



EUROPEAN CENTRAL BANK

EUROSYSTEM

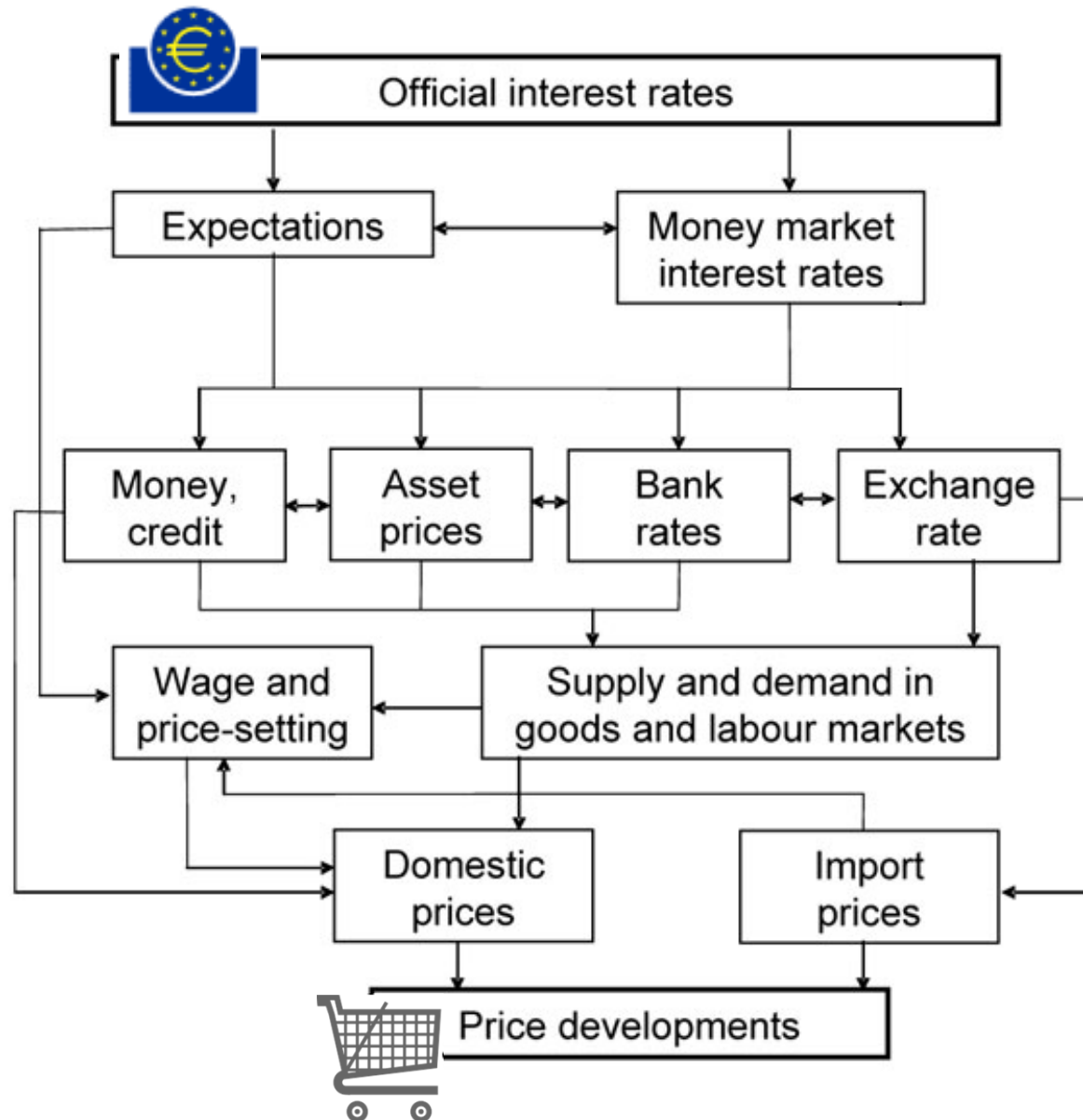
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Georg Strasser
DG Research

