Inflation dynamics: theory and evidence

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Ivan´s research agenda: many valuable theoretical insights

1. Supply/cost-push shocks explain relevant share of recent inflation (role of asymmetric shocks).
2. Fiscal/monetary policies should not be overstated: low Phillips´ curve slope (possibly unstable).
3. Inflation expectations also matter, but there is much uncertainty about their pass-through to actual inflation (possibly also overstated).
4. Wage-price spirals are natural adjustment mechanisms already implicit in most macro models… not to be confused with uncontrolled spirals.

My comments: study these propositions using evidence from Chilean Price data, at the firm level.

- Census of firms: IRS B2B transactions data on quantities and prices; cover ≈ 60% CPI, +80% CPI goods.
- Allows tracking firms network; merged with other info –employment; finance; surveys, etc.
- Analysis applied to MP decisions of last 2-3 years, communicated in several monetary policy reports.

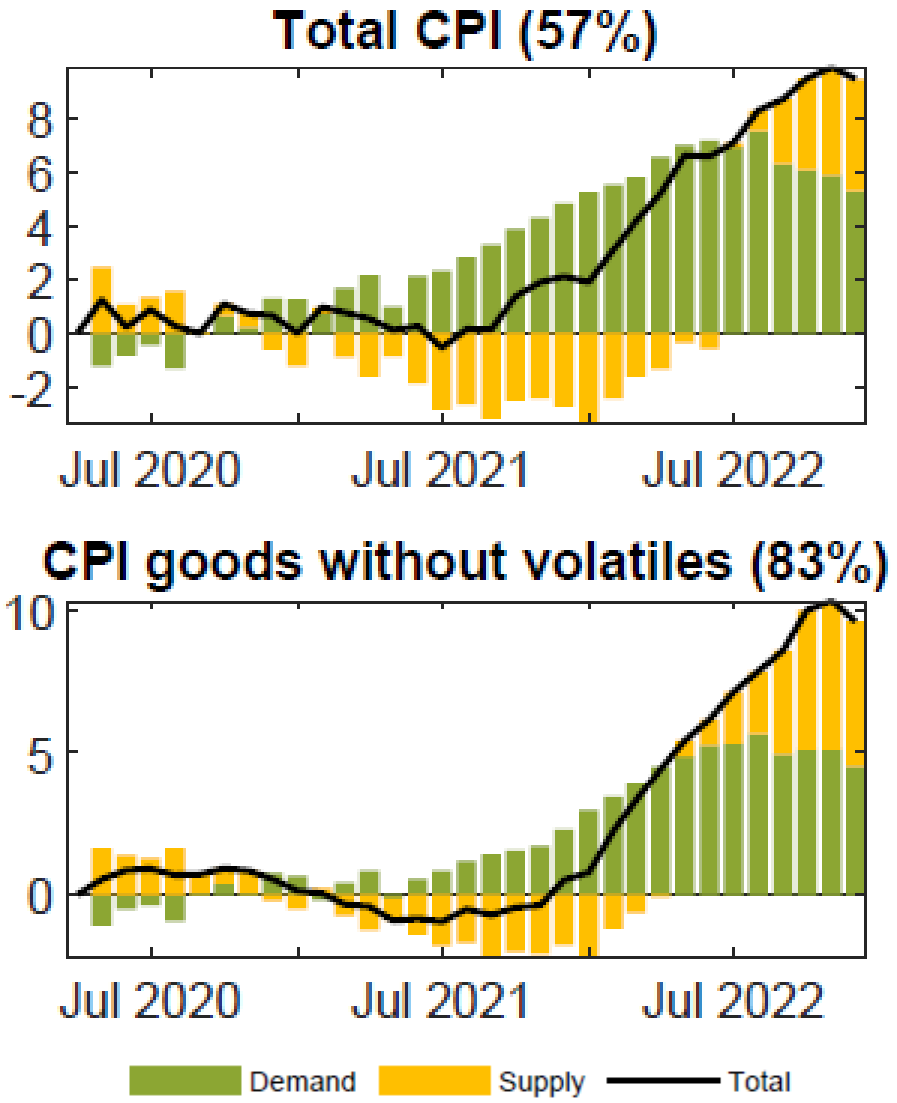
1. Demand or supply?

