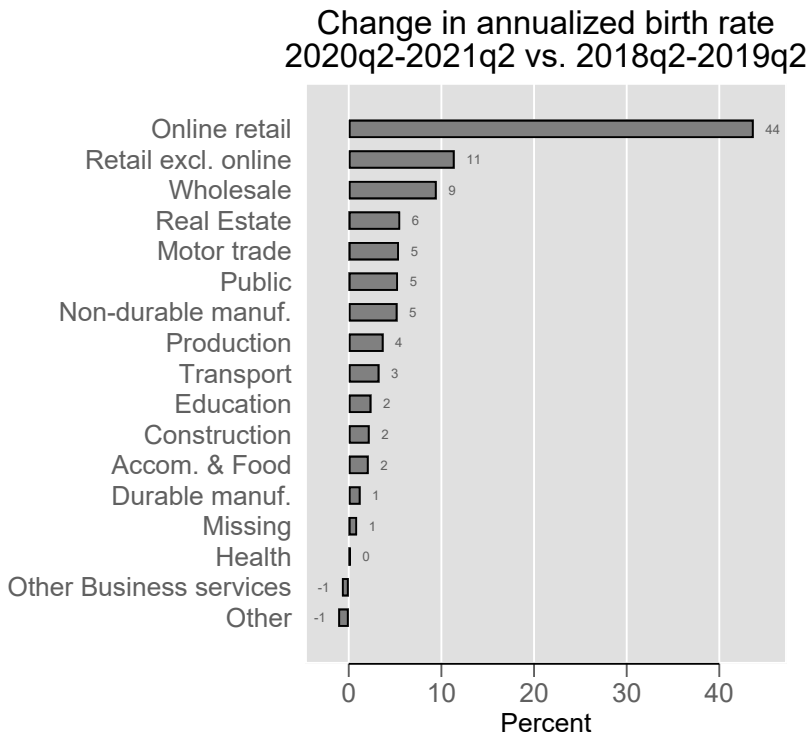
Sector contributions to firm entry during COVID, relative to pre-COVID



Source: Authors' calculations using BvD-FAME.

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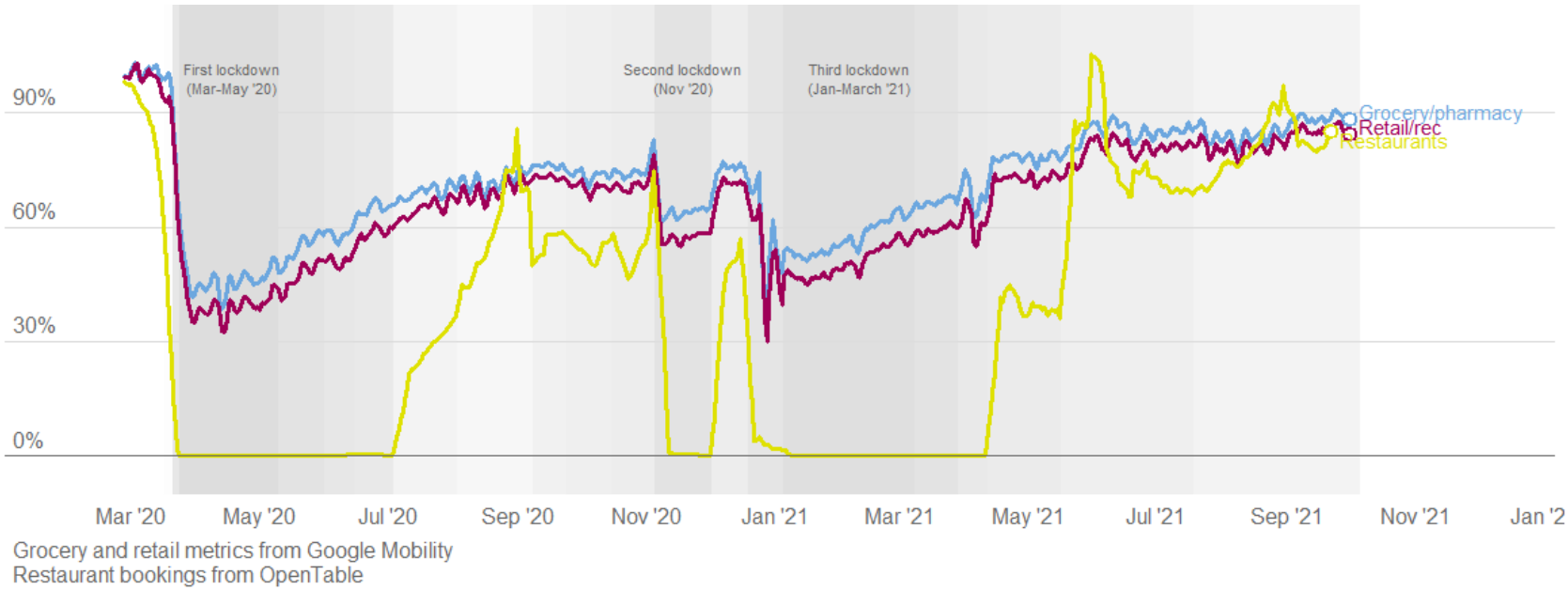
Google mobility data for retail footfall

Figure: Retail footfall as an indicator of lockdown intensity: London example



Source: Coronavirus (COVID-19) Mobility Report, Greater London Authority (GLA).

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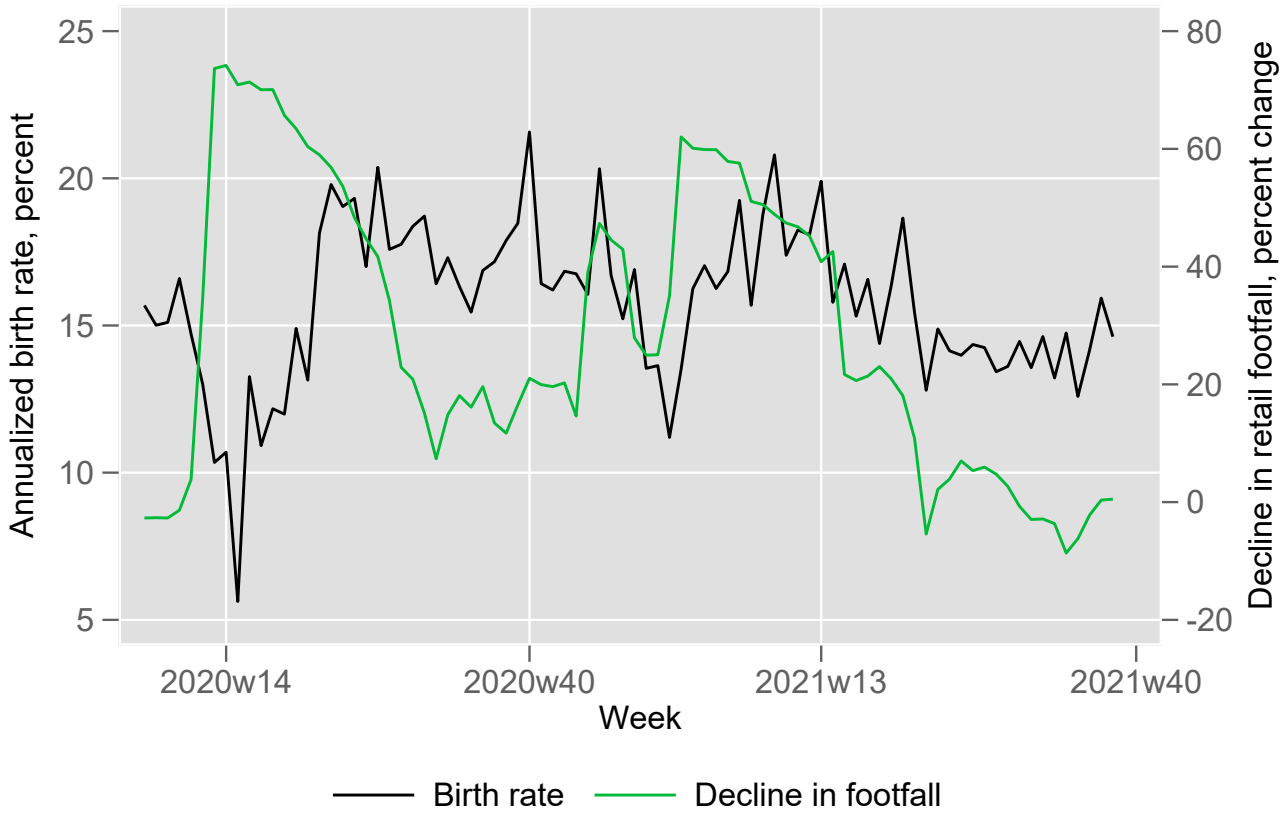
Footfall and the birth rate

Figure: Annualised birth rate and decline in footfall



Source: Authors' calculations using BvD-FAME, Companies House and Google mobility data.
Note: The footfall indicator is expressed in deviation to the median corresponding day of the week during the five week period Jan 3-Feb 6, 2020; we then take the weekly average of these growth rates. Decline in footfall is the negative of the of the mobility trends for places like cafes, restaurants, shopping centers, theme parks, museums, libraries, and movie theaters.

