EUROPEAN CENTRAL BANK

EUROSYSTEM

High-frequency indicators of financial integration

9 May 2023

Stefano Borgioli
European Central Bank

Introduction

This presentation

- ✓ Presents a new set of high-frequency indicators
- ✓ Presents the basic elements of "*risk sharing*"

Disclaimer: Any views expressed are only the speaker's own and should not be regarded as views of the European Central Bank or the Eurosystem.

1

High-frequency financial integration indicators - European financial integration during the COVID-19 crisis

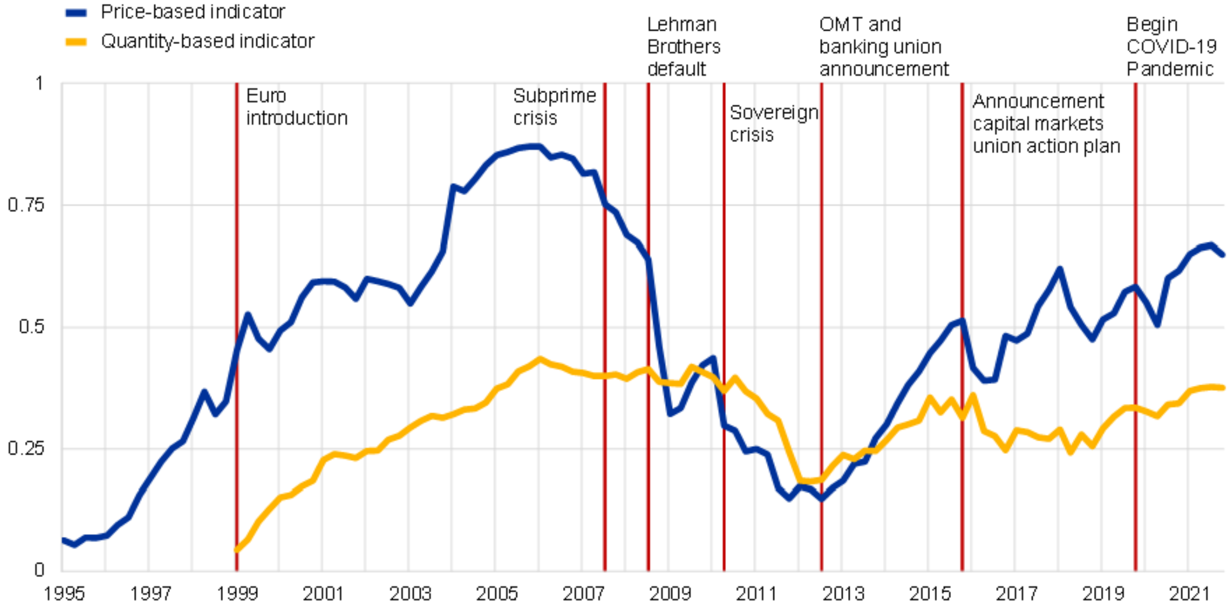
European financial integration during the COVID-19 crisis

- ECB (2022), "*Financial Integration and Structure in the Euro Area*", April.
- Hartmann P., Borgioli S., Kempf A., Molitor P., Mongelli P. (2021), "*Financial integration and structure in EMU during the corona crisis*", VOX EU/CEPR, May.
- Borgioli S., Horn K., Kochanska U., Molitor P., Mongelli P., Mulder E., Zito A. (2020), "*European financial integration during the COVID-19 crisis: Insights from a new indicator*", VOX EU/CEPR, December.
- Borgioli S., Horn K., Kochanska U., Molitor P., Mongelli P. (2020), "*European financial integration during the COVID-19 crisis*", ECB Economic Bulletin, Issue 7/2020, November
- Kochanska U., Borgioli S., Zito A., Mongelli P. (2023), "*A novel high-frequency indicator of financial integration for monitoring the impact of COVID-19*", ECB Statistics Paper Series, **forthcoming**.

European financial integration during the COVID-19 crisis

- In early 2020, the rapid spread of the coronavirus (COVID-19) quickly developed into a pandemic, which was followed by a sharp global economic downturn that was extraordinary in its speed, reach and scale.
- These rapidly emerging financial strains could not be captured by a low-frequency -monthly or even quarterly- composite indicator of financial integration.
- Need for constructing a novel **high-frequency** price-based indicator of financial integration.
- Focus on the price-based dimension of financial integration, given the instant reaction to incoming news.

Price- and quantity-based financial integration composite indicators



The original frequency of the composite indicators posed a **challenge to the timely analysis** of financial integration

Source: ECB and ECB calculations

European financial integration during the COVID-19 crisis

- A **higher-frequency version** of the price-based composite indicator (among others) was developed.

Box 1 High-frequency financial integration indicators within a real-time monitoring toolkit

Prepared by Urszula Kochanska, Eva Mulder and Alessandro Zito

The technical details of the development of the high-frequency financial integration indicators are presented in Box 1 of **Borgioli S., Horn K., Kochanska U., Molitor P., Mongelli P**. (2020).

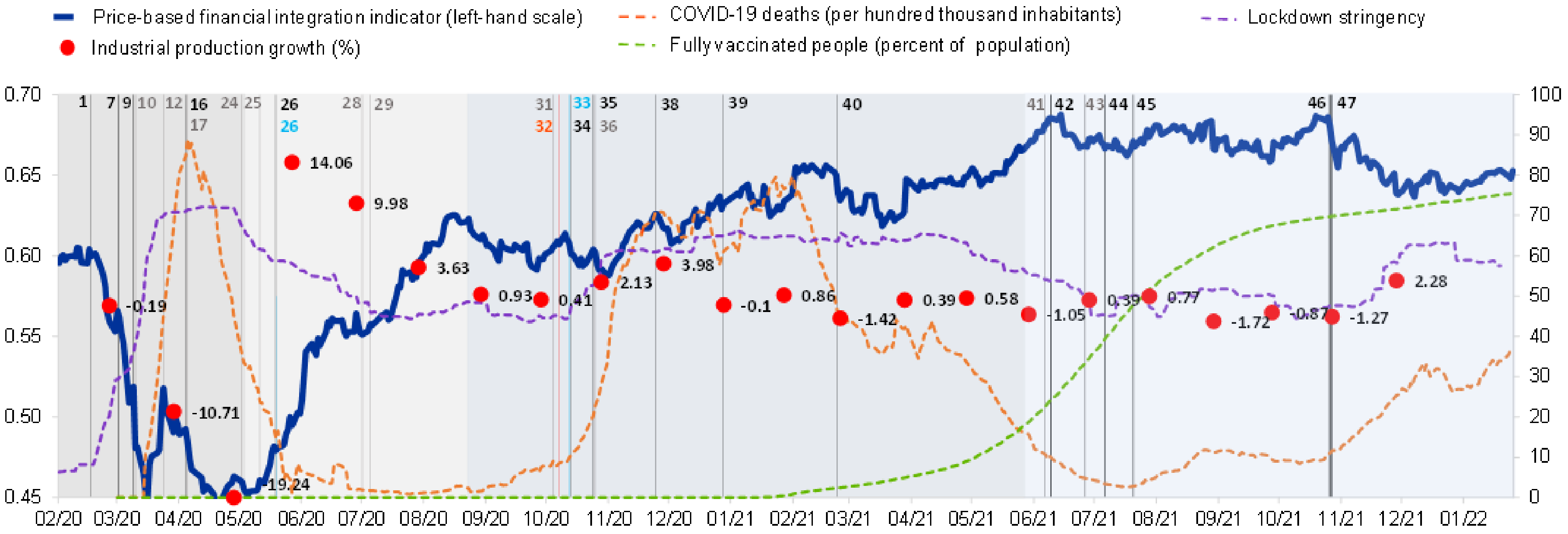
High-frequency price-based indicator

- A prerequisite for developing the HF-PIFI was the availability of input data for various market segments …
- … high-frequency input data are indeed available for all market segments with the exception of the retail banking market.
  - ✓ Daily data are available for the money and bond markets and for the sub-index (EqM2) of the equity market component.
  - ✓ Data for the other sub-index of the equity market (EqM1) are available weekly.
  - ✓ Input data for retail banking markets are available monthly.
- We had then to ensure the greatest possible consistency between high-frequency and lower-frequency data.

Overview of input data and measures for the high-frequency price-based indicator

Market segment	Input measure	Coverage	Frequency	Raw data
Money market (MM)	Standard deviation (SD) of unweighted interbank lending rates	EMU2021	Daily	€STR; source: ECB
Bond market (BM)	SD of ten and two-year sovereign bond yields to maturity	EMU2021-	Daily	Ten-year and two-year government benchmark bond yields; source: Refinitiv
	SD of non-financial corporate uncovered bond yields	Available euro area countries	Daily	Bloomberg Barclays euro-aggregate indices; source: Bloomberg
Equity market (EM)	EqM1 – median equity market segmentation index	EMU2011 excl. LU	Weekly	Country and sector MSCI equity indices; source: Refinitiv
	EqM2 – Country and sector dispersion absolute difference	EMU2011 excl. LU	Daily	Refinitiv Datastream global equity indices, source: Refinitiv
Retail banking market (BKM)	SD of bank interest rates on deposits and i) loans from/to households and NFCs	EMU2011-	Monthly	MIR statistics; source: ECB

European financial integration during the COVID-19 crisis



See Annex for events description

European financial integration during the COVID-19 crisis

- Contrary to previous major crises, material financial disintegration in the euro area at the start of the pandemic stopped and reversed relatively quickly.
- The most influential policy measures containing re-fragmentation in the euro area were first the fast series of ECB monetary policy measures and then, decisively, the EU agreement about a very large COVID recovery fund.
- Once pre-pandemic levels were reached again, measured financial integration gradually further increased and remained resilient to further COVID waves.

European financial integration during the COVID-19 crisis

- Besides the price-based composite indicator, the toolkit comprises other high-frequency statistical indicators like a new dispersion indicator for money markets.
- For the sovereign and corporate segments of the bond market, the toolkit includes both the level and dispersion of spreads or yields at different maturities.
- To deepen the cross-country analysis of the government sector, the toolkit further includes daily credit default swap (CDS) premia and a market assessment of redenomination risk premia.

See Borgioli S., Horn K., Kochanska U., Molitor P., Mongelli P. (2020)

2

Risk sharing

Risk-sharing

- Economic agents, such as households and firms, attempt to insure their disposable income and consumption streams against fluctuations in the business cycle of their country, i.e. they try to “smooth out” changes in their consumption resulting from economic shocks.
- Consumption can be smoothed via inter-temporal channels:
  - private savings,
  - welfare programmes,
  - intergenerational transfers (i.e. public debt).

Risk-sharing

- Risk sharing is the capacity of a country to absorb asymmetric shocks through ex ante insurance on capital markets or ex post compensation through savings or fiscal transfers.

- Consumption streams can be insured via risk sharing through international channels, e.g. cross-country transfers which contribute to cushion country-specific shocks.

Risk-sharing

- Main risk-sharing channels:
  - “Private” channels
    - the savings/credit channel. Households and firms in the country hit by an adverse shock may protect their consumption by resorting to savings or to credit conceded by other countries.
    - the income channel, which includes the capital market channel (cross-border holdings of financial assets). Resident economic agents obtain income from other countries (regions) not affected by the shock.
  - “Public” channels
    - the fiscal channel. The effects of the shock may be smoothed out through fiscal transfers drawn from the central or federal budget

Risk-sharing

- **Credit channel.** The public sector, households and firms may borrow cross-border to sustain consumption or investment levels in the face of adverse shocks. Indeed, the supply of credit to an economy is in principle less affected by country-specific shocks when international banks operate in that economy.
- **Capital market channel.** Works via internationally/inter-jurisdictionally diversified private investment portfolios. These can generate income flows unrelated to fluctuations in the home economy, as long as the home and the other economies are not strongly interlinked and therefore experience similar business cycles.

Risk-sharing

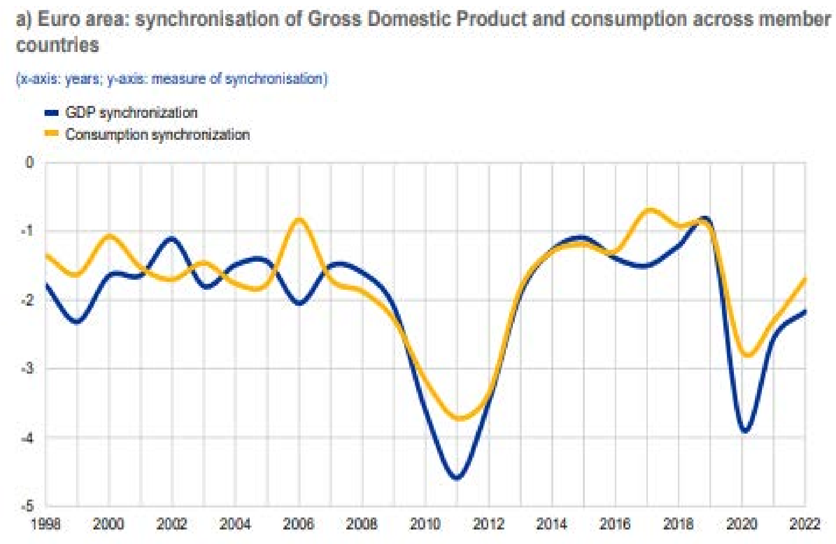
- Fiscal channel. Relies on cross-regional fiscal transfers. This channel is generally well-developed in mature federations, where transfers from the federal government help to smooth the impact of shocks at the state or regional level.

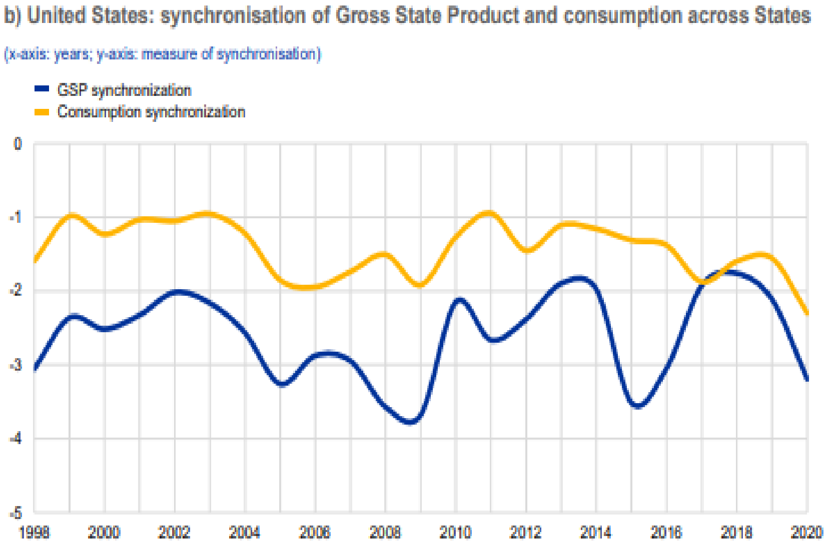
Testing for risk-sharing

- Tests of international risk sharing have been typically based on the relationship between total economy consumption growth and output growth, controlling for global economic shocks and other factors.
- To the extent that consumption growth is uncorrelated with output growth, this would point to effective risk sharing.
- Under perfect risk sharing, consumption would be completely delinked from output fluctuations, i.e. the correlation coefficient would be zero for all countries

Testing for risk-sharing

Synchronisation of output and consumption within the euro area and the US

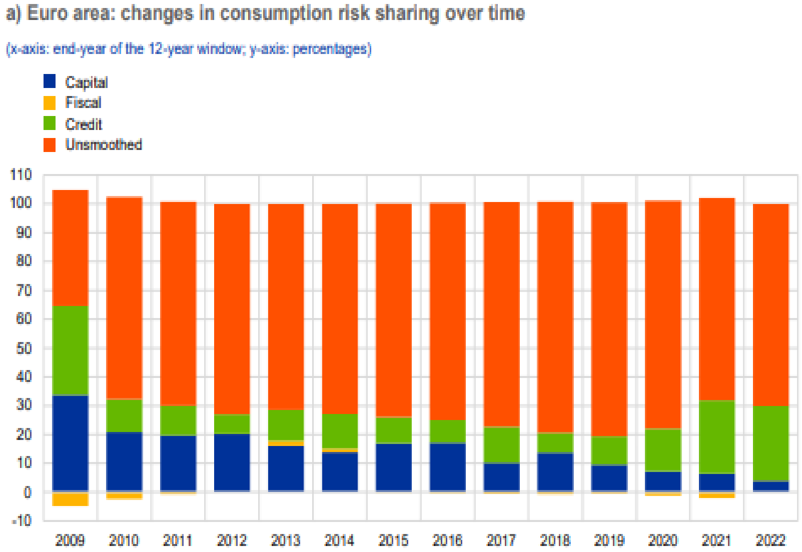


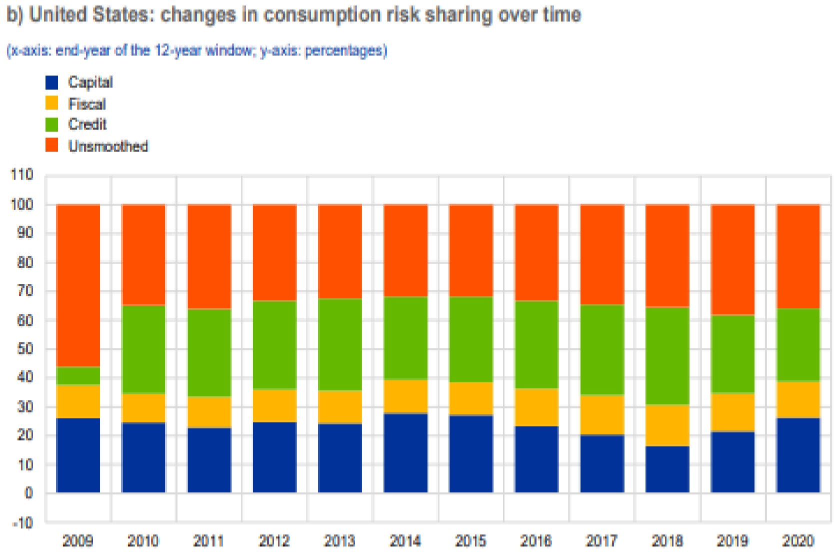


Source: ECB Occasional Paper Series
No 306 / September 2022

Testing for risk-sharing

Risk-sharing mechanisms in euro area continue to be relatively weak compared to the US





Source: ECB Occasional Paper Series
No 306 / September 2022

Risk-sharing during the COVID-19 crisis

VoxEU COLUMN

An early view on euro area risk-sharing during the COVID-19 crisis

Carl-Wolfram Horn, Francesco Paolo Mongelli, Alessandro Giovannini

10 JAN 2021 COVID-19 / ENVIRONMENT

- Income risk-sharing in the euro area, albeit low, was resilient throughout the crisis.
- The provision of unprecedented policy support has prevented private risk-sharing channels from collapsing, reducing the risk of a sudden stop in cross-border financial flows and a further exacerbation of the crisis.

Thank you for your attention!

Annex

High-frequency indicators - significant events

1. Closure of Italian schools and universities (4 March 2020), 7. ECB PEPP announcement (18 March), 9. PEPP legal documentation published (25 March 2020), 10. Third European Council with divergent views on coronabonds (26 March 2020), 12. Eurogroup agreement on comprehensive policy response (9 April 2020), 16. ECB collateral rating freeze (22 April), 17. Fourth European Council with endorsement of Eurogroup's comprehensive policy response and plans for recovery fund (23 April), 24. Franco-German EUR 500 bn. European recovery fund proposal (18 May 2020), 25. European Commission EUR 750 bn. "Next Generation EU" recovery instrument proposal (27 May 2020), 26./26. ECB PEPP expansion and Germany announces major fiscal stimulus package (4 June 2020), 28. Start of special European Council on recovery fund (17 July 2020), 29. End of special European Council on recovery fund with final agreement on size and structure (21 July 2020), 31. First issuance of EU Commission SURE bonds (21 October), 32. S&P upgraded the outlook on the Italian sovereign bond rating from negative to stable (23 October 2020), 33. Germany adopts toughest health restrictions since first lockdown (28 October 2020), 34. ECB hints at December monetary policy stimulus (29 October 2020), 35. BioNTech/Pfizer vaccine announcement (9 November 2020), 36.Second issuance of EU Commission SURE bonds (10 November 2020), 38. ECB expands PEPP envelope and announces to "preserve favourable financing conditions" (10 December 2020), 39. Announcement of US economic relief package (15 January 2021), 40. ECB temporarily increases PEPP purchases (11 March 2021), 41. Commission successfully placed 800 billion euros of bonds, "Next Generation EU" (8 June 2021), 42. European Union countries agreed on an easing of travel restrictions over summer (11 June 2021), 43. EU hands out first payments from COVID-19 recovery fund, "Next Generation EU" (28 June 2021), 44. ECB reformulates inflation goal to 2%, allows overshoot (8 July 2021), 45. ECB extends forward guidance on rates (22 July 2021), 46. ECB Governing Council (28 October 2021). 47. Inflation in the euro area is estimated at 4.1% in October (29 October 2021). Omitted numbers are relevant events suppressed for readability.