- Supply shocks were undoubtedly important. Yet fiscal stimulus was very significant and coordinated across AEs and EMEs alike. Chile stands out: 30%+ GDP in transfers and private pension fund withdrawals.
- Carlomagno et al (2023): decompose inflation into demand-supply shocks, using structural VAR estimated with price and quantity data at the product level (firm-specific info).

Sign restrictions.

Shock	Impulse response functions to	
	Δp_t	Δq_t
Demand Shock	+	+
Supply Shock	+	-

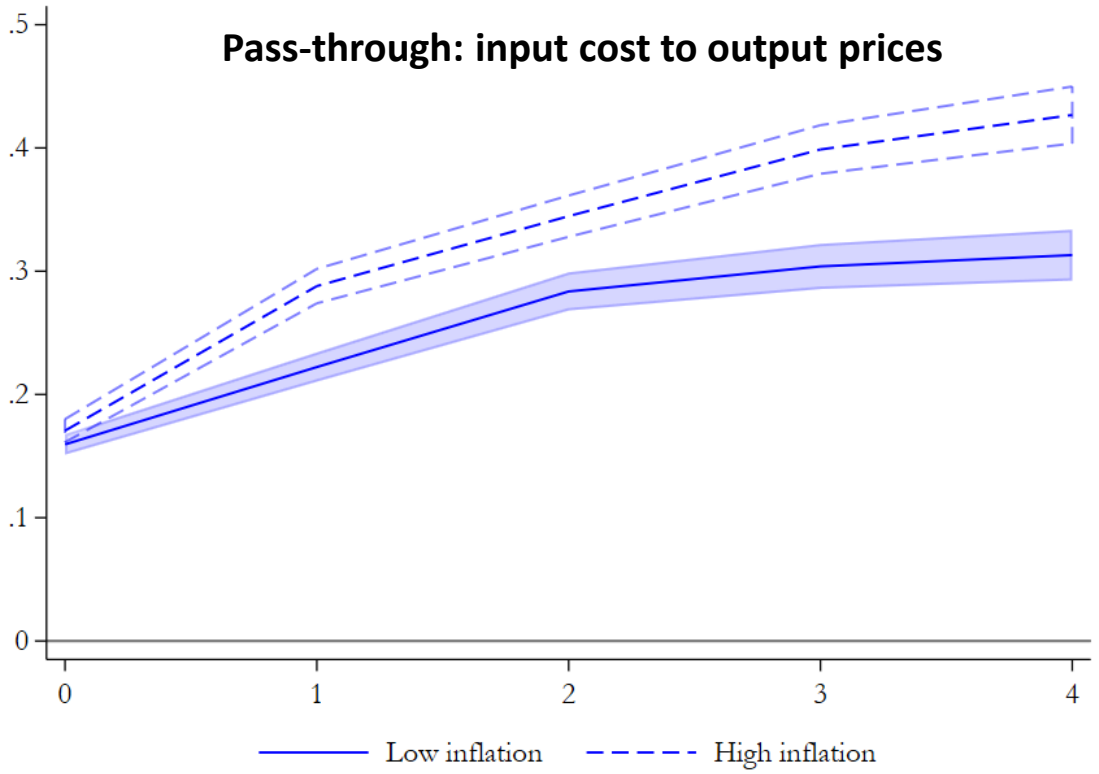
- Main takeaway: inflation pre-invasion mostly attributed to demand.