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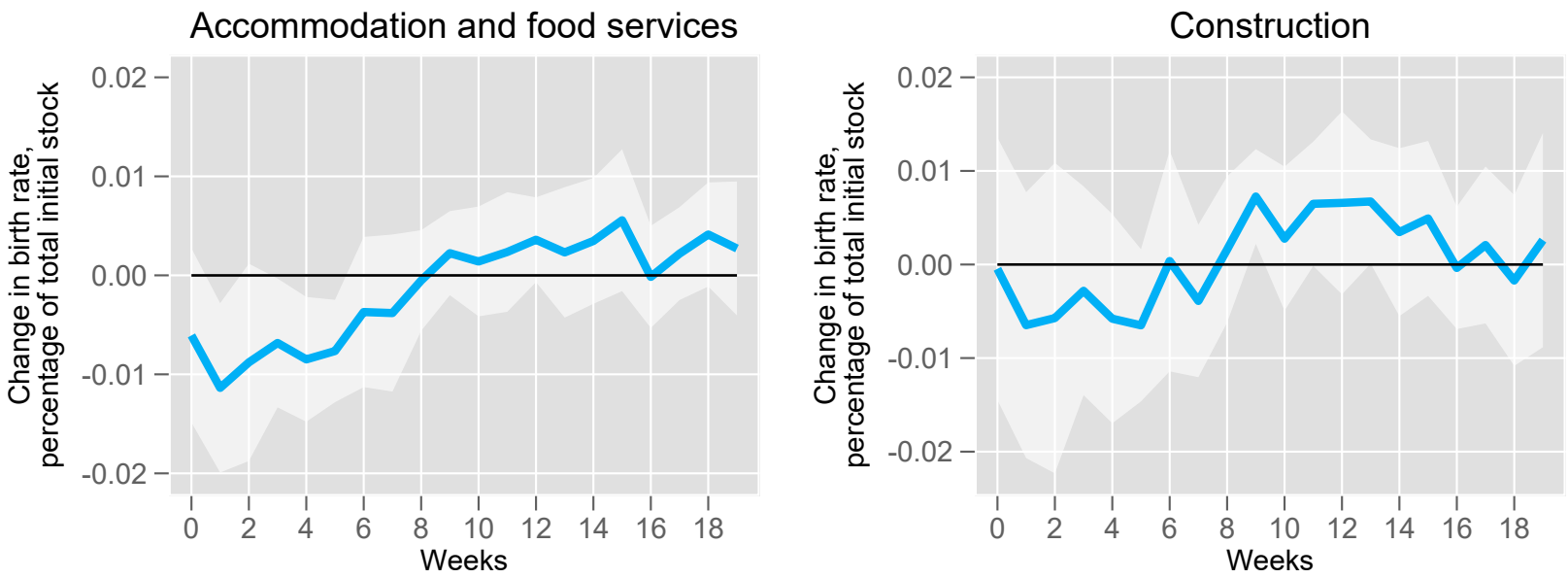
Evidence suggests these firms were created in response to demand-shifts

Figure: Local projection of retail footfall on the birth rate in placebo industries: estimated coefficient following a 1% decline in footfall



Note: impulse response of the annualized weekly birth rate for specific industries to a 1% change in the retail footfall indicator. Industry-level birth rates are expressed as contributions to the total birth rate. Standard errors are clustered at the week level. The light shaded areas show the 90% confidence interval.

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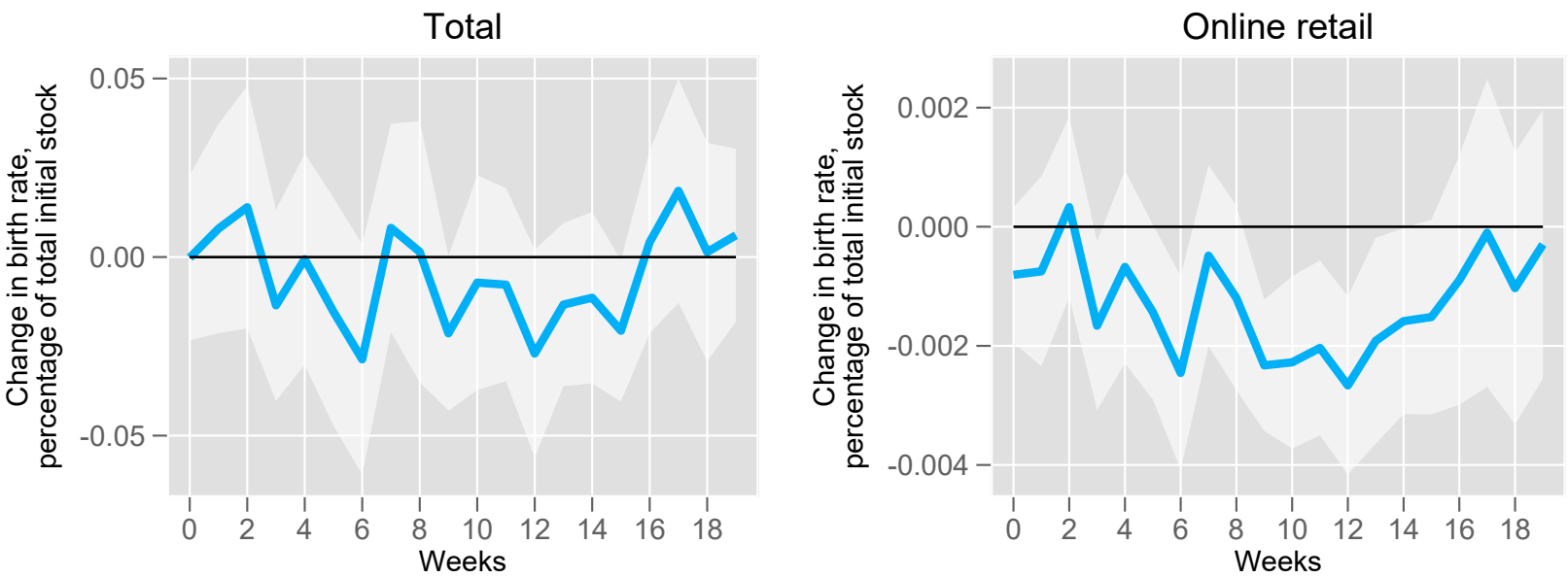
Some evidence that these firms were created in response to demand-shifts

Figure: Local projection of mobility to parks on the birth rate: estimated coefficient following a 1% decline in footfall



Note: impulse response of the annualized weekly birth rate to a 1% change in mobility to parks. Standard errors are clustered at the week level. The light shaded areas show the 90% confidence interval.

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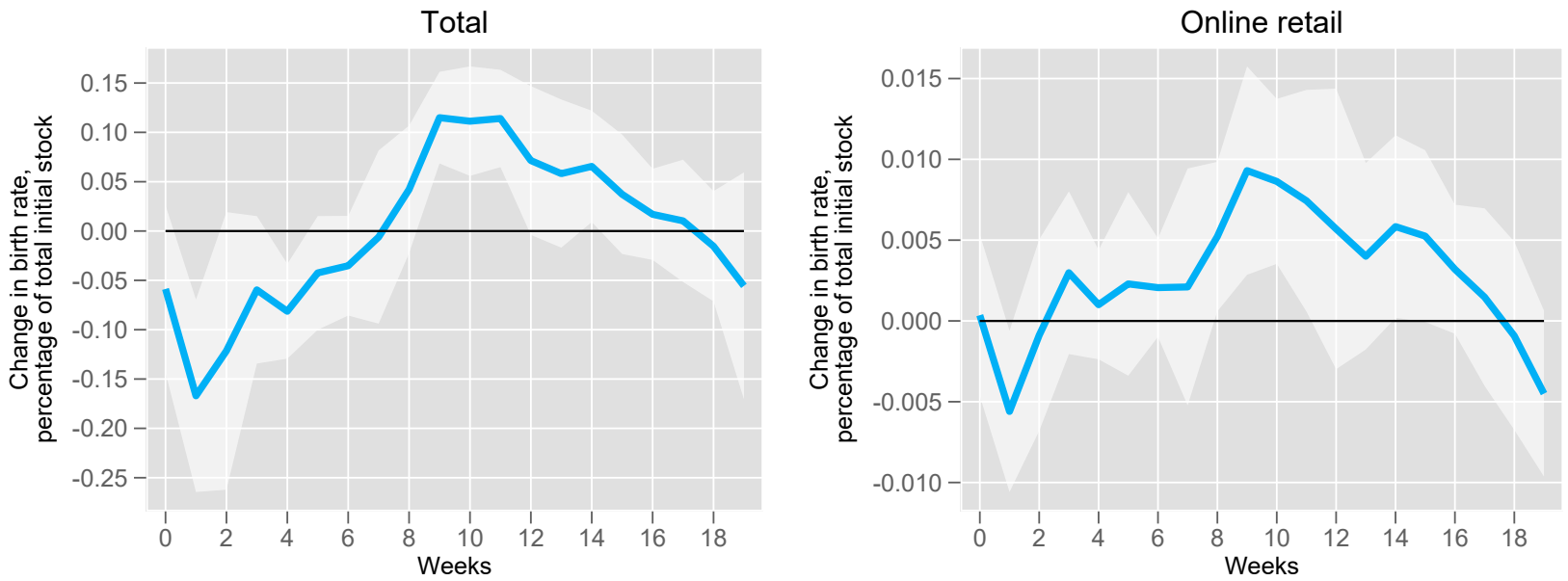
IV estimation with lockdown stringency

Figure: Instrumenting footfall with a lockdown stringency index



Note: this figure shows the impulse response of the annualized weekly birth rate to a 1% footfall shock using the local projection framework as described in equation on slide 14, and instrumenting footfall with a lockdown stringency index. The response in online retail is expressed as a contribution to the total birth rate. Standard errors are clustered at the week level. The light shaded area shows the 90% confidence interval.

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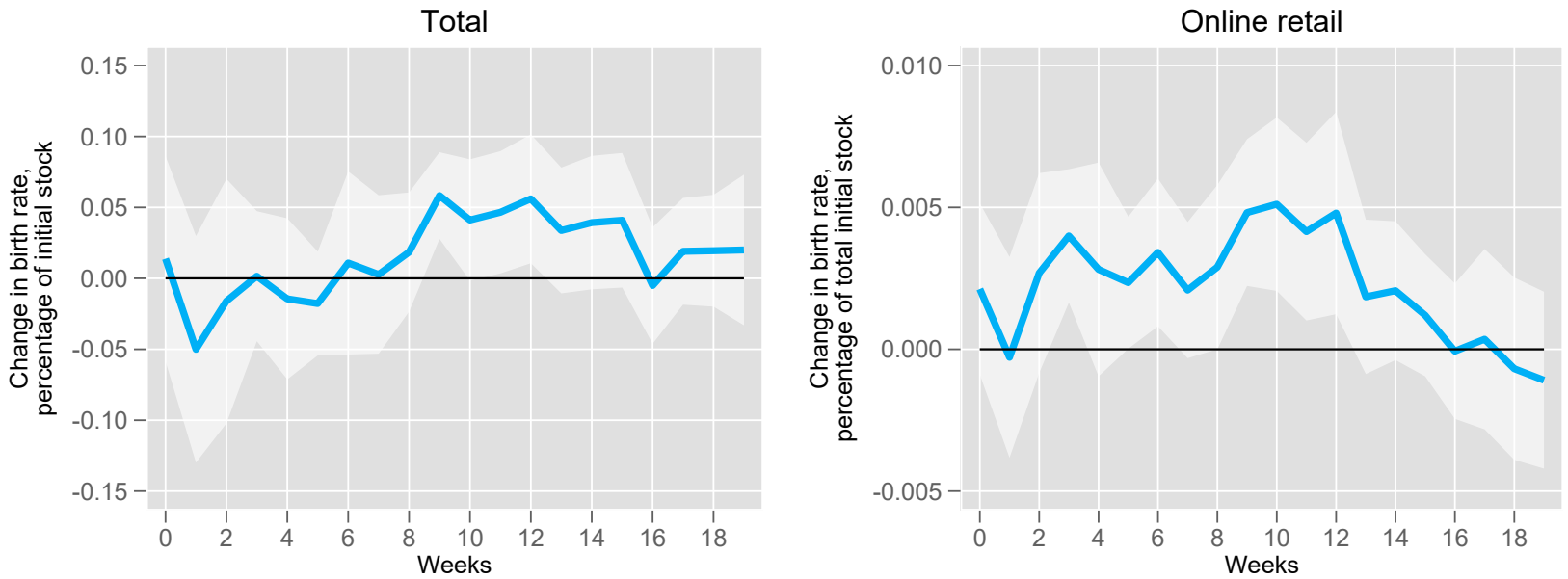
Alternative local projections using regional variation

