# Discussion of

# Session 3: Supply side factors*

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## ECB Conference

## Inflation in a changing economic environment

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* The views expressed here are my own and do not indicate concurrence with other members of the research staff of the Board of Governors or the Federal Reserve System.

# Papers Recap

- Juselius and Takáts
  - The role of demographics for low-frequency movements in inflation.
  - An example of what Leeper and Faust (2015) call longer-run disparate confounding factors

- Bulligan, Guglielminetti, and Viviano
  - The relationship between the intensive margin of labor utilization and wage growth
  - An example of the “normal” cyclical dynamics

- Nickel, Bobeica, Koester, Lis, and Porqueddu
  - Recent low wage growth in the euro area
  - Includes analysis of both longer-run disparate factors and “normal” cyclical dynamics

# Inflation and demography

The potential links between demography and inflation are various. Can often work in different directions and can be offsetting.

The hypotheses can broadly be characterized as follows:

- Life cycle consumption and savings } Aging population $\Rightarrow \uparrow \pi$.

- Secular stagnation
- Financial wealth
- Political economy
- Fiscal consolidation

} Aging population $\Rightarrow \downarrow \pi$.

- Composition of consumption /relative prices } Aging population $\Rightarrow ? \pi$.

Bottom line: The link between demography and inflation is immensely important for our understanding of longer-run inflation dynamics but very hard to identify.

# Joined at the hip? Inflation and demography through time: Overview

- Juselius and Takáts (2019) set includes 22 countries, 1870-2016.
- Working-age population is associated with lower inflation, while the old and young population is associated with higher inflation.
- The relationship between age structure and inflation is stable and robust.
- The finding is consistent with the life-cycle consumption and savings /natural rate/ channel *and* delayed monetary policy responses...
- … and in contrast with some of the existing literature.
- The implications for monetary policy could be important – the age structure effect will turn inflationary over the coming decades.