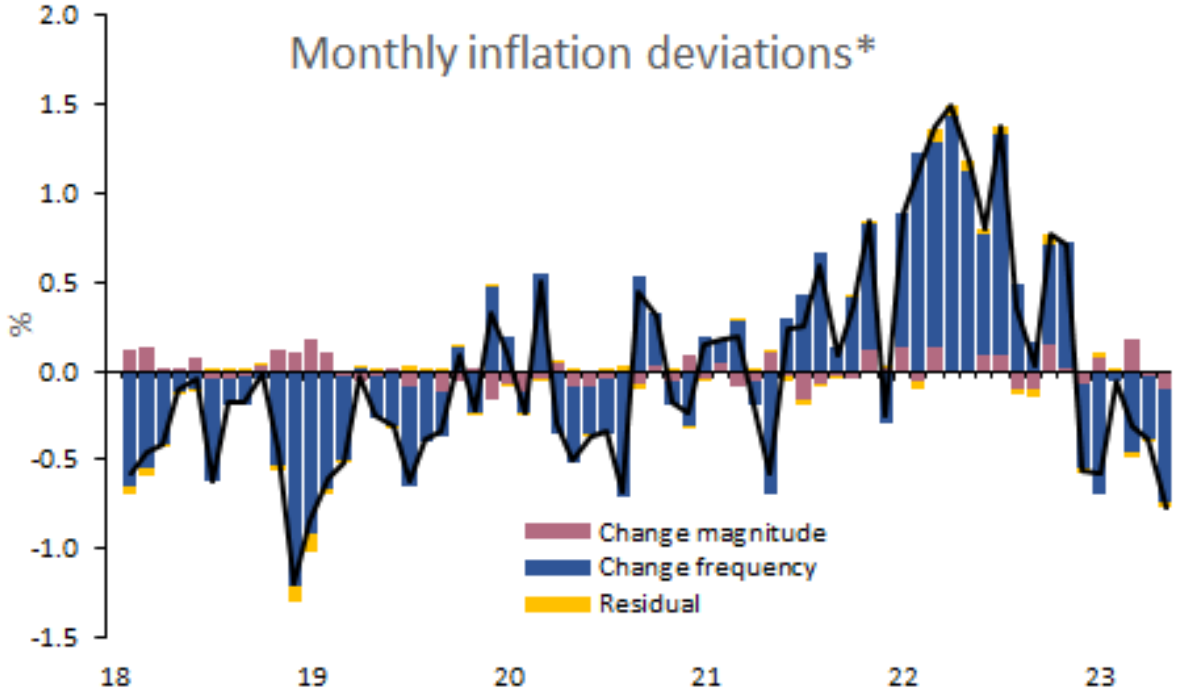
Carlomagno, Eterovic and Hernández-Román (2023). "Disentangling Demand and Supply Inflation Shocks from Chilean Electronic Payment Data." Central Bank of Chile WP N°986. Prepared for Central Bank of Chile *Monetary Policy Report*, Dec. 2022.

2. Stable Phillip´s curve slope?

- Data set allow estimation of input cost-output price pass-through. Not a direct measure of PC slope, but suggestive…
- In high inflation environment, firms pass-through of input costs to output prices is faster and higher.
- In accounting sense, spike in inflation explained by price adjustment frequency, not magnitude.



