Inflation in the Aftermath of the Covid-19 Crisis: An EME Perspective

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OECD, December 3, 2021

Introduction

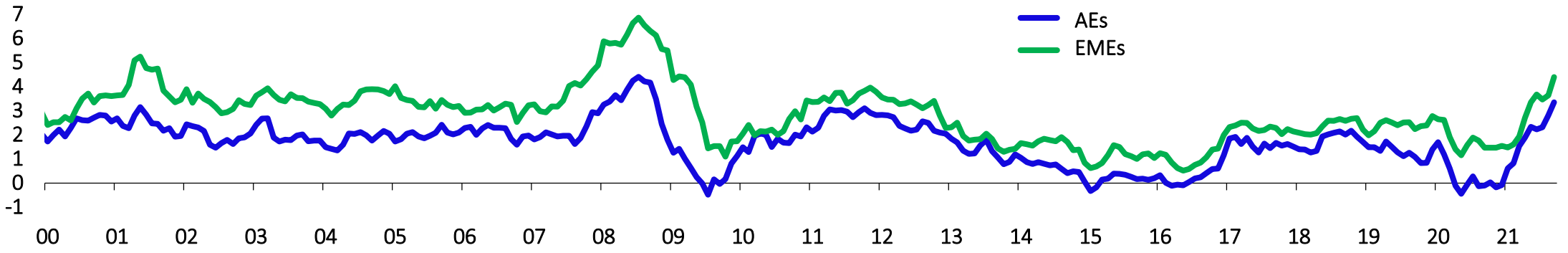
- Quite unexpectedly, inflation has become one of the main concerns in the recovery from the Covid-19 crisis.
- While the scars on the economy appear to be milder than expected and the pandemic has failed to disappear for good, inflation has raised the concern that a swift response from central banks may prompt a deterioration in financial conditions that may harm the recovery.
- To this end, a number of central bankers, policymakers and analysts have argued that the upsurge in inflation is supply-sided, temporary and/or imported and that it would not be advisable to overreact to recent data.
- However, as inflation has continued to escalate, a number of central banks have started to withdraw the support measures to contain the crisis while others have changed the tone of their communication.

Stylized facts of current inflation

Global inflation has been rising for nearly a year, surprising to the upside especially in the last six months.

Inflation in AEs and EMEs (*)

(annual variation; percentage)



- Global inflation has accelerated continuously since end-2020, coinciding with the recovery from the Covid-19 crisis.
- This followed a long period of persistently low and stable inflation, when many observers attributed this to structural factors.
- The upsurge in inflation is stronger for AEs than for EMEs, especially when compared to 2007-08

(*) Based on Bajraj, Carlomagno, and Wlasiuk (2021). Sources: Bloomberg, Eurostat, BLS.

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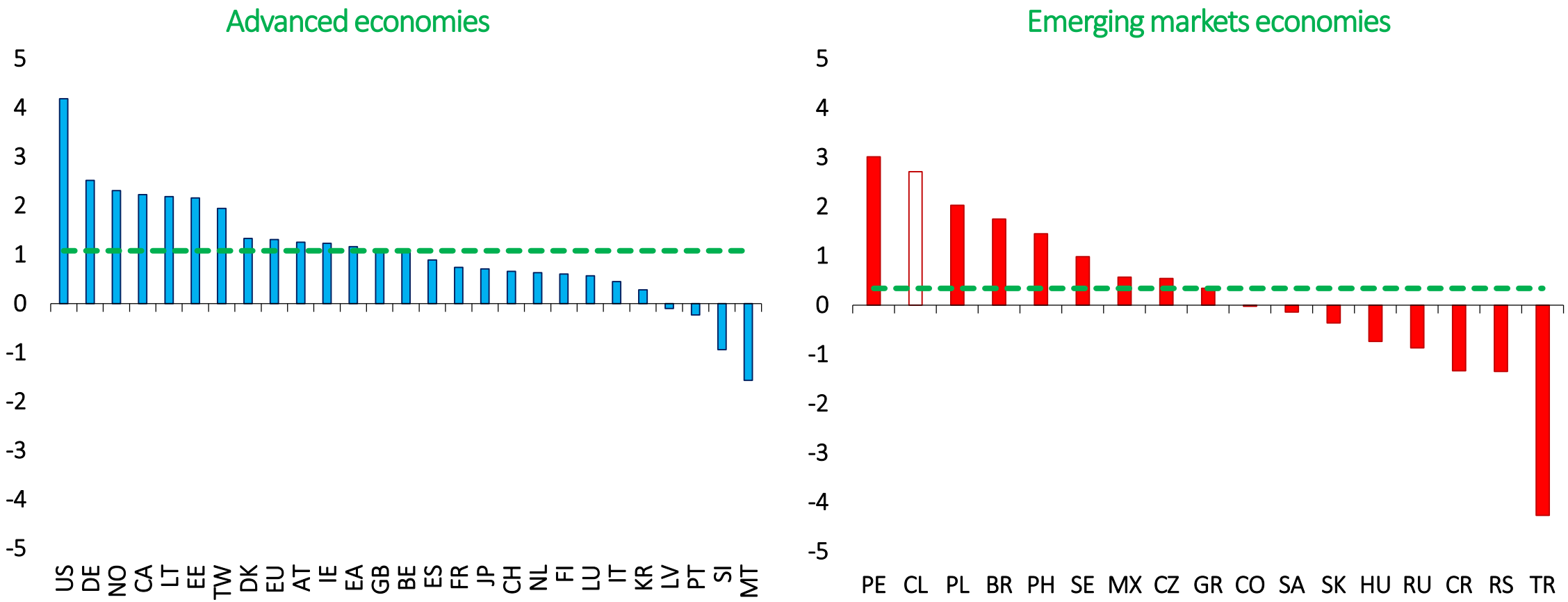
Heterogeneity across countries: overall inflation.

Headline inflation: deviation from historical average (*)

(percentage)



(*) Historical average considering period from 1998 to 2019. Green line corresponds to median between countries. Current inflation corresponds to September (August for a few countries). Inflation for every country has been calculated using weights from Eurozone CPI. Calculated based on Bajraj, Carlomagno and Wlasiuk (2021).

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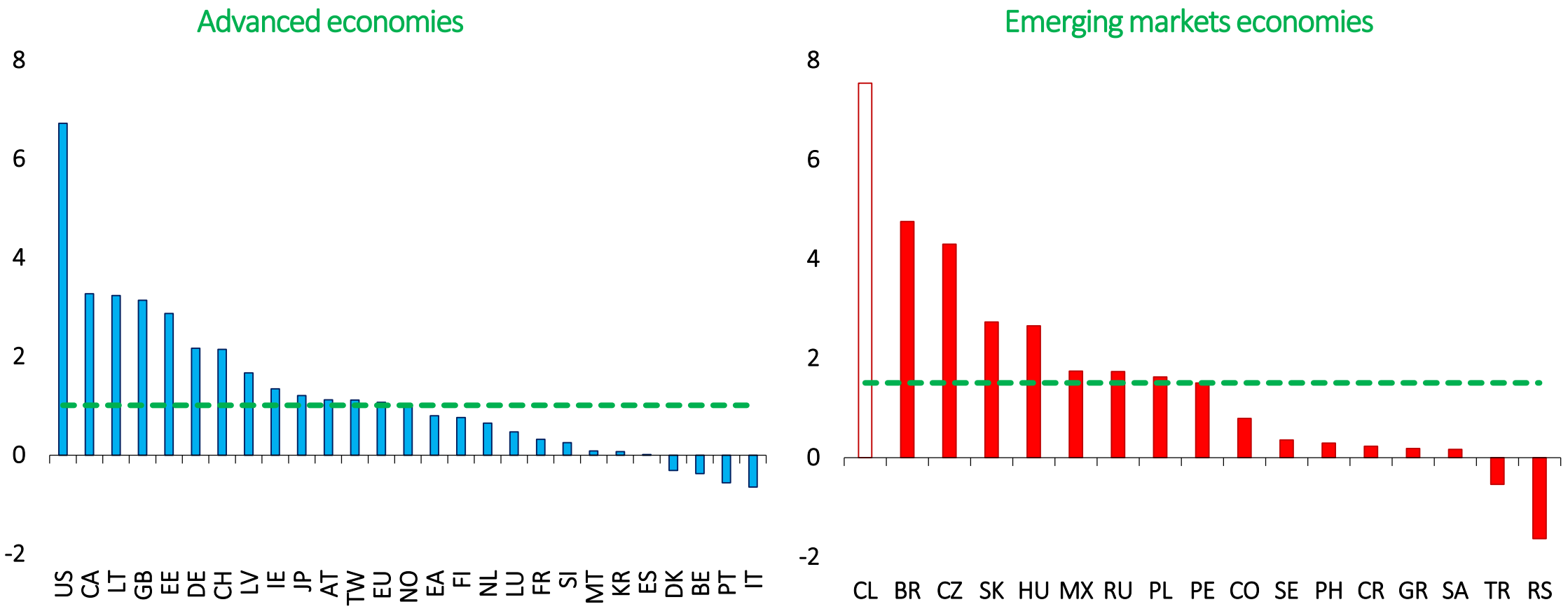
Heterogeneity across countries: goods inflation.

Goods inflation: deviation from historical average (*)

(percentage)



(*) Historical average considering period from 1998 to 2019. Green line corresponds to median between countries. Current inflation corresponds to September (August for a few countries). Inflation for every country has been calculated using weights from Eurozone CPI. Calculated based on Bajraj, Carlomagno and Wlasiuk (2021).

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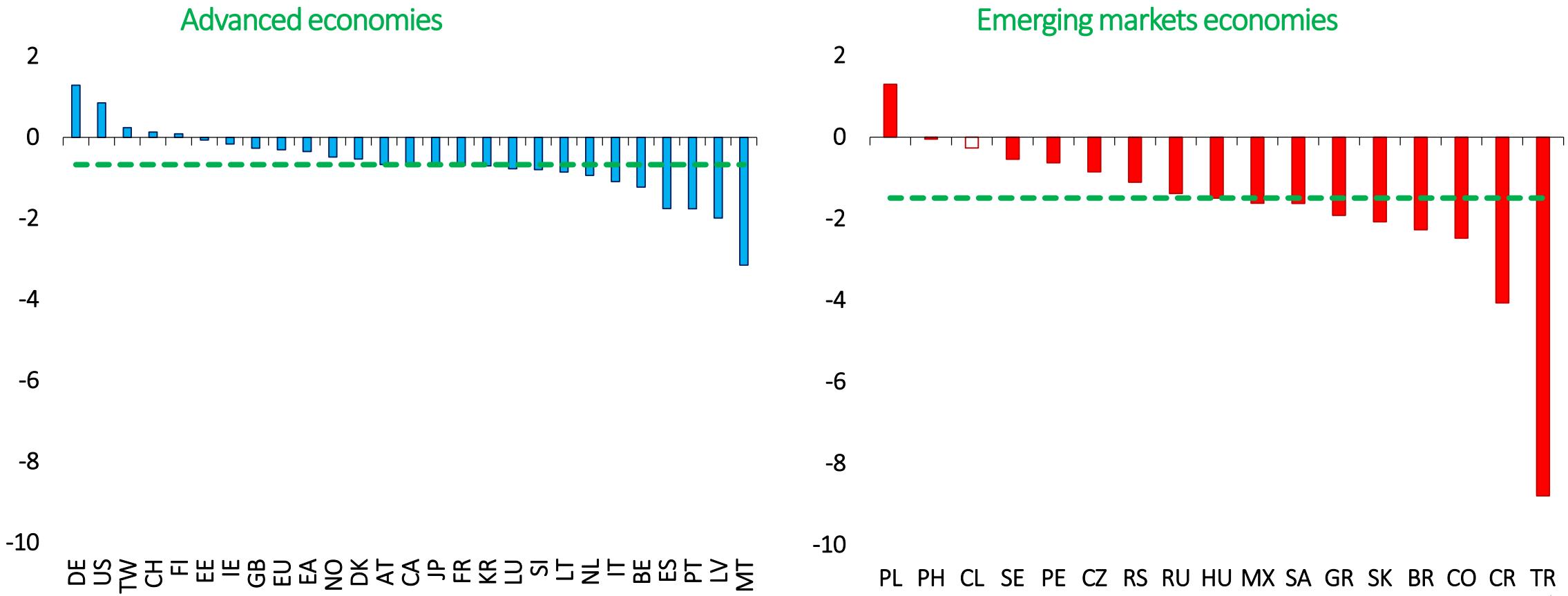
Heterogeneity across countries: services inflation.

Services inflation: deviation from historical average (*)

(percentage)



(*) Historical average considering period from 1998 to 2019. Green line corresponds to median between countries. Current inflation corresponds to September (August for a few countries). Inflation for every country has been calculated using weights from Eurozone CPI. Calculated based on Bajraj, Carlomagno and Wlasiuk (2021).

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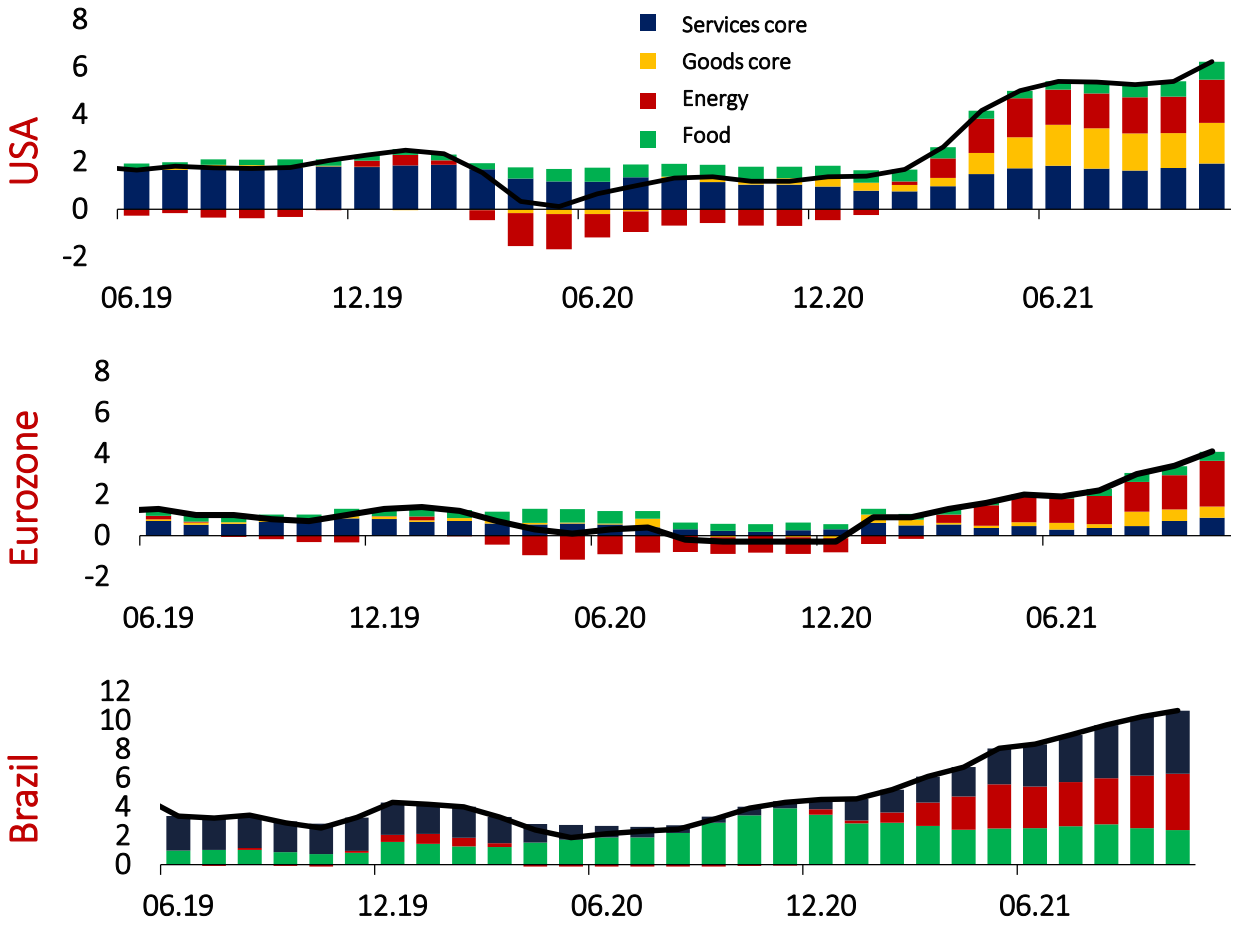
Food and energy lead the rebound in global inflation.

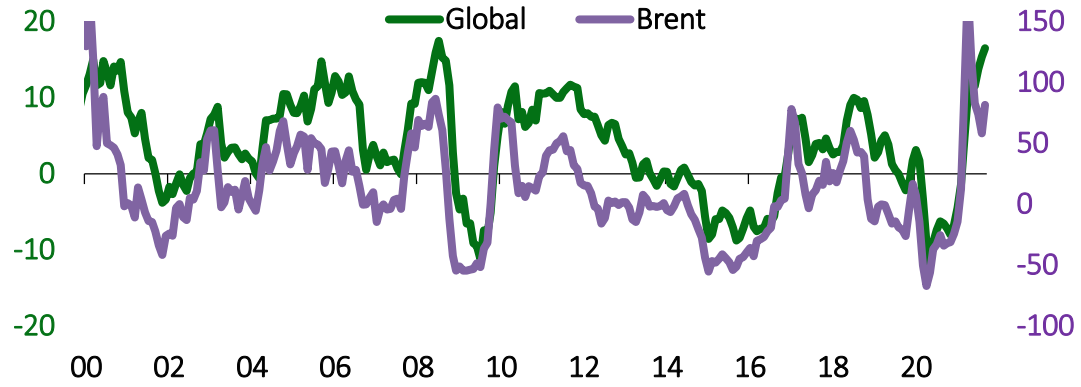
Annual inflation by contributions

(annual change; percentage)



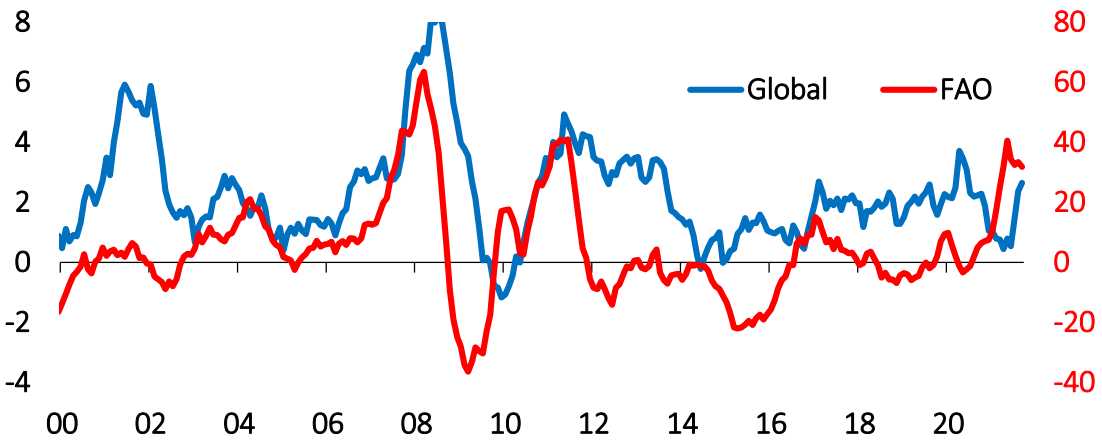
Global energy inflation and Brent annual variation (*)

(annual change; percentage)



Global food inflation and FAO annual variation (*)

(annual change; percentage)



(*) Based on Bajraj, Carlomagno, and Wlasiuk (2021). Sources: Bloomberg, Eurostat, BLS.