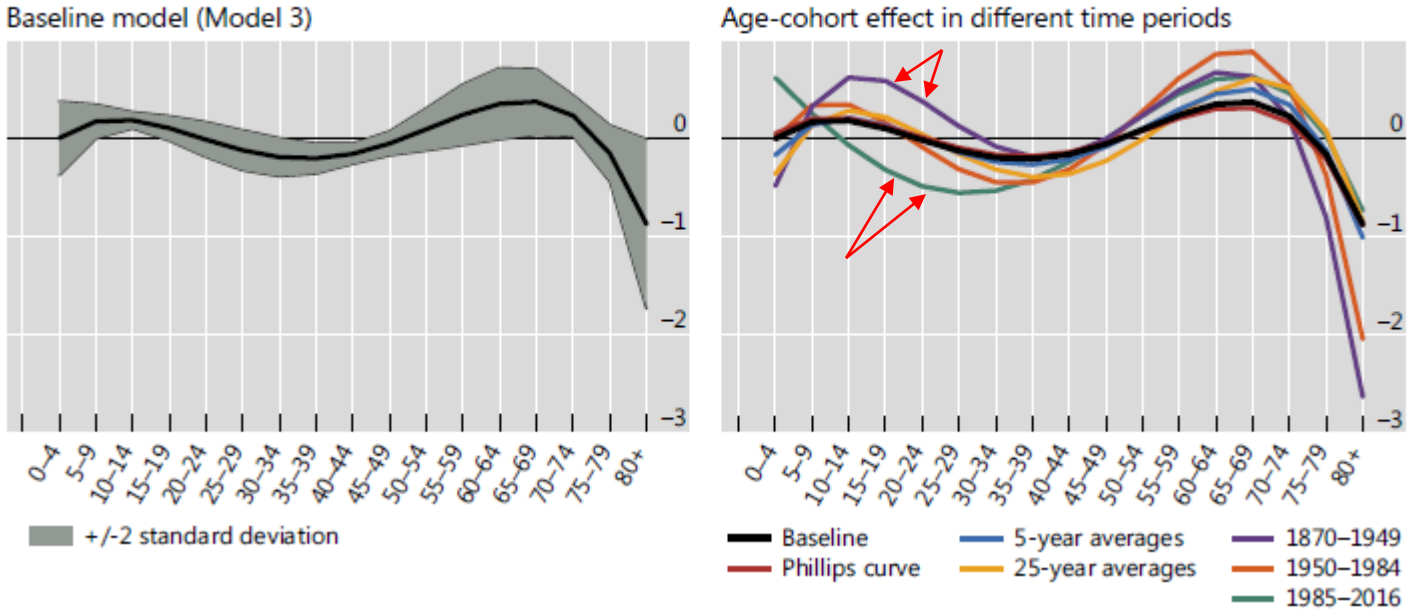
# Discussion Points

- The relationship between demographic changes and inflation is based on overall CPI inflation. There has been a change in the drivers of food and energy price and core prices.
    - If the identification comes from oil price movements, the finding about the relationship between inflation and demography can be misleading and not a good predictor for future inflation.
- It is surprising that the age structure impact is so stable across time periods given how different the periods are.
    - How freely capital flows across countries
    - Retirement decisions given the changes in longevity
    - When do young people join the labor force and become net savers

# Discussion Points

For example, how is that 15-24 year olds had inflationary effect in 1870-1949 but deflationary in 1985-2016. Not really consistent with the life-cycle consumption and savings of dependent population.

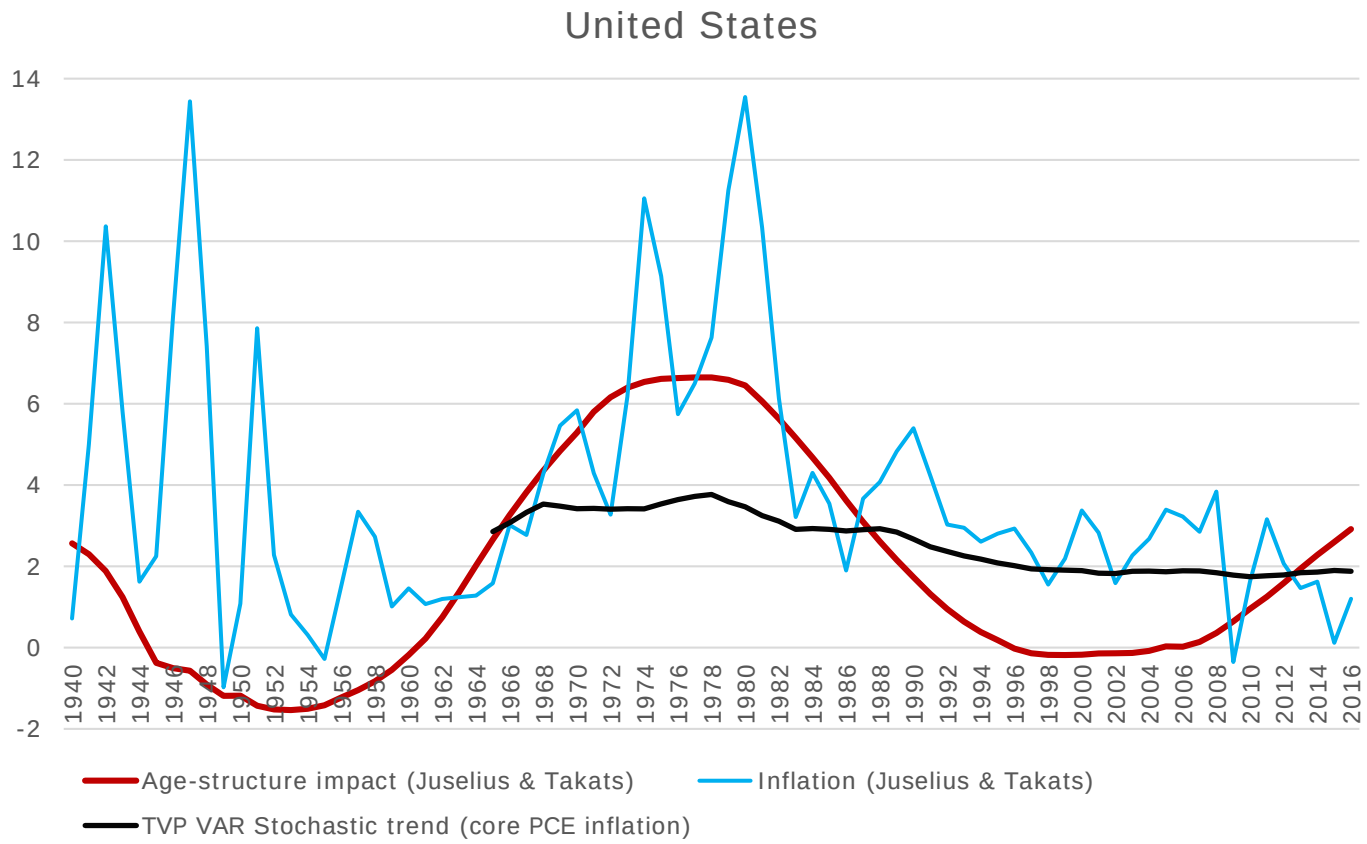
Estimated age-cohort effects ($\beta_{1k}$ coefficients, equation (2)) Figure 2