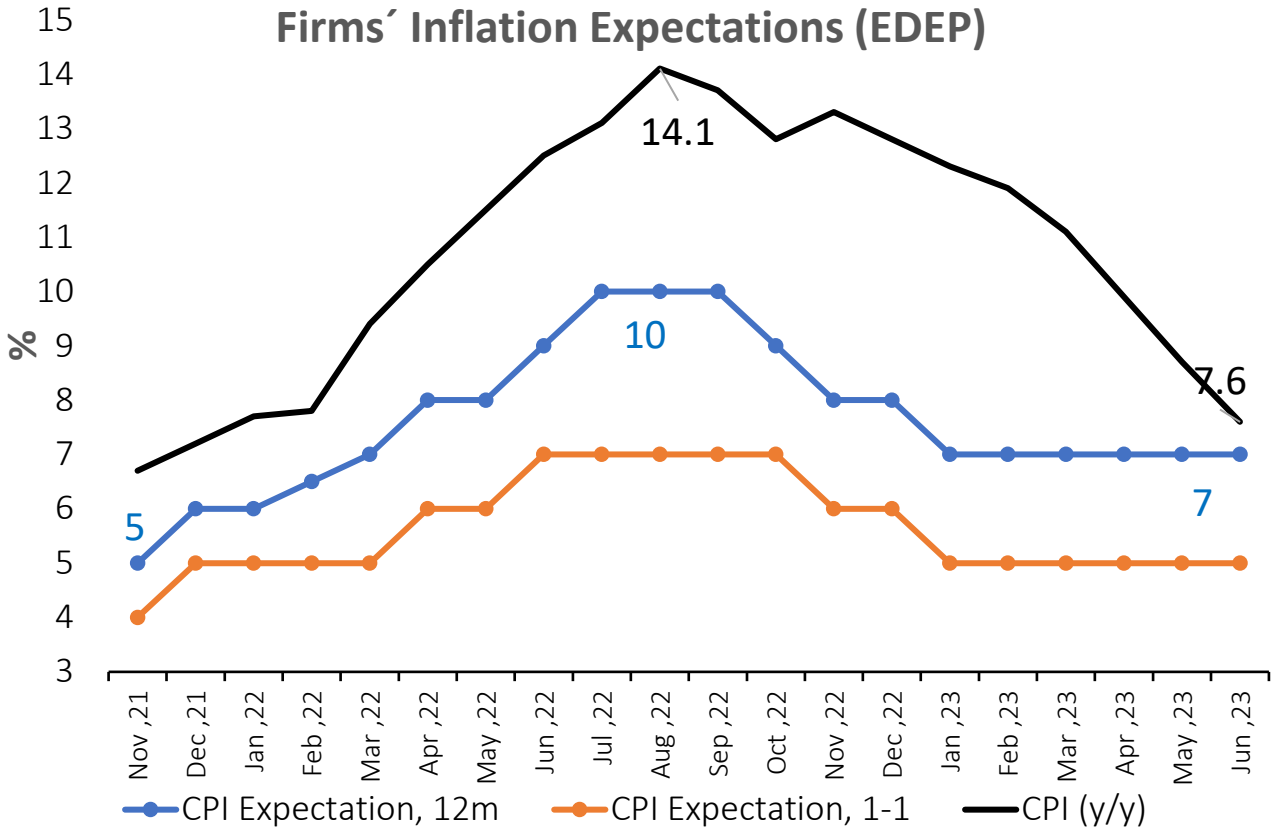
Local projections from Albagli, Grigoli, Luttini, and Rojas (2023), "Price Setting in a High Inflation Environment," mimeo.



*Monthly CPI % change minus 2018-2023 average. Source: González and Rojas (2023). Prepared for Central Bank of Chile *Monetary Policy Report*, Jun. 2023.

3. Low pass-through of inflation expectations to prices?

- Firms´ inflation expectations spiked together with headline. Merging firm-level transactions and inflation surveys allows estimating pass-through of inflation expectations to output prices.



Source: EDEP: *Encuesta Determinantes y Expectativas de Precios*. Central Bank of Chile.