The monetary policy transmission mechanism in the euro area

ECB Central Banking Seminar
Frankfurt am Main, 11 July 2018

Monetary policy (MP) transmission



1 Interest rate channel

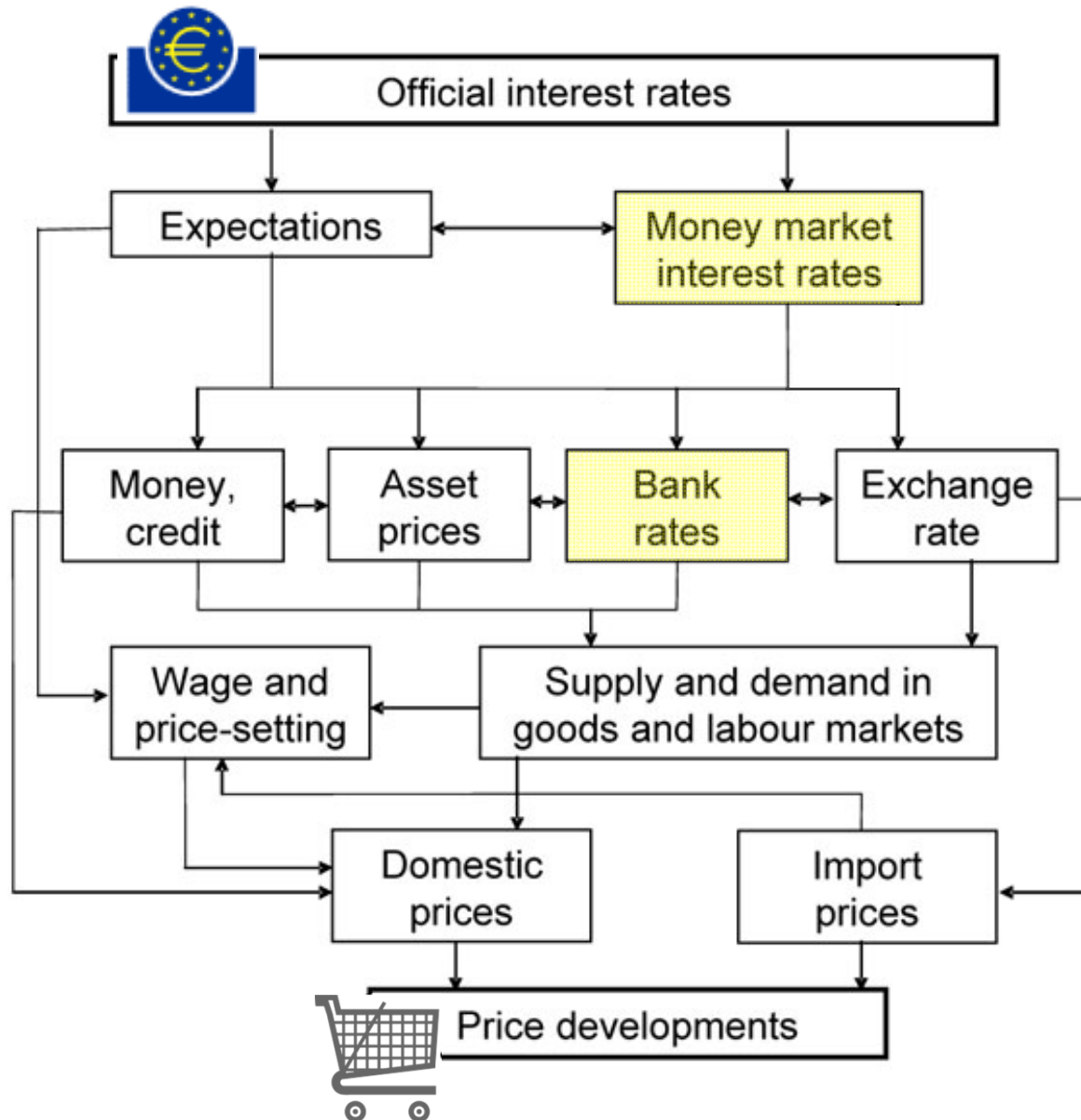
2 Expectations channel

3 Exchange rate channel

4 Credit channel

5 Risk-taking channel

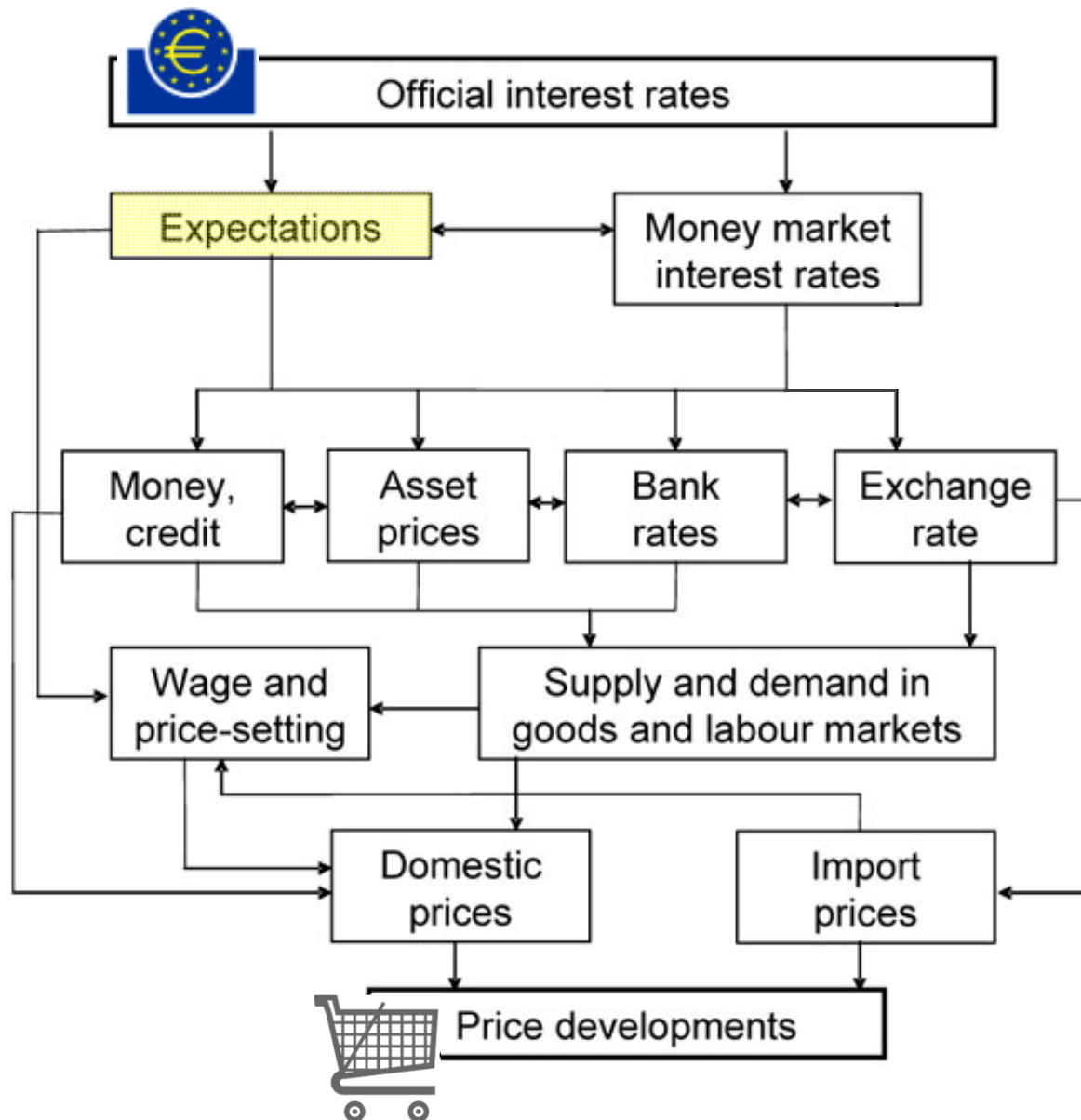
Transmission channel 1



Interest rate channel

- Change in official interest rates directly affects **money market rates**
- Subsequent effects on **bank rates** on loans and deposits
- More indirect effect on long-term market rates (expectations)
... affects returns on savings and costs of borrowing, and thus spending and investment decisions of firms and households, and in turn price level
- Change in discount factors may affect **asset prices** and thus also spending and investment via wealth effects

Transmission channel 2



Expectations channel

Central bank can affect **expectations of**

- **Future interest rates** (thereby also long-term rates)
- **Inflation**

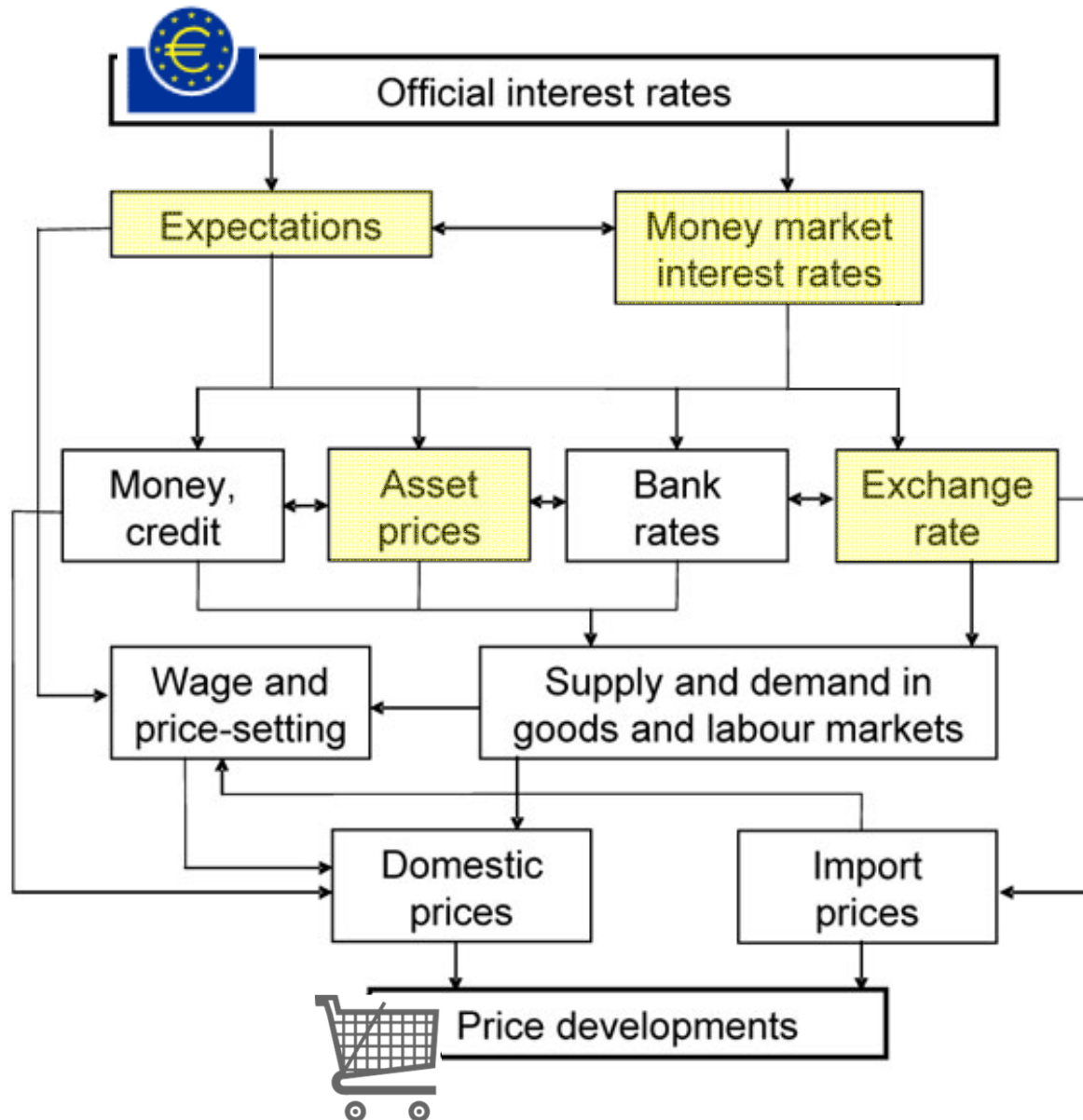
Prerequisites:

- **Credibility**
- **Transparency** (communication of objective and monetary policy strategy)

Importance:

- Economic decisions typically depend on longer-term expectations
- Anchored inflation expectations facilitate conduct of monetary policy (MP)

Transmission channel 3

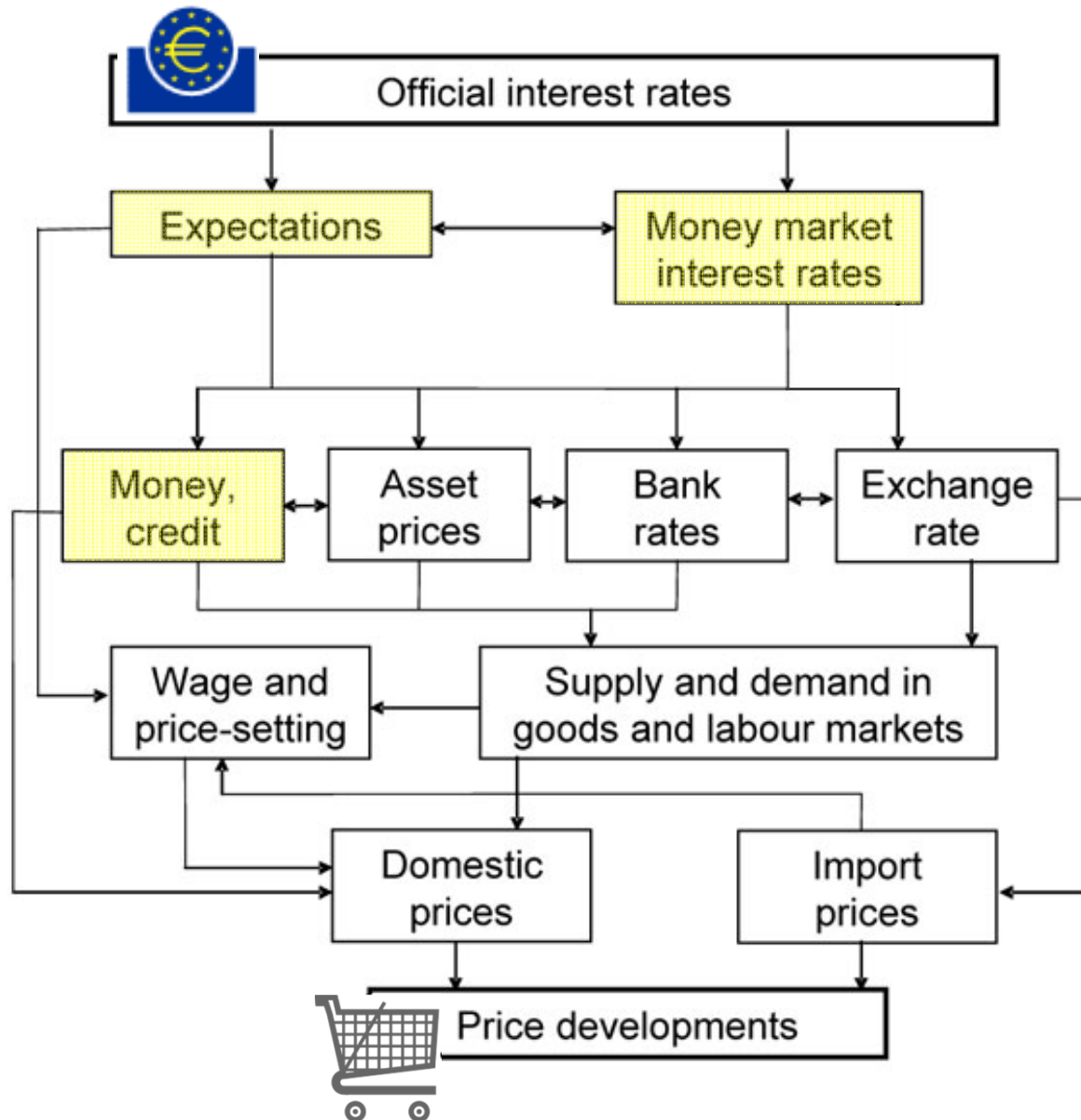


Exchange rate channel

Change in financing conditions and expectations affects exchange rates and asset prices

- **Exchange rate** movements affect
 - **Domestic price of imported goods** (final goods directly, or indirectly via input costs)
 - **External demand**
- **Asset price** movements affect
 - **Domestic demand via wealth effects**