Source: Juselius and Takáts (2019).

# Discussion Points

The age-structure effect is not matching US stochastic trend for core PCE inflation very well and not sure what to make of the pickup since 2006?




Source: Juselius and Takáts (2019), author's calculations.

# Adjustments along the intensive margin and wages: Evidence from the euro area and the US: Overview

- Bulligan, Guglielminetti, and Viviano (2019) – how does the propensity to adjust along the intensive margin affect wage growth?

- Search-matching model where labor utilization varies both along the extensive (UR) and intensive margins (h). HH's utility *and* firms' adjustment costs depend on the hours per worked.

- Wage is affected by hours through three channels:

  - the disutility of working
  - the production function
  - the cost of adjusting hours

- In this highly stylized model, wages increase with the intensive margin if in st. st. $mdu_L > w$. But quite a complicated function…

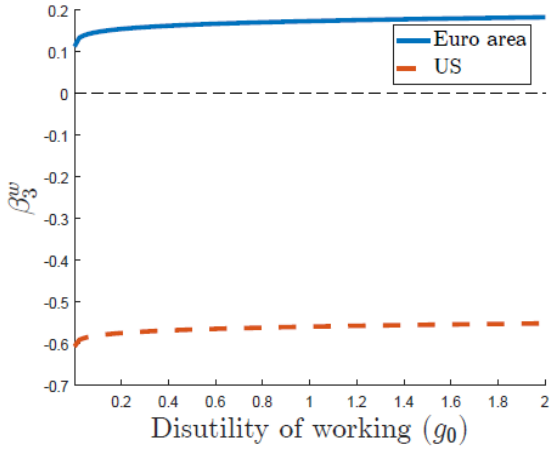
# Adjustments along the intensive margin and wages: Evidence from the euro area and the US: Overview

- Focus on relative adjustment cost (intensive vs extensive margin). Under some standard assumptions:

Higher MC adj h ⇒ lower optimal h ⇒ lower $mdu_L$ (below st. st. w)

Intuition: Higher relative adjustment costs imply that it is more expensive for the firm to increase hours than it is for the workers. Hence, firms offer lower wages to keep the share of surplus constant.

(a) *Disutility of labour*



# Discussion Points

- The search-matching model is very useful for illustrating the various channel through which the intensive margin can affect wage growth and how complicated the relationship is.