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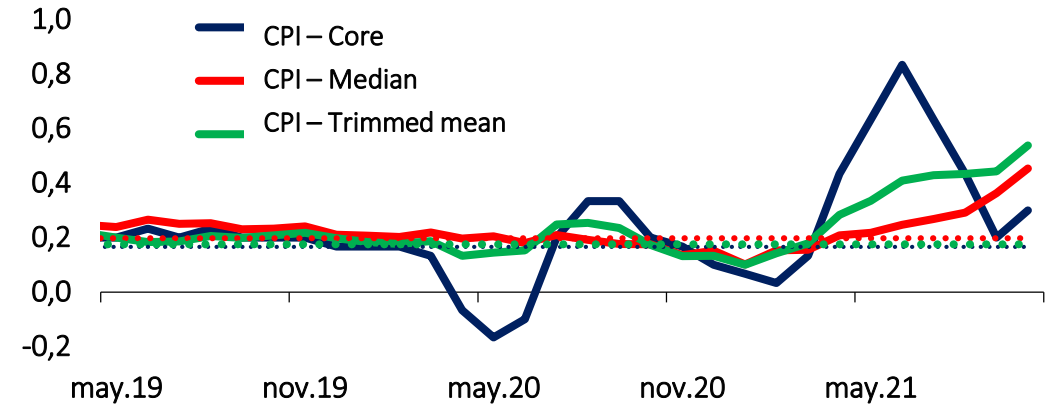
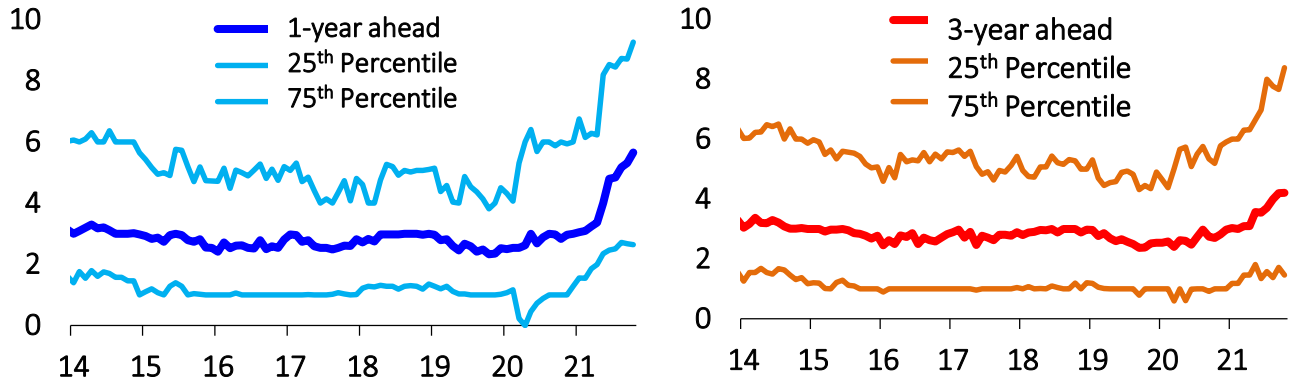
The dynamics of inflation in the US have caught most attention.

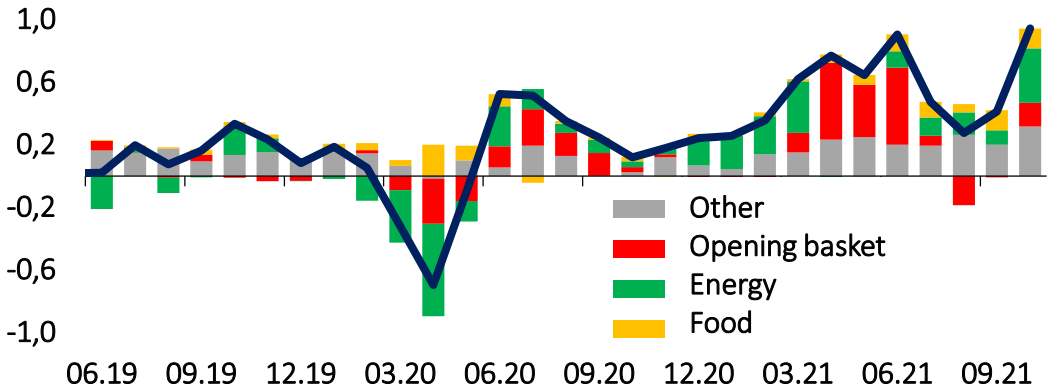
CPI
(monthly change; percentage, 3-month moving average)



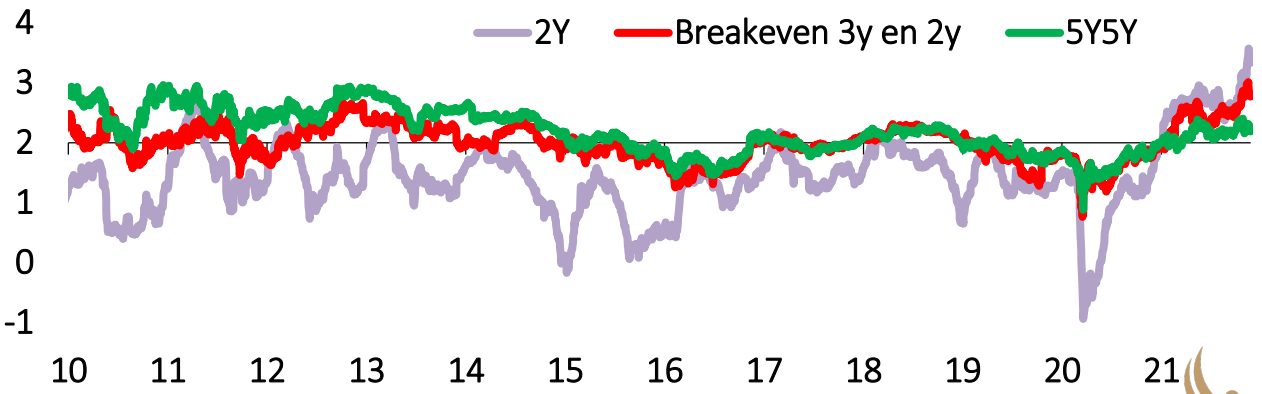
CPI expectations and Consumer SCE
(annual change; percentage)



CPI (*)
(annual variation; percentage)



Inflation expectations: breakeven
(percentage)



(*) Reopening categories consider used cars, car rental, car insurance, airfare, lodging, food outside the home and energy. Sources: Bloomberg, Bureau of Labor Statistics, and Federal Reserve.

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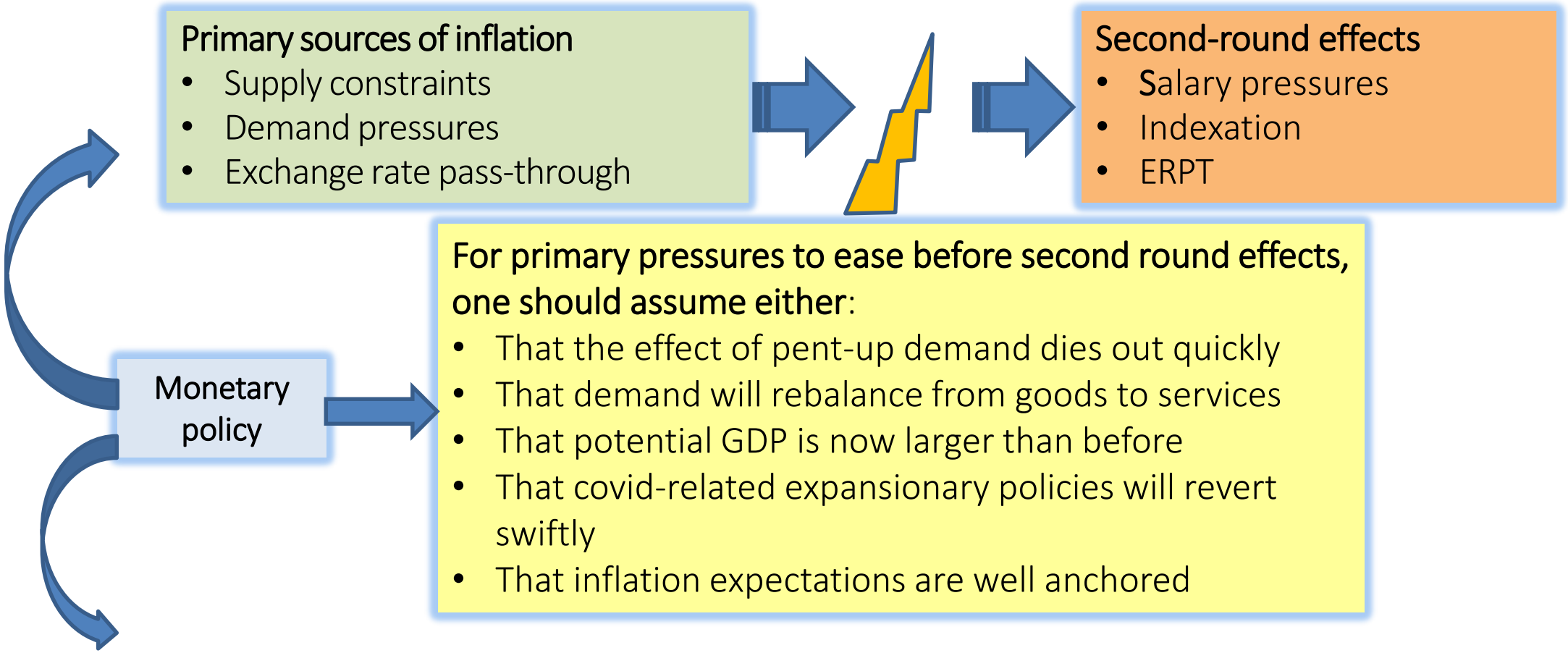
Supply-side or demand-side?
Transitory or persistent?
Local or imported?



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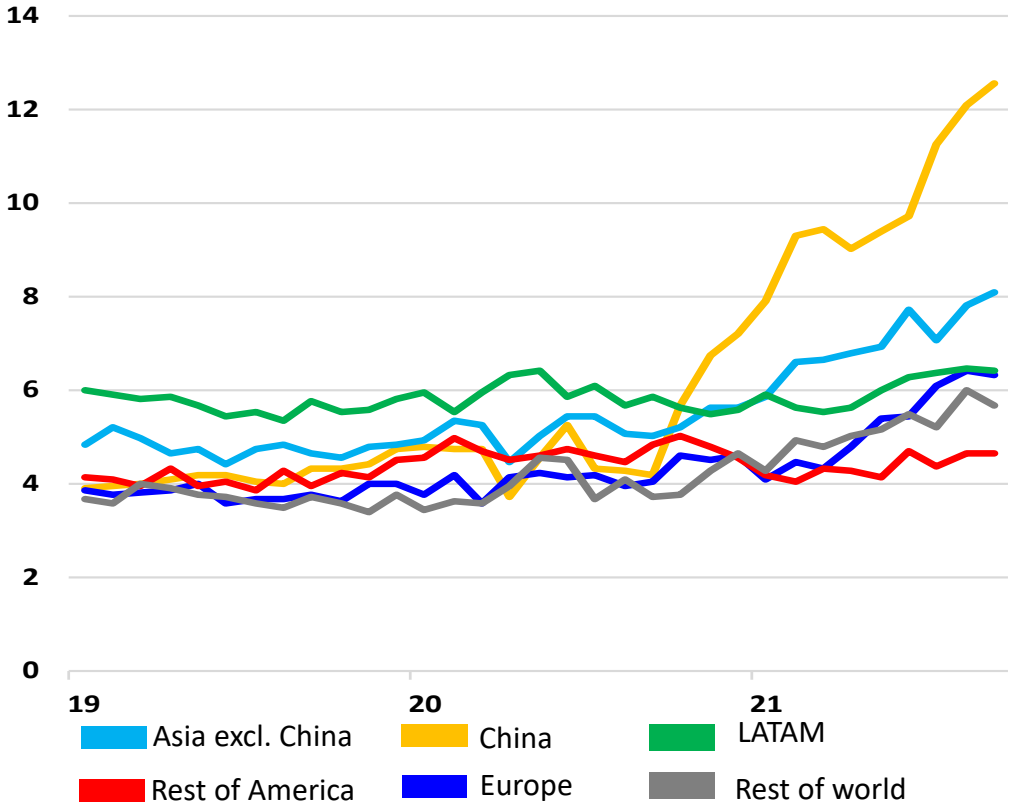
International cost pressures

Supply chain disruptions led to a significant increase in transportation costs, specially from China.

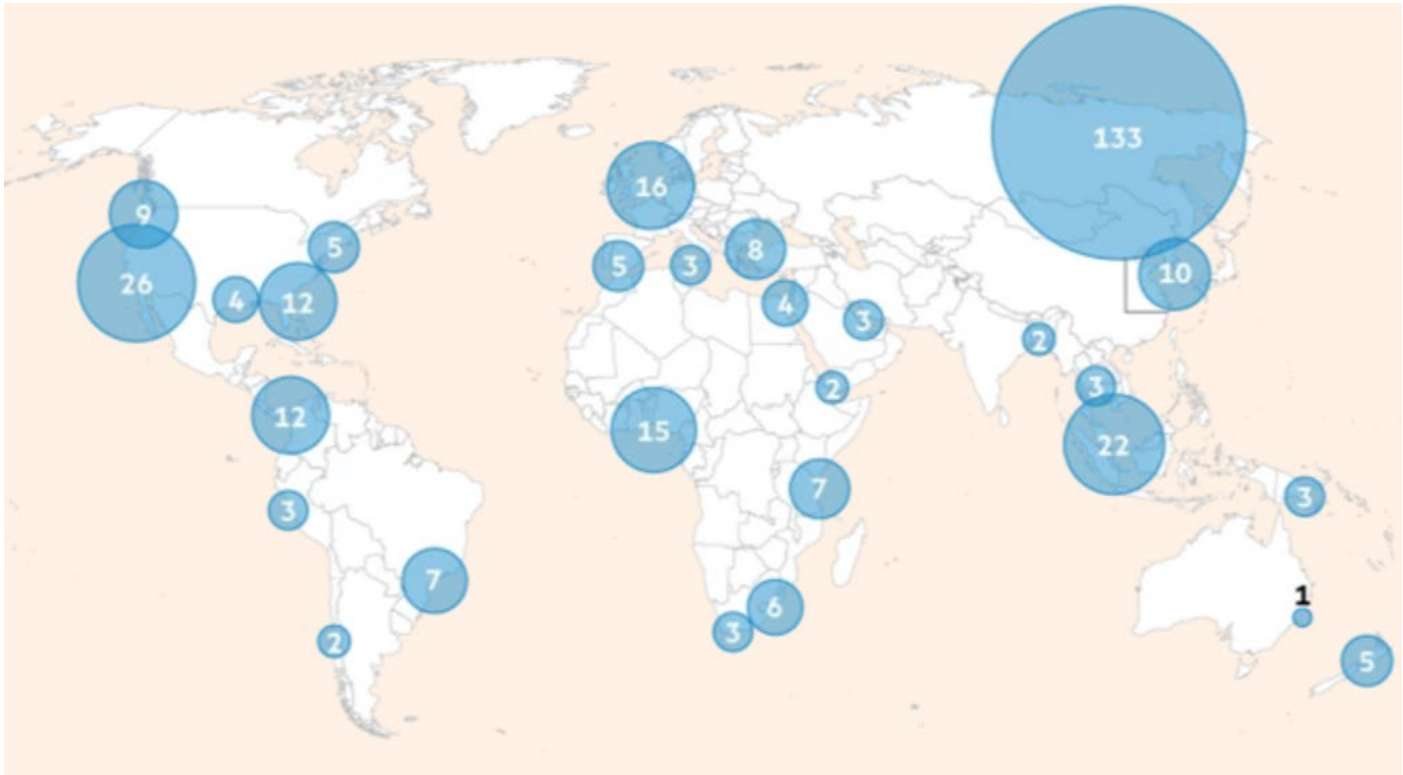
Imports transportation costs (*)

(freights/imports; quarterly moving average, percent)



Disruptions in transportation costs

(number of ships waiting to dock in a port, until August 13)



(*) For each company the import CIF quantity is decomposed in FOB + freight + insurance, then it is aggregated in monthly frequency to build the quarterly moving average for the ratio Freights/Imports. Source: Central Bank of Chile based on Customs dataset and Kühne + Nagel - *Seaexplorer*.

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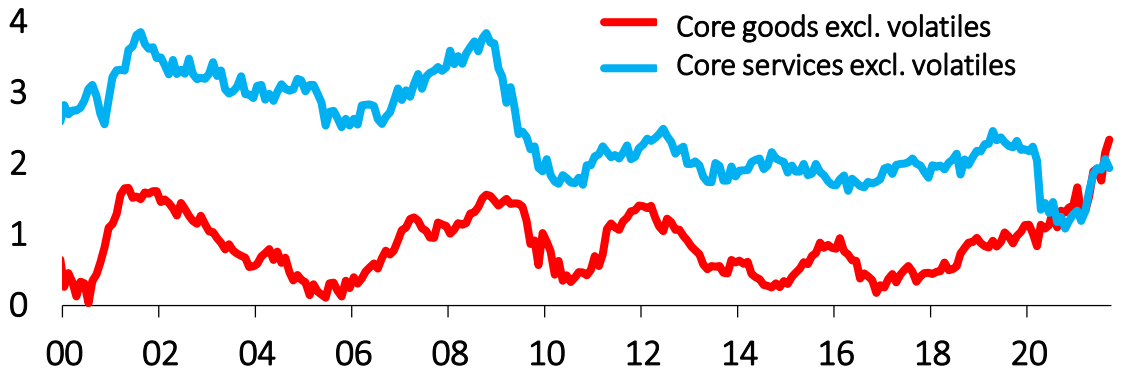
Growth in demand above supply at a global level has led to an increase in goods prices, affected by lack of stocks and high transportation costs.