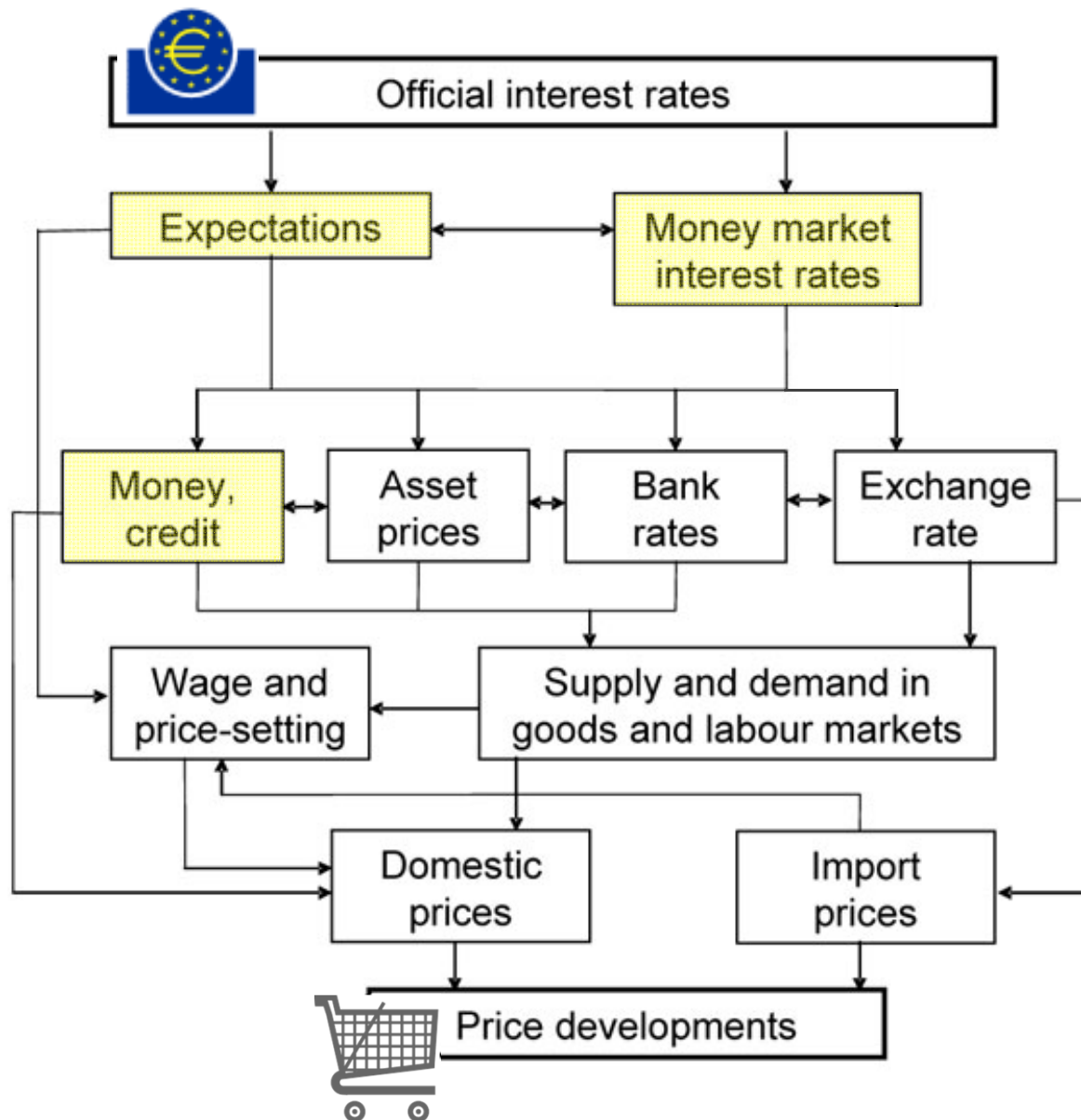
Transmission channel 4



Credit channel

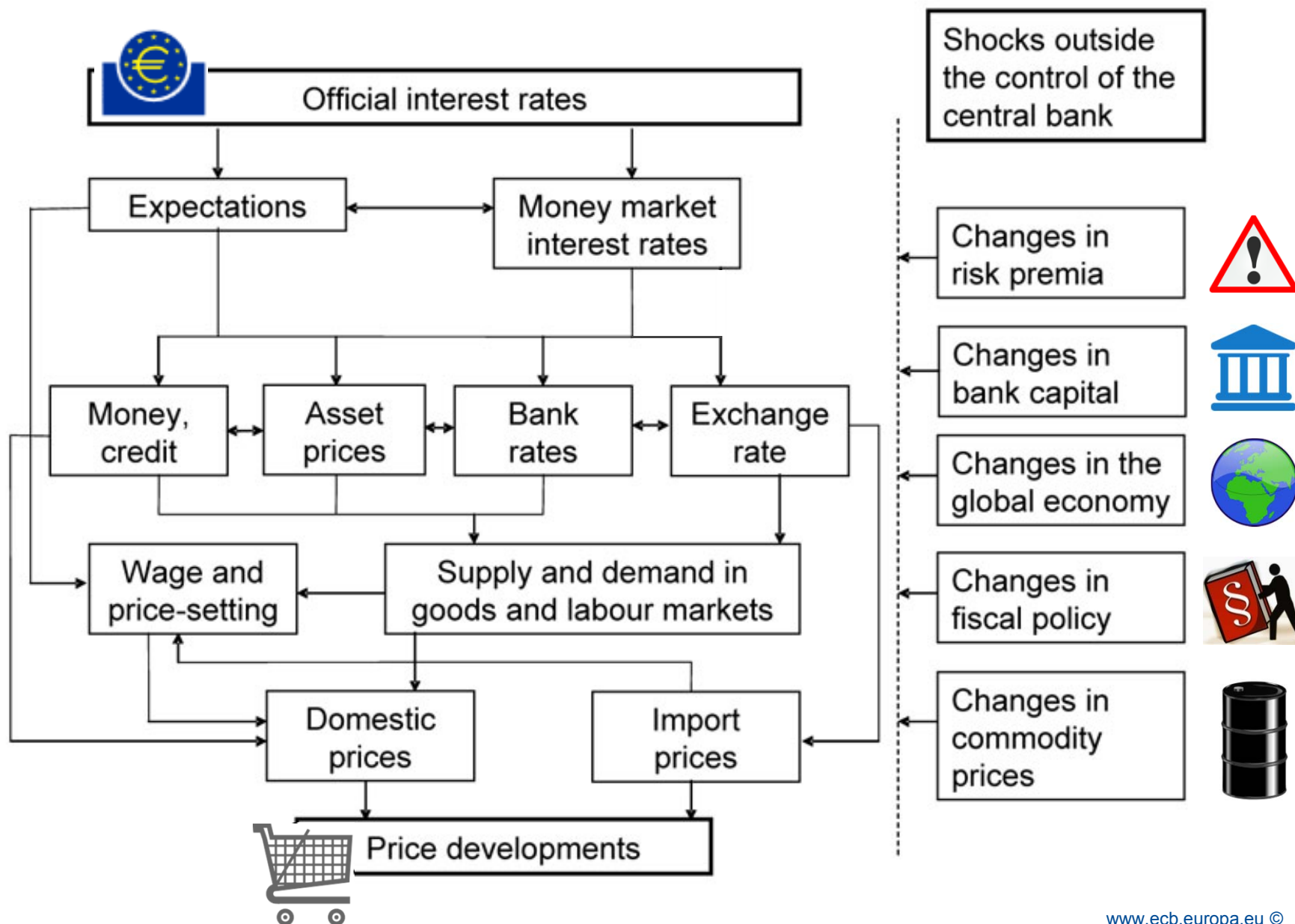
- **Quantity** of new loans
- **Bank balance sheet channel:**
Lower interest rates increase borrowers' net worth (higher net present value, higher asset prices) and thus **collateral value**, leading to an increase in the ability to borrow
- **Bank lending channel:**
Lower interest rates decrease the **riskiness of loans** (reduced likelihood of default of households and firms), leading to an increase in loan supply (keeping risk exposure constant)