- …But ultimately, the big questions is whether this helps us model/forecast wage growth better

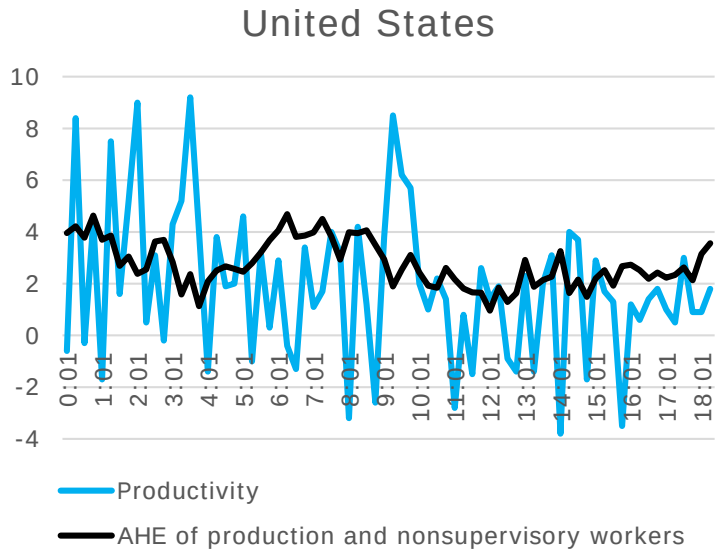
- The paper finds that in the euro area, the coefficient on the intensive margin is positive and including the intensive margin improves the fit of a WPC.  Not so for the United States.

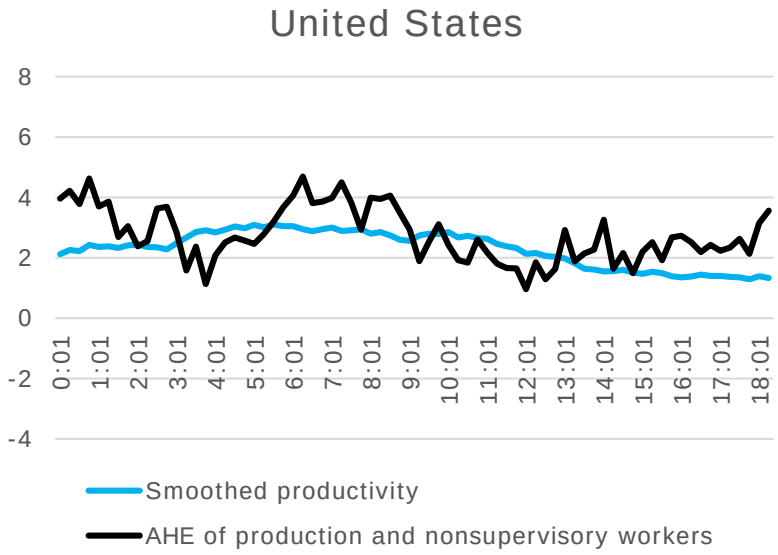
- For the US, AHE do **not** control for compositional changes.  How would the authors disentangle the compositional effect from the intensive margin?

# Discussion Points

- Given the high correlation that you show between the intensive and extensive margin in the data, how confident are you in the estimated coefficients? Multicolinearity leads to imprecisely estimated and unstable parameters.

- Why is productivity included contemporaneously? Do wages actually move with productivity quarter by quarter?



# Understanding low wage growth in the euro area and European countries: Overview

- Nickel, Bobeica, Koester, Lis, and Porqueddu (2019): Study the reasons behind subdued wage growth in the EA / European countries
- Wage growth was over predicted over 2013-2017. Similarly to price inflation, wage inflation failed to pick up as it did in previous recoveries and as predicted by institutions/professional forecasters.
- Findings vary across countries...
- That said, LM slack, low inflation, and subdued productivity growth explain most of the weakness in wage growth
- but not all of it…

