

# Job Polarization and the Flattening of the Price Phillips Curve

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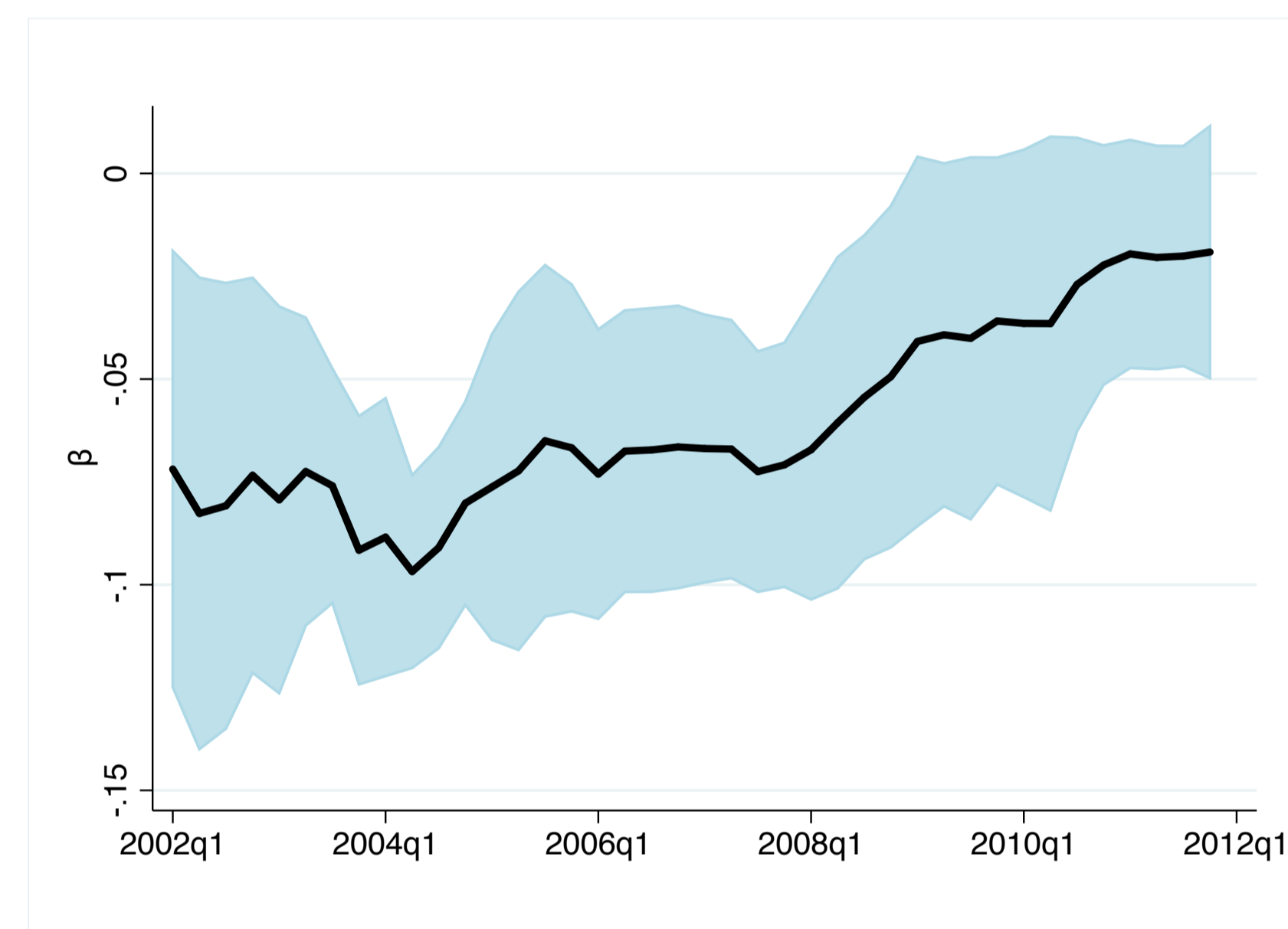
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## Abstract