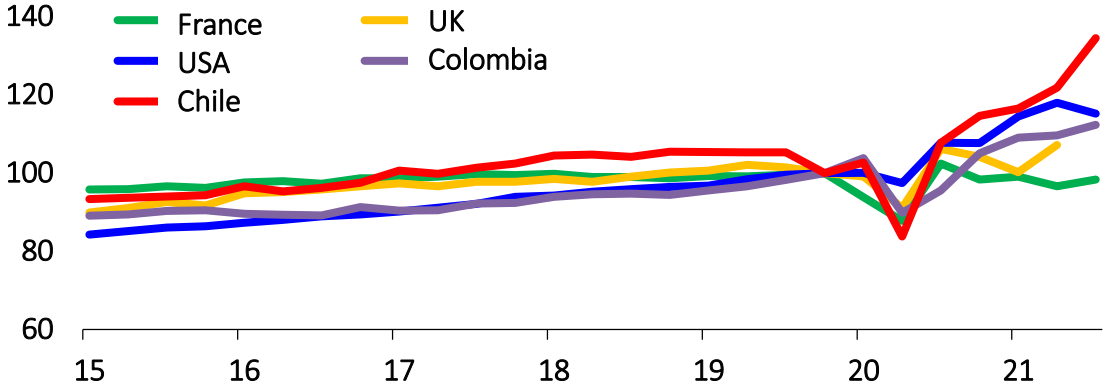
Inflation of global goods and services (1)

(annual variation; percentage)



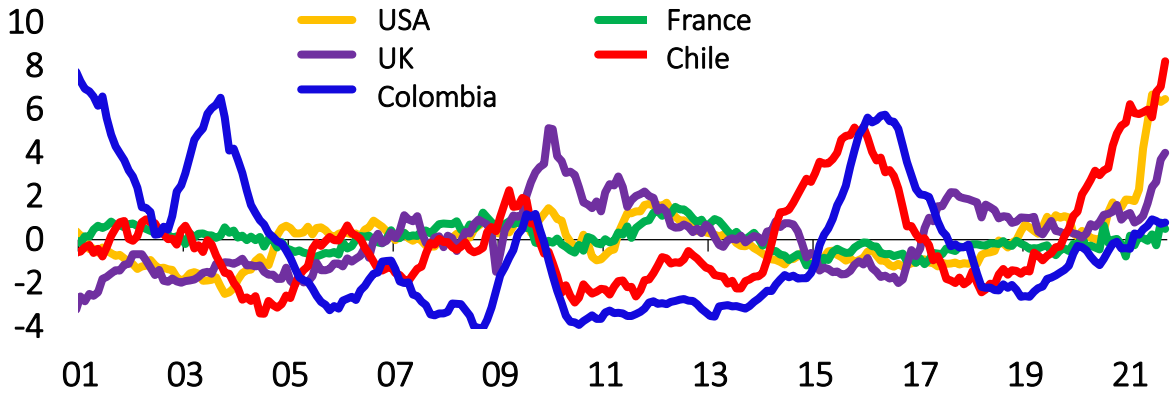
Consumption of goods

(level; 2019.IV = 100)



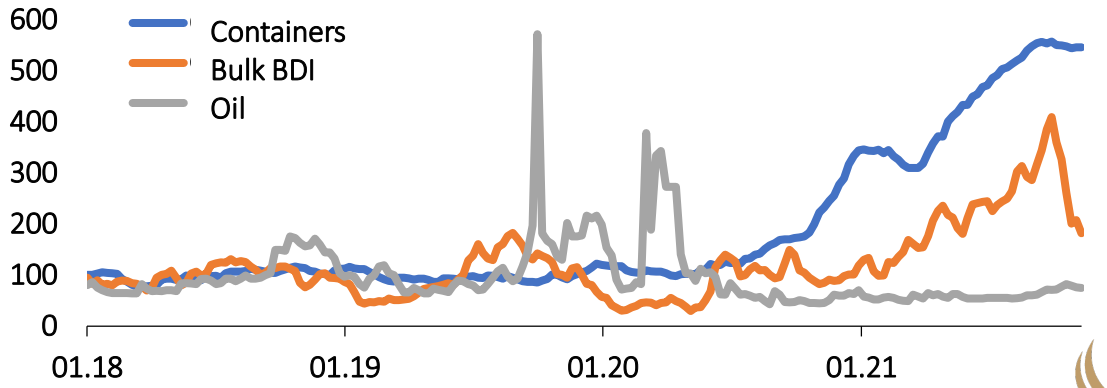
Goods inflation

(annual variation; percentage)



Shipping cost indices

(index; 2018=100)



(*) Based on Bajraj, Carlomagno, and Wlasiuk (2021). Sources: Bloomberg, Eurostat, BLS.

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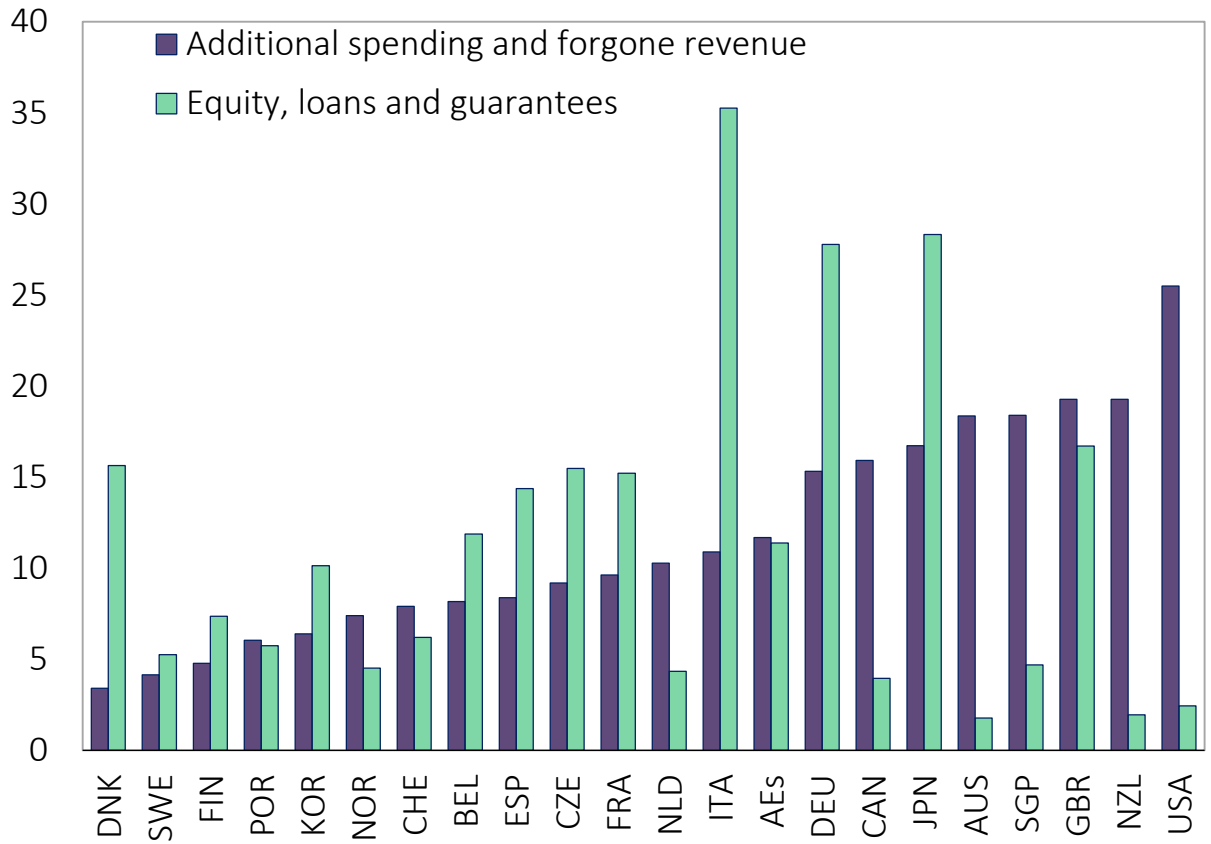
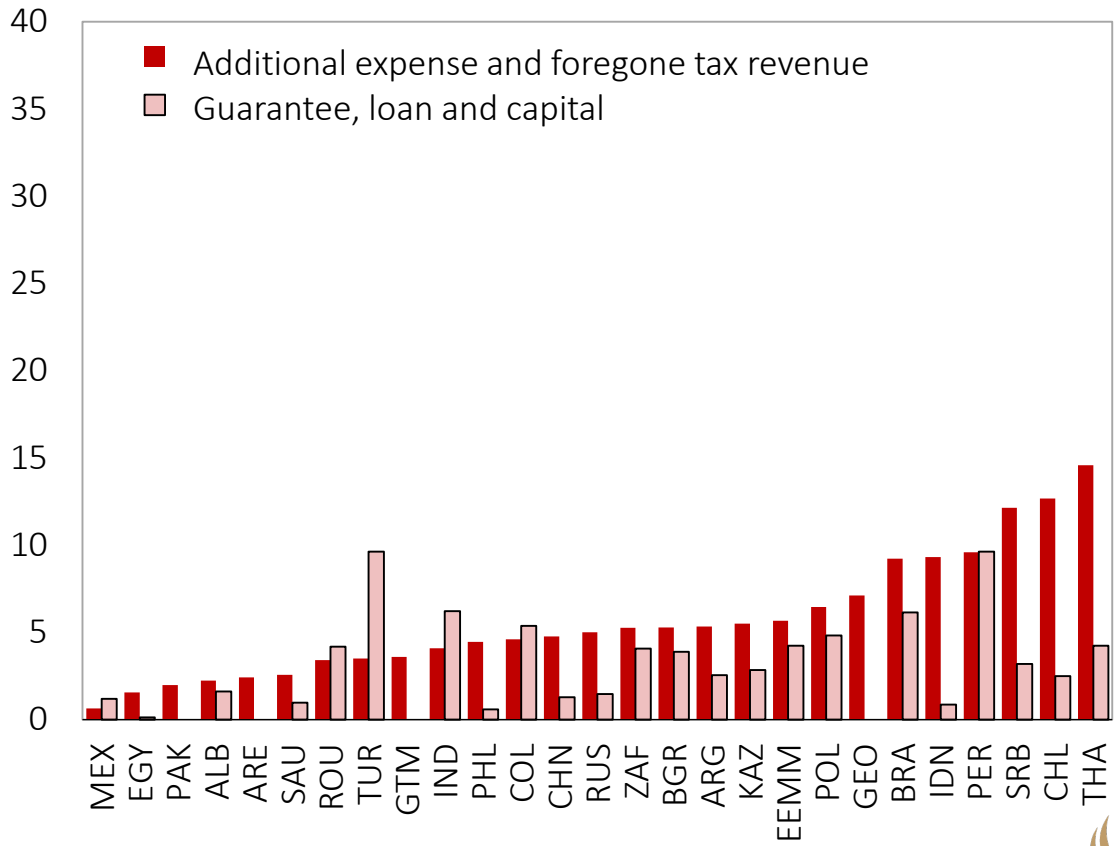
Fiscal policy has provided a significant boost to spending.

Fiscal policy response to the Covid-19 crisis in selected economies (*)

(as per cent of GDP; accumulated amounts for 2020 and 2021)





(*) Source: IMF *Fiscal Monitor*, October 2021.

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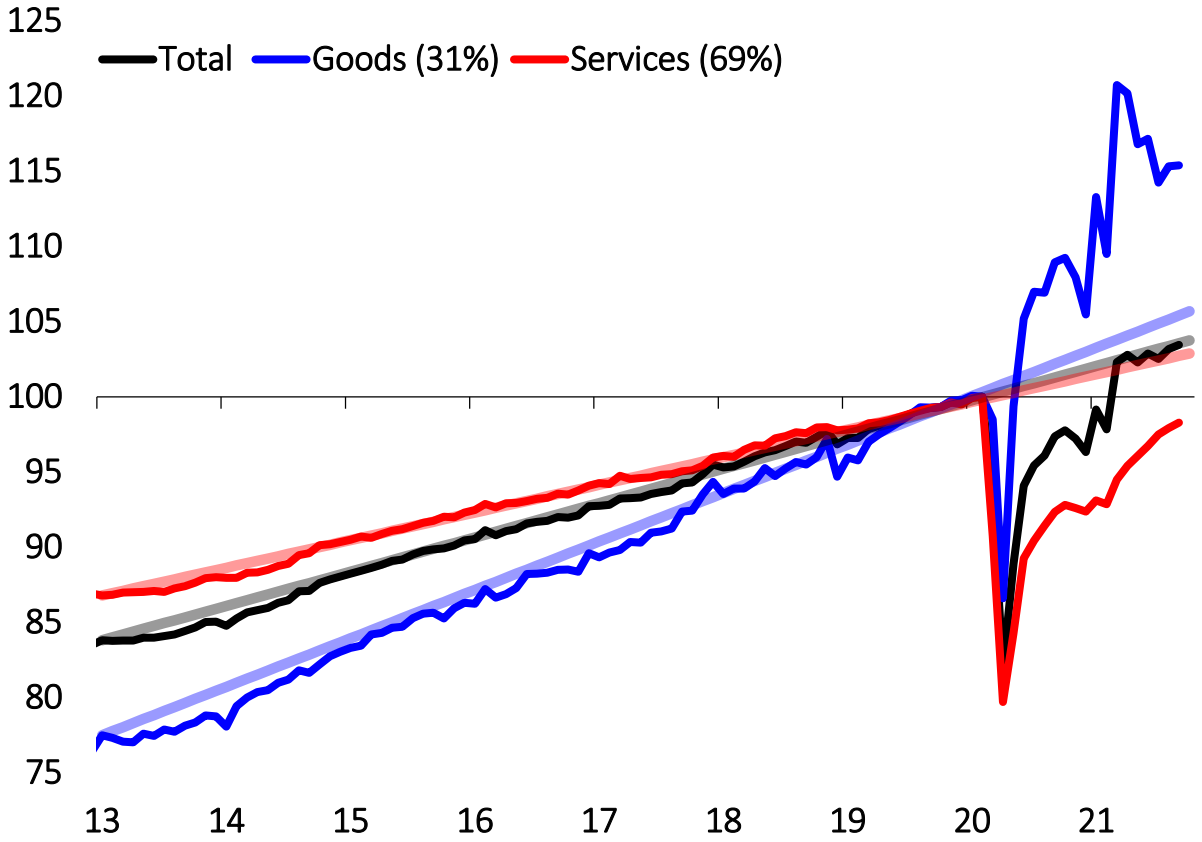
Short term indicators show a rebalance from goods to services that is highly sensitive to the developments on Covid-19

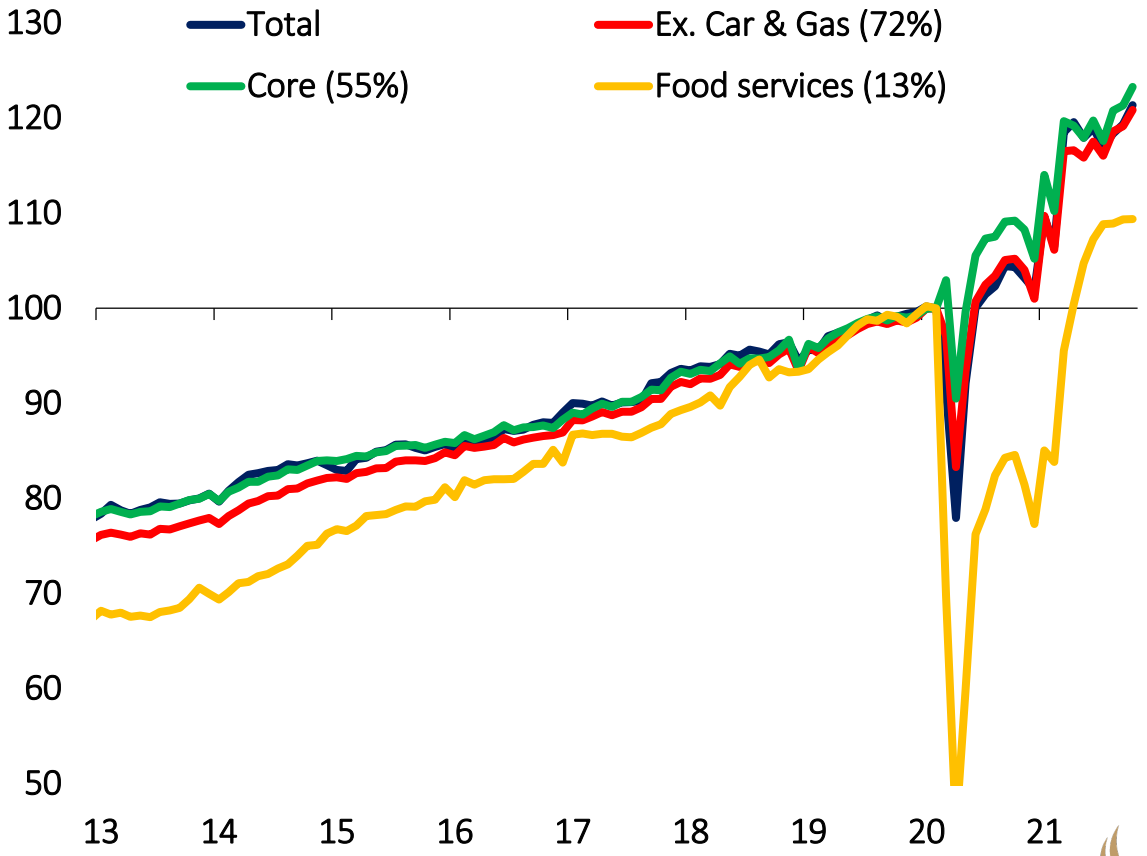
Personal spending in the US (*)

(index, February 2020=100, real terms)



Retail sales in the US (*)

(percentage; standard errors)



(*) Sources: Bloomberg and US Census Bureau.