Figure: Estimated coefficient following a 1% decline in footfall from regional data



Note: these figures show the impulse response of the annualized weekly birth rate to a 1% footfall shock using the following extended version of the local projection framework described on slide 14, where k denotes region:
$\text{Birth rate}_{k,t+h} = \sum_{j=0}^{4} \gamma_j^h \text{Footfall}_{k,t-j} + \sum_{j=1}^{4} \eta_j^h \text{Birth Rate}_{k,t-j} + FE_k + \varepsilon_{k,t}$. The response in online retail is expressed as a contribution to the total birth rate. Standard errors are two-way clustered at the county and week level. The light shaded area shows the 90% confidence interval.

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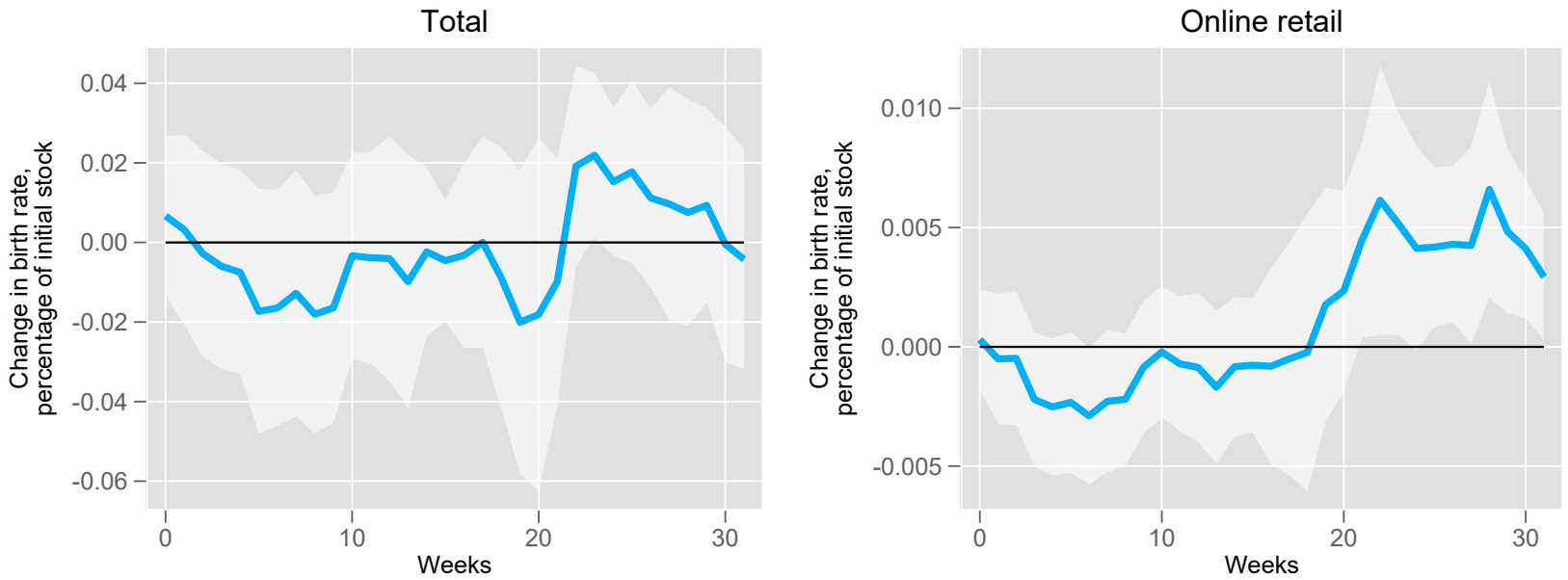
Alternative local projections using regional variation

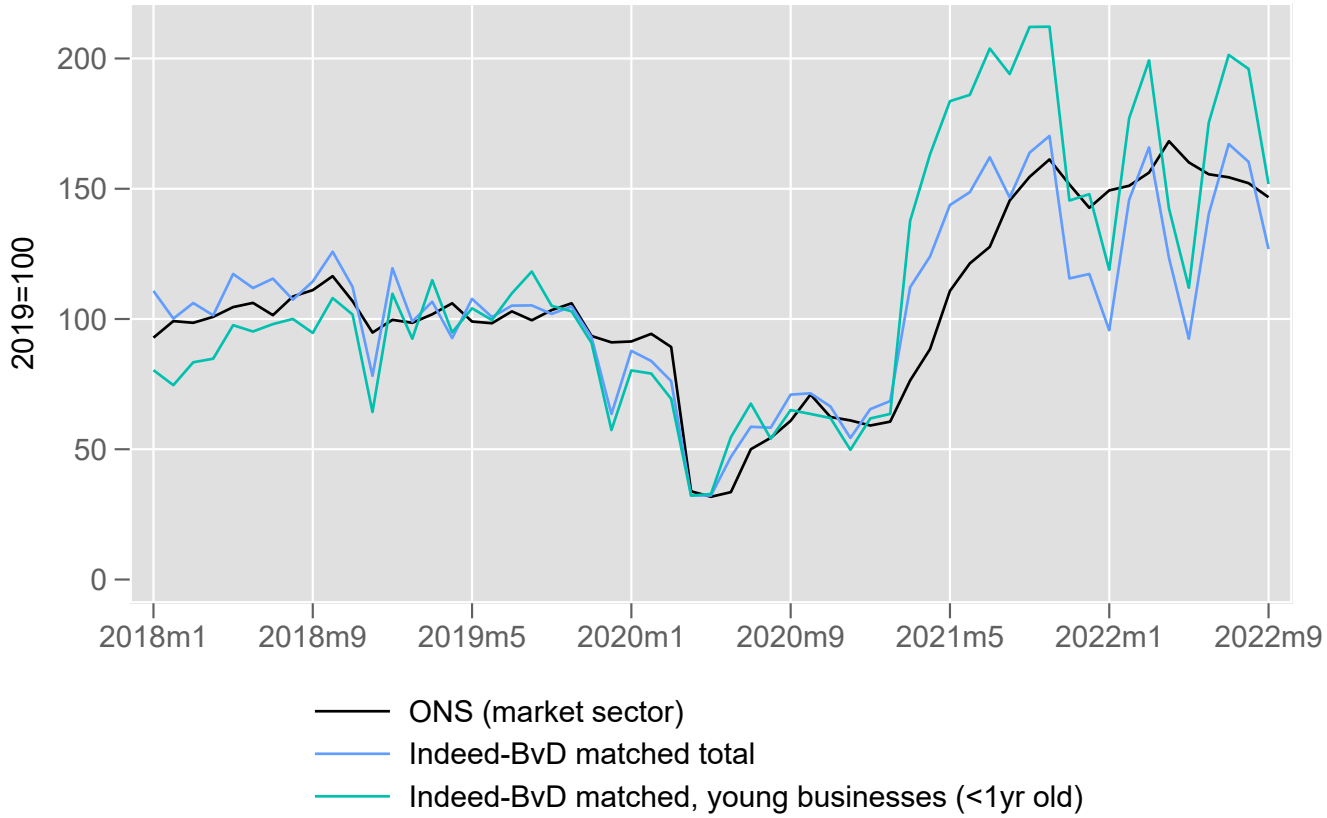
Figure: Estimated coefficient following a 1% decline in footfall using regional variation (including time fixed effects)



Note: these figures show the impulse response of the annualized weekly birth rate to a 1% footfall shock using the following extended version of the local projection framework described on slide 14, where k denotes region:
$\text{Birth rate}_{k,t+h} = \sum_{j=0}^{4} \gamma_j^h \text{Footfall}_{k,t-j} + \sum_{j=1}^{4} \eta_j^h \text{Birth Rate}_{k,t-j} + FE_k + FE_t + \varepsilon_{k,t}$. The response in online retail is expressed as a contribution to the total birth rate. Standard errors are two-way clustered at the county and week level. The light shaded area shows the 90% confidence interval.

Indeed postings vs. ONS vacancy data

Figure: ONS vacancies vs. Indeed job postings, by posting date, 2019=100



Source: Authors' calculations using BvD-FAME, Indeed and ONS Vacancy Survey data monthly experimental data.