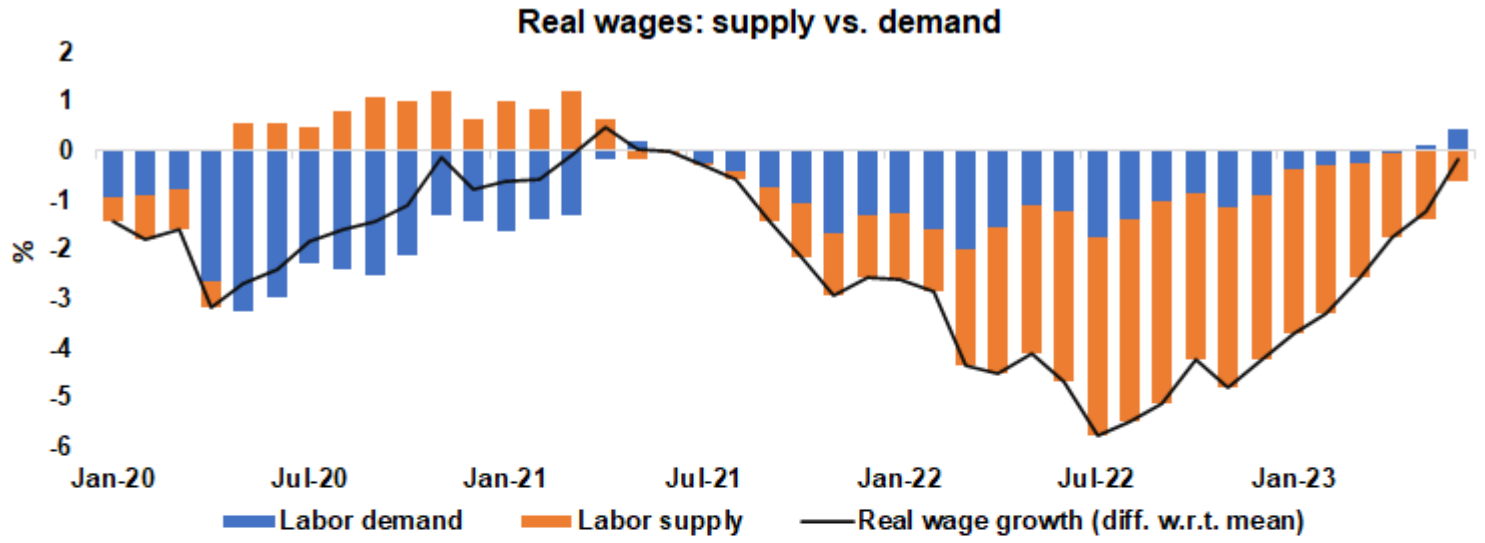
- Controlling for input cost inflation, pass-through of inflation expectation to output prices is close to 1. (Pending: isolate exogenous variation of infl. expectations)*