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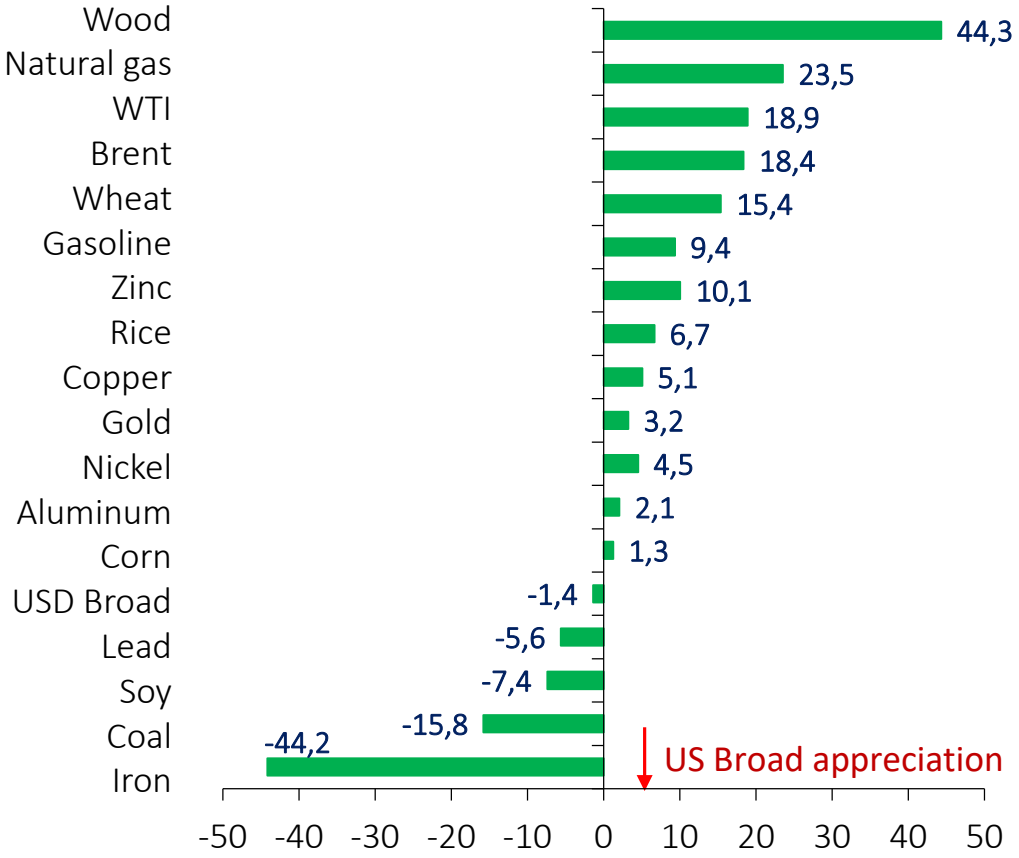
Rises in energy prices increase inflationary pressures.

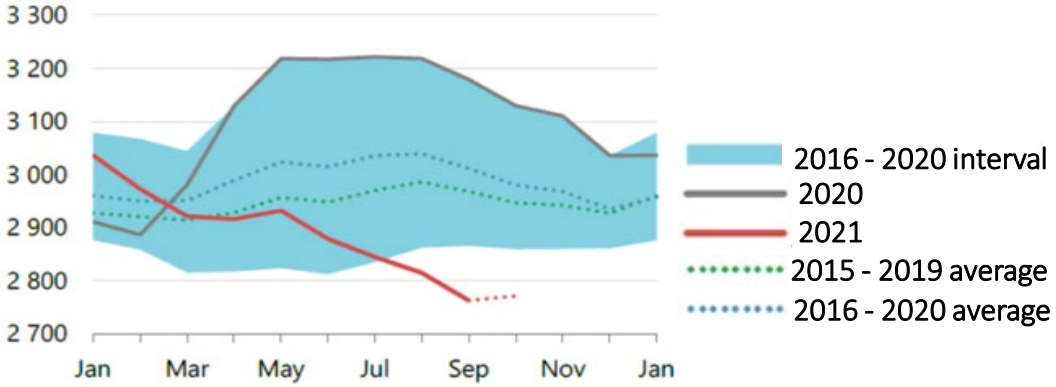
Variations with respect to August 2021

(10-day average; percentage)



Oil: OECD inventories

(billions of barrels per day)



(*) Sources: Bloomberg and Cochilco.

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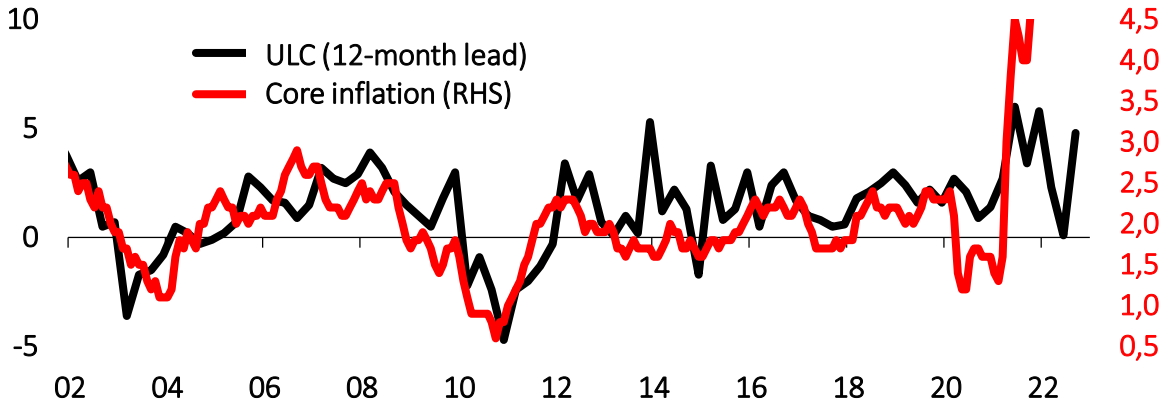
...while signs of tightness and wage pressures have intensified in the labor market.

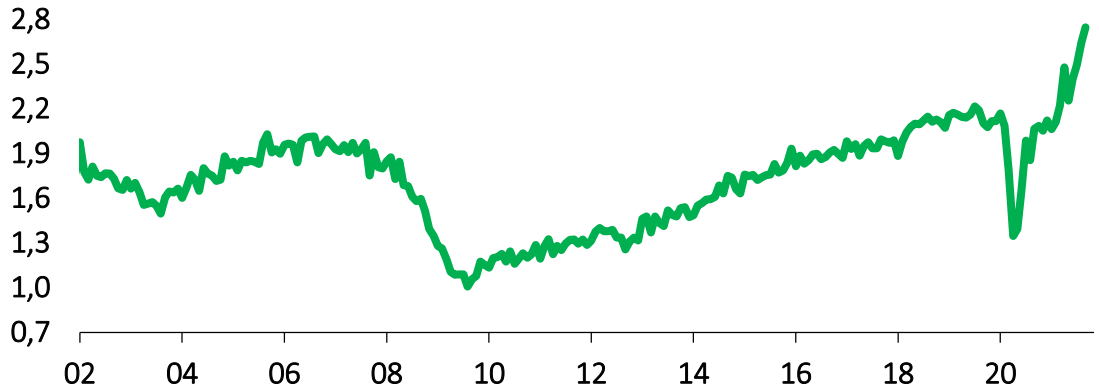
ULC and core inflation

(annual variation; percentage)



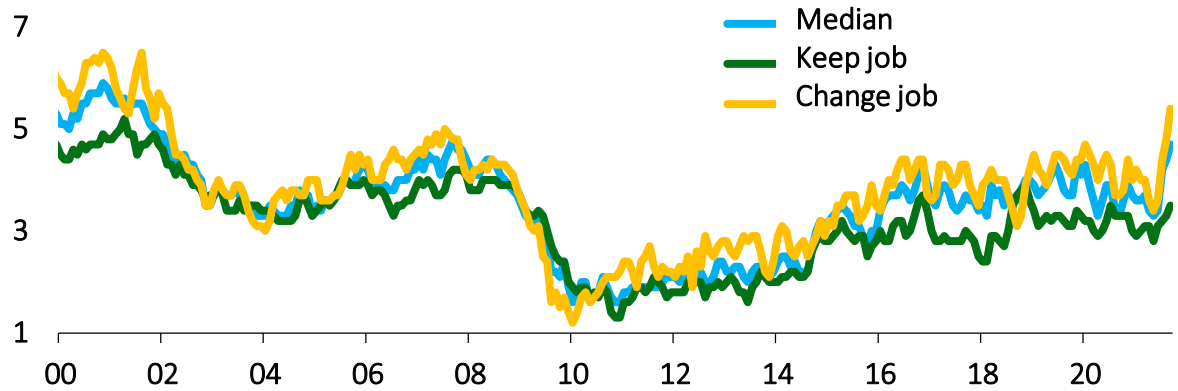
Rate of job resignation (*)

(percentage of labor force)



Salary by work status

(annual change 3-month MA, percent)



(*) Shadow Labor Force corresponds to those who are inactive but want to work. The rest correspond to people who do not want to work due to the indicated situation. Source: Bureau of Labor Statistics.

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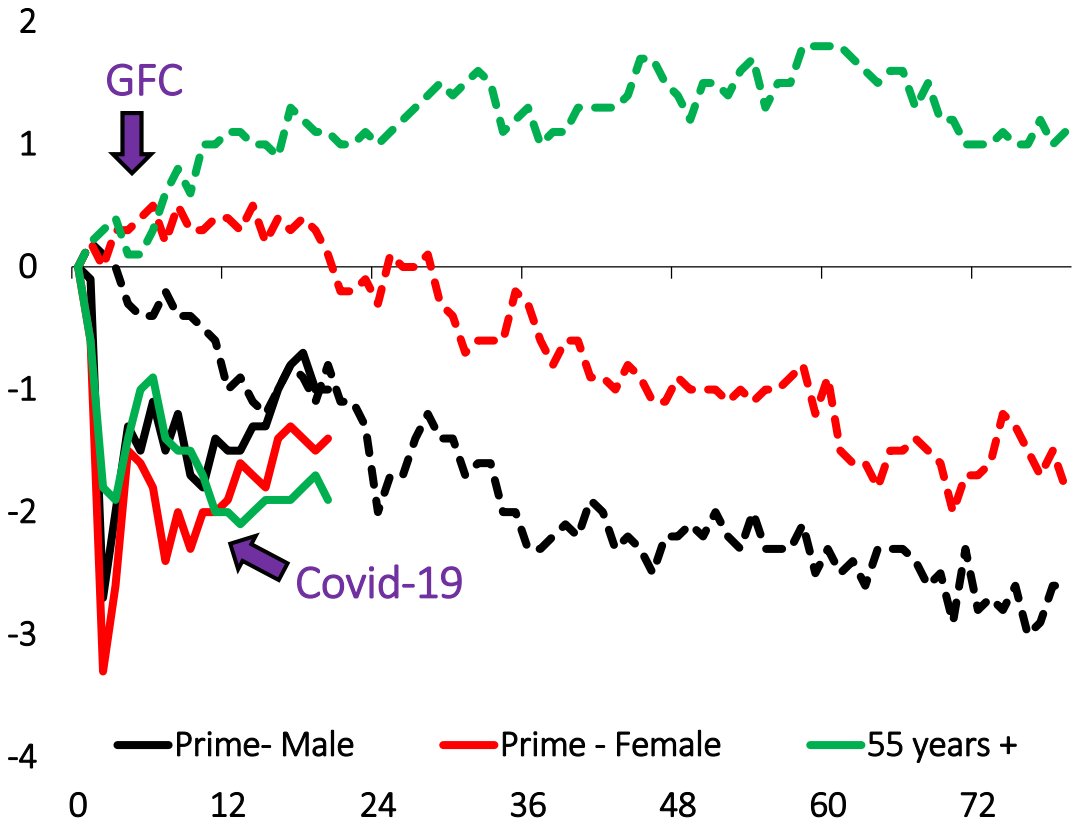
Labor market response: uncertainty over slack.

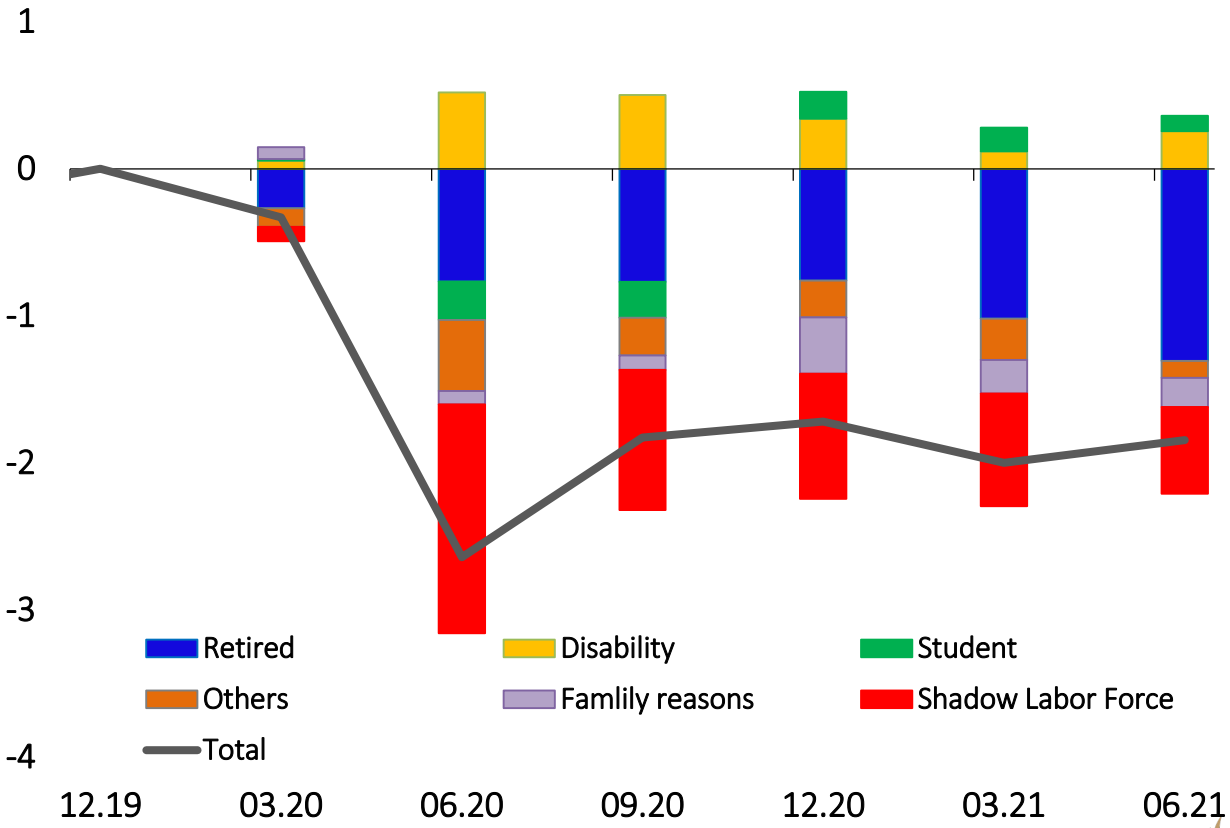
Participation rate by gender and age group in the US (1)

(percentage; accumulated since the beginning of the event)



Change in participation rate by reason of inactivity in the US (2)

(percentage; difference from December 2019)



(*) Source: Bureau of Labor Statistics. (1) Covid-19 event starts in February 2020 and Global Financial Crisis event in December 2019. (2) Shadow Labor Force corresponds to people that are not part of the labor force but want to work. The other categories correspond to people that do not want to work for the reason indicated.

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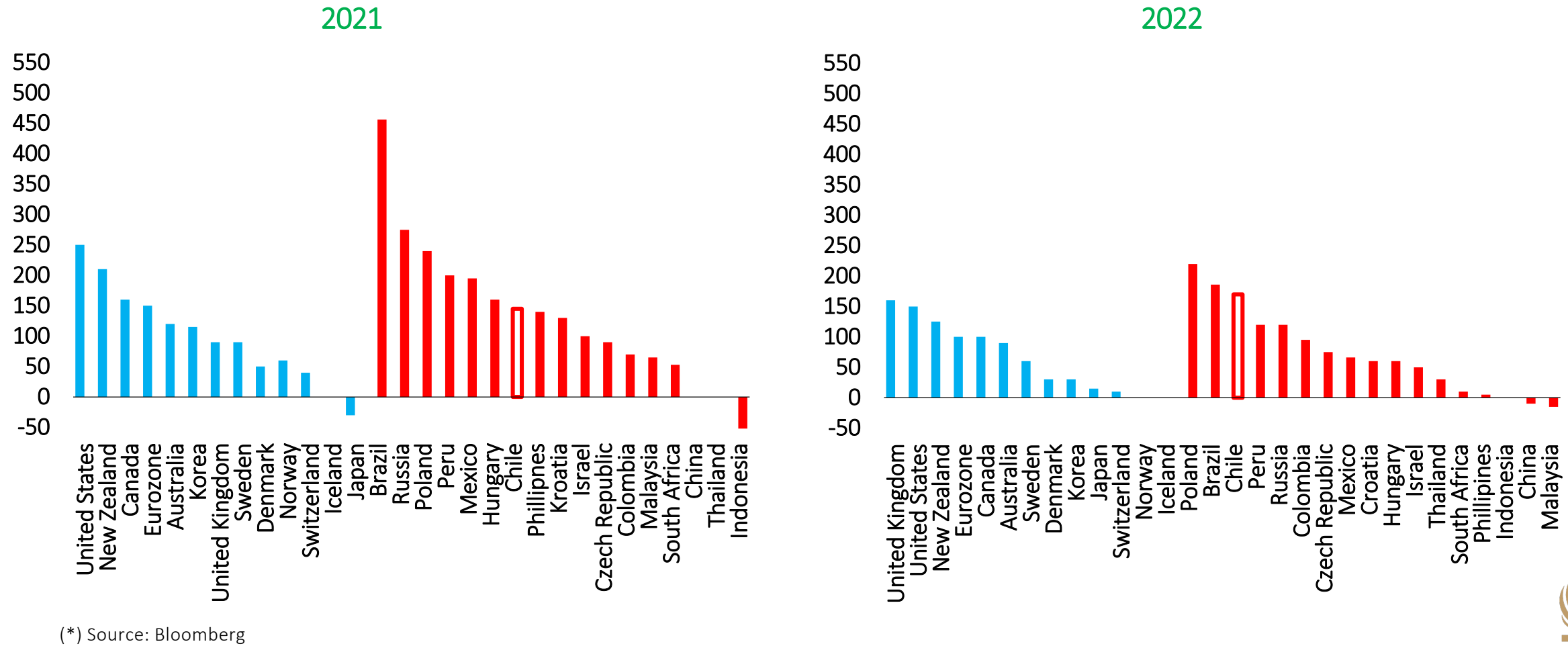
Increase in inflation expectations for 2021 and 2022 has been higher in EMEs.