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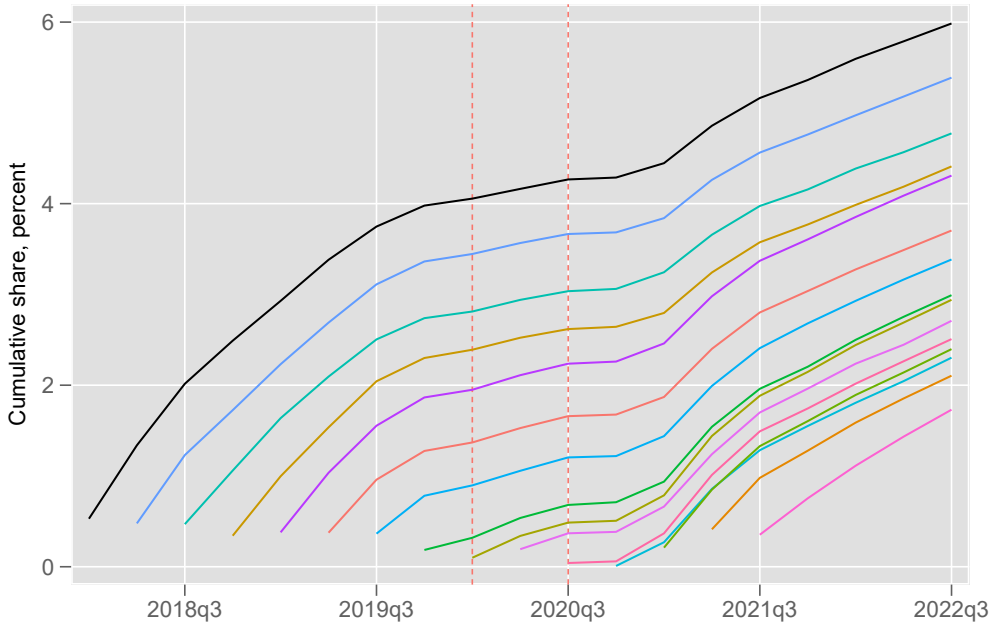
Job postings cohort analysis

Figure: Cumulative share of firms posting a vacancy by quarterly cohorts of incorporation



Source: Authors' calculations using matched Indeed and BvD-FAME data. Note: cohorts born before the first red vertical line (2020q1) are firms born pre-COVID, firms born after the second red vertical line (2020q3) are born during COVID-19 (post march 2020).

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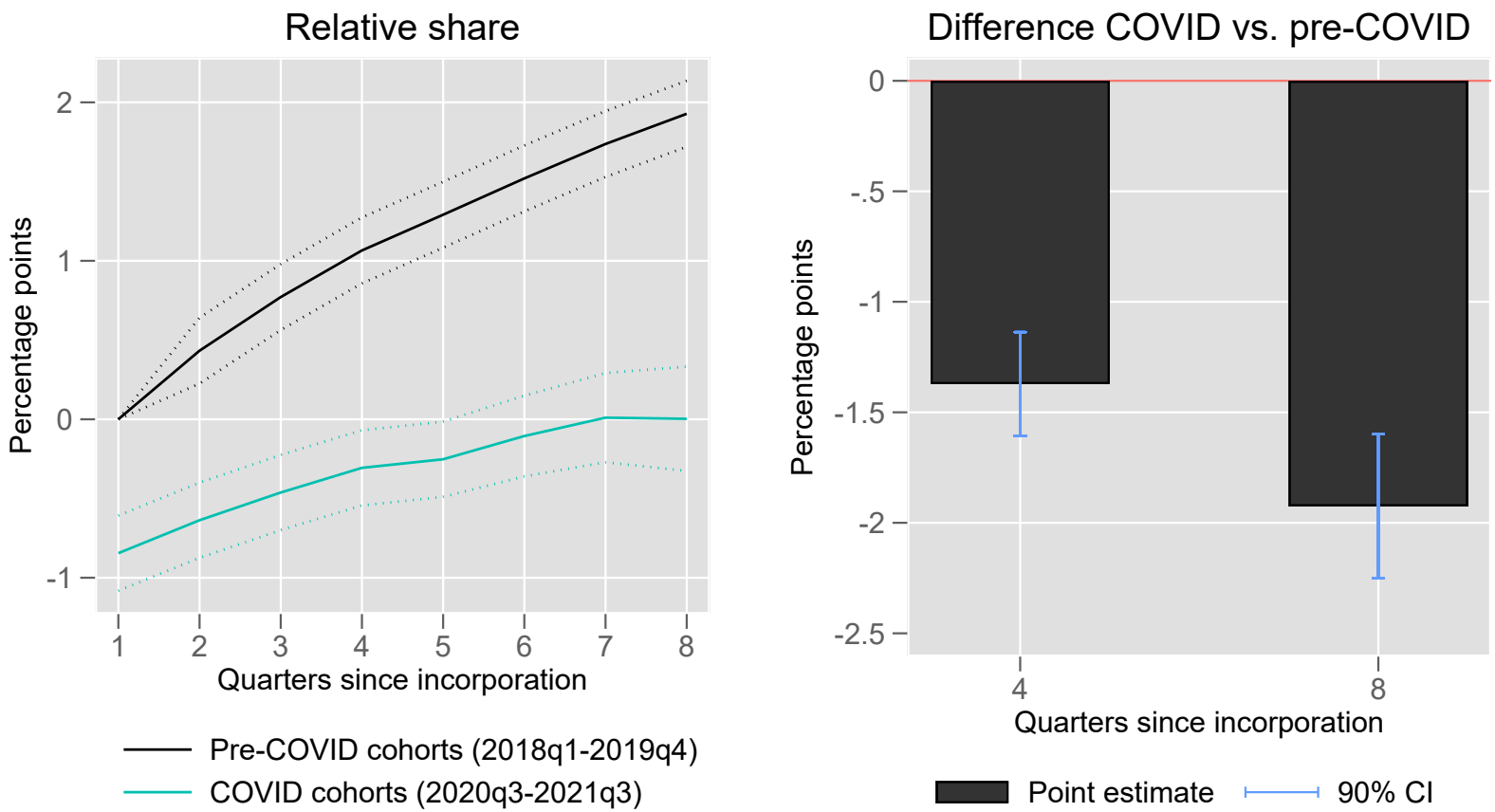
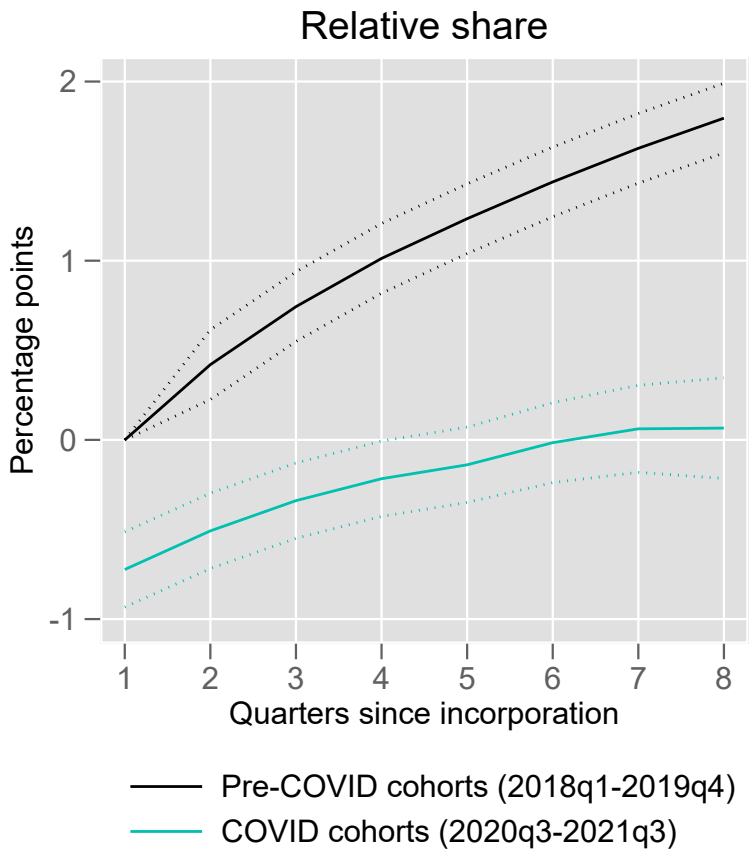
Figure: Cumulative share controlling for sector-time trends in vacancy postings

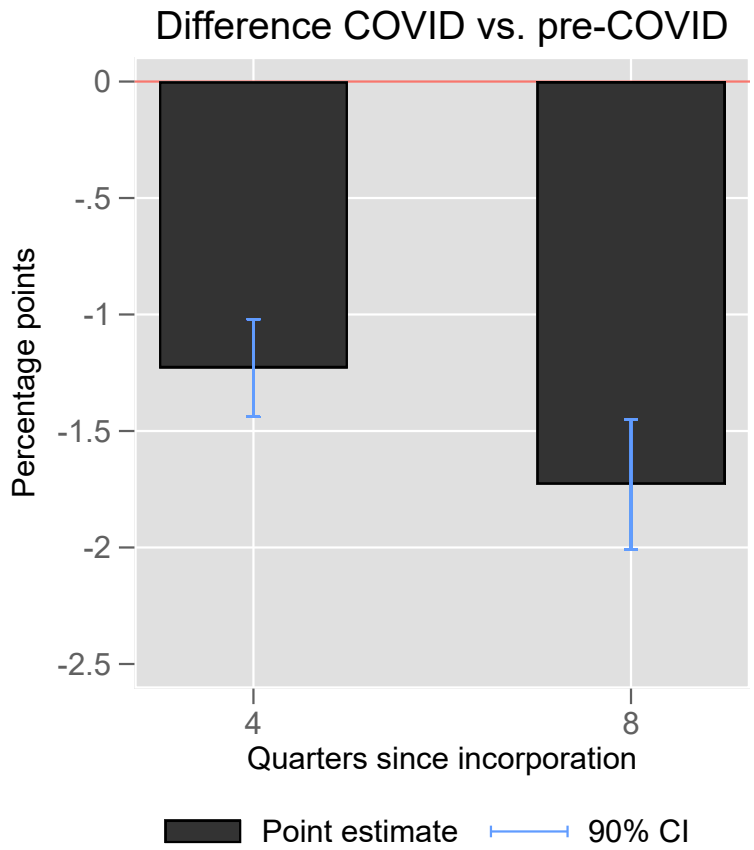


Note: The figure on the left plots the age-cohort group fixed effects from a regression using the demeaned cumulative share of posting in Indeed in each quarter by 2-digit sector. We normalize the results so that the pre-COVID group share at age one is zero. Dotted lines plot the 90% confidence intervals. The figure on the rightcompares the coefficients for COVID vs. pre-COVID cohorts at quarters 4 and 8, and shows the 90% confidence interval around the difference.