# Understanding low wage growth in the euro area and European countries: Overview

- Other possible factors
  - Is the UR gap an adequate measure of slack - alternative measures of LM slack lead only to marginal improvements of the fit. Not clear what the best measure is => monitor a wide range.
  - Forward-looking expectations are less useful than backward-looking
  - Compositional effects explain some of the low wage growth
  - Nonlinearities – some evidence from both a TVP model and a regime-switching model
- In a structural model
  - negative influence from technology and adverse wage-bargaining shocks over 2013-2017
  - but not from oil supply shocks and domestic demand

# Understanding low wage growth in the euro area and European countries: Overview

- Trend wage growth has been gradually edging down, reflecting smaller contribution from both
  - Trend inflation
  - Trend productivity growth
- There is a break between real wages and productivity, resulting in a labor share decline. The timing of the break varies across countries.
- Utilizing firm-level data, the study finds that:
  - For any level of productivity, real wage growth is lower after the GFC.
  - The change in relationship is bigger for low-prod firms as both the level and the slope have changed.

# Discussion Points

- Very extensive paper.  With lots of useful analysis on recent wage growth both across European countries and across time.

- Complements the analysis of aggregate data with micro-level data when necessary/possible.

- The main findings are broadly consistent with Abdih and Danninger (2018) findings for United States.

- Wage measures used – shouldn't they vary with the questions asked?

- Productivity – is contemporaneous change in productivity the best measure to include?  No restrictions imposed in the WPC.

- With respect to LM slack, how about using prime-age non-employment (i.e. 1- prime age E-pop)?

# Discussion Points

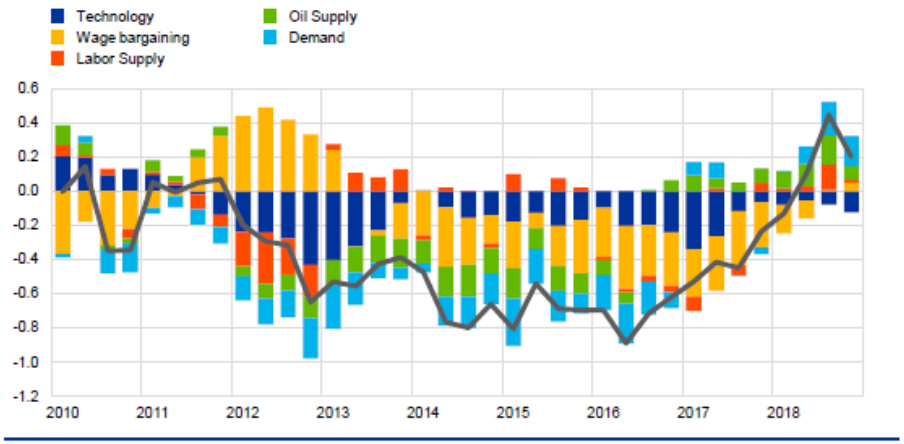
- Compositional effects – should matter only to the extent they are different from previous recession/recovery episodes. Otherwise it will be captured by the UR coefficient. Didn't see the differentiation in the analysis.

- Bargaining – very interesting result…but how do we know that this is not capturing the effect of DNWR? Can we tell the two apart?

**Chart 17**

Shock decomposition of wage growth in the euro area

(percentage point deviation from model mean, annual percentage change)




Source: ECB calculations.
Notes: wage growth = compensation per employee. Domestic and global demand shocks have been combined in one shock for presentation purposes.

# Discussion Points

- More generally, what is a good way to disentangle the effects from loss in households' bargaining power, DNWR, and a break between real wage growth and productivity growth due to frontier companies relying on capital-intensive technology.

- "The pass-through from labor costs to prices is stronger in high inflation regimes."
  - Identification issues: For the pass-through to get stronger, is higher inflation level enough? Or do we also need a regime switch/unanchoring of expectations?

# Concluding remarks

- Very nice papers with some very relevant and intriguing findings.
- It was a pleasure to discuss the three papers; quite an enriching experience.
- More work has to be done to understand wage growth and inflation, including the longer-run factors.
- What do we make of the possible declines in both the wage and price inflation trends?
- What are the implications for monetary policy? How do they depend on the causes for these declines?