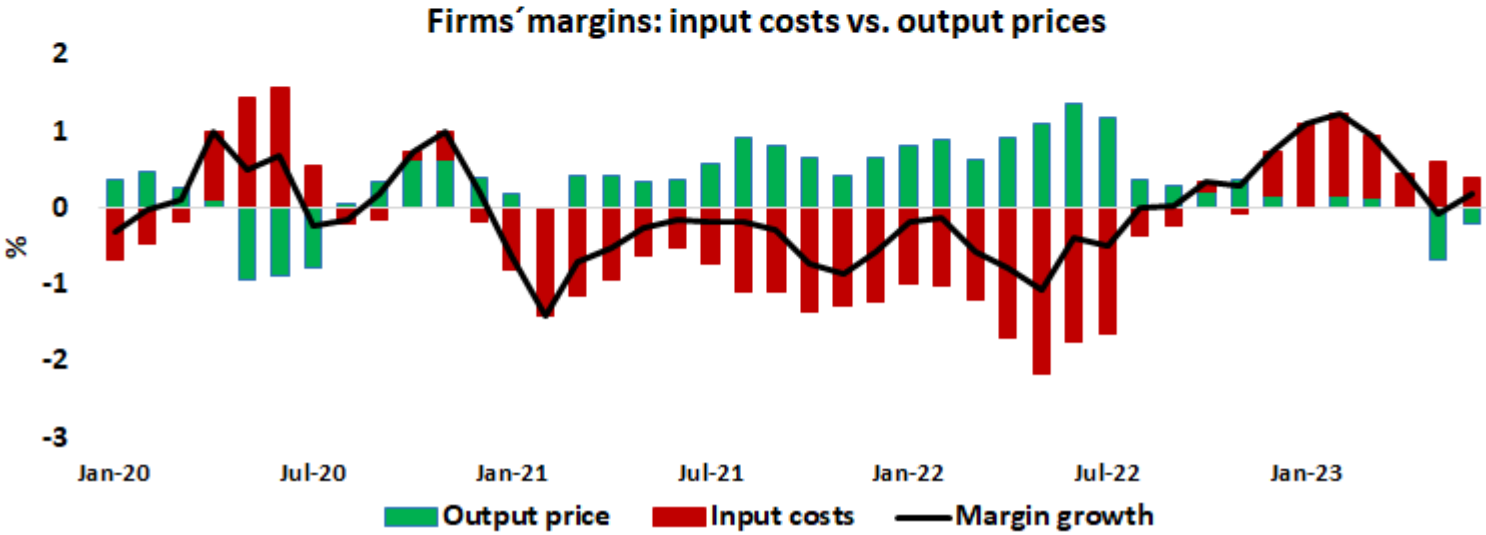
	NK PC	Hybrid PC
	(1)	(3)
Lag of inflation expectations	0.989***	0.675**
	(0.362)	(0.272)
Real Marginal Costs	0.055***	0.041***
	(0.012)	(0.009)
Lagged dependent variable		0.327***
		(0.030)
Wald test lag of inflation exp. = 1 (F-test)	0.0	1.4
Firms	429	429
Observations	10,131	10,131
R-squared	0.208	0.293

*Albagli, Grigoli and Luttini (2022). "Inflation Expectations and the Supply Chain". IMF WP N° 2022/161.

4. Wage-price spirals: under or out of control?

- As highlighted by Ivan, direction of real wages insufficient to isolate drivers and persistence of spirals.
- However, additional information -- aggregate demand, firm margins and its drivers –can give a clearer picture.
- We use a similar structural identification to separate labor demand vs. supply (but using aggregate employment data).
- For firms´ margins, we can split them into the contributions of input costs and output prices (firm-level data).
- **We characterize 3 phases since covid:**

