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OESTERREICHISCHE NATIONALBANK
EUROSYSTEM

The surprising resilience of cash

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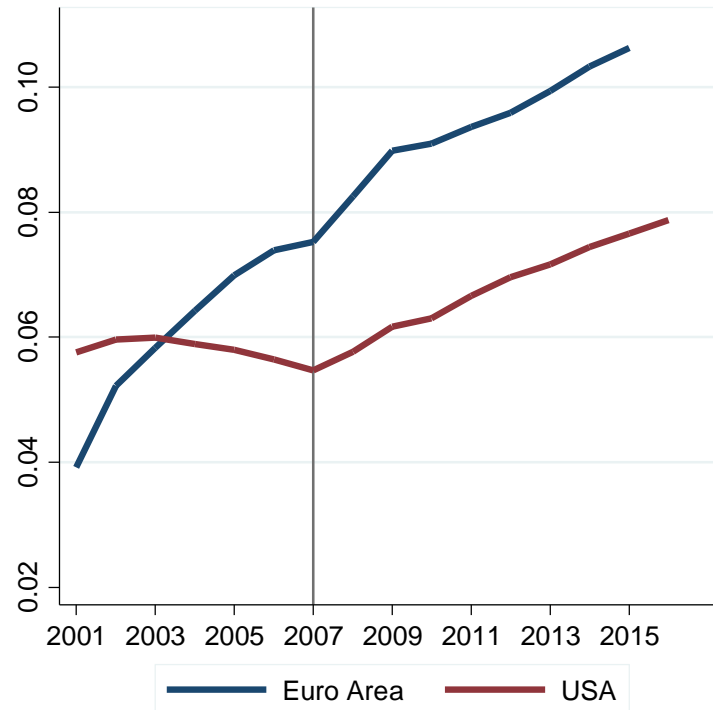
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The Financial System of the Future
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Based on joint work with Clemens Jobst. The views expressed here are exclusively those of the authors and do not necessarily reflect those of the OeNB or the Eurosystem.



Motivation

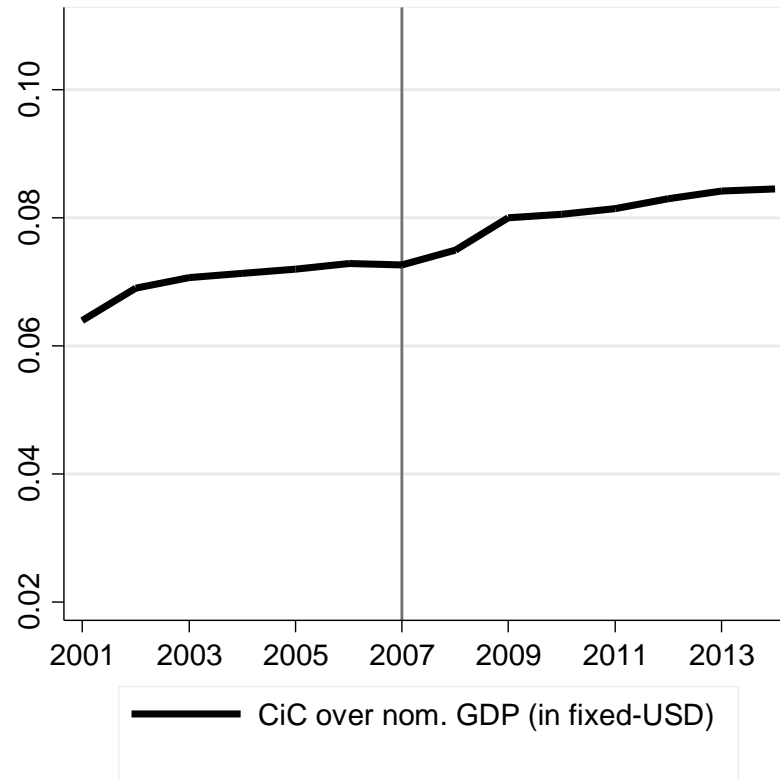
Currency in Circulation over Nominal GDP (in %)



- no decrease, increase after 2007
- Per capita holdings 2014 ~3000 euro → foreign demand, hoarding

Motivation

“World” Currency in Circulation over Nominal GDP (in %)



Note: The figure shows the currency in circulation to nominal GDP ratio for a sample of economies which comprise about 95% of World GDP (see Jobst and Stix 2017). All aggregations are based on market USD exchange rates that are fixed at 2006.