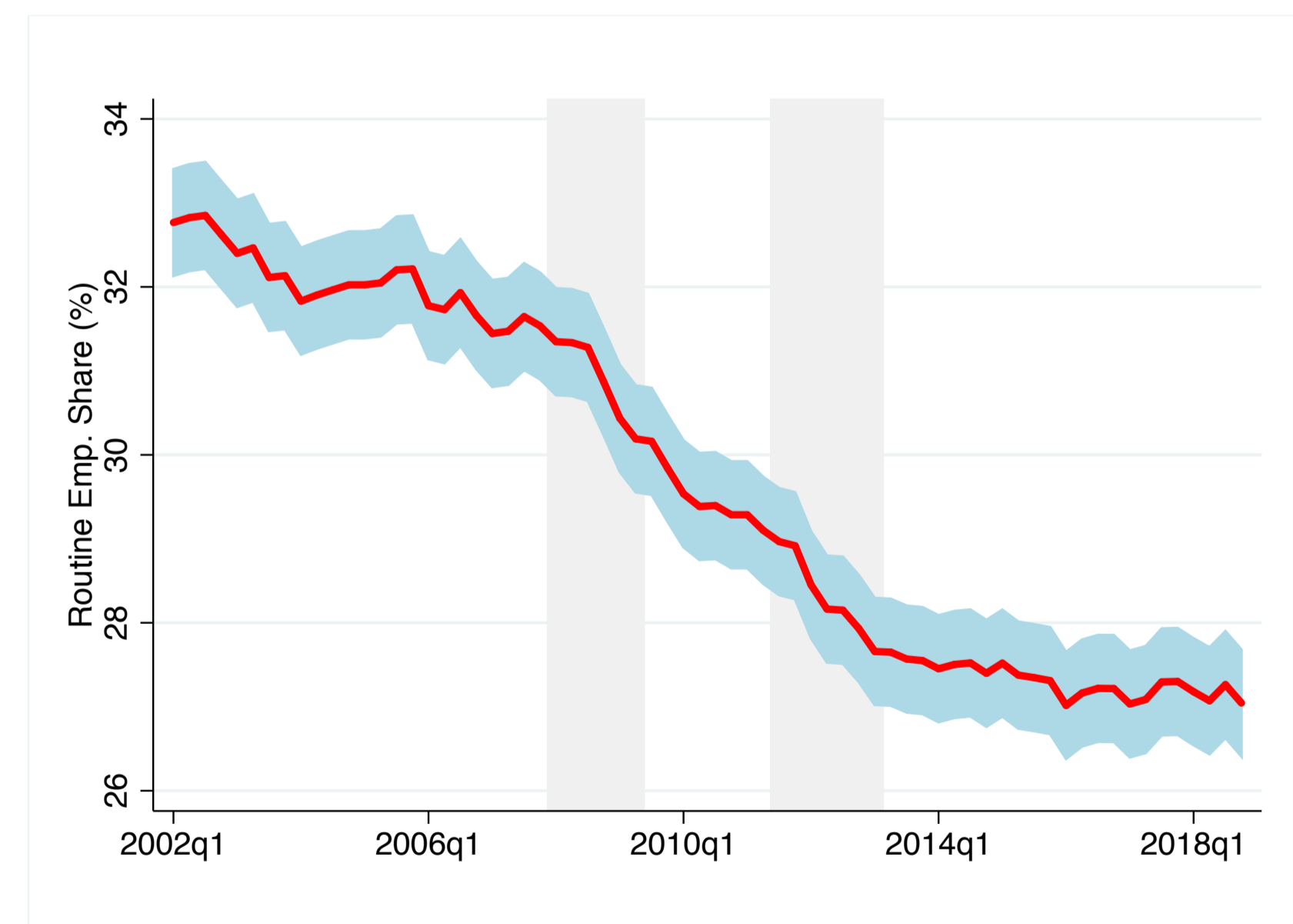
This paper shows that the change in the occupational composition of the labor market in favour of non-routine jobs –i.e. job polarization– flattens the price Phillips Curve (PC). Using data from the European Monetary Union and exploiting the fact that job polarization accelerates during recessions, we obtain two results. First, countries experiencing a bigger shift in the occupational structure during a downturn exhibit a flatter PC afterward. Second, the occupational shifts experienced during the Great Recession and the Sovereign Debt Crisis explain up to a fourth of the flattening of the curve in the 2002-2018 period. We reconcile this evidence through a New Keynesian model with unemployment and search and matching frictions. Heterogeneity in the *fluidity* across segments of the labor market –i.e. differences in the separation and hiring rate across jobs– is the source of PC flattening.