Job postings regressions weighted by cohort size

Figure: Cumulative share of firms posting a vacancy by quarter since incorporation: average over cohorts born pre-COVID and during COVID, weighted regression





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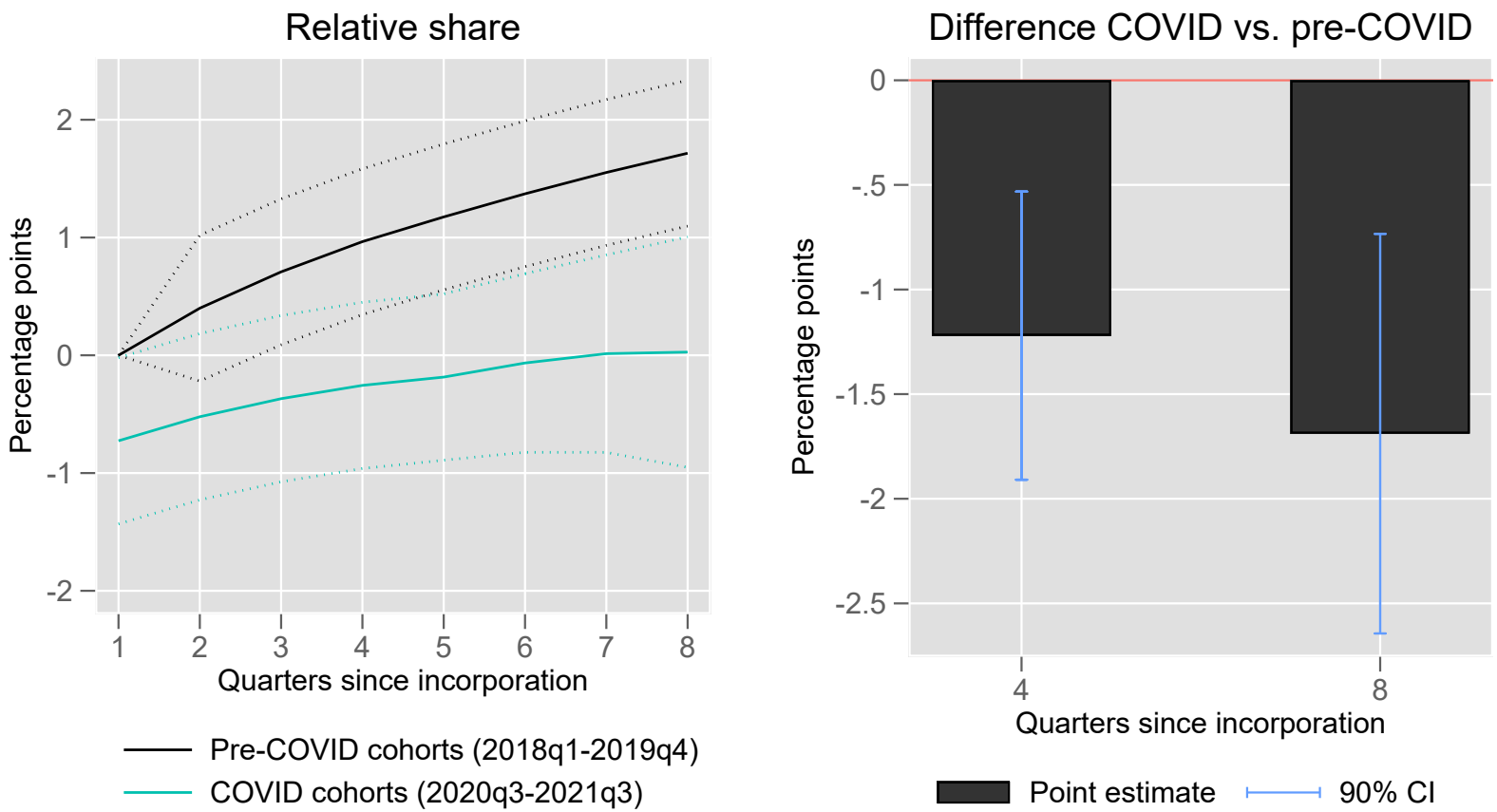
Job postings regressions excluding sectoral dimension

Figure: Cumulative share of firms posting a vacancy by quarter since incorporation: average over cohorts born pre-COVID and during COVID, aggregate regression



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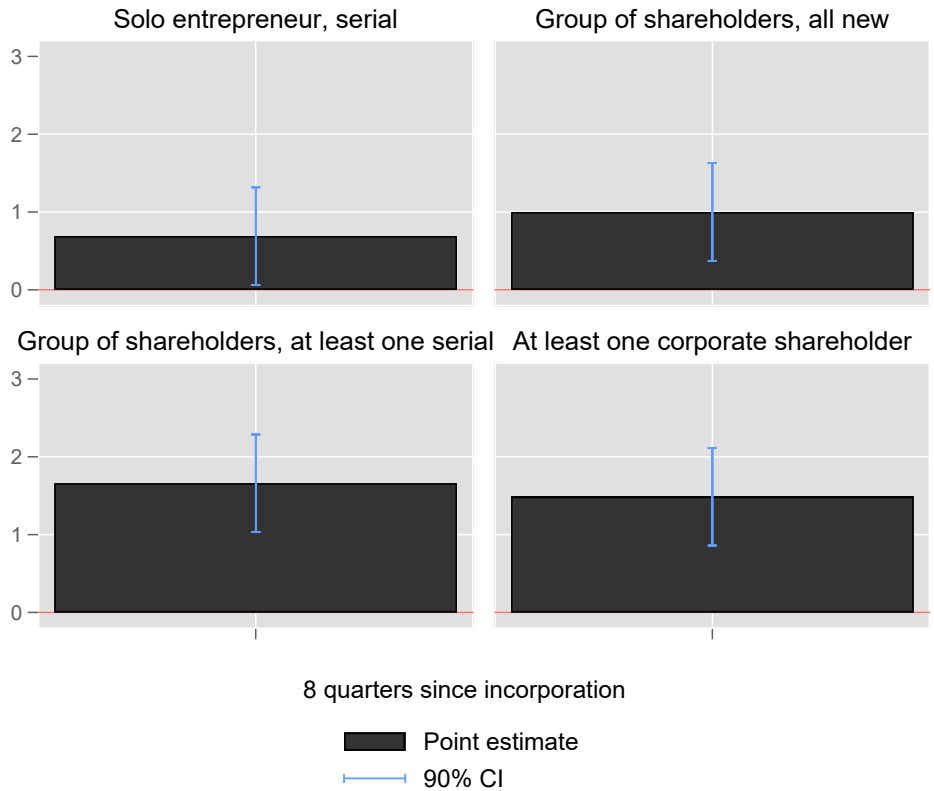
Job postings by ownership type

Figure: Share of firms of posting a vacancy 8 quarters after incorporation, by ownership type, in deviation from new solo entrepreneurs



Note: The figure plots the age-ownership fixed effects from a regression using the demeaned cumulative share of posting in Indeed in each quarter by cohort and type of ownership. It plots the ownership effect relative to the new solo entrepreneur cohort group at quarter 8, and shows the 90% confidence interval around the difference.

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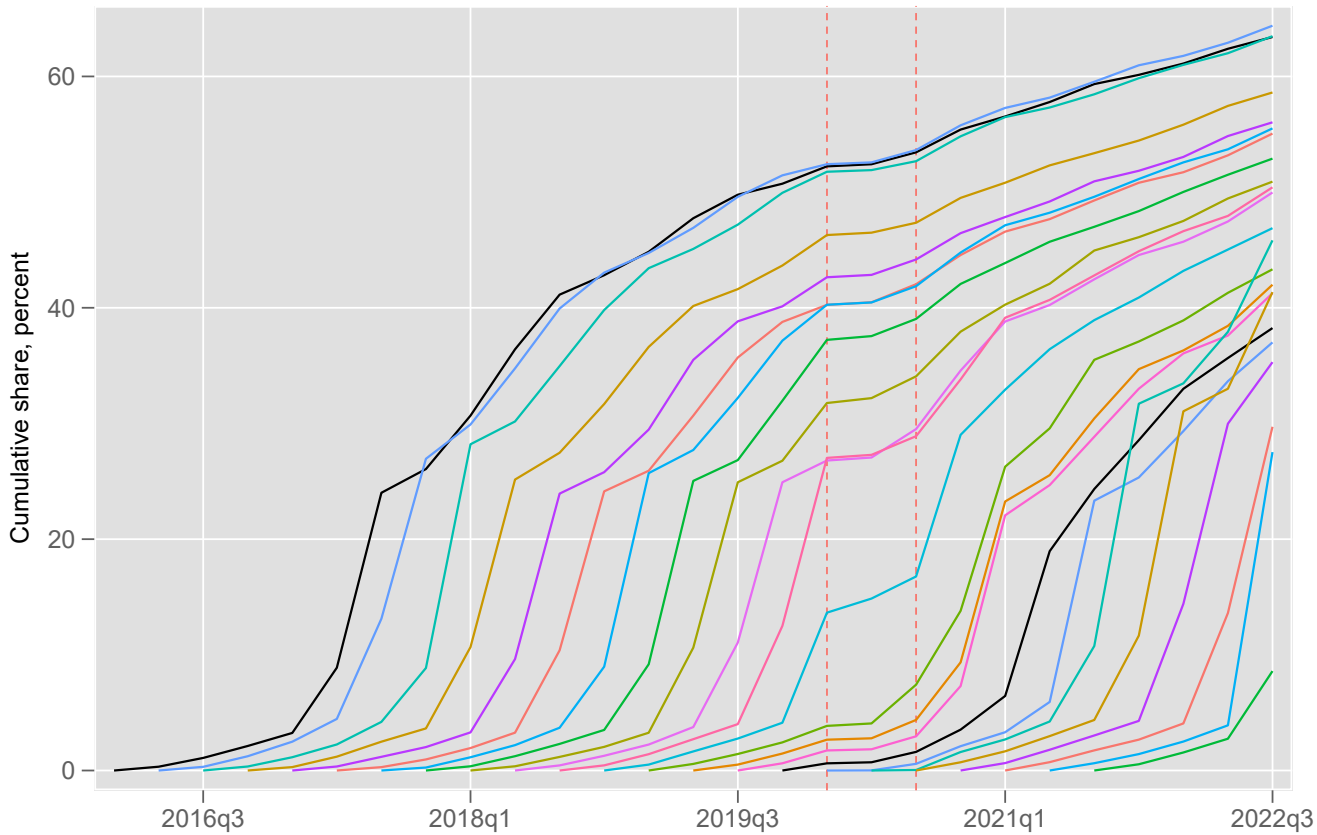
Additional results using dissolution data

Figure: Cumulative share of firms dissolving by quarterly cohorts of incorporation



Source: Authors' calculations using BvD-FAME. Note: The red vertical lines denote the easement period 2020Q1 and 2020Q3.