Source: Jobst and Stix (2017).

Demand for currency has increased in many economies

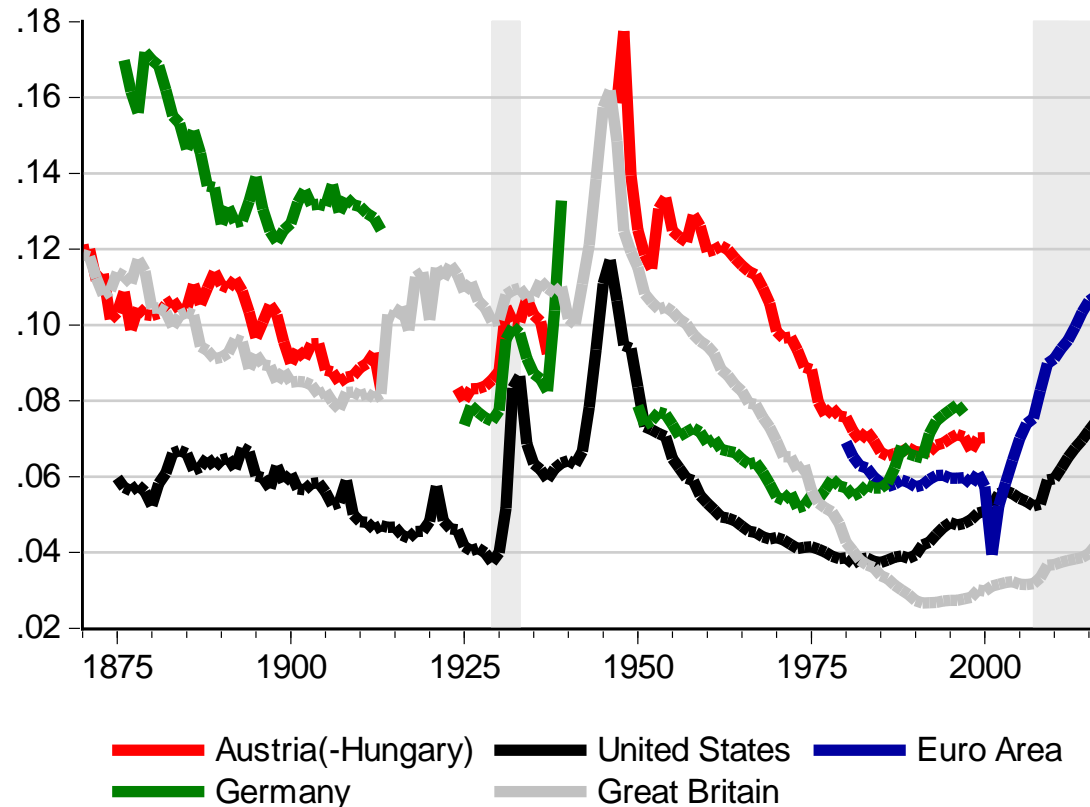
- Change in CiC / NGDP Ratios from 2003/04 to 2013/14 in 72 economies

Mean increase 17%

63% of economies had an increase

50% of economies had an increase of >13%

A long-run view on currency in circulation (over nom. GDP in %)