## 1 Empirical Facts for the EMU

### The Price Phillips Curve has Flattened



### The Share of Routine Jobs have Declined



## RESEARCH QUESTIONS

- Can the change in the occupational composition of the labor market explain the flattening of the Phillips Curve?  
→ Countries experiencing a larger decline in routine employment had also a flatter PC.
- Which job-specific characteristics matter for the (analytical) slope of the Phillips Curve?  
→ The market of routine and non-routine jobs deeply differ in terms of *fluidity* (hiring and separation rate). This characteristic matters for the analytical slope of the Phillips Curve in a New Keynesian framework: the transition of the labor market from less fluid (routine) jobs to more fluid (non-routine) occupations rationalizes the flattening.

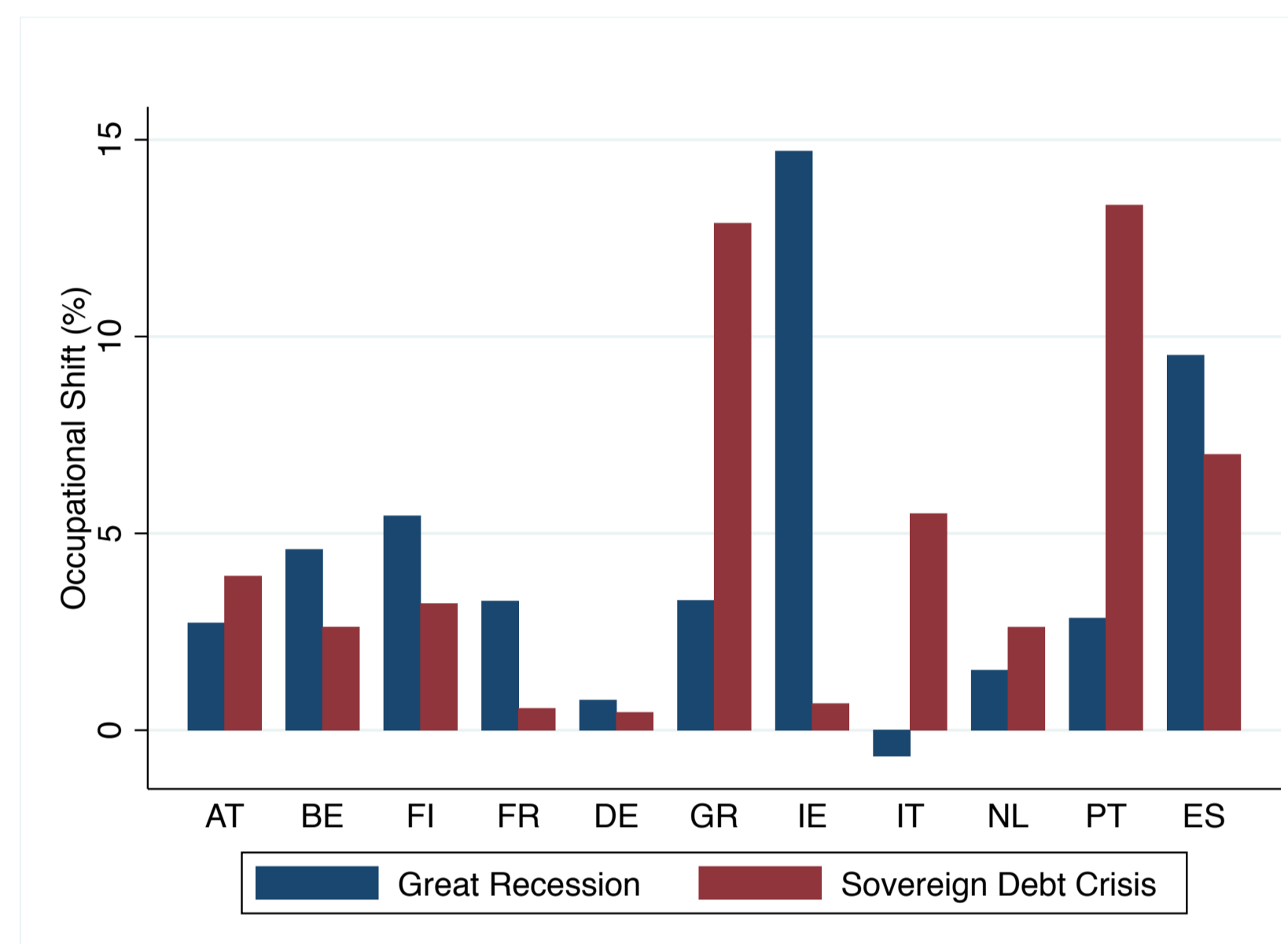
## 2 Identification

As explained in Jaimovich and Siu 2020 for the US

- the decline of routine employment follows a long-run trend
- the business cycle operates on the trend through shifts

We show that these properties holds also for the EMU. Hence, for each EMU country and recession –either the Great Recession (GR) or Sovereign Debt Crisis (SDC)– we build a measure of occupational shift as follows:

$$Shift_{i,c} = \frac{Share_{peak_{i,c}}^R - Share_{trough_{i,c}}^R}{Share_{peak_{i,c}}^R}, c = \{GR, SDC\}$$



This measure is

- **uncorrelated with** pre-recession labor market composition, sectorial composition, price and occupational dynamics
- **correlated with** the size and length of the recession