Change in inflation expectations since the beginning of 2021 (*)

(basis points)



(*) Source: Bloomberg

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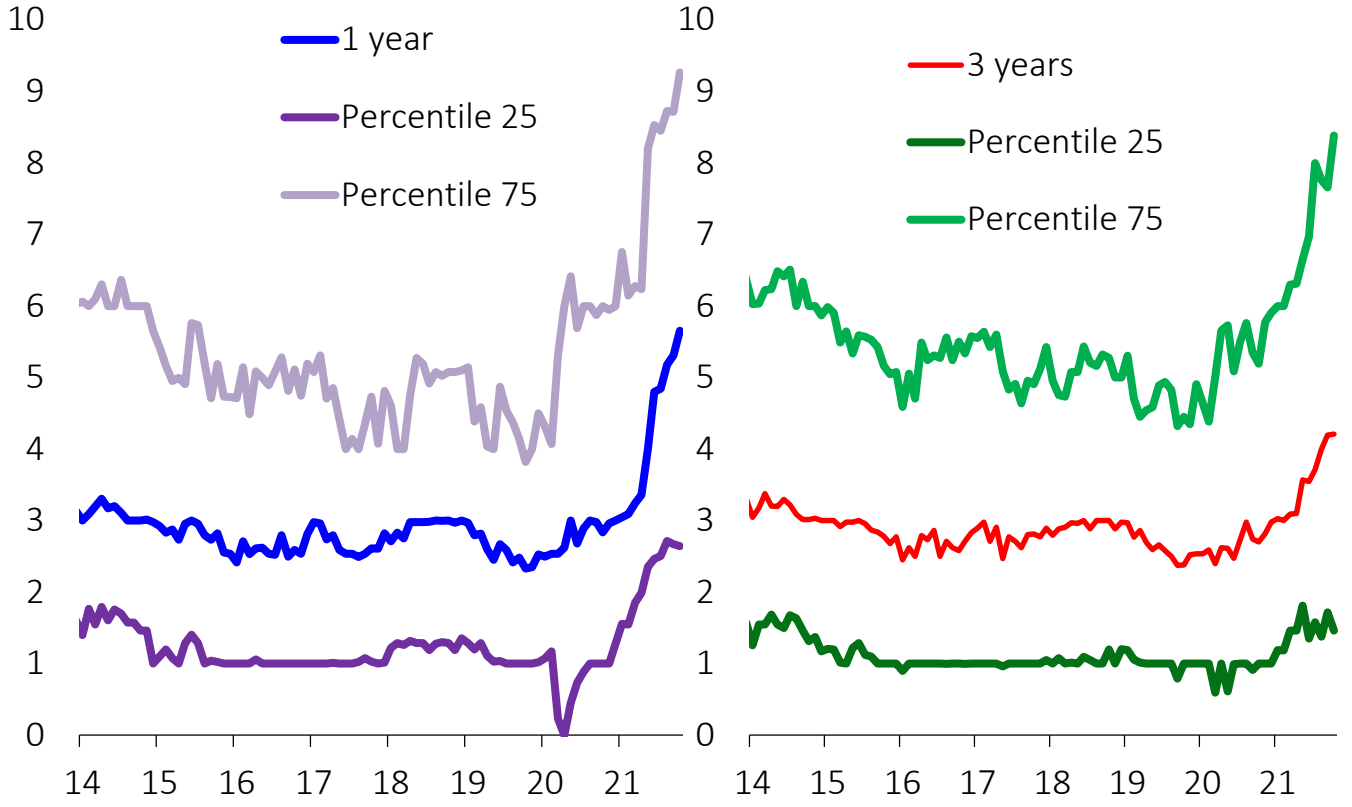
Household and business inflation expectations have started to rise, even for the medium term.

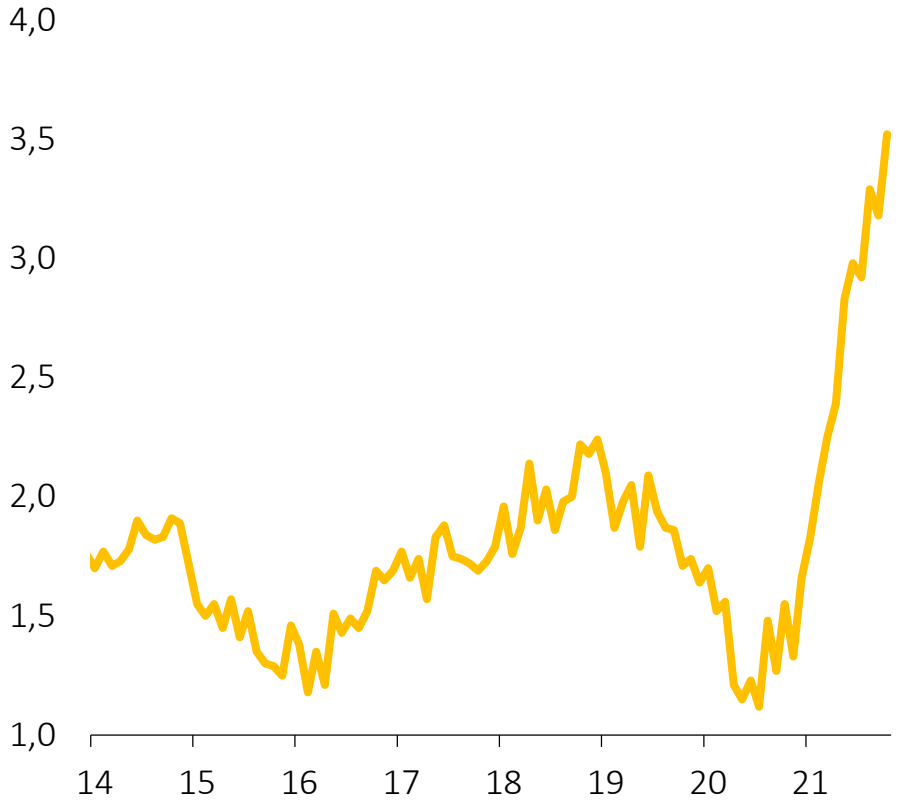
Households' inflation expectations in the US

(percentage)



Businesses inflation expectations in the US

(percentage)



(*) Source: Bureau of Labor Statistics, Federal Reserve Bank of St. Louis.

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An EME perspective

What differentiates inflation and the policy space to contain it between AEs and EMEs?

Inflation dynamics: second-round effects

- Labor costs (AEs)
- Indexation (EMEs)
- Exchange rate pass-through (EMEs)

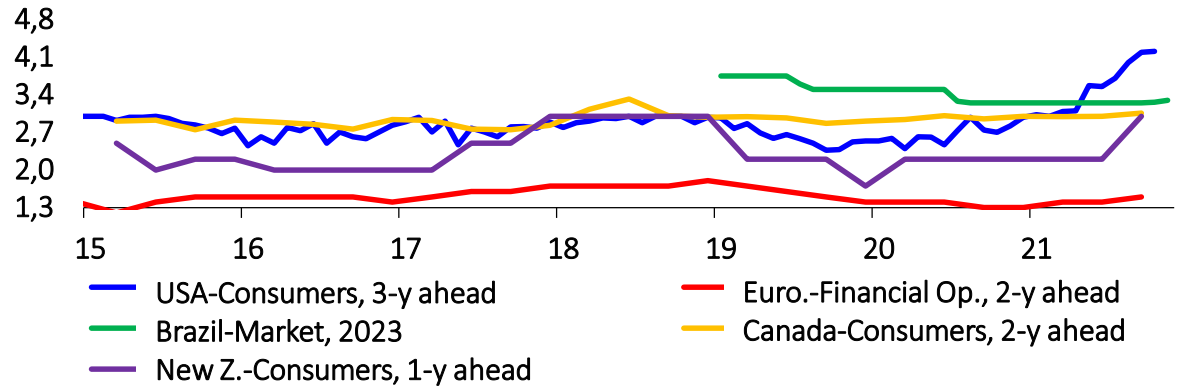
Policy space:

- Sovereign risk and debt tolerance
- Uncertainty and central bank credibility
- Cross-border spillovers

The same factors—inflation expectations, wages, generalization of the rise and closing of gaps—are perceived as less worrisome in other AEs.

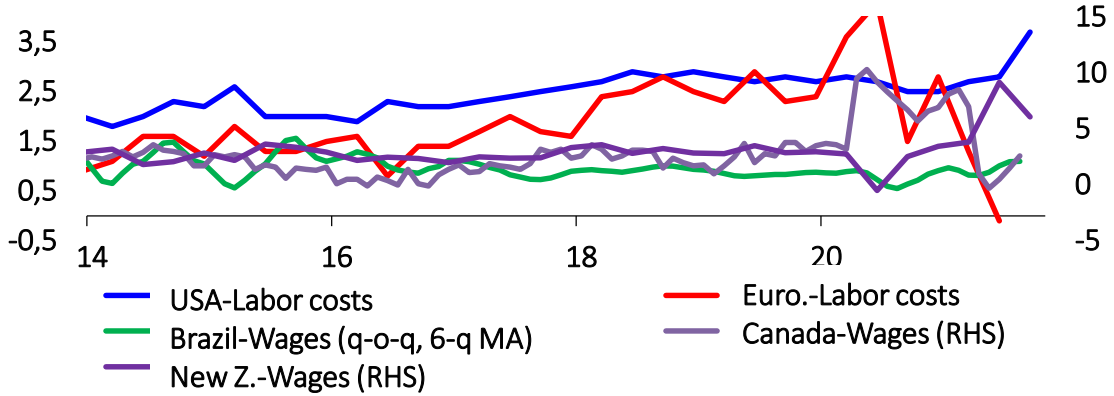
Inflation expectations

(annual change; percentage)



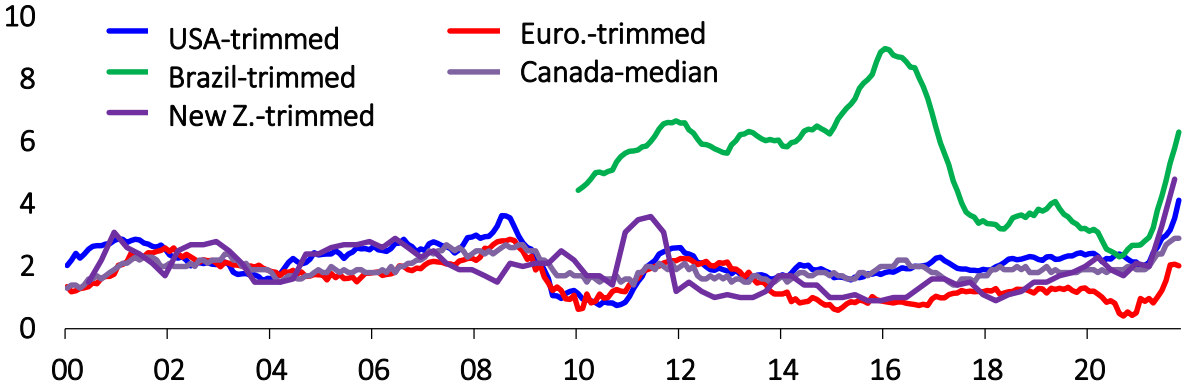
Wages and labor costs

(annual change; percentage)



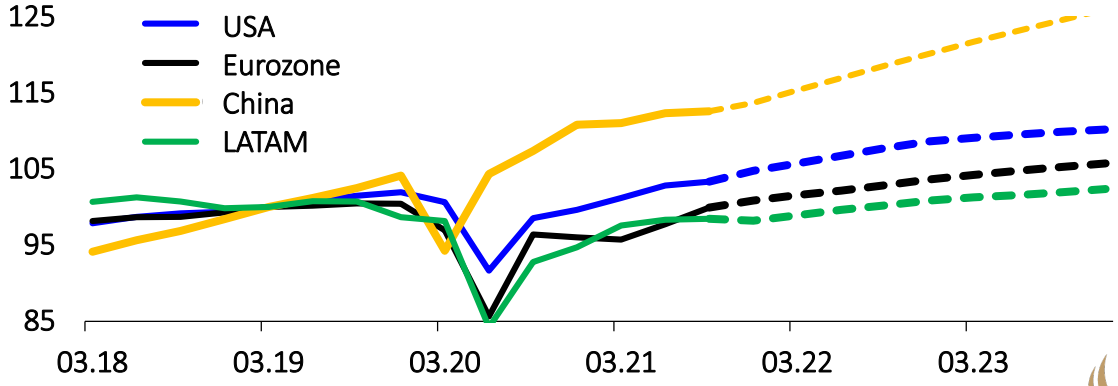
Variable-exclusion core inflation measures

(annual change; percentage)



GDP evolution of main areas (*)

(index; 2019.I = 100)



(*) Considers September 2021 *MP Report* forecasts. Source: Bloomberg, Eurostat, IMF, and local statistics offices.

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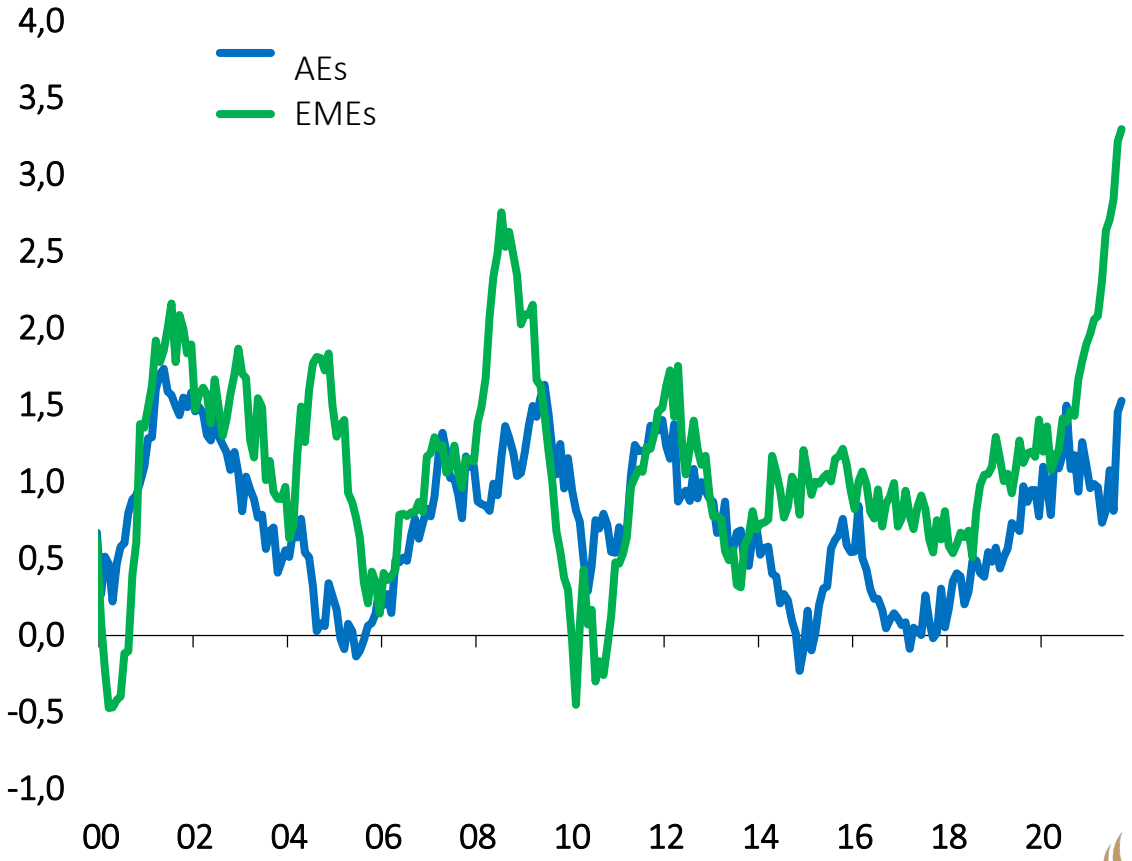
Currency depreciations put additional pressure on emerging economies, particularly in the LAC region.

Multilateral dollar (*)

(parities against the USD)

Core goods inflation without volatiles (*)

(annual change, percent)



(*) LATAM corresponds to the median of the indices for Brazil, Chile, Colombia, Mexico and Peru. Indices for AEs and EMES are weighted by bilateral trade with the US. Based on Bajraj, Carlomagno, and Wlasiuk (2021). Source: Bloomberg.

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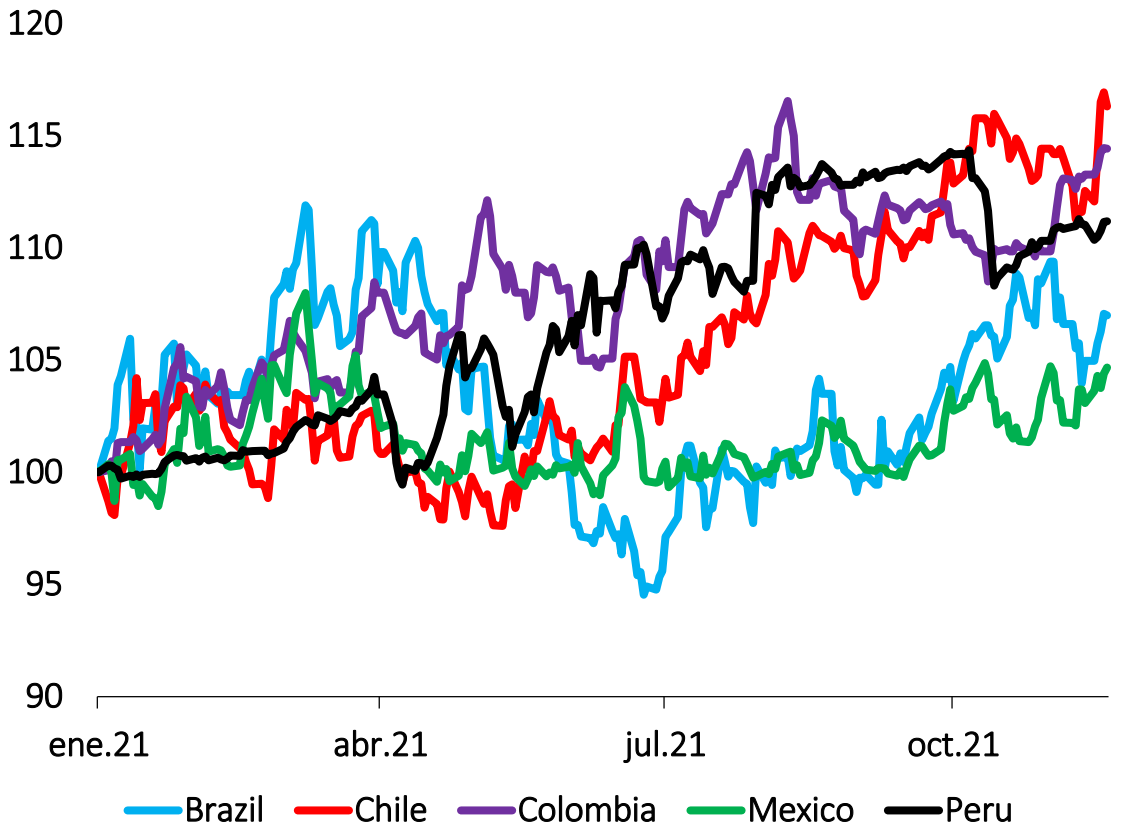
Nominal exchange rate depreciation has been heterogeneous.