Transmission channel 5

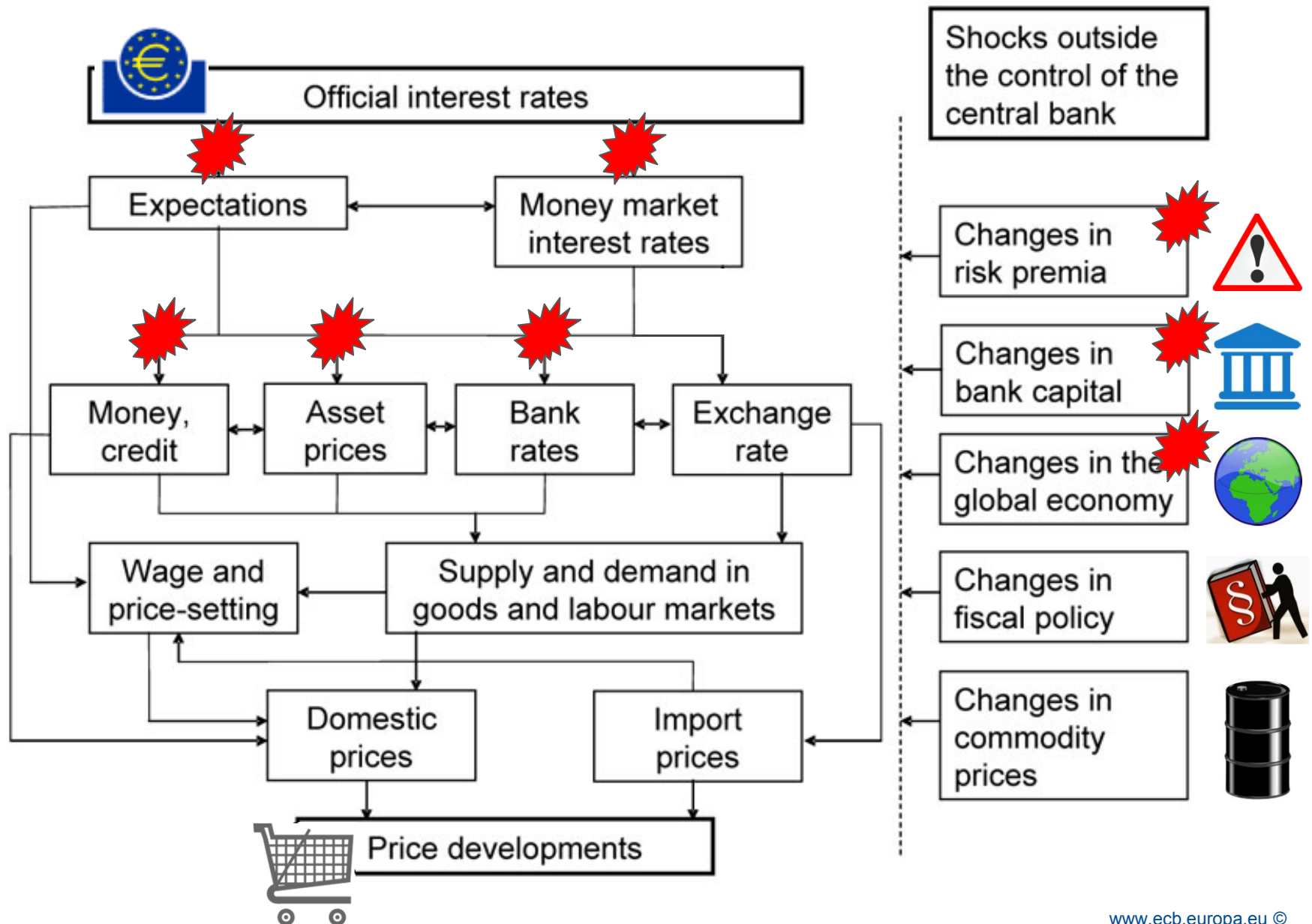


Risk-taking channel

- **Riskiness** of new loans
- **Stretched collateral values:**
Low interest rates boost asset and collateral values; if viewed as sustainable, this leads borrowers and banks to accept higher risk
- **Search for yields:**
Low interest rates make riskier assets **relatively** more attractive, leading banks to soften credit standards; attempt to meet long-term return guarantees
- Analogous channels for nonbanks, e.g. “balance sheet channel”:
Lower interest rate might decrease risk rating of assets; to keep a desired risk exposure, investors may add more risky assets



Monetary policy transmission under strain



Impairments of the transmission mechanism during the crisis

- ❖ **Impaired pass-through** from official to money market rates and government bond yields (which determine pricing of other assets)
- ❖ Difficulties in **bank access to funding** and **low liquidity in government bond** markets (which serve as collateral)
- ❖ Cyclical downturn and drop in asset prices reducing **net worth of lenders** and their ability to borrow
- ❖ **Drastic decline in risk appetite**
- ❖ **Cross-country heterogeneity** (stressed vs non-stressed)

Tools of Unconventional Monetary Policy (UMP)

- **Zero interest rate** on main refinancing operations and negative rate on excess reserves
- **Targeted longer-term lending operations** (TLTROs)
- **Forward guidance** (state-contingent, time-contingent)
- **Asset purchase** programme of public and private securities (APP)

Transmission channels of UMP

1 Spread between capital market and borrowing conditions

2 Market expectations

3

4 Financing conditions in open market

5

Spread between capital market and borrowing conditions

- Goal:
 - Patching MP transmission via banks: effective **MP pass-through** to households and firms
 - Compressing spread between **financing conditions** in capital market and **borrowing conditions** faced by individual borrowers in market for individual loans
- Mechanism:
 - Target financial instruments with **immediate influence on the setting of credit conditions** by financial intermediaries
 - Affect portions of banks' liability structures (central bank credit, wholesale funding) where connection with pricing of bank credit is closest
 - TLTROs and asset-backed securities (ABS) purchases, covered bonds purchases (under APP)

Market Expectations

- Goal:
 - Influence **market expectations** of future interest rates and inflation
- Mechanism:
 - Signaling the **future** course of monetary policy action
 - **Credibility** of promise on certain course of action for setting the future policy rates enhanced by asset purchases today
 - **Forward guidance** and APP influence expectations
 - State-contingent, time-contingent, open-ended forward guidance

Financing conditions in open market

- Goal: Direct pass-through to financing conditions in **open market**
- Mechanism: **Pricing kernels**
 - APP creates downward pressure on sovereign bond yield curves
 - Affects via yield curves the **pricing kernels** in each country – used to price the whole spectrum of local assets and credit
- Mechanism: **Portfolio rebalancing**
 - Purchases of sovereign bonds depress their term premium
 - Induces investors to move up the risk and maturity ladder, bidding up assets with higher risk-adjusted returns.
 - Incentive to reduce cash holdings due to **negative rate policy**
 - Rebalancing of bank balance sheets towards more asset holdings and lending

Five research questions

- 1 How heterogeneous is the effect of MP on households?
- 2 (How) can forward guidance anchor expectations?
- 3 What is the impact of unconventional MP?
- 4 How does wage- and price setting respond to MP?
- 5 Future evolution of the MP transmission process