Hence, we use this **exogenous variation** in employment composition to study if countries experiencing a larger occupational shift during a recession have also witnessed a bigger flattening of the Phillips Curve after.

	(1)	(2)	(3)	(4)
	$\Delta \log(p)$	$\Delta \log(p)$	$\Delta \log(p)$	$\Delta \log(p)$
$u_{t-1}$	-0.033*** (0.007)	-0.087*** (0.013)	-0.086*** (0.012)	-0.079*** (0.014)
$After_{GR} \times u_{t-1}$		0.069*** (0.019)	0.052** (0.018)	0.057* (0.027)
$After_{GR} \times Shift_{GR} \times u_{t-1}$			0.002*** (0.001)	0.005** (0.001)
$After_{SDC} \times u_{t-1}$				0.010 (0.010)
$After_{SDC} \times Shift_{SDC} \times u_{t-1}$				0.010*** (0.003)
Observations	748	748	748	748
$R^2$	0.893	0.896	0.897	0.900
Country FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

These results are **robust** to

- sample selection
- several definitions of unemployment gap
- several definitions of price inflation
- other structural changes that might have affected the slope

**All in all, the occupational shifts occurred during the GR and SDC explain 25% of the flattening of the curve in recent years.**

## 3 Theory and Micro-foundation

### The Model

We use a New Keynesian model a la Blanchard and Galí 2010 with

- sticky prices
- search and matching frictions
- real rigidities
- unemployment

and show that the slope of the price Phillips Curve can ultimately be written as a function of the structural parameter  $\delta$  (i.e. the separation rate):

$$\hat{\pi}_t = -\frac{\alpha B \mu \lambda}{\delta N} \left( \frac{x = \text{Hirings}}{\delta N} \right)^\alpha \hat{u}_t + \kappa(1 - \delta)(1 - x)\hat{u}_{t-1} - \Psi \gamma \hat{u}_t$$