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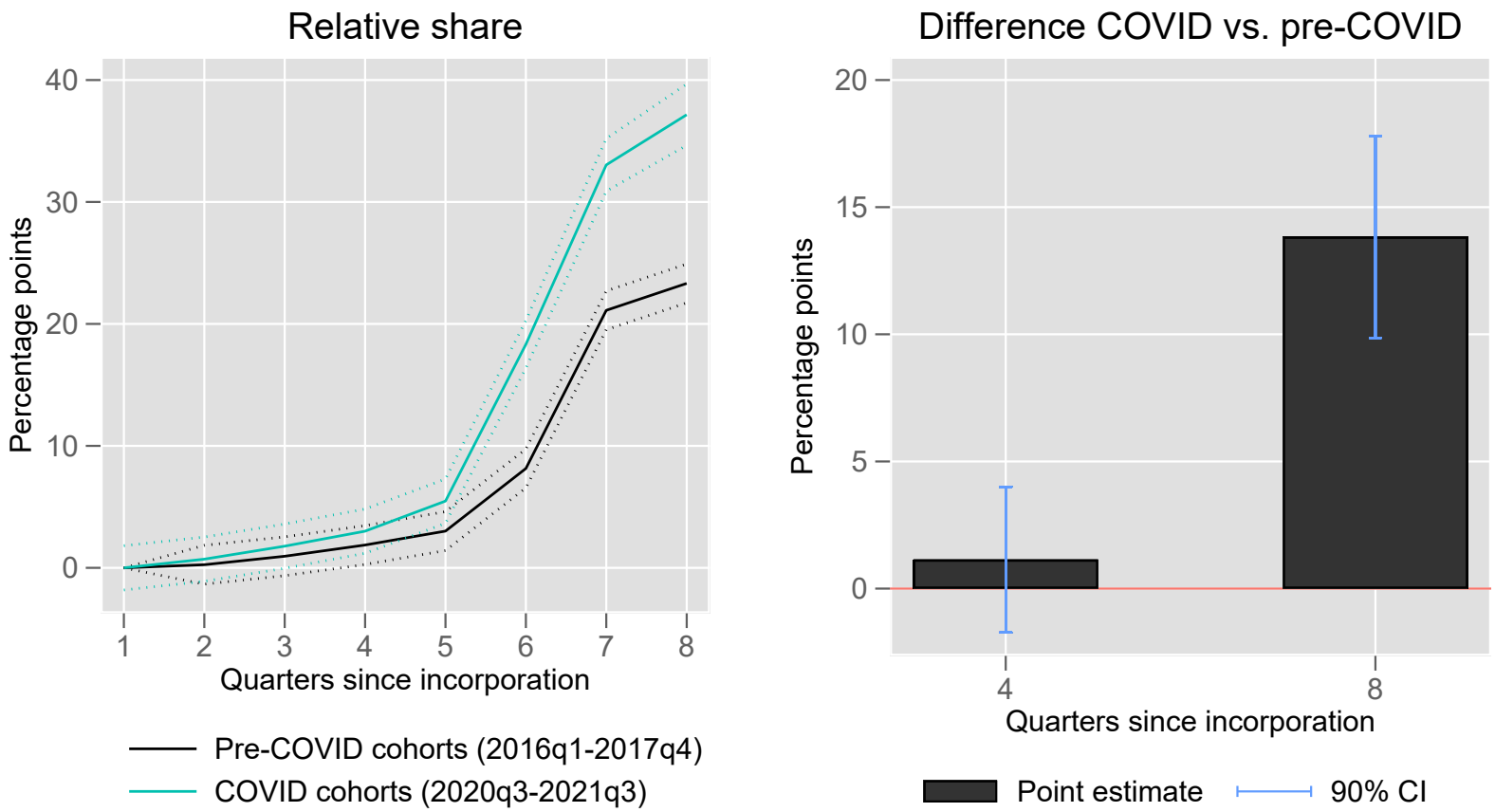
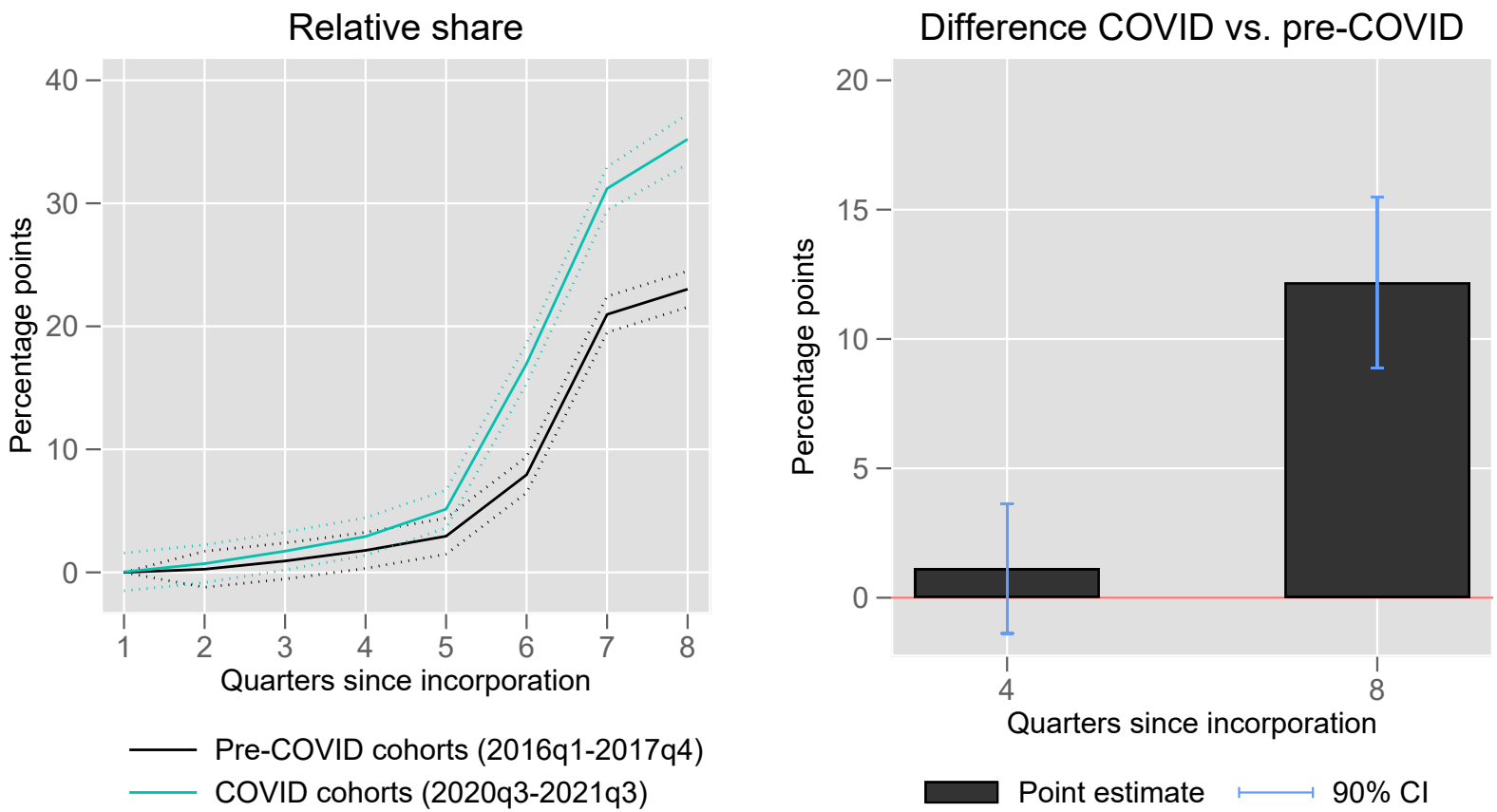
Figure: Cumulative share of firms dissolving by quarter since incorporation: age-cohort group effects for cohorts born pre-COVID and during COVID



Note: The figure on the left plots the age-cohort group fixed effects from a regression using the demeaned cumulative share of firms dissolving in each quarter by 2-digit sector. We normalize the results so that the pre-COVID group share at age one is zero. Dotted lines plot the 90% confidence intervals. The figure on the rightcompares the coefficients for COVID vs. pre-COVID cohorts at quarters 4 and 8, and shows the 90% confidence interval around the difference.

Dissolution regressions weighted by cohort size

Figure: Cumulative share of firms dissolving by quarter since incorporation: average over cohorts born pre-COVID and during COVID, weighted regression



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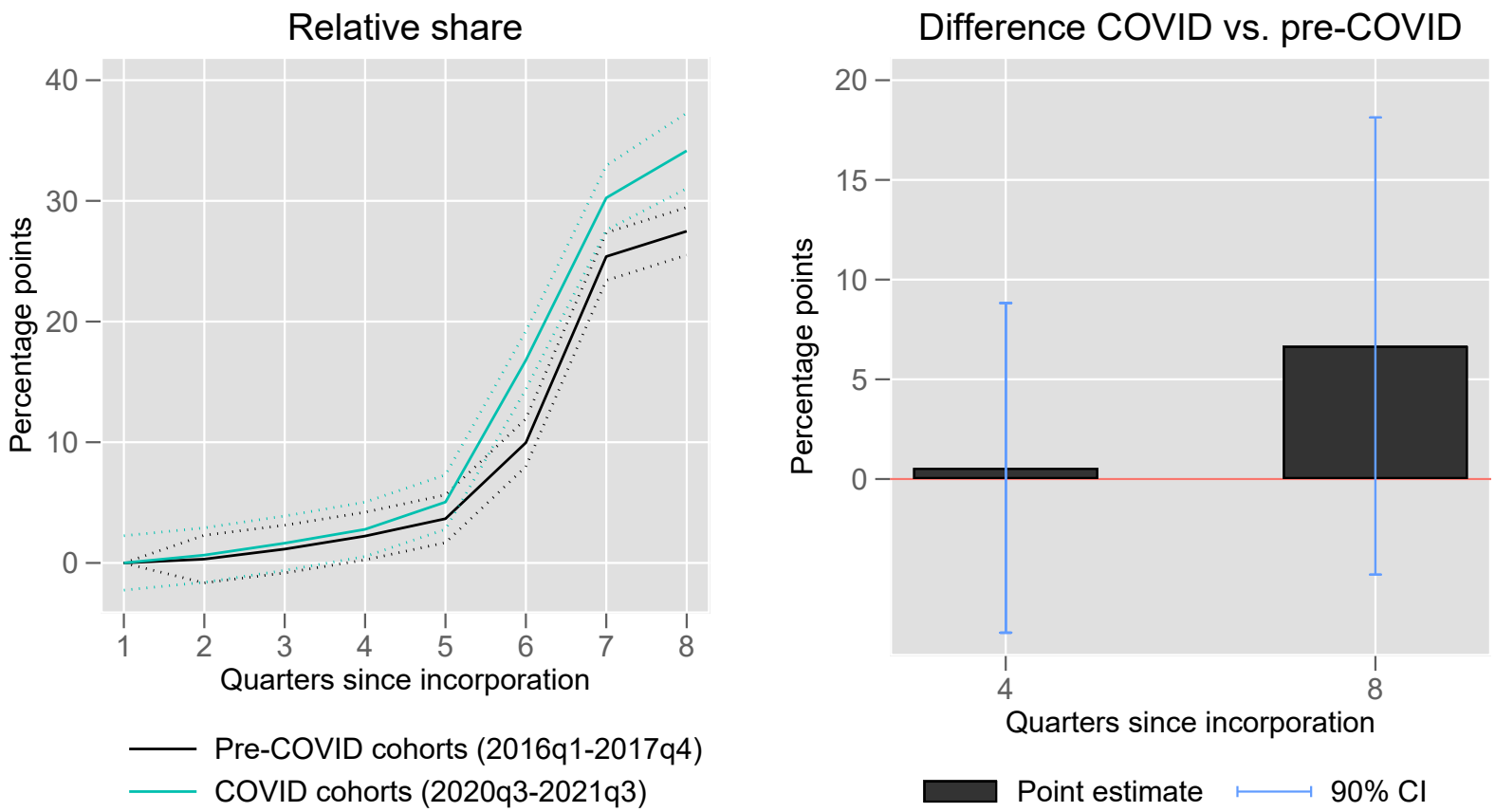
Dissolution regressions excluding sectoral dimension