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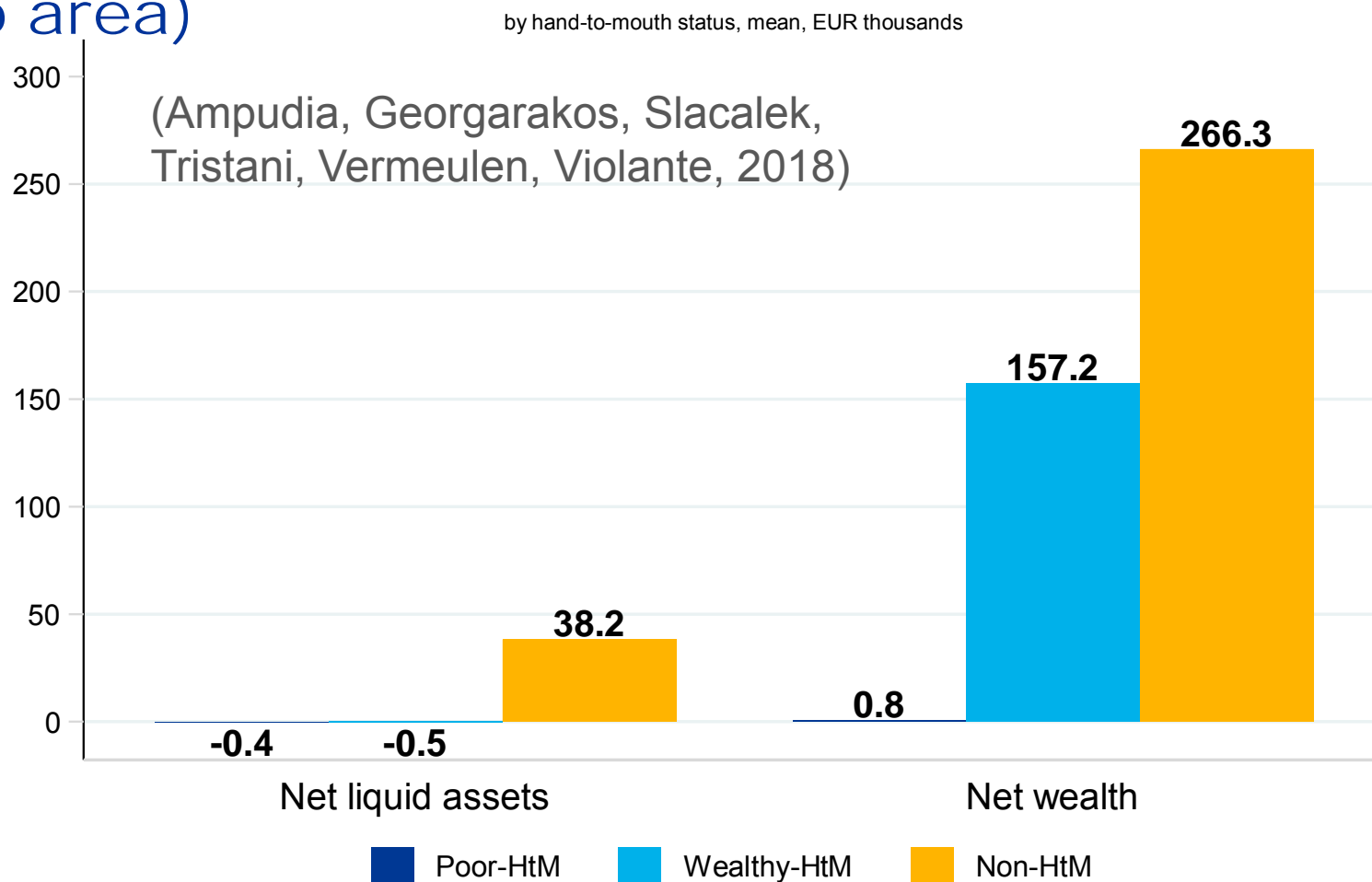
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Effects of conventional MP

- Direct (for given prices and wages):
 - impact on **returns on short-term assets** and payments of variable-rate debt
 - change in saving incentives (**intertemporal substitution**)
- Indirect (after adjustment in all prices and wages):
 - impact on wage **income**, dividends, employment, wealth
- Both direct and indirect effects are **heterogeneous across households**
- 24% of households in the euro area are **hand-to-mouth**

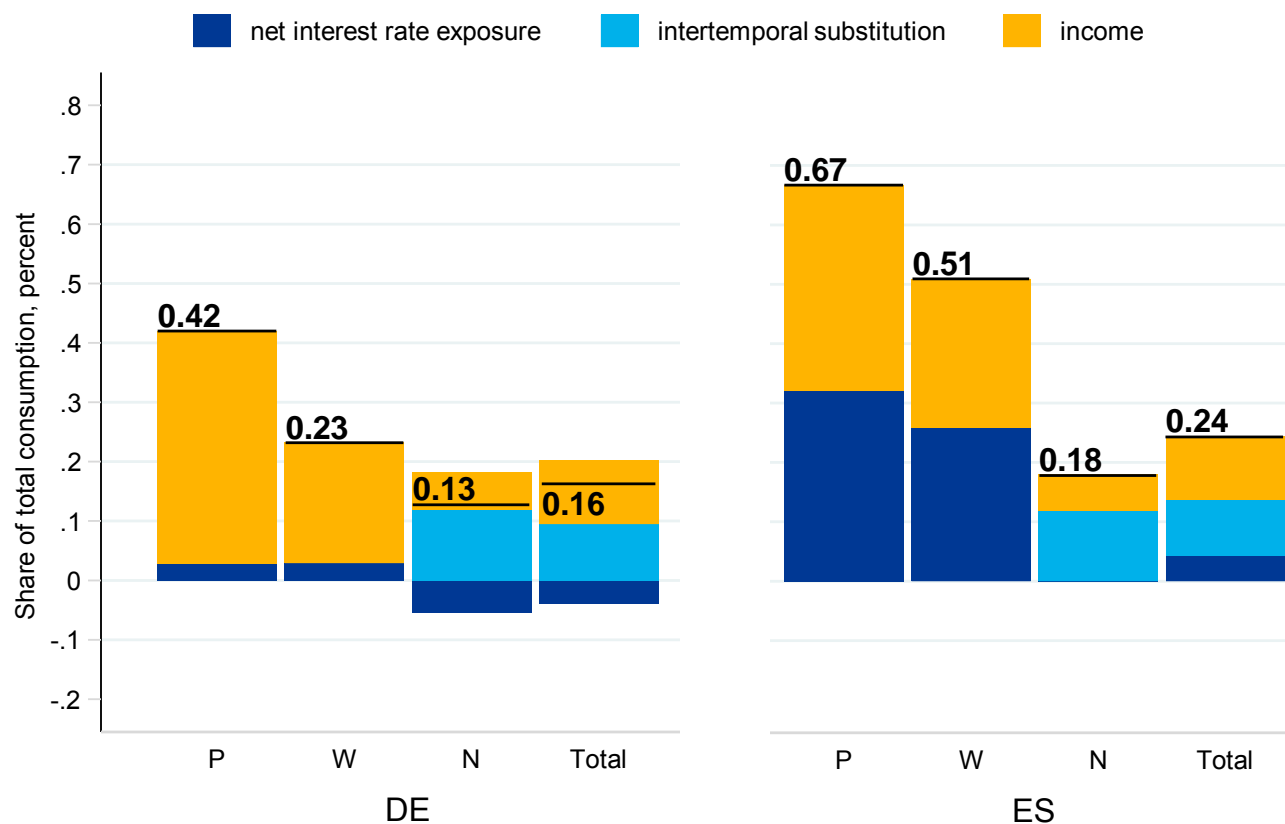
Liquid and total wealth by hand-to-mouth status (euro area)



Source: HFCS 2nd wave. Countries: Euro Area countries.