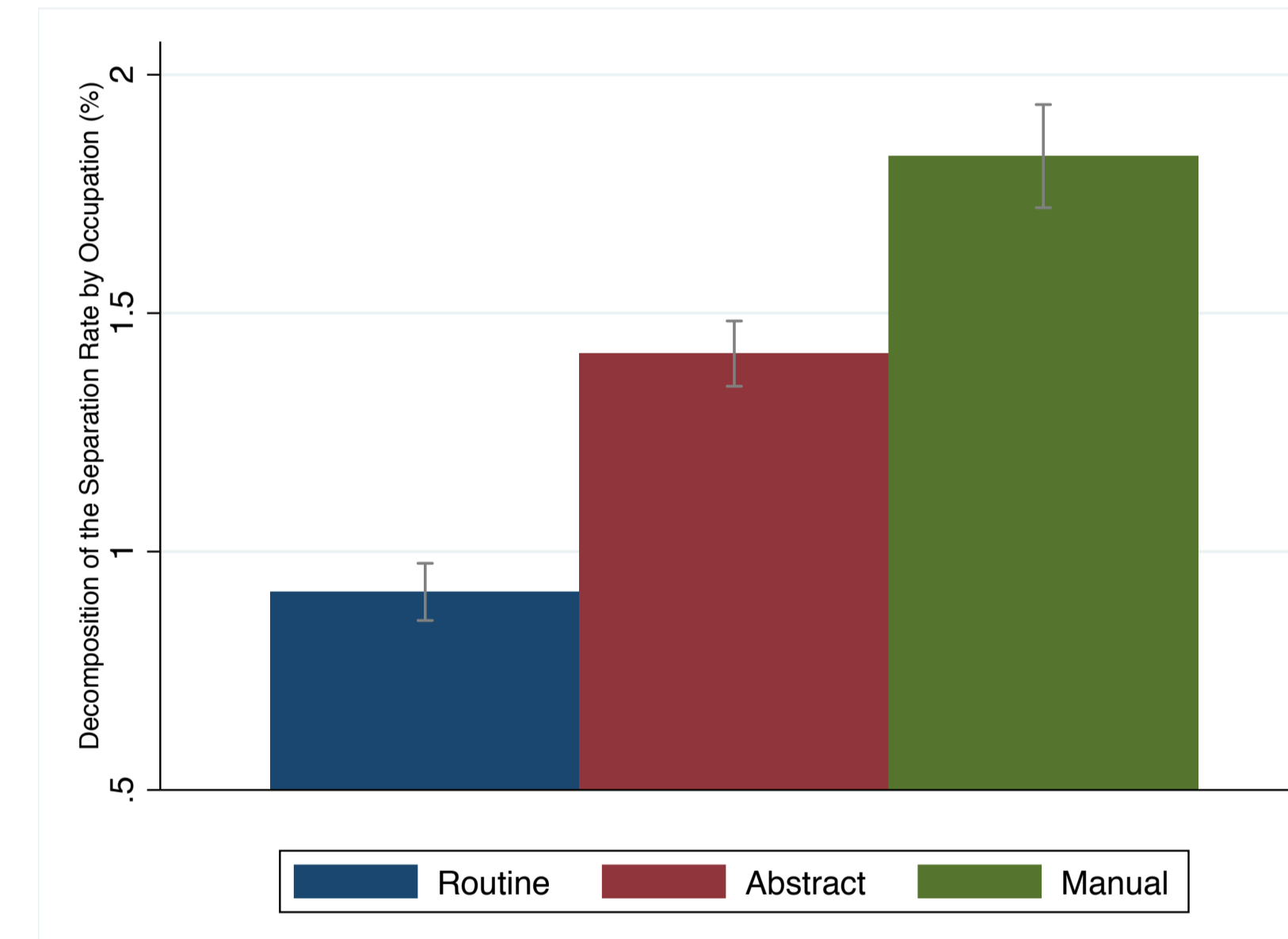
where  $\alpha$ ,  $B$ ,  $\mu$ ,  $\lambda$  and  $N$  are respectively the return on vacancy posting, matching efficiency, the price markup, the Calvo factor, and steady state employment.

In light of this, it can be proved that

- if  $\delta$  increases, steady state hiring rate  $x$  increases (but less than proportionally) → higher fluidity
- if  $\delta$  increases, the slope of the Phillips Curve becomes smaller