Figure: Cumulative share of firms dissolving by quarter since incorporation: cohort analysis pre/post COVID, regression on aggregate data



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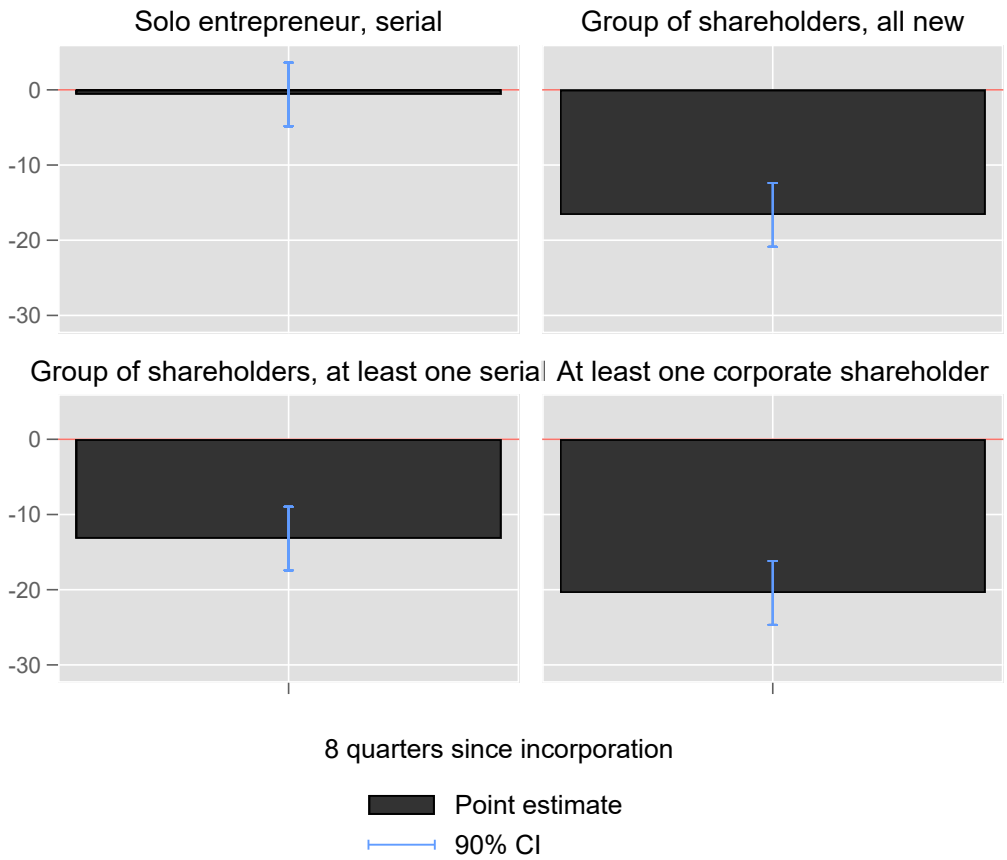
Dissolution regressions by ownership type

Figure: Cumulative share of firms dissolving 8 quarters since incorporation, by ownership type, in deviation from new solo entrepreneurs



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Estimated job creation by new firms before and during the pandemic by ownership type ($a = 4$)

	Solo new	Solo serial	Group new	Group serial	Corp.	Other	Total
$E_{j,a}^{pre}$	177,962	129,833	106,695	246,491	564,298	674	1,225,954
$E_{j,a}^{COVID}$	75,043	110,572	88,442	133,300	318,603	37,308	763,267
$E_{j,a}$ difference	-102,919	-19,261	-18,253	-113,191	-245,696	36,633	-462,688
No change in $s_{j,a}^{i}$	6,075	-19,238	-5,335	-67,927	-106,053	38,219	-154,259

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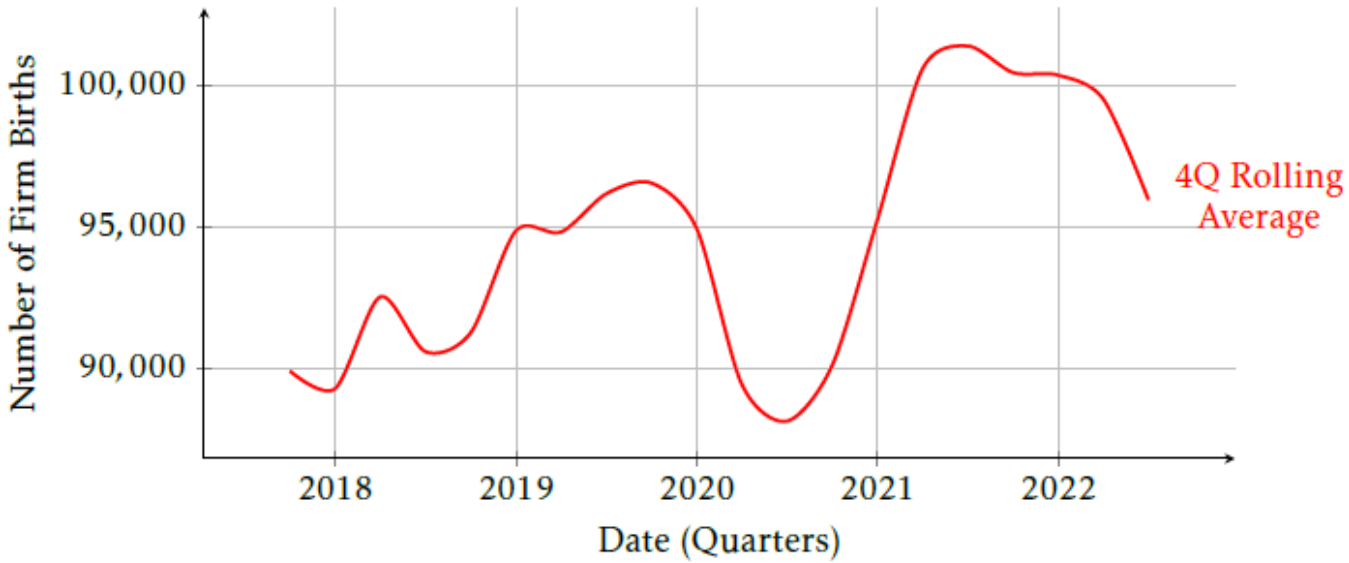
ONS data on firm births and employment

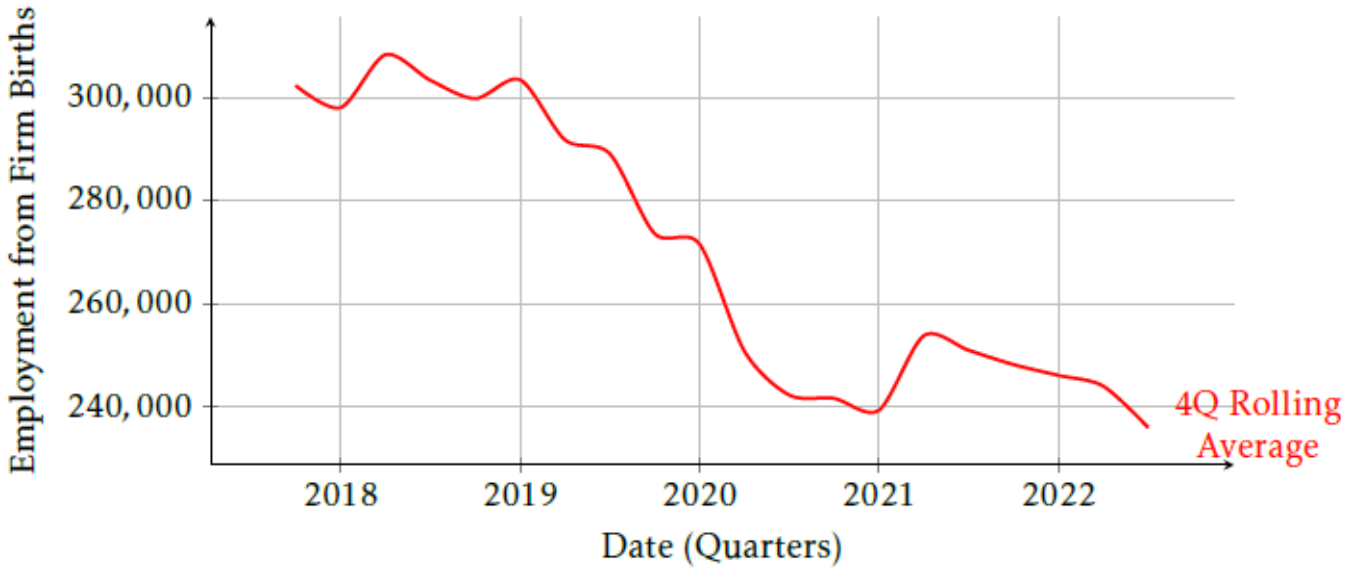
Figure: Number of Firm Births
Source: Authors' calculations from ONS 'Business Demography Quarterly Experimental Statistics'



Plot shows number of firms added to the the Inter Departmental Business Register (IDBR) ("firm births"). We plot a four quarter rolling average because seasonality in the raw data masks the trend.