Net liquid wealth = (deposits + stocks + bonds + mutual funds - credit card balances and overdraft debt)

Estimated distributional impact on consumption of a temporary 100bp cut in standard policy interest rates (Germany, Spain)



Source: HFCS 2nd wave. Countries: DE and ES.

$$\Delta C = MPC \cdot \frac{\text{Net Interest Exposure}}{C} \cdot \Delta R - \sigma \cdot (1 - MPC) \cdot \Delta R + MPC \cdot \frac{Y}{C} \cdot \Delta Y$$

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“Odyssean” FG

Commitment about future conduct of monetary policy

- **Large effects** on private sector expectations (but: “forward guidance puzzle”)
- Requires credibility
- State-contingent
- No sizable inflation overshoot



“Delphic” FG

Guidance about the **likely** future course of monetary policy

- **Smaller effects**; inflation undershoots target substantially and for extended period of time
- Can be counter-productive if taken as signal that economy is performing poorly (Campbell, Evans, Fisher and Justiniano BPEA 2012)



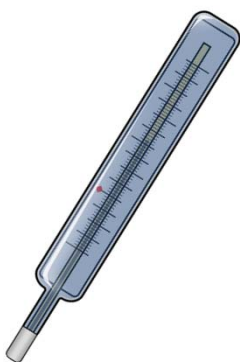
- Purely **qualitative** FG

E.g. ECB until Jan 2016: “we expect the key ECB interest rates to remain at present or lower levels for an extended period of time”



- **Time-contingent** FG

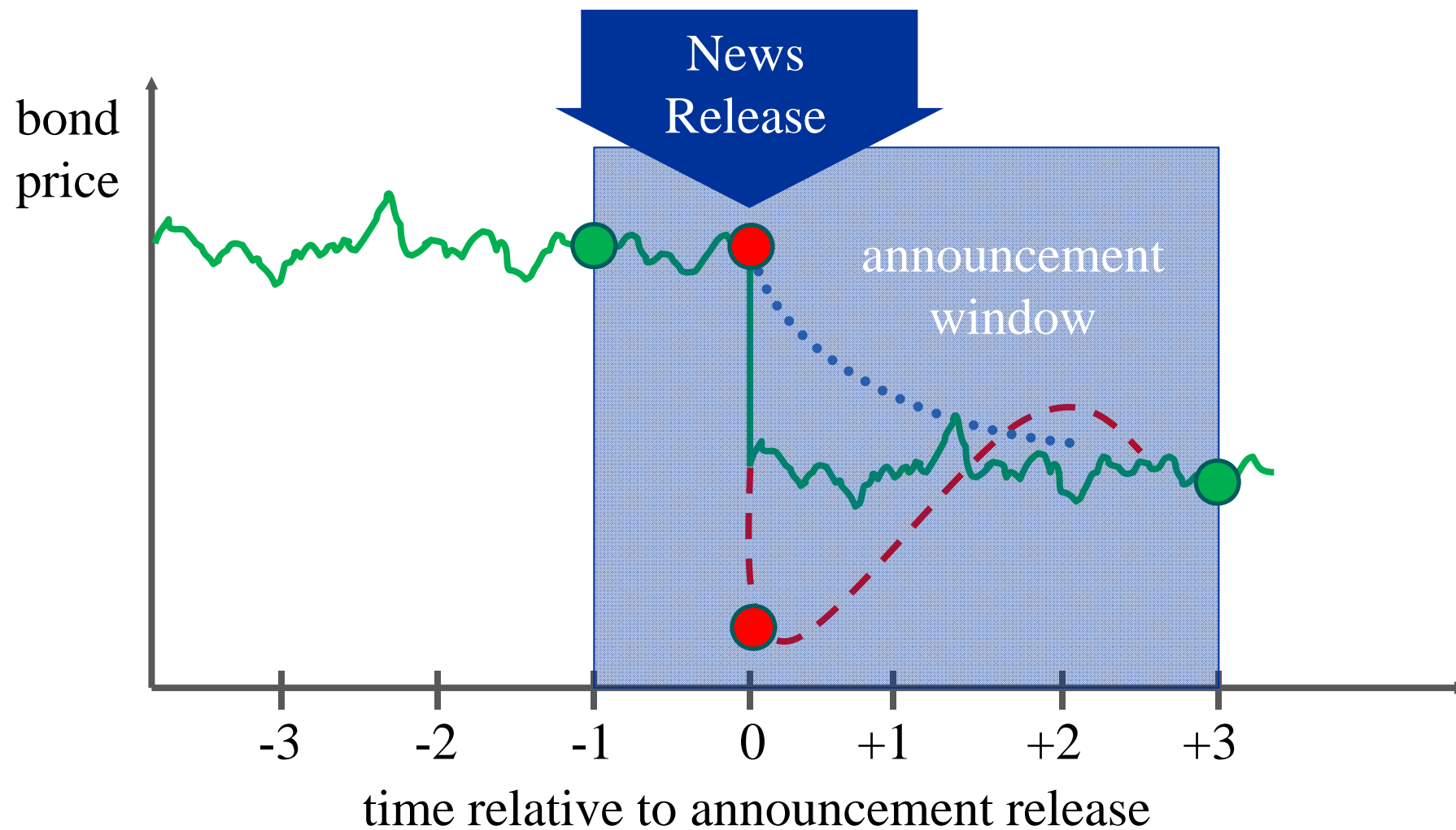
E.g. Bank of Canada, April 2009 - April 2010: “conditional on the inflation outlook, commits to hold the current policy rate until the end of the second quarter of 2010”







- **State-contingent** FG

E.g. FOMC Dec 2012: policy rates appropriate “at least as long as the *unemployment* rate remains above 6-1/2 percent, *inflation* between one and two years ahead is projected to be no more than a half percentage point above the Committee’s 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored”

Event Study







$$\Delta R_t^{c,i} = \alpha^{c,i} + \alpha_{SG} SG_t^c + \alpha_{OG} OG_t^c + \alpha_{LTG} LTG_t^c + \alpha_{STG} STG_t^c + \beta_{s_t} s_t^{c,i} + \beta_{SG} SG_t^c s_t^{c,i} + \beta_{OG} OG_t^c s_t^{c,i} + \beta_{LTG} LTG_t^c s_t^{c,i} + \beta_{STG} STG_t^c s_t^{c,i} + \varepsilon_t^{c,i}$$

	(surprise impact)	Overall	APP in place
	Time-contingent FG, <1.5years	1.25***	0.25
	Open-ended FG	0.44**	0.51*
	No FG	0.41**	0.41**
	State-contingent FG	0.22*	0.22*
	Time-contingent FG, ≥1.5years	0.08	0.05

Bond yields respond to macroeconomic surprises ...

- **less** under **state-contingent** FG and **long-horizon** FG.
- unchanged under open-ended FG.
- **more** under **short-horizon** FG in absence of APP.