### Separation across jobs

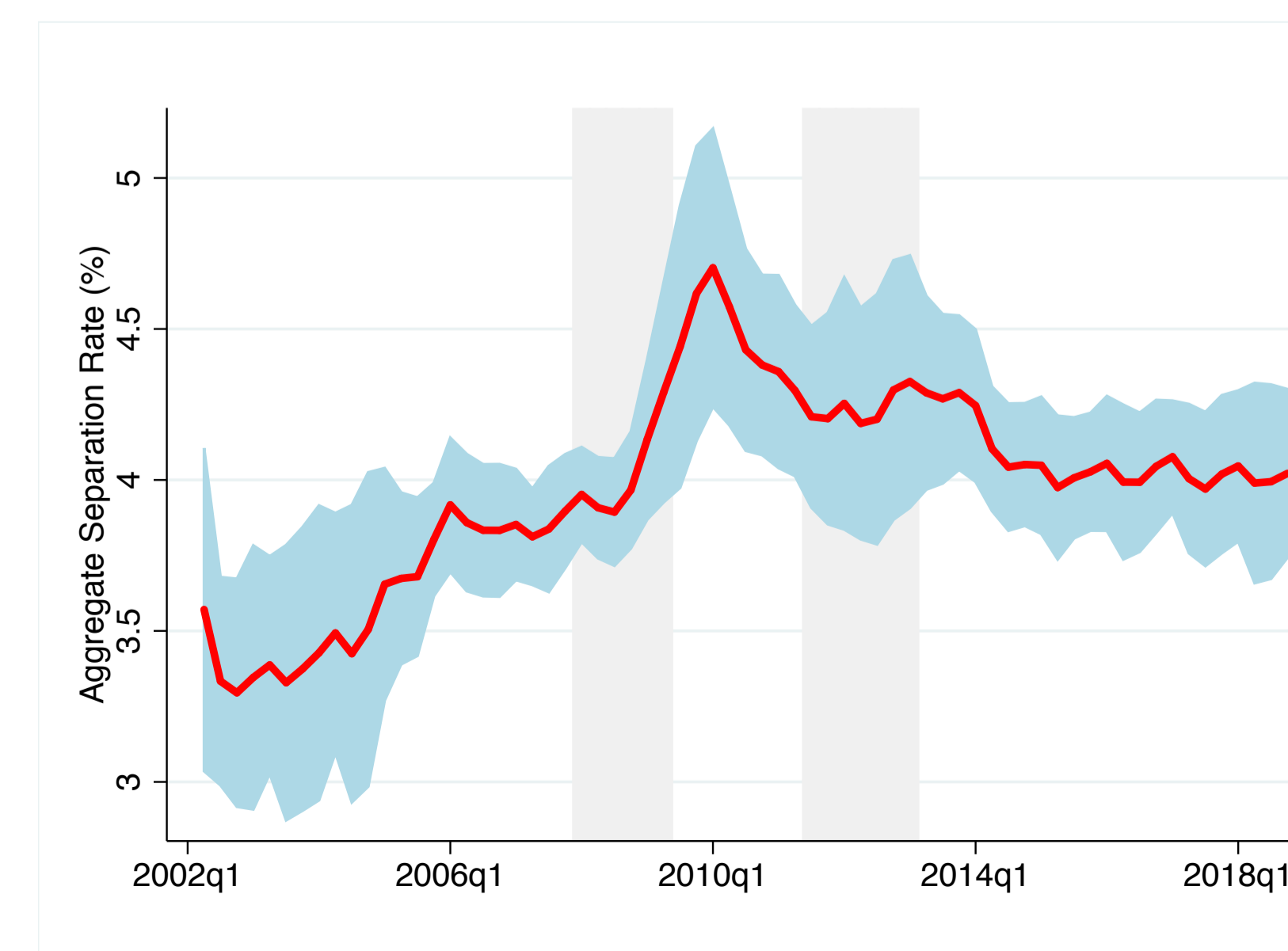
We use data on flows of workers from employment to unemployment by occupation to study heterogeneity in the separation rate across jobs.



