Wages and Prices in the Euro Area: Exploring the Nexus

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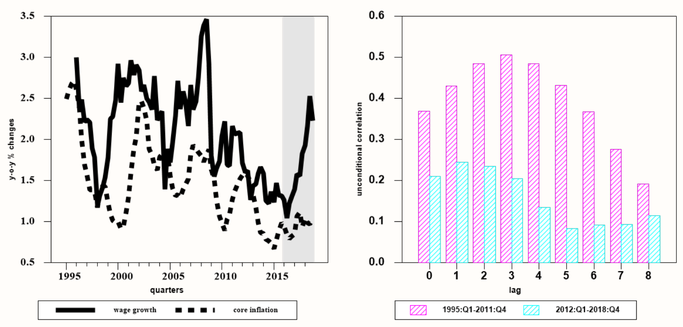
Introduction

- Renewed attention to the **empirical nexus between wages and prices** after the Global Financial Crisis
  1. **Research**: assessing the linkages between wages and prices especially with respect to the puzzling behaviour of inflation conditional to economic activity
  2. **Policy**: during the *missing inflation*, wage dynamics constantly monitored, patiently waiting for its pass-through (PT) to core inflation
- Weakening in the impulse from wages to prices ⇒ in the Euro Area (EA) unconditional correlation tends to vanish after 2011 (0.25 vs. 0.55 in 1995-2011).

Figure 1: The vanishing link between wage growth and core inflation in the EA.



This paper

- Studies *conditional* wages/prices nexus in the EA
- **Answers three research questions**
  1. How does wage dynamics transmit to measures of underlying inflation?
  2. Is the PT from wages to prices shock-dependent?
  3. What role for monetary policy and financial shocks, two drivers rather neglected so far?
- **Informs policymakers on wage-prices spirals**

Main findings

- **The conditional PT from wages to core consumer prices is lower than 1** – although close to 1 for wage bargaining shocks
- During *missing inflation* **wage growth mainly driven by labour market-specific shocks and aggregate supply shocks**. Negligible contribution of aggregate demand shocks ⇒ **not strong enough to raise core inflation**
- **Financial shocks** act as disturbances of **supply nature** ⇒ move wages and consumer prices in opposite directions
- Accordingly, this feature translates into **firms' counter-cyclical mark-ups**, consistently with theoretical models in which firms face financial frictions and nominal rigidities
- Overall ⇓
  1. Important implications for building theoretical models that address the relation between labour, financial and macroeconomic variables
  2. **Empirical explanation of why core inflation may remain subdued despite a pick-up in wages**
- **Implications for post-pandemic inflation developments associated to strong recovery of labour markets**: **wage-price spirals could be activated by aggregate demand or wage mark-up shocks**

Empirical Framework

- Bayesian VAR model

$$\mathbf{y}_t^{'}\mathbf{A_0} = \sum_{\ell=1}^{p} \mathbf{y}_{t-\ell}^{'}\mathbf{A}_\ell + \mathbf{c}^{'} + \boldsymbol{\varepsilon}_t^{'}, \;\; \boldsymbol{\varepsilon}_t \sim (\mathbf{0}_n, \mathbf{I}_n) \quad (1)$$

- Quarterly data over sample 1999-2018
- Identification of 5 shocks (baseline model) ⇒ **Aggregate Demand**, **Aggregate Supply**, **Labour Supply**, **Wage Mark-Up**, **Monetary Policy**

Table 1: Identifying assumptions

	AD	AS	LS	WMU	MP
Y_t/H_t	+	+			+
UR_t	−		−	+	−
Y_t	+	+	−	−	+
W_t	+	+	+	+	+
P_t	+	−	+	+	+
R_t	+				−

Notes: +/− denote sign restrictions on impact (t = 0); blank entries imply unconstrained IRFs. Y_t is Real GDP, H_t are hours worked, UR_t is unemployment rate, W_t is nominal wages, P_t is the harmonized index of consumer prices (HICP) net of food and energy, R_t is the short-term (shadow) rate.

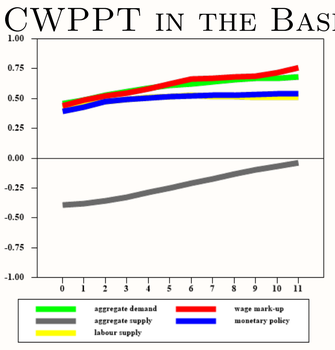
Conditional W-to-P Pass-Through

- Ratio between cumulated IRFs of W and IRFs of P conditional to each identified shock $s = 1, ..., 5$

$$CWPPT_h^s = \frac{\sum_{h=1}^{H} \text{IRF}(P)_h^s}{\sum_{h=1}^{H} \text{IRF}(W)_h^s}, \; H = 12 \quad (2)$$