- **Short-horizon** and **open-ended** FG seem to have little (or perverse) effects  
- **Long-horizon** FG seems more effective 
- All types of FG strengthened in the presence of an **APP**
- **State-contingent** FG 
 - Preserves market responsiveness, lowers disagreement
 - Consistent with central bank's own uncertainty and provides more flexibility
 - Caveats: time inconsistency, credibility requirement, trade-off between simplicity and accuracy/robustness of state contingency

(Coenen, Ehrmann, Gaballo, Hoffmann, Nakov, Nardelli, Persson, Strasser, 2017)

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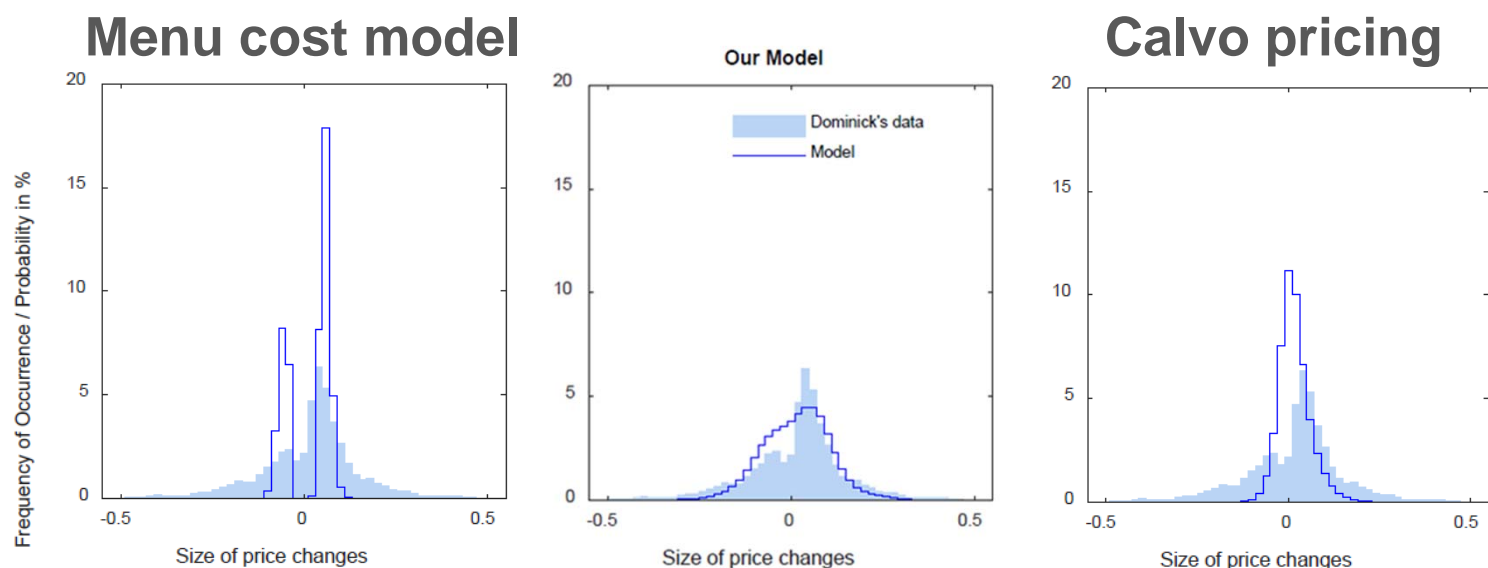
“Whatever it takes” altered risk-taking of euro area banks (Alcaraz, Claessens, Cuadra, Marques-Ibanez, Sapriza, 2018)

- **Event-study** approach:
 - Treatment: Draghi’s “whatever it takes” (26 July 2012)
 - Event window: March 2012-October 2012
- Data for **Mexico: mix of domestic and foreign banks**
 - Euro area banks vs. non-euro foreign & domestic banks
 - Separation of supply shocks from demand shocks using loans to multi-bank firms
- Findings:
 - “Whatever it takes” radically **altered risk-taking of euro banks**
 - **Less aggressive lending of euro area banks** in Mexico (higher interest rates, slower growth of loans to firms)
 - Cross-border **spillovers of MP** due to global risk taking

Five research questions

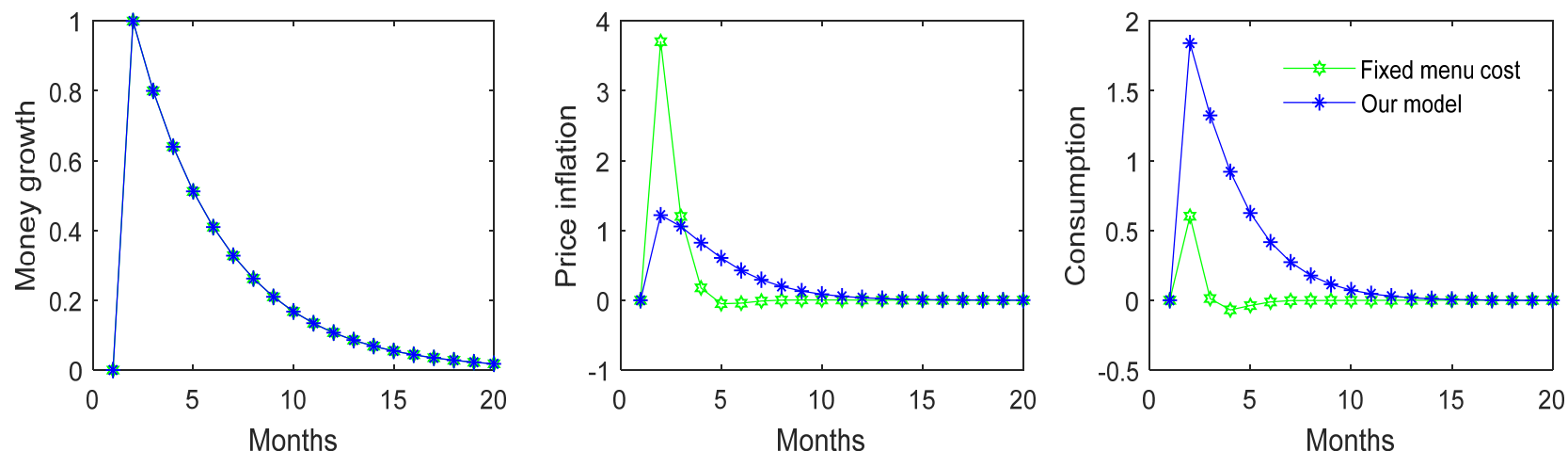
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Existing price-setting models at odds with empirical distribution of price changes



- **Too few** small price changes, perfect price-setting
 - Prices **far** from optimal level get reoptimized
 - **Too many** small price changes, random timing of price-setting
 - Random sample of all prices get reoptimized, including many already **close** to optimal level
- Under menu cost average size of price changes is larger than under Calvo,
- and more flexible aggregate price level and smaller real effects of MP

Response to Money Supply Shock (Nakov, Costain, Petit, 2018)



- Assumption: precise decisions are costly, thus price reset not precise
- Decision cost parameter reflects **price changes in micro data**
- In DSGE model this gives intermediate response for both wages and prices as in data. Spans the range of MP transmission between the two extremes menu cost and Calvo.
- Real effects of nominal shocks 3x larger than under menu cost and 1/2 of the size under Calvo – and this with a **micro-founded** approach
- Rationale for strong expansion in consumption with delayed response of inflation currently observed in the euro area

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5 **Future evolution of the MP transmission process**

Monetary policy transmission evolves with the structure of financial intermediation ...

- Historically, credit intermediation has been largely **bank-based in the euro area** (LTRO, TLTRO targeted at banks)
- Recently, **structural shift** away from bank lending to credit intermediation through financial markets
- Likely tradeoff
 - **Faster** MP transmission: Non-banks may respond more quickly to changes in market prices, larger funding share in capital market than banks
 - **Financial stability risks**: Non-banks might engage in more maturity transformation than banks (in low interest rate environment)

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