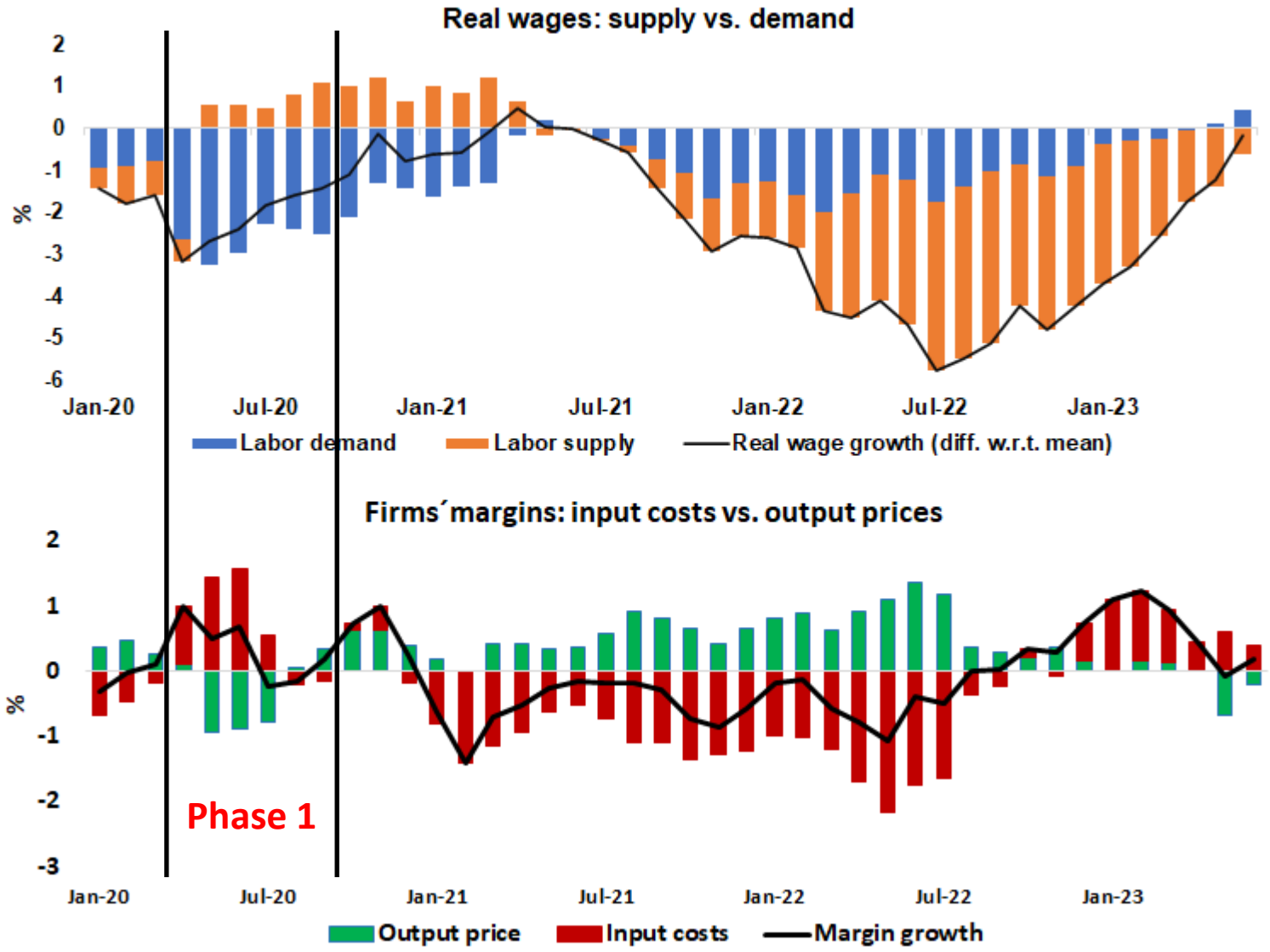




4. Wage-price spirals: under control?

Phase 1: pandemic without stimulus (Mar. 2020 – Sep.2020).