- Largely incomplete PT in the short-run and quite similar across same-nature shocks
  1. Largest PT associated with AD and WMU shocks (0.6, 0.8)
  2. MP and LS shocks lead to lower values (0.4, 0.6)
  3. AS shocks move W and P in opposite directions (-0.5, -0.1)

Figure 2: CWPPT in the Baseline model

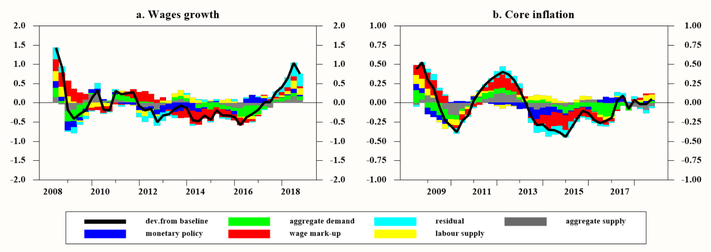


Notes: the colored solid line is the median of the posterior distribution of the Bayesian VAR to the identified shocks (green for AD, black for AS, yellow for LS, red for WMU, blue for MP).

Drivers of wages and prices

- Acceleration in wage growth mainly reflected labour market shocks and **AS** shocks
- Wage pressures stemming from labour-specific shocks effectively transmitted to core inflation but counter-balanced by the negative contribution of **AS** shocks. Small contribution of **AD** shocks

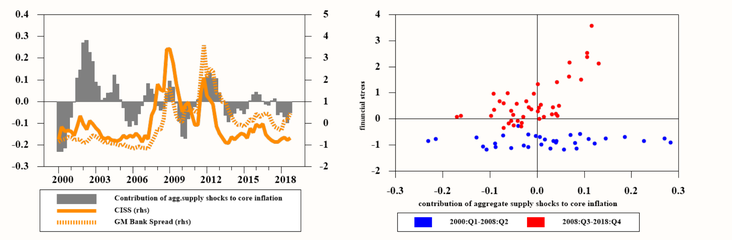
Figure 3: Historical Decomposition.



Adding Financial Shocks

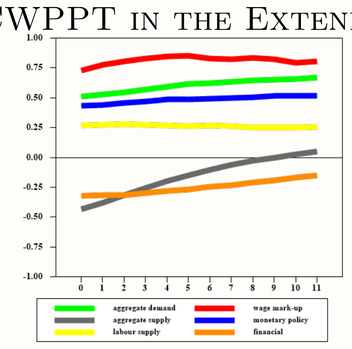
- Extended model ⇒ Add **financial** shocks
- Identification ⇓
  1. No contemporaneous impact on labour variables (0 on Y_t/H_t, UR_t)
  2. Figure 4 shows positive correlation between financial stress and the estimated contributions of **AS** shocks from the baseline model
  3. Supply-side mechanism related to financial developments at work in the EA

Figure 4: Financial stress and AS contribs.



Notes: for sake of comparison, the CISS indicator and the bank spread are standardized (i.e., taken in difference from their historical means and then divided by the corresponding standard deviation). The contributions of aggregate supply shocks to core inflation are obtained from the baseline VAR model described in Section 2.

Figure 5: CWPPT in the Extended model.



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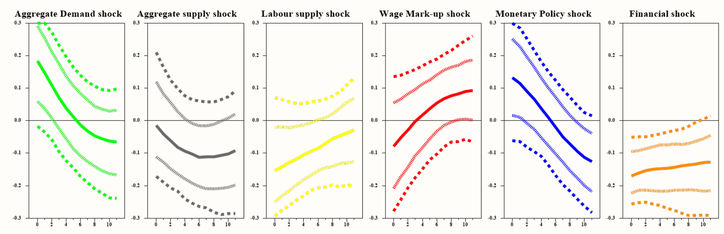
Countercyclical Mark-Ups

- Assessing the *conditional* cyclical behavior of firms' mark-up $(\text{IRF}(P)_h - (\text{IRF}(W)_h - \text{IRF}(Y/H)_h))$
- Mark- up ↓ following a **financial** shock
- Evidence validates models with financial frictons and nominal rigidities

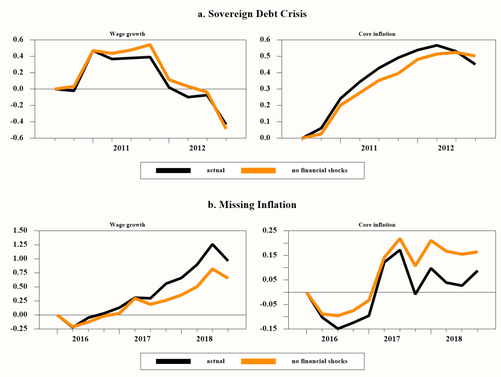
Figure 6: Conditional Mark-Ups.



Financial Shocks and Inflation

- During *missing inflation*, favourable financial shocks kept core inflation lower by about 0.2%

Figure 7: Counterfactuals: Extended model.



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