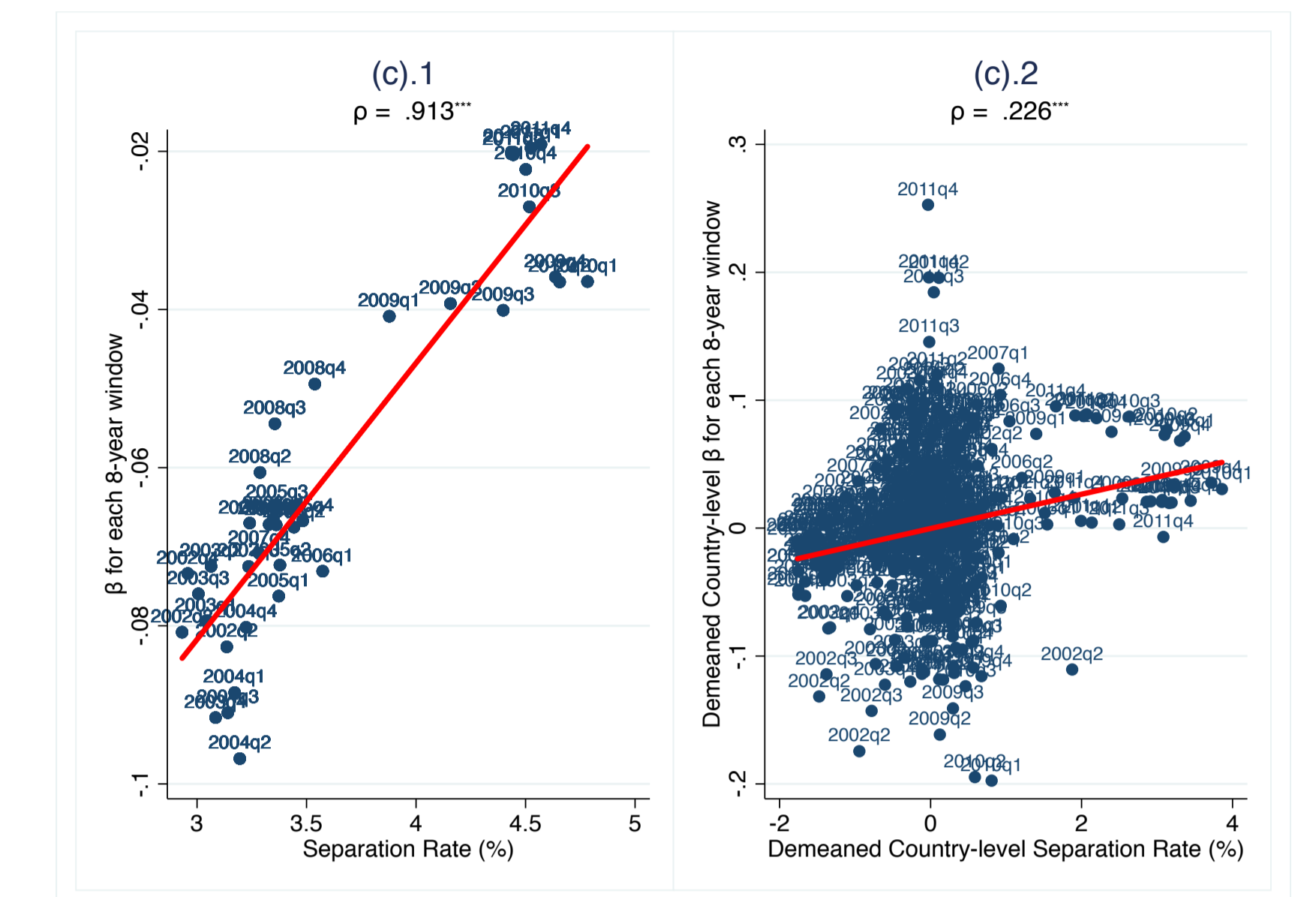
Non-routine jobs (abstract and manual occupations), exhibit a higher separation rate.

Therefore:

- Transition of the labor market towards non-routine jobs should increase the aggregate separation rate



- The separation rate should be negatively correlated with the slope of the Phillips Curve (both across and within country)



## 4 Conclusions

This paper shows that

- in the last twenty years, the composition of the labor market shifted away from routine occupations (job polarization)
- the process of routine job destruction mostly occurred during recessions
- countries that destroyed more routine jobs during a downturn experienced a flatter Phillips Curve afterward
- the remaining jobs are more fluid, i.e. the market of non-routine occupations is more dynamic with more hirings and firings
- in a standard New Keynesian Model with unemployment, higher fluidity leads to a flatter Phillips Curve.

In light of this, we conclude that employment composition and occupational heterogeneity matter for the slope of the Phillips Curve. Further investigation on the role of labor market characteristics and regulation is needed for a deeper understanding of the relationship between prices and unemployment.

## 5 References

- [1] Blanchard, Olivier and Jordi Galí (2010): Labor Markets and Monetary Policy: A New Keynesian Model with Unemployment. American Economic Journal: Macroeconomics, 2(2), pp. 1–30.
- [2] Jaimovich, Nir and Henry E Siu (2020): Job polarization and jobless recoveries. Review of Economics and Statistics, 102(1), pp. 129–147.