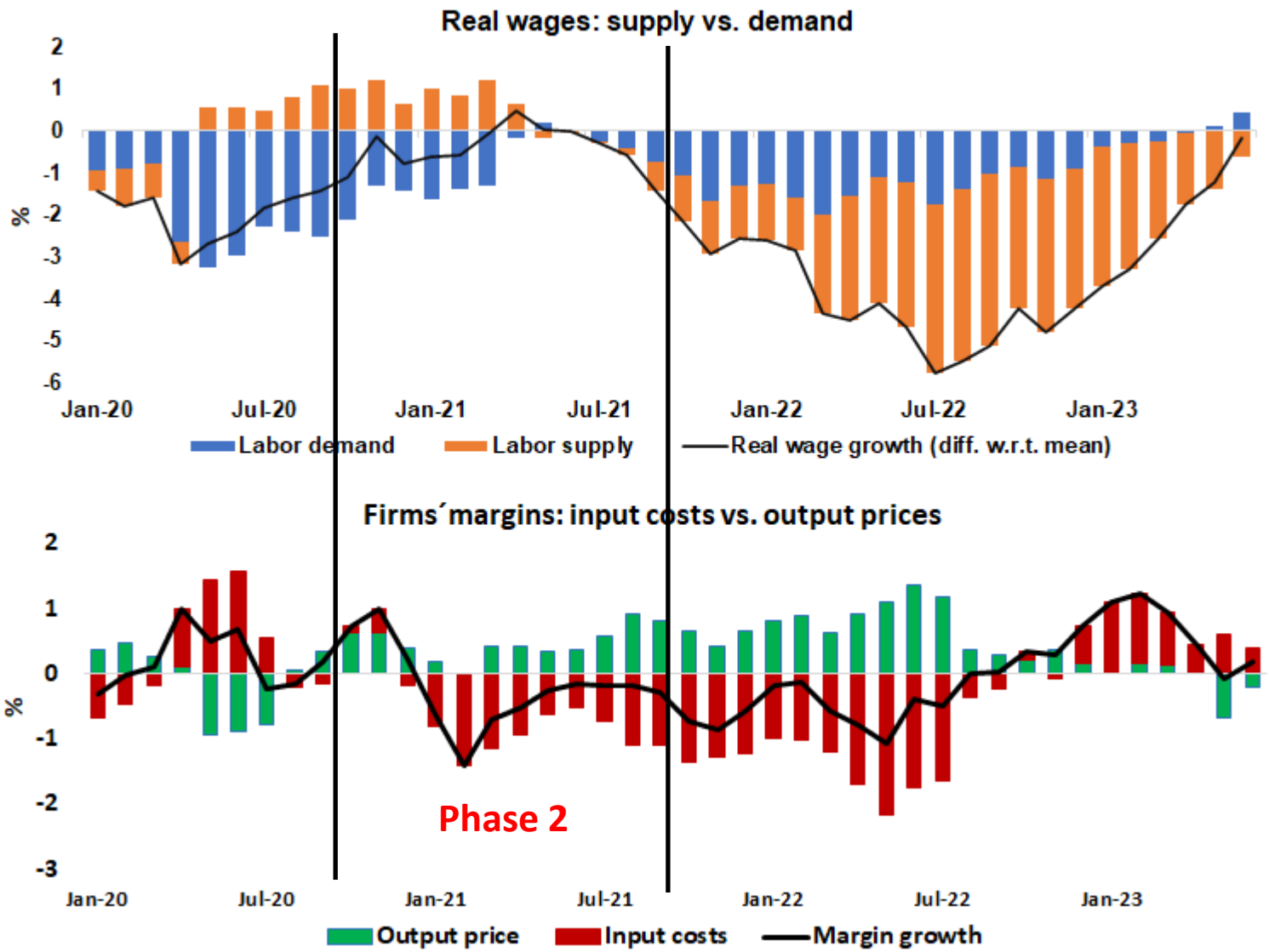
- As the economy contracted, demand for labor fell sharply. Fall in wages mitigated only partially by lower labor supply driven by lockdowns.
- Prices fell, but costs fell even more, improving firms´ margins initially.



4. Wage-price spirals: under control?

Phase 2: end of the pandemic, too much stimulus (Oct. 2020 – Oct. 2021).

- Demand surged, fueled by stimulus. Labor demand recovered, and labor supply contracted (also influenced by stimulus), raising real wages.
- Firms faced sharp cost increases, due both to higher demand and supply bottlenecks. Prices started to increase more markedly, lowering real wages → standard NK effect from demand (and supply) shock.
- Yet, price increases fell short of costs, reducing firms ´margins (also standard NK prediction).



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Phase 3: inflation and contraction (Nov. 2021 – present).

- Demand and costs raised inflation to 14% (Aug. 2022). Monetary policy increased ≈100bp per meeting (mid 2021), contracting output and labor demand.
- Simultaneously, labor supply recovered due to end of the pandemic and fiscal stimulus –> both reduced real wages.
- Real wages and margins have edged closer to historical averages recently. The labor market is not tight by any measure: wage-price spirals perfectly explained by Ivan´s paper (i.e., standard NK models).
- But don´t take this for granted! (role of expectations): MP needs to act fast to avoid high expectations becoming sticky.