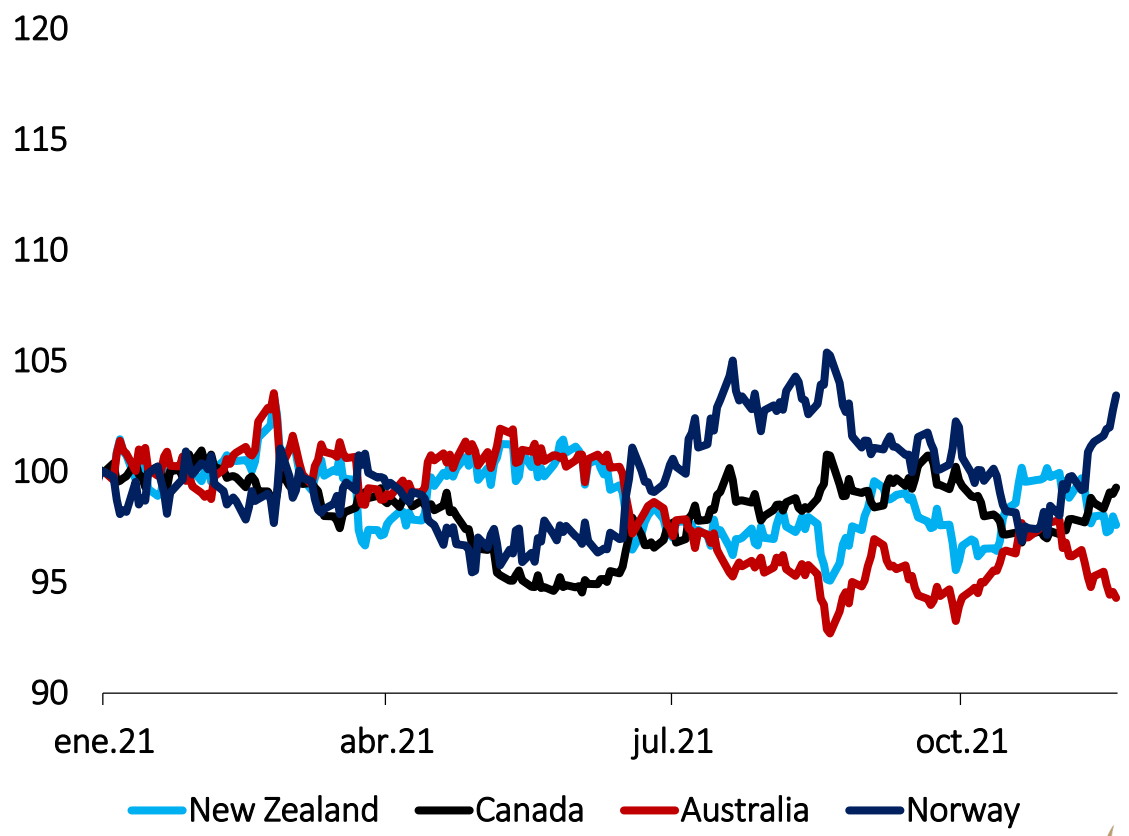
Latin American currencies (*)

(index; Jan-01-2021=100)



Commodity exporters currencies (*)

(index; Jan-01-2021=100)



(*) Source: Bloomberg.

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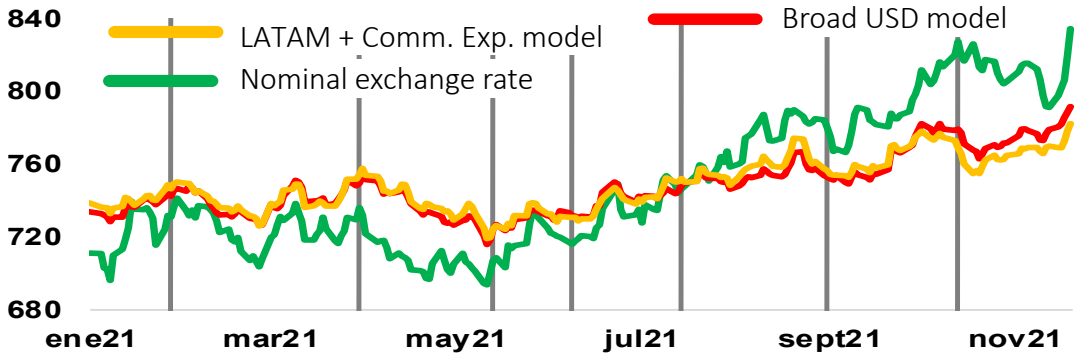
Uncertainty and idiosyncratic depreciation.

Domestic factors explain the increase in long interest rates and the exchange rate depreciation in Chile

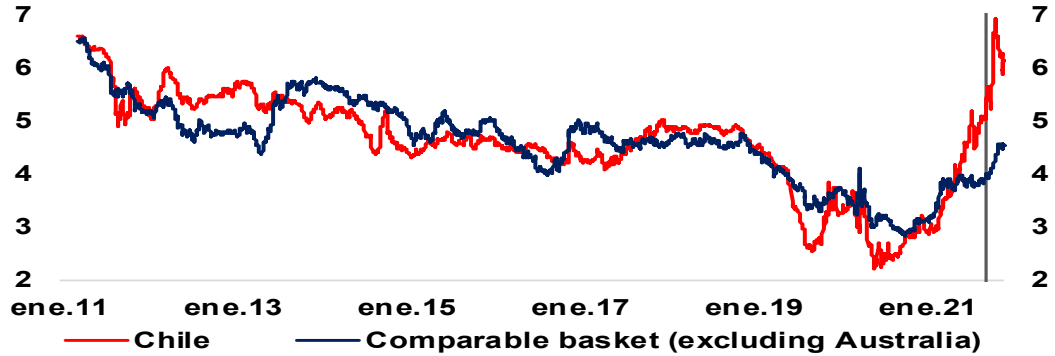
Nominal exchange rate (1)(2)

(USD/CLP; daily data)



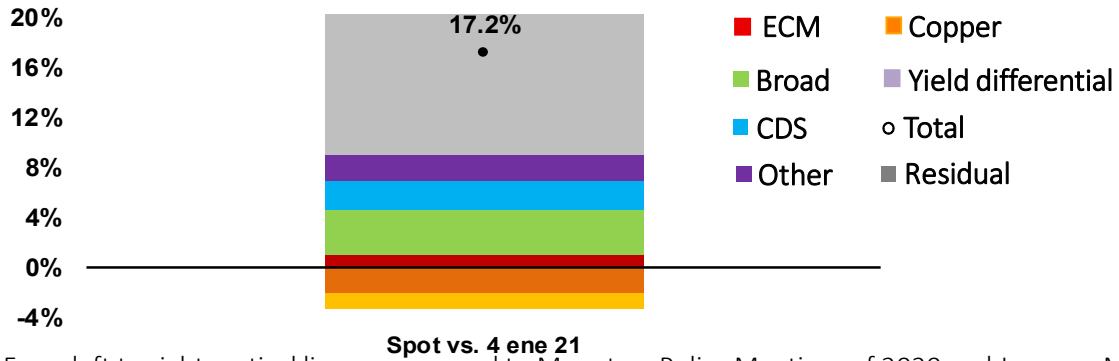
10-year government bond yield (3)

(percent; daily data)



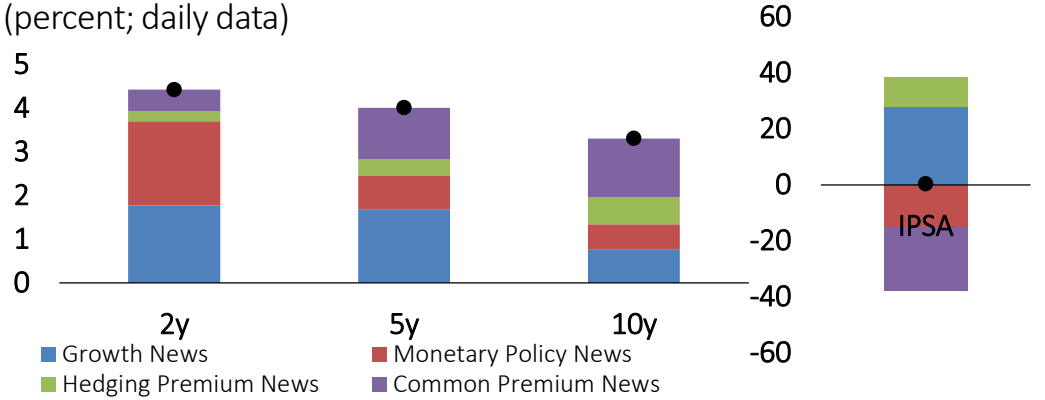
Change from an event (LATAM model + commodity exporters)

(cumulative contribution to change; percent)



Structural vector autoregression decomposition YTD (4)

(percent; daily data)



(1) From left to right vertical lines correspond to Monetary Policy Meetings of 2020 and January, March, May, June, July, September and October 2021. (2) Last observation: 19-Nov-21. (3) The basket of comparable economies is made up of a combination of Latin American countries and commodity exporters (Australia, Brazil, Colombia, Mexico, New Zealand, and Peru).The weights are the coefficients of a cointegration relationship with the Chilean rate. (4) Historical Decomposition (Cieslak and Pang, 2021). Last observation 18-Nov-21. Sources: Bloomberg, Central Bank of Chile, and *RiskAmerica*.

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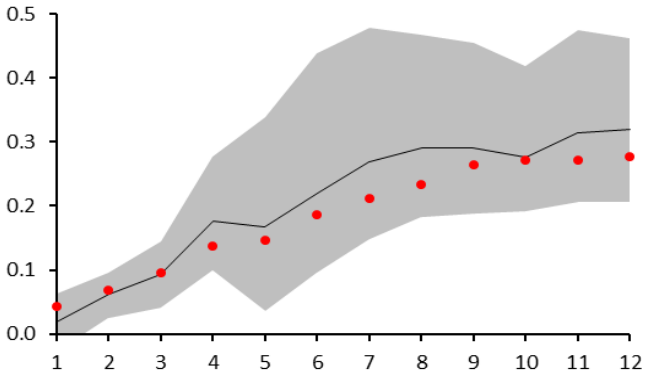
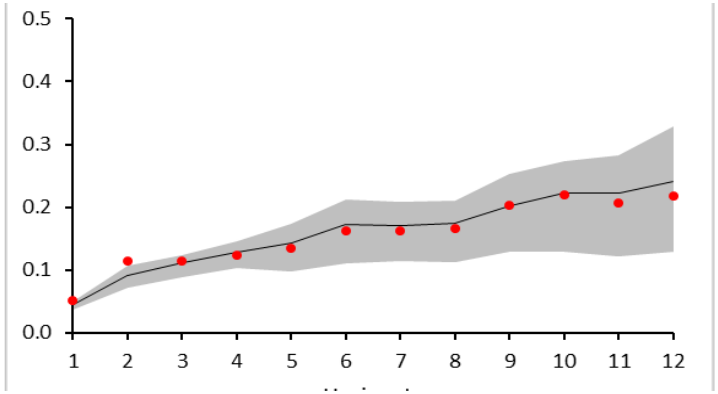
Exchange rate pass through coefficient.

Chile: Exchange rate pass through coefficient (*)
(basis points)

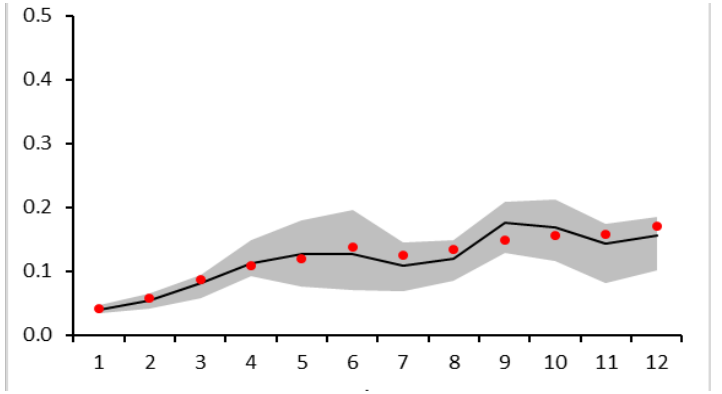
1991 - 1999



2000 - 2009



2010 - 2018



Research by the Central Bank of Chile staff on the "*Dynamics of Chilean Inflation*" shows:

- Median estimate for 1-year horizon pass-through coefficient is 0.13,
- Different shocks to the FX have different impact on domestic inflation. Higher pass through for shocks coming from monetary policy and international financial conditions. Lower when FX moves because of international prices.

(*) Source: Central Bank of Chile.

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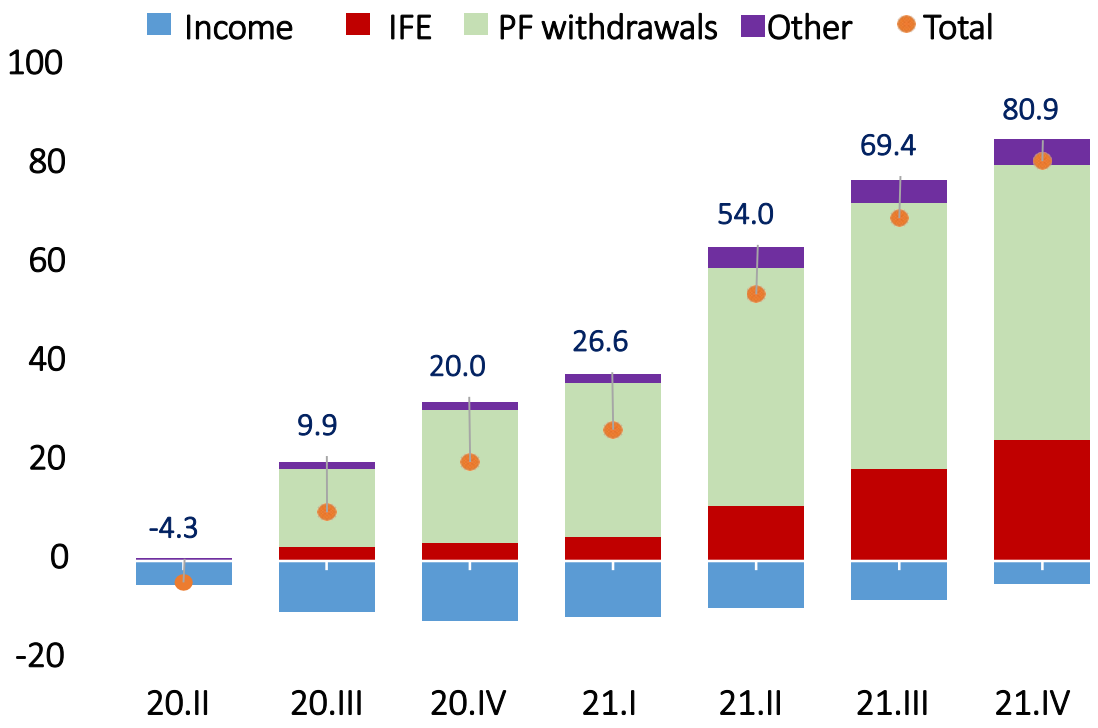
Demand boost: fiscal transfers and withdrawals from pension funds.

The accumulation of massive pension savings withdrawals and fiscal transfers have significantly increased household liquidity.

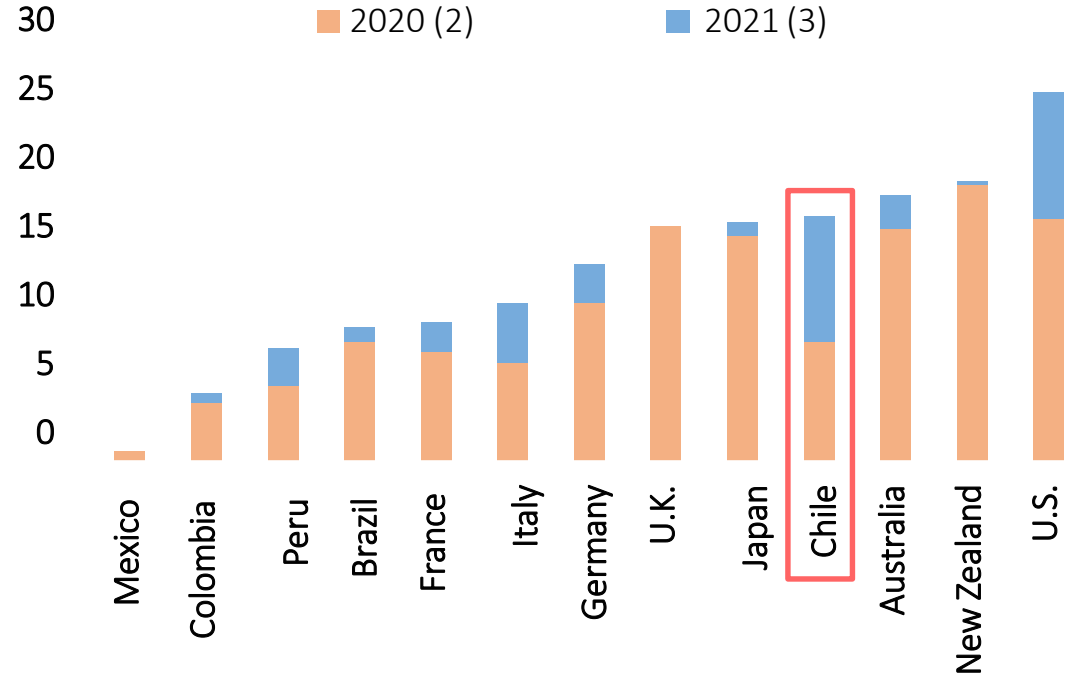
Households' cumulative income and liquidity injections (1)

(billions of dollars)



Expenditures or revenues foregone by governments in response to Covid-19

(percent of 2020 GDP)



(1) For details on the methodology, see Chapter III in the September 2021 *Monetary Policy Report*. (2) Corresponds to IMF *Fiscal Monitor* data for January 2021. (3) Difference between July and January 2021 delivery. Chile considers an additional 2.8% for IFE. Sources: International Monetary Fund, Chile's Ministry of Finance, Superintendence of Pensions and the Central Bank of Chile.