ONS data on firm births and employment

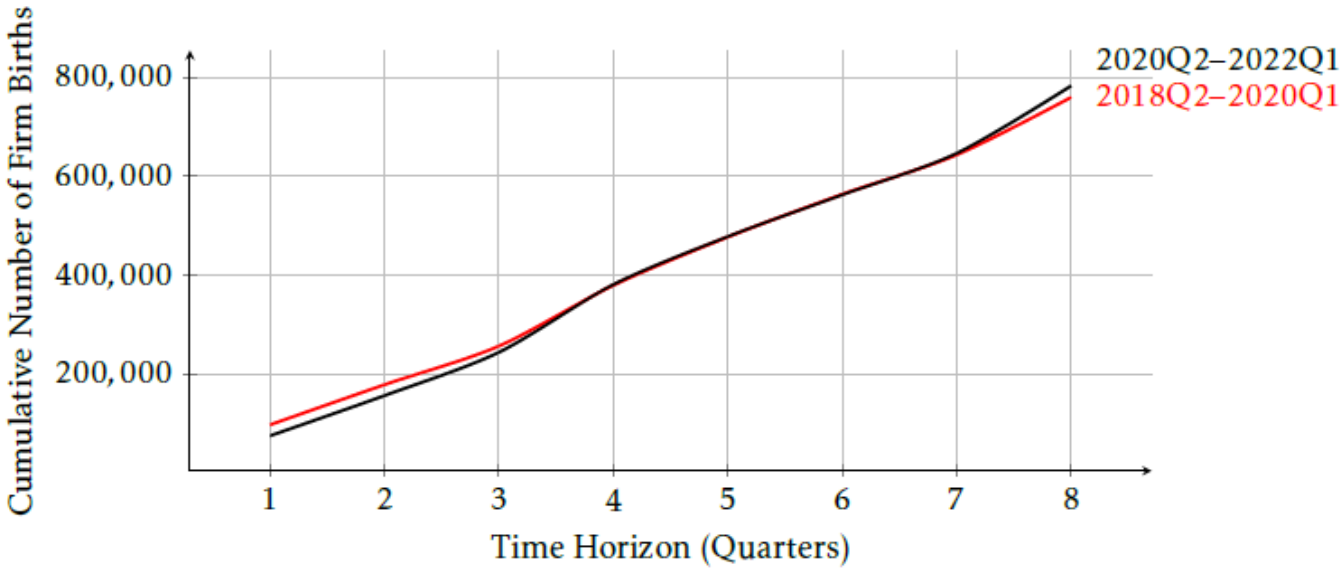
Figure: Employment from Firm Births
Source: Authors' calculations from ONS 'Business Demography Quarterly Experimental Statistics'



Plot shows total employment by new firms added to the the Inter Departmental Business Register (IDBR). We plot a four quarter rolling average because seasonality in the raw data masks the trend.

ONS data on firm births and employment

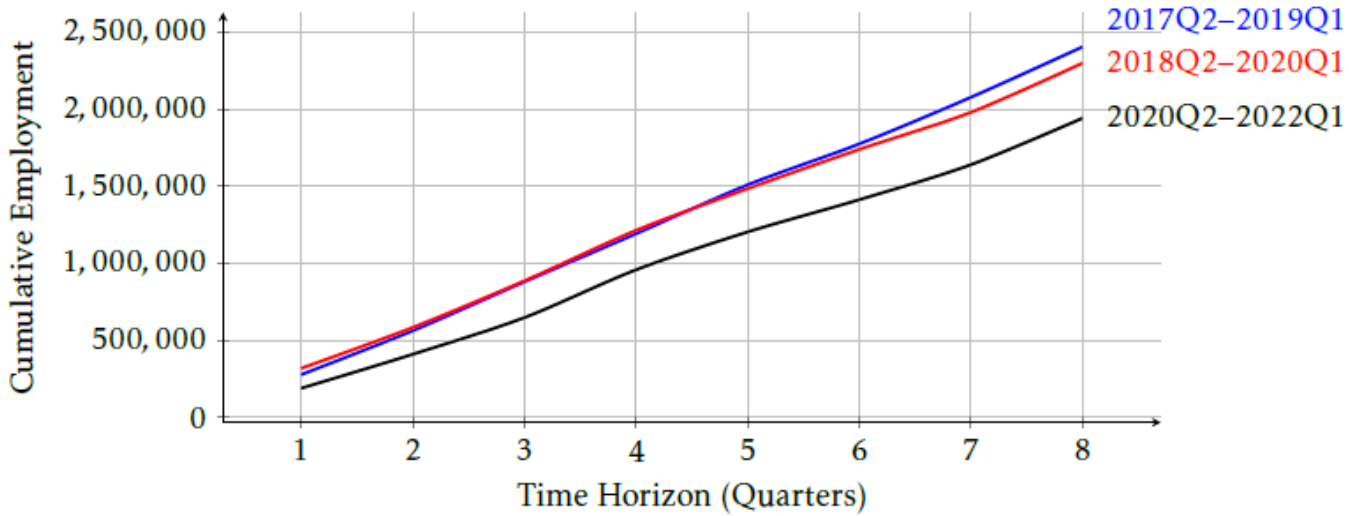
Figure: Cumulative Number of Firm Births
Source: Authors' calculations from ONS 'Business Demography Quarterly Experimental Statistics'



Plot shows cumulative number of firms added to the the Inter Departmental Business Register (IDBR). Each line represents cumulative births over an eight quarter time period. The two time periods are seasonally-equivalent, each beginning in Q2. The 2019Q2-2021Q2 line is omitted because it includes COVID and non-COVID periods. The 2017Q2-2019Q1 line is omitted because it is very similar to 2018Q2-2020Q1 which worsens clarity.

ONS data on firm births and employment

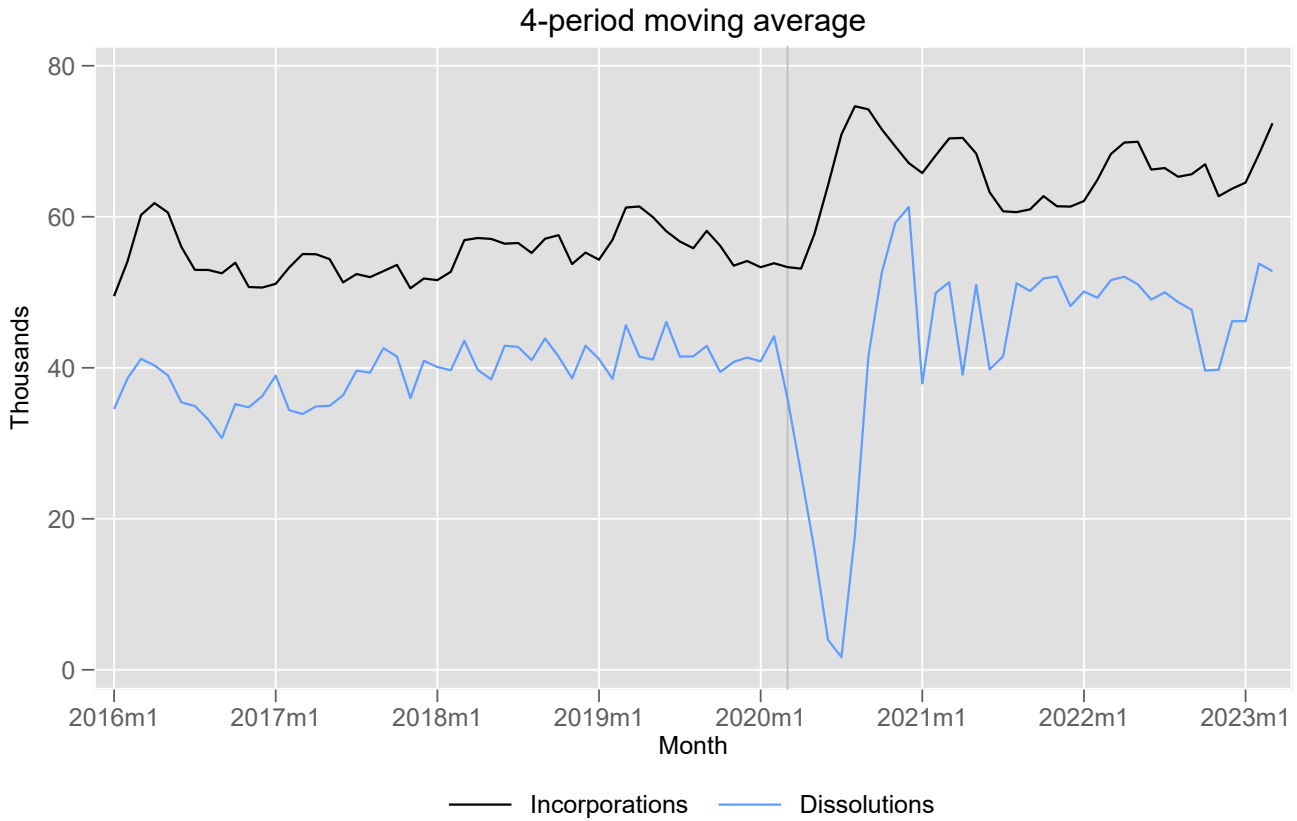
Figure: Cumulative Employment from Firm Births
Source: Authors' calculations from ONS 'Business Demography Quarterly Experimental Statistics'



Plot shows cumulative employment by new firms added to the the Inter Departmental Business Register (IDBR). Each line represents cumulative employment over an eight quarter time period. The three time periods are seasonally-equivalent, each beginning in Q2. The eight quarter time horizon following 2019Q2 is omitted because it includes COVID and non-COVID periods.

Latest update on firm entry/exit

Figure: Monthly number of incorporations and dissolution



Source: authors' calculations using Companies House.

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