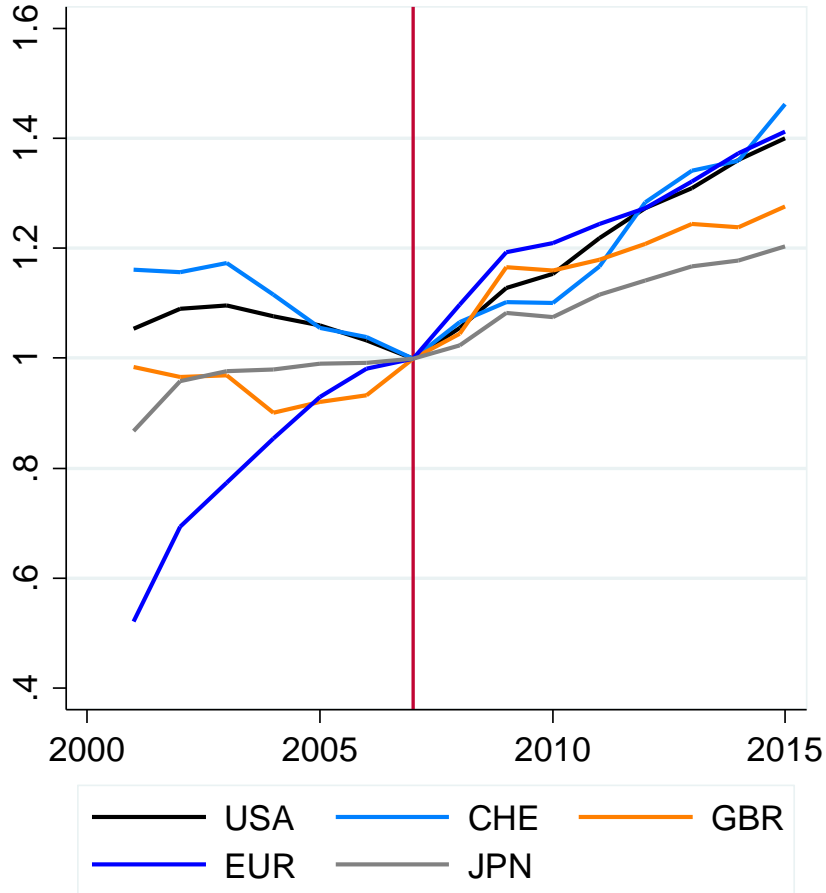


- Financial innovations ↓ cash
- Cash resilient
- Recent increase strong
- Increase also in Great Depression
- Increase also in GBR

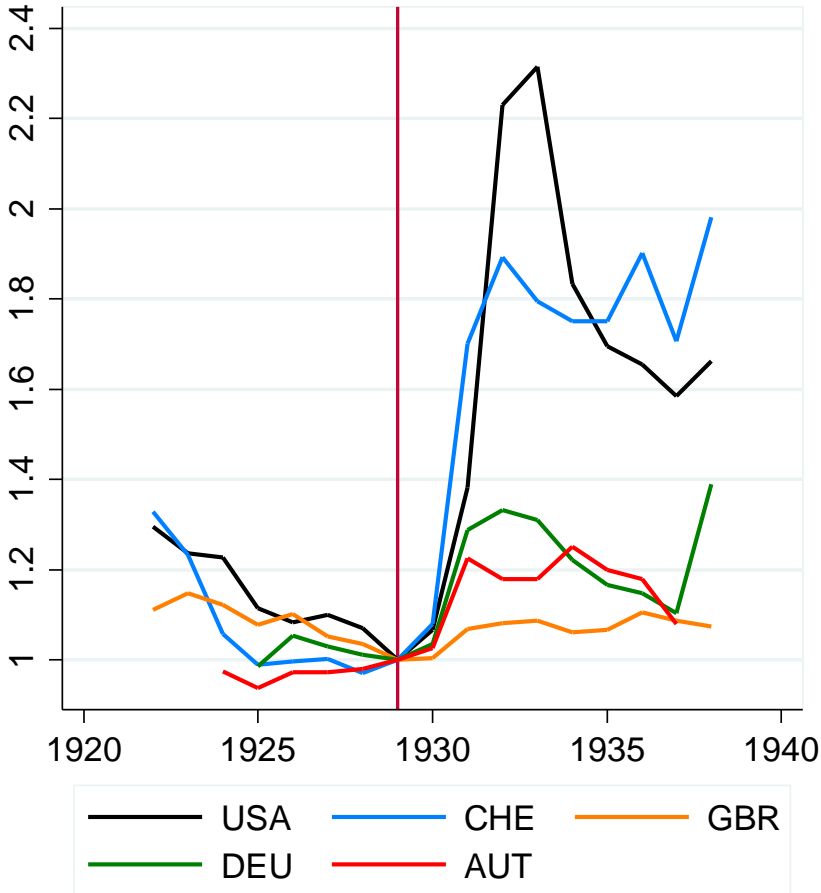
Note: The shaded area marks the period from 1929 to 1933 and from 2007 to 2015. Sources: See Jobst and Stix 2017.

Comparison with the 1930s banking crises

2001-2015



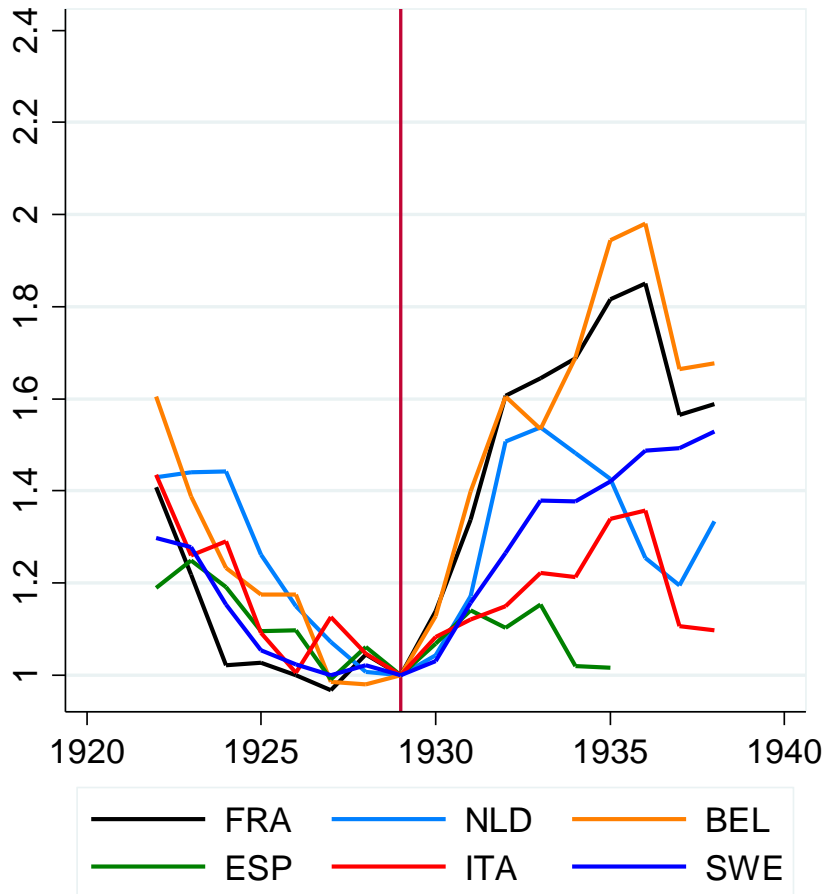
1923-1938



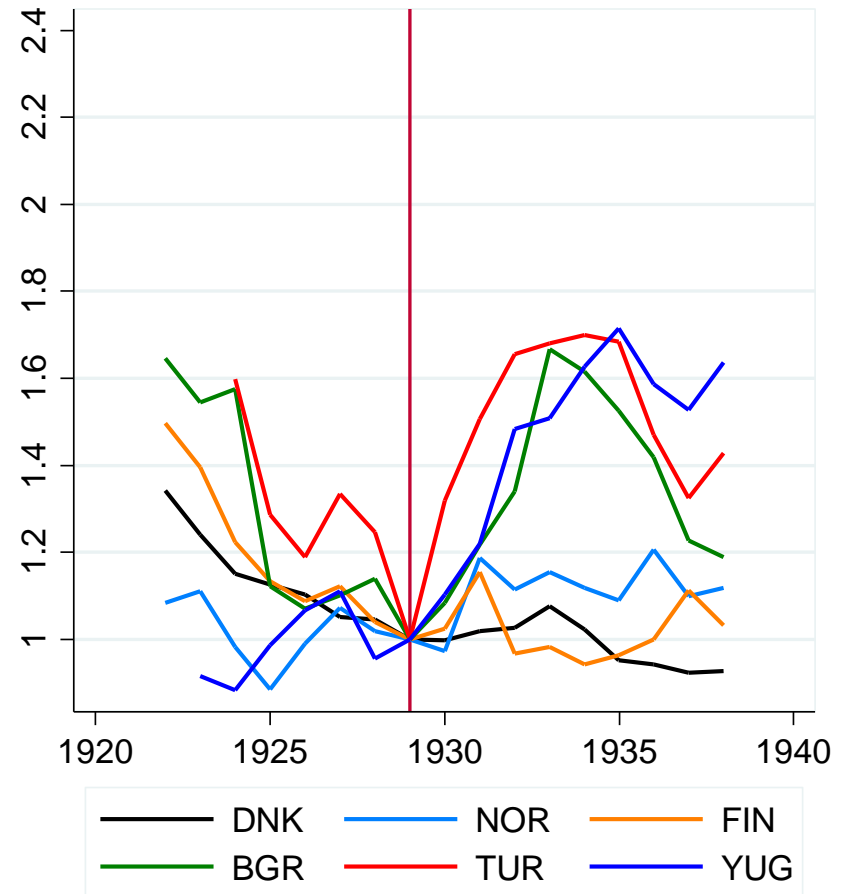
Sources: See Jobst and Stix 2017.

...other economies

1923-1938



1923-1938



Sources: See Jobst and Stix 2017.

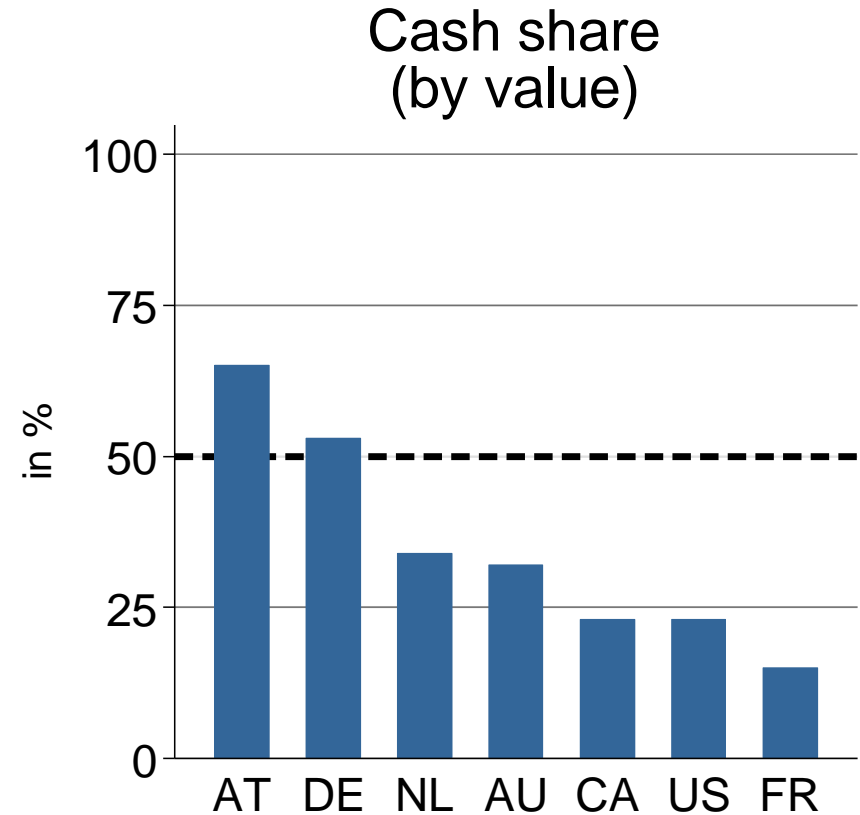
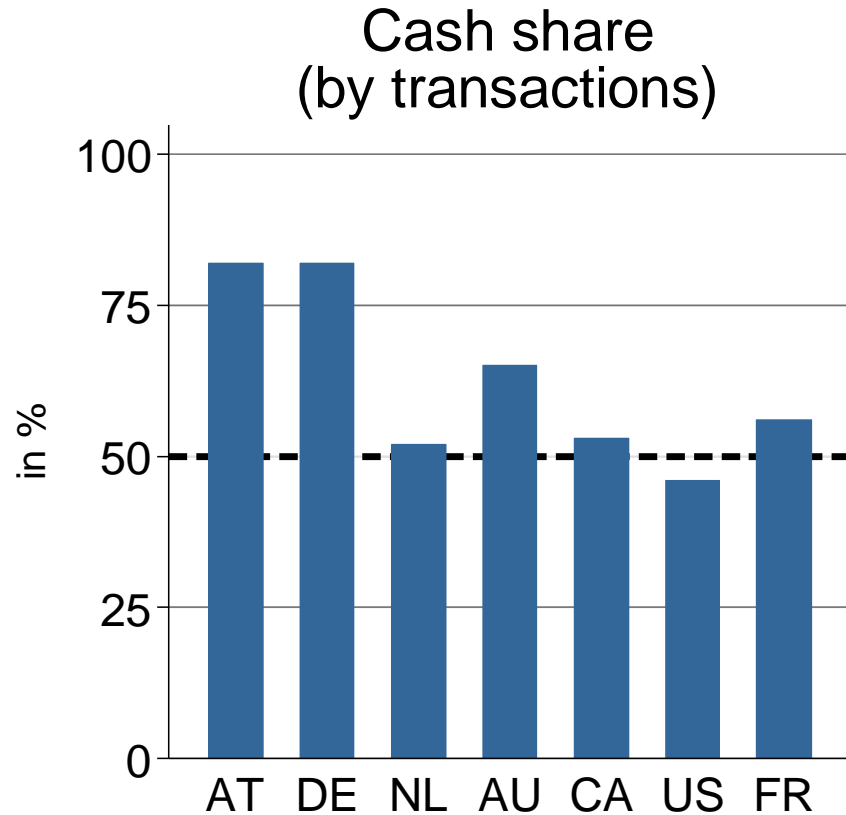
Key questions

- To what extent and why is cash still used for transactions?
- What are the drivers of recent increases of currency demand?

To what extent and why is cash used for transactions?

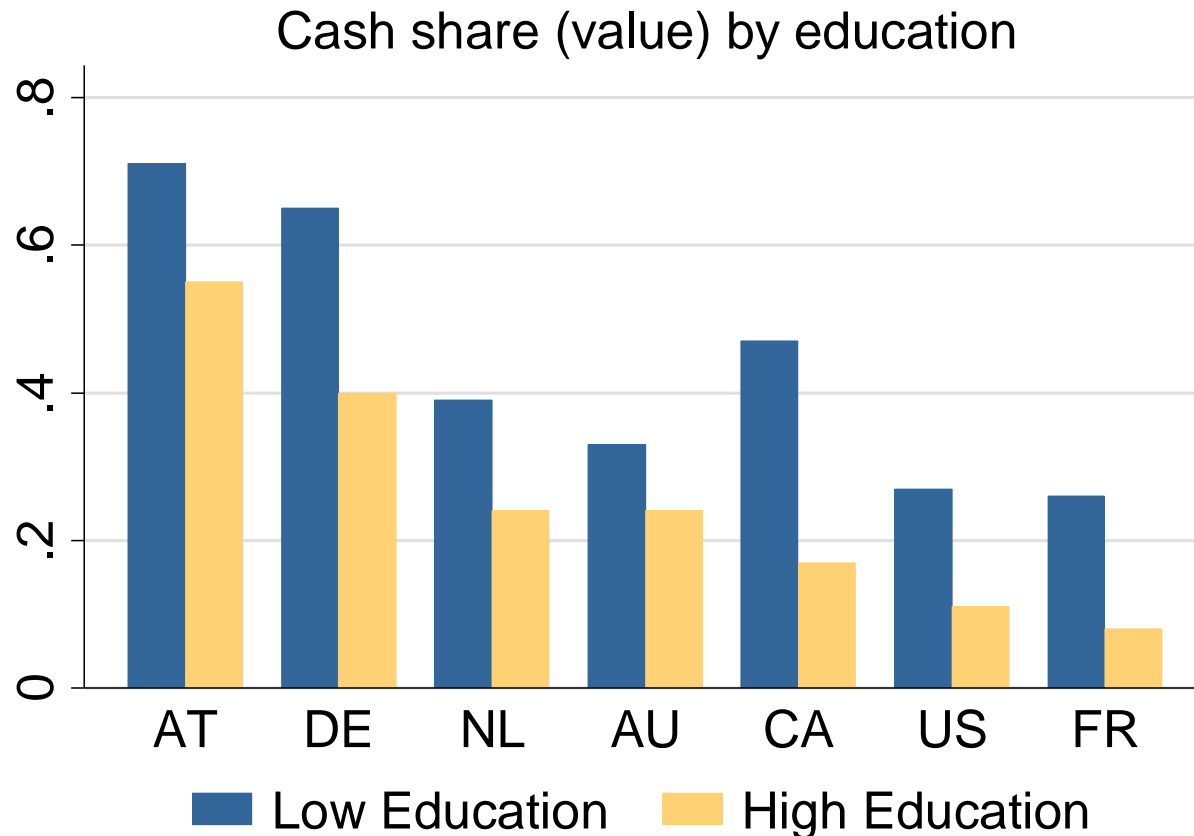
- Technological innovations → direct effect on cash
- Cash balances used for transaction balances comprise only small share of total currency in circulation
- Payment diary survey studies provide information on use of cash at the point-of-sale
- Bagnall et. al. (2016, IJCB): Compare results from 7 advanced economies
 - Payment card ownership almost universal

Share of cash at point-of-sale transactions



Source: Bagnall et al. 2016.

Socio-demography & preferences matter



- Cash for expenditure control, to economizing on fees
- Use of payment instruments largely in line with what consumers prefer, how they assess attributes of payment instruments

Future

- Evidence from past payment diary surveys:
 - Trend decline
 - Changes have occurred gradually
- New technologies (NFC, electronic wallets, etc.) will have a sizeable effect but cash will continue to play a role

What are the drivers of recent increases?