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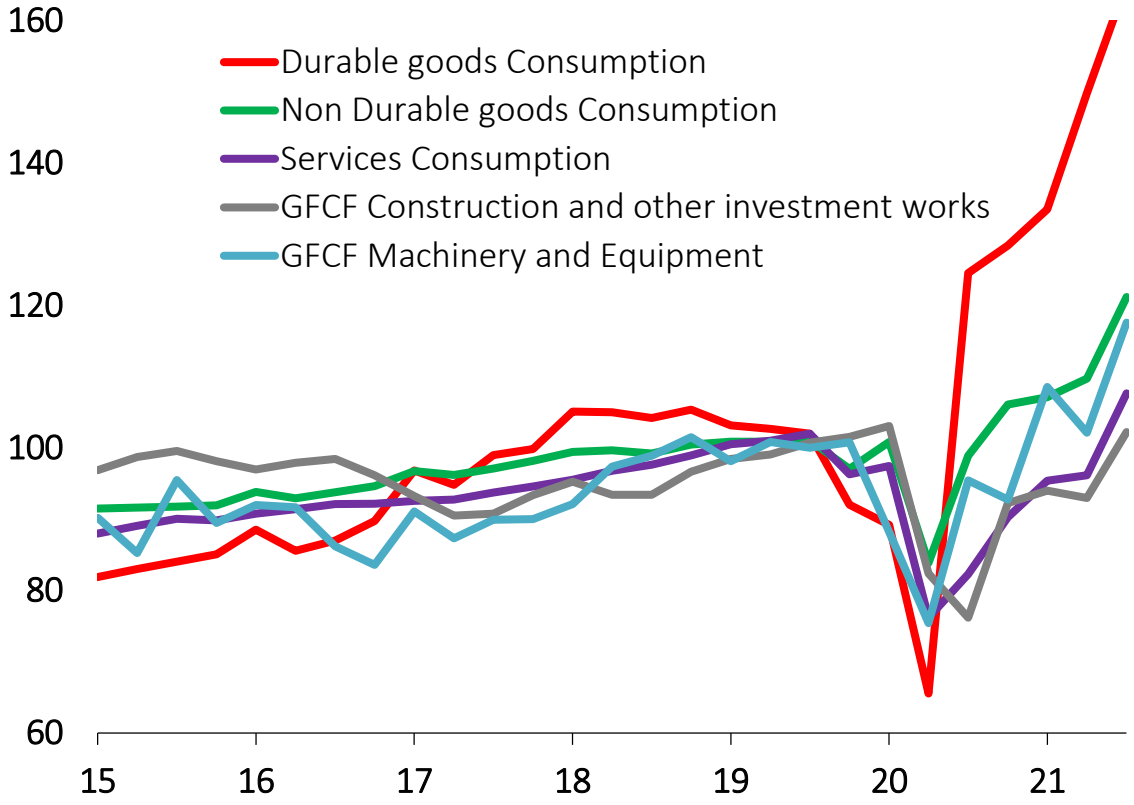
Demand boost: retail sales and total consumption.

Durable goods consumption in 2021Q3 is 60% over 2019 period.

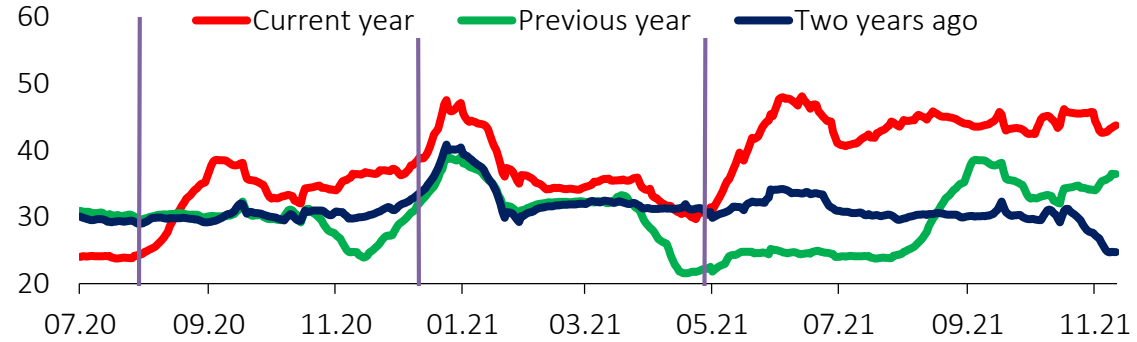
Domestic demand (1)

(index 2019=100, seasonally adjusted series)



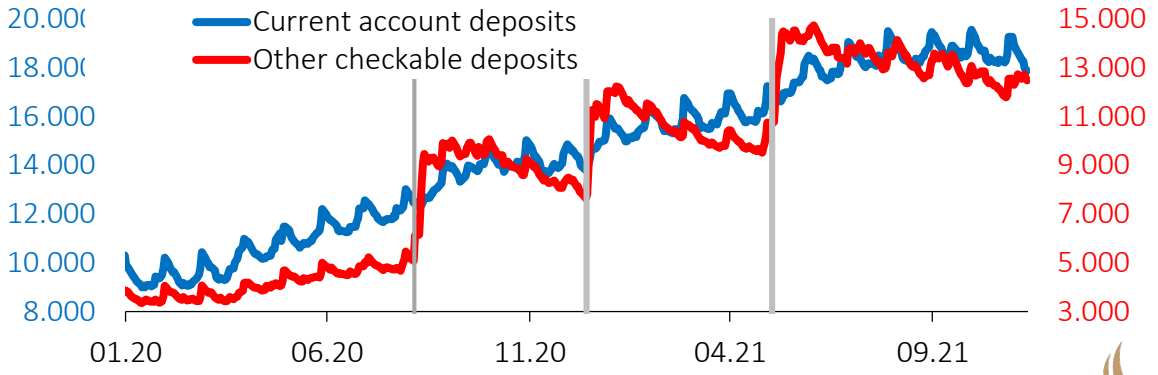
Retail sales with electronic invoice (2)

(billions of CLP, 28-day moving average)



Personal bank accounts balances (3)

(billions of CLP, daily data)



(1) Source: Central Bank of Chile. (2) Last observation: November 11, 2021. (3) Vertical lines indicate payments of pension fund withdrawals. Source: Internal Revenue Service, Ministry of Finance, Superintendence of Pensions, *Gfk Adimark*, IPSOS, and the Central Bank of Chile.

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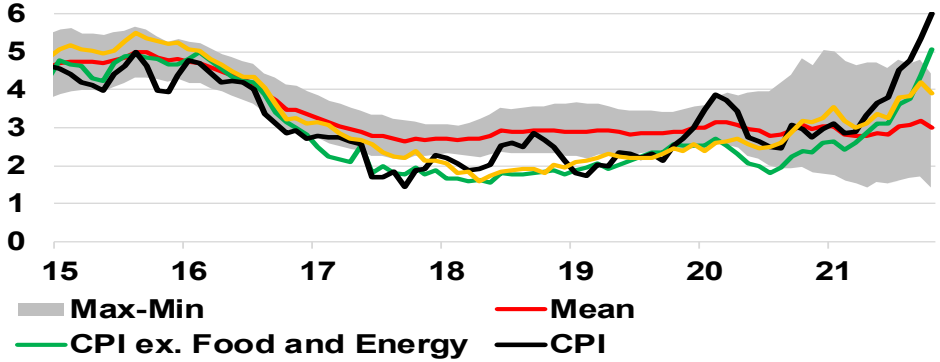
Inflation: Core measures, goods, and services

The increase of recent months has affected every item in the CPI basket, reflecting inflationary pressures on both the demand and the cost side, as well as the sharp depreciation of the CLP

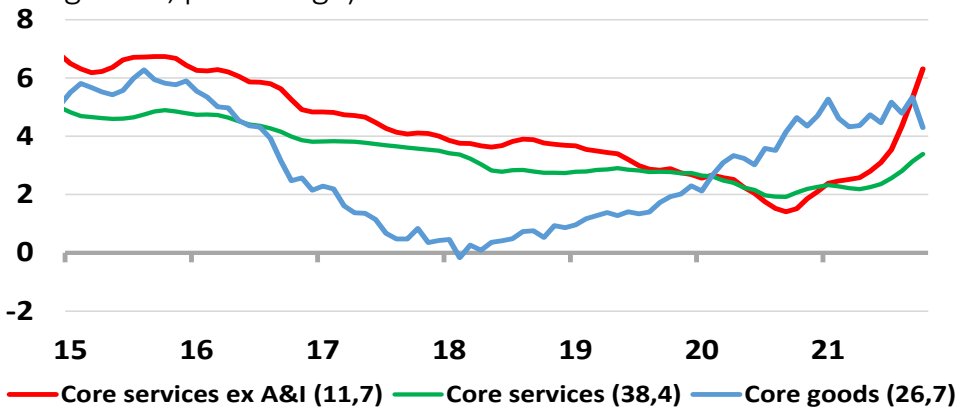
Inflation indicators (1)(2)

(annual growth; percentage)



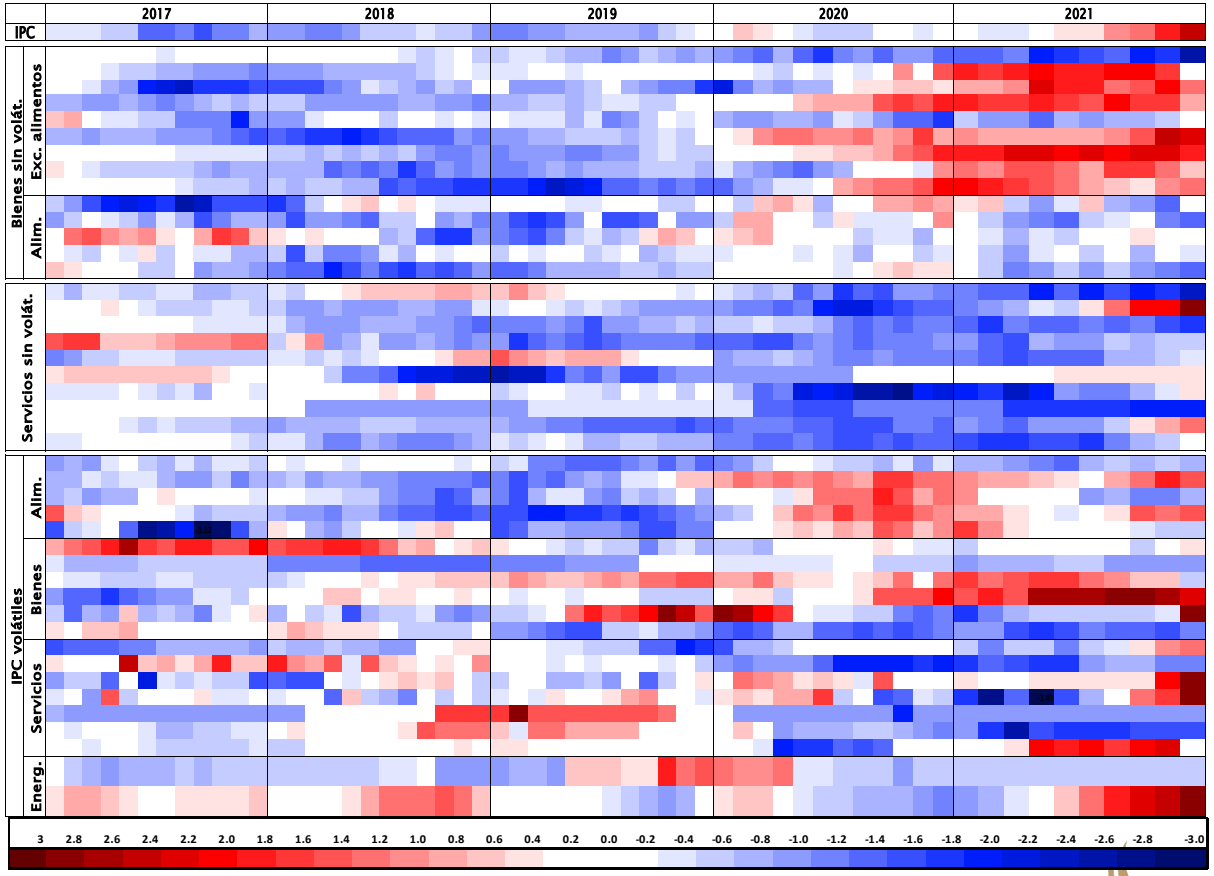
Core inflation: goods and services

(annual growth; percentage)



Prices heatmap

(series in annual growth, standardized with respect to historical mean from 2013)



(1) Some of the trend measures considered: average adjusted by volatilty, TMVC, and first dynamic factor estimated using Doz et al. (2012). (2) Core CPI based on Carlomagno and Sansone (2019) "*Marco metodológico para la construcción de indicadores de inflación subyacente*" . Source: Central Bank of Chile and National Institute of Statistics.

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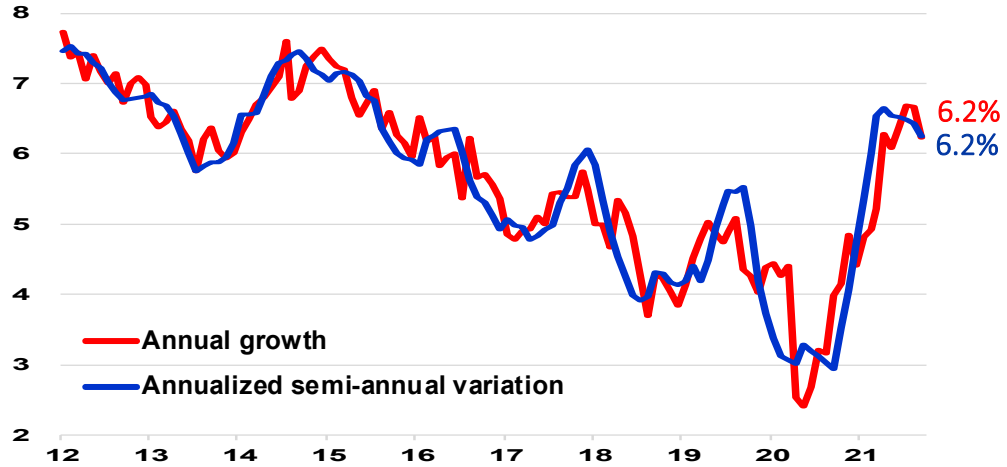
Inflation: Costs

Cost indicators are also reflecting pressures from inflation and high liquidity of households

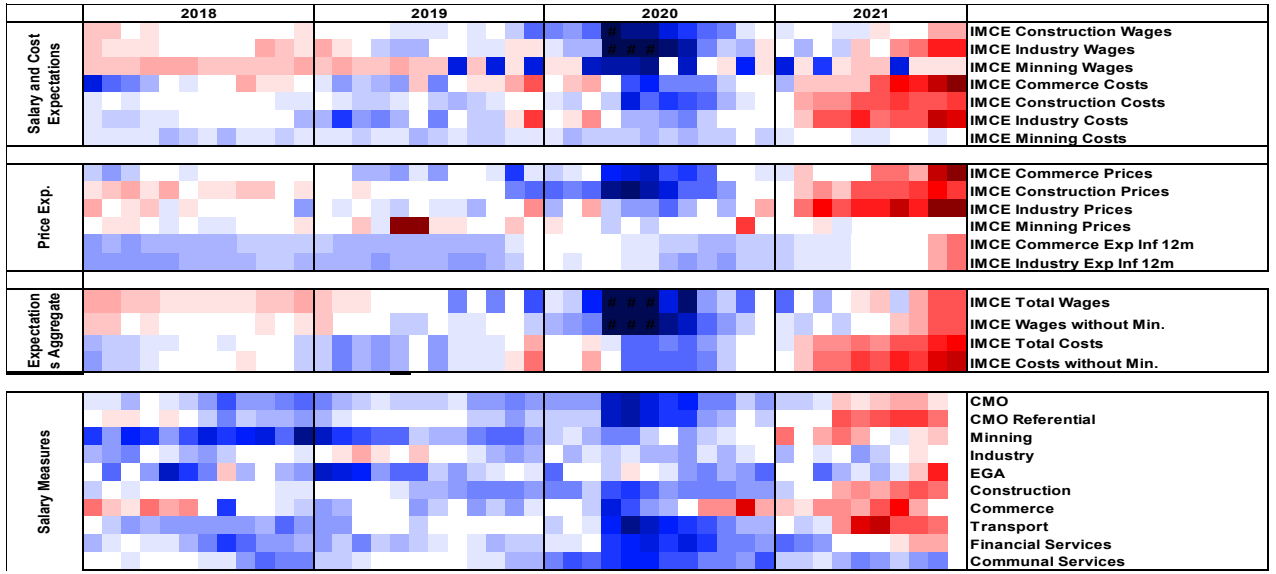
Wage inflation

(annual growth and annualized semi-annual moving average velocity, seasonally adjusted series; percentage)



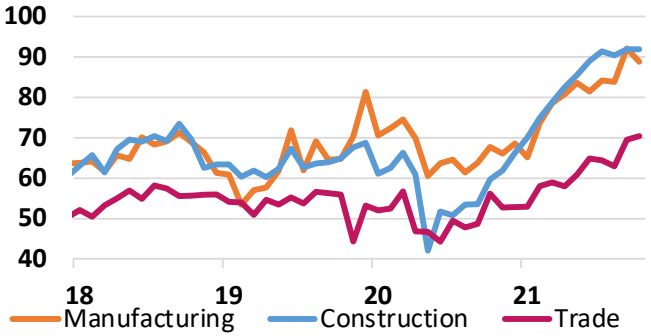
Costs heatmap

(series in annual growth, standardized with respect to historical mean from 2013)



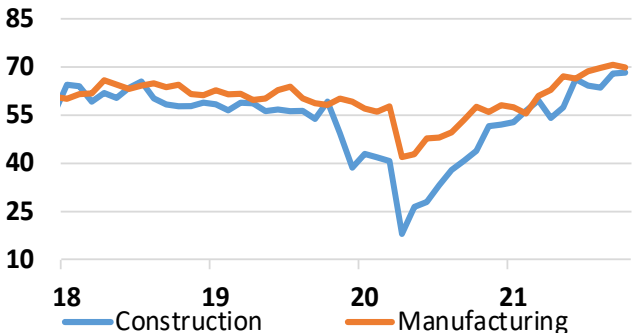
IMCE: Costs (*)

(index)



IMCE: Wages (*)

(index)



(*) Figures above (below) 50 indicates the level of wages/costs is expected to rise (fall). Source: ICARE/Universidad Adolfo Ibáñez, and Central Bank of Chile.

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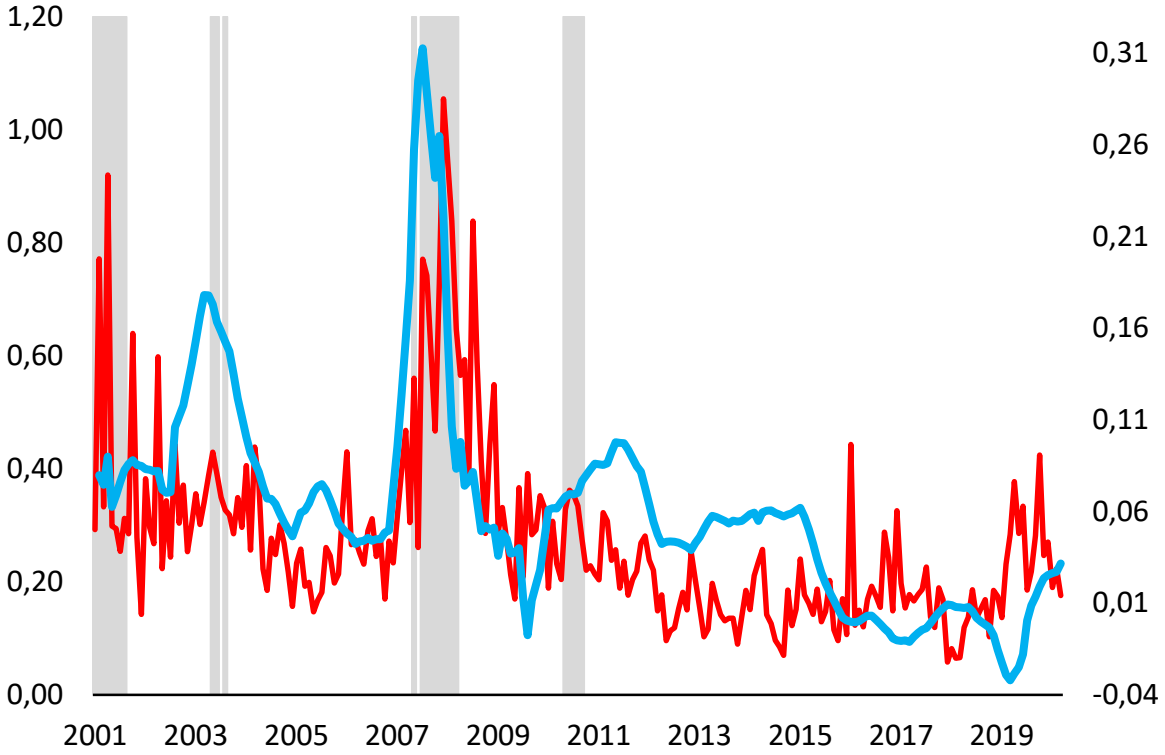
Inflation expectations anchoring

The **(un-)anchoring** phenomenon can be thought of as a concept about the **sensitivity** of long-term expectations to short-term surprises. Being the deviation of inflation expectations from Central Banks' targets its feared consequence.

Chile. Inflation expectations anchoring (*)
(percentage)



Bernanke: "*(…) in general, if the public is modeled as being confident in its current estimate of the long-run inflation rate, so that new information has relatively little effect on that estimate, then the essential idea of well-anchored expectations has been captured.*"

Draghi: Anchored inflation expectations "*ensure that temporary movements in inflation do not feed into wages and prices and hence become permanent.*"

- $\bar{\pi}_t = \bar{\pi}_{t-1} + \rho_t[\pi_{t-1} - E_{t-2}(\pi_{t-1})]$
- Standard deviations of 2-year ahead survey inflation expectations (disagreement measure)
- Periods in which 2-year ahead inflation survey expectations differ from Central Bank's target

(*) Source: Bernanke, B. (2007) "*Inflation Expectations and Inflation Forecasting,*" speech at the *Monetary Workshop of the NBER Summer Institute*, Cambridge, Massachusetts, July 10th. Draghi, M. (2014) "*Monetary Policy and the Outlook for the Economy,*" speech at the *Frankfurt European Banking Congress*, Frankfurt am Main, November 21. Graph from Arias and Kirchner (2019), monthly frequency; ρ_t estimated using Gibbs sampling. **Long-term inflation expectations, $\bar{\pi}_t$**, approximated with 2-years ahead survey inflation expectations.

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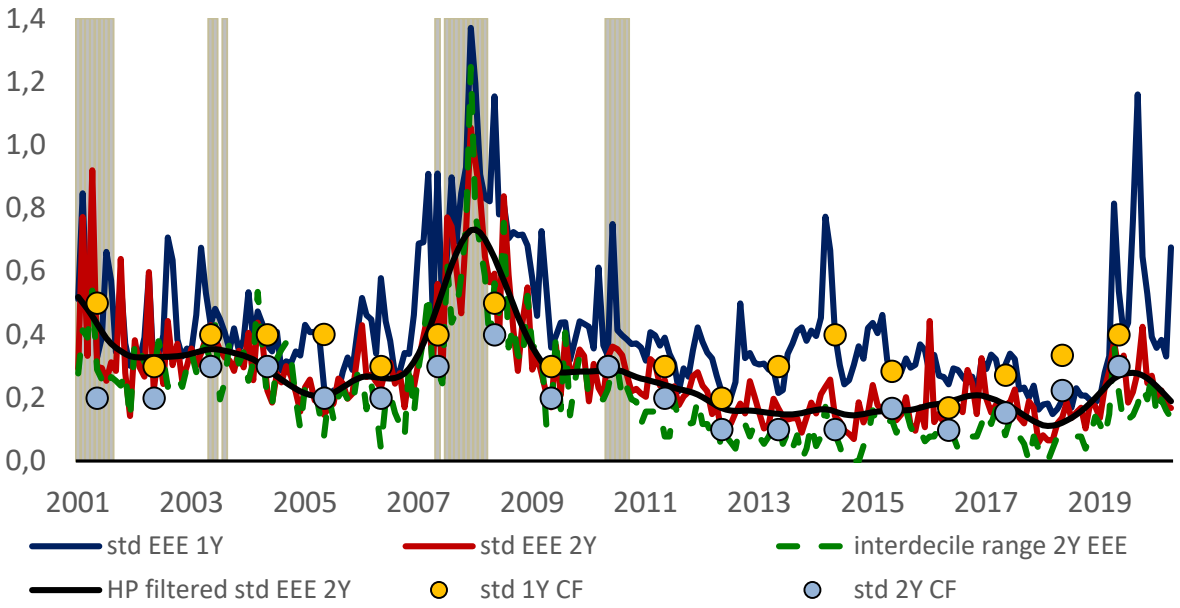
When do inflation expectations un-anchor?

- Systematic upside surprises,
- Loss of confidence in Central Bank responsiveness, and
- Perceived policy inconsistency (fiscal/monetary/FX).

How to detect inflation expectations anchoring in Chile

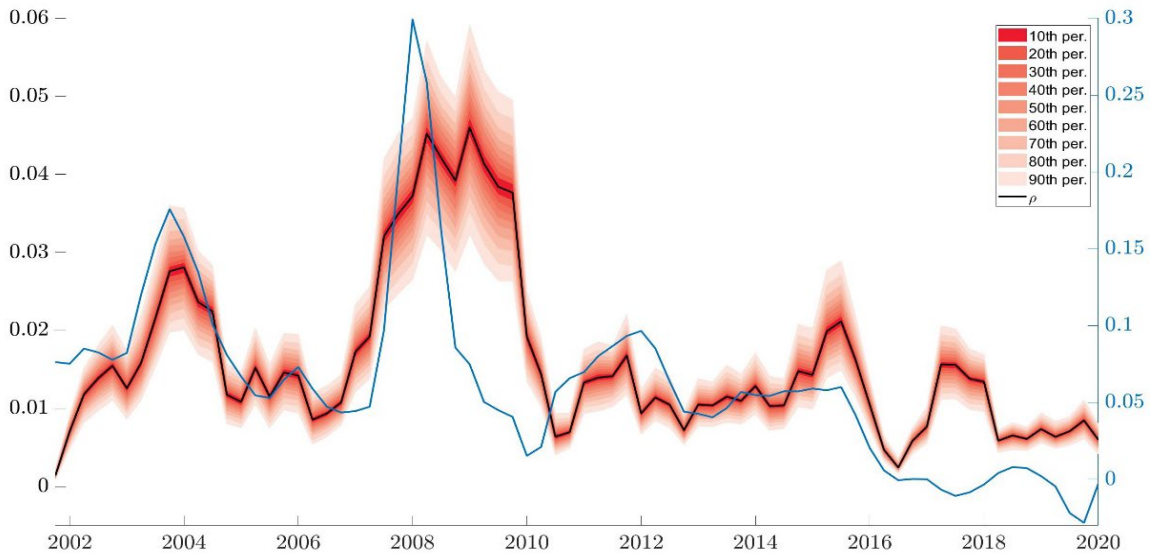
Arias and Kirchner (2019) embed an (un-)anchoring mechanism in a SOE-DSGE model for Chile, with agents that learn about the law of motion of inflation, in such a way, that as more (or larger) forecast errors accumulate the stronger the updates of their beliefs is - reflecting a growing doubt on their past forecasting models. That updating intensity conceptualizes, in the model, the idea of anchoring.

Alternative measures of anchoring in Chile



ρ depicts the mean of the posterior distribution of the degree of anchoring in the estimated DSGE model

(higher values reflect lower degree of anchoring)



Findings suggest a stronger response to inflation deviations is needed in a world with the possibility un-anchoring

(*) Source: Arias and Kirchner (2019) "*Shifting Inflation Expectations and Monetary Policy*", Working Paper 829, Central Bank of Chile. EEE 1Y (2Y) refer to 1-(2-)year ahead inflation expectations from the CBC EES; CF refers to *Consensus Forecast* data; grey bars denote episodes in which the 2-year ahead inflation expectation median deviates from Central Bank's target. Blue line on right graph depicts estimate of ρ_t in $\bar{\pi}_t = \bar{\pi}_{t-1} + \rho_t[\pi_{t-1} - E_{t-2}(\pi_{t-1})]$ using Gibbs sampling.

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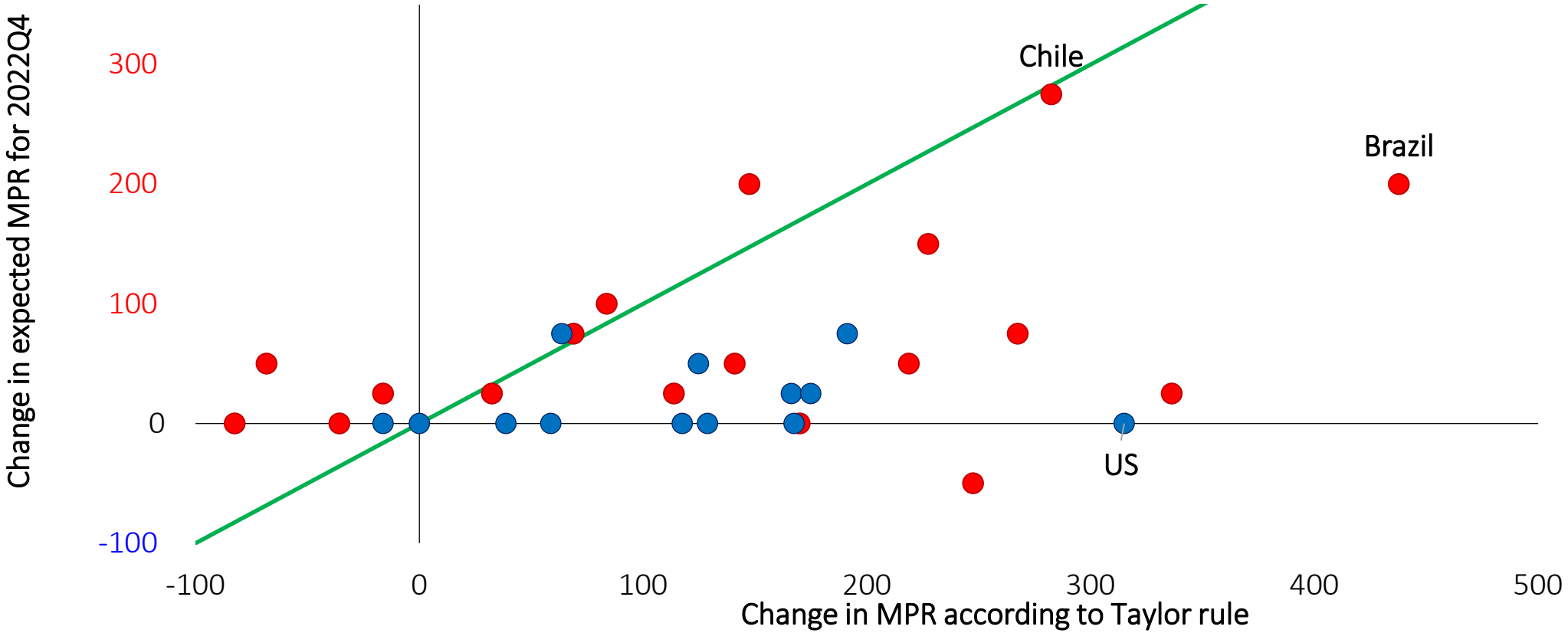
Policy conclusions

Change in expected monetary policy rates

Change in expected monetary policy rates since the beginning of 2021 (*)

(basis points)



(*) Change in MPR according to a Taylor rule considering changes in expected growth and inflation for 2021 and 2022, and standard coefficients for a Taylor rule. Expectations taken from Bloomberg, except for Chile (October 2021 CBC EES).

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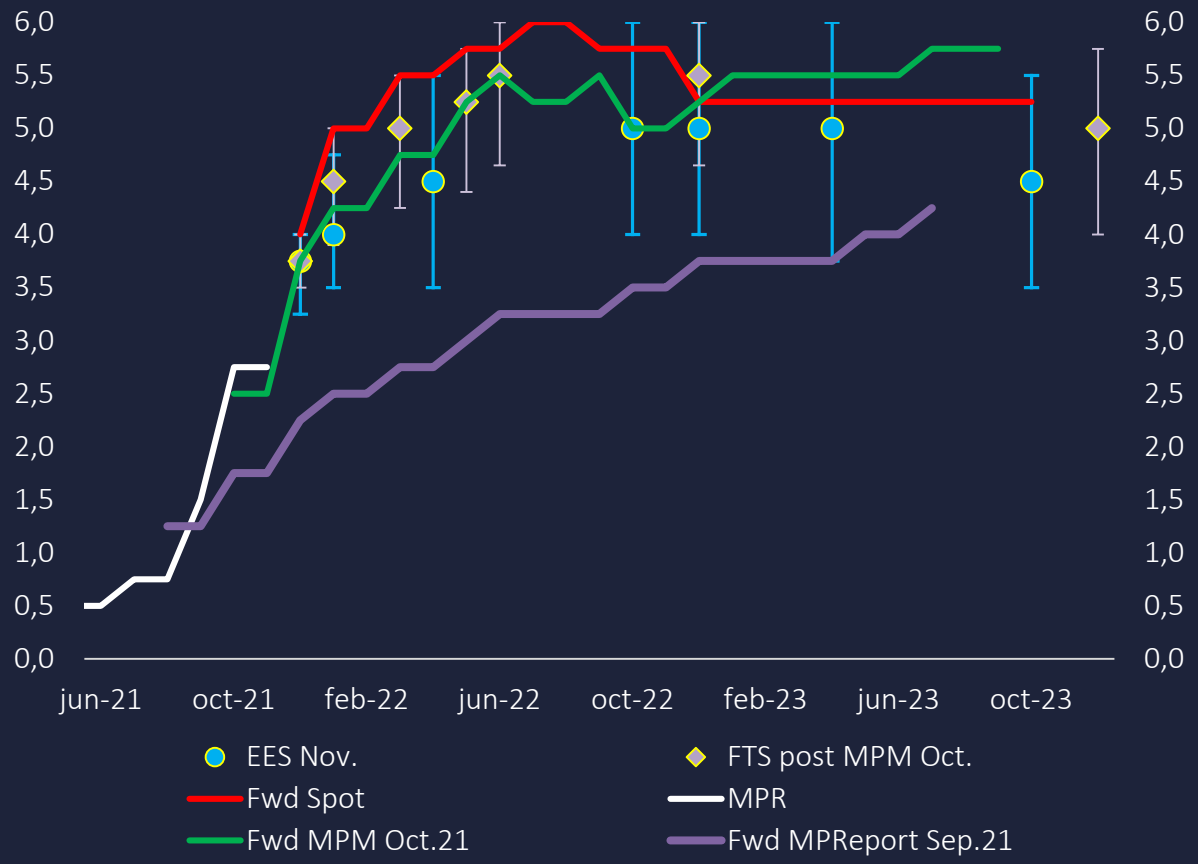
The CBC started to withdraw the monetary policy impulse in July 2021, intensifying with the rise in medium-term inflation forecasts. Forward guidance points to return to the neutral rate in December and market expectations point to a forward trajectory above the upper CBC MPR Corridor until mid-2022.

Expectations for the Monetary Policy Rate (*)

(percentage)



Expectations for the Monetary Policy Rate (*)

(percentage)

	Forward	EES	FTS
MPM Dec-21	4.0	3.75	3.75
MPM Jan-22	5.0	4.0	4.5
MPM Mar-22	5.5	4.5	5.0
MPM May-22	5.75	-	5.25

(1) Spot date: November 25, 2021. Source: Central Bank of Chile.

Monetary policy challenges

- A double trade-off:

  a. Between monetary restraint, economic activity and employment, especially when the economy is exiting from a deep recession, and

  b. Between gradual action and more drastic measures if decision is delayed too far.

- An appropriate response to this dilemma should take into account that the increase in inflation is far from homogeneous across countries, and that differences don not run exclusively in the AEs/EMEs split.
- At the same time, we suggest that the exceedingly expansionary point of departure, lowers the risk of a first move, if forward guidance is clear on the pace and conditions for next steps.
- Delaying action in the larger economies may create negative spillovers that may further constrain policy space for the smaller, emerging ones. A first step for AE central banks to strengthen policy guidance would be to provide more precision on the tolerance limits to inflation upside deviations.

Monetary policy challenges

Why are EME Central Banks raising policy rates?

1. Because many of them face additional inflationary pressures from idiosynchratic factors
2. Because second-roud effects are already under way, building further momentum on price increases
3. Because they are starting from an exceedingly expansionary basis
4. Because they cannot draw on unlimited patience:
   - Forward inflation targeting is generally set on a limited time horizon
   - Inflation is becoming a major economic concern for a population already hit by the Covid-19 crisis
5. Because delaying policy decisions may force more drastic adjustements with further damage to the economy
6. Because a change of direction at the Fed would create further inflationary pressures through the exchange rate

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Monetary policy challenges

- Challenges for international organizations and the academic community:
  - Encourage policy consistency across economies
  - Continue tracking the unwinding of special measures adopted in response to the Covid-19 crisis during recovery from this unprecedented event
  - Estimate shadow interest rates, as well as the gap between actual and neutral rates to facilitate comparisons between countries with different doses of conventional and nonconventional monetary policies
  - Assess structural changes, longer-term trends (demographic factors; extension of global value chains; impact of trade disputes, move towards cleaner technologies).

Inflation in the Aftermath of the Covid-19 Crisis: An EME Perspective

Mario Marcel
Governor of the Central Bank of Chile

OECD, December 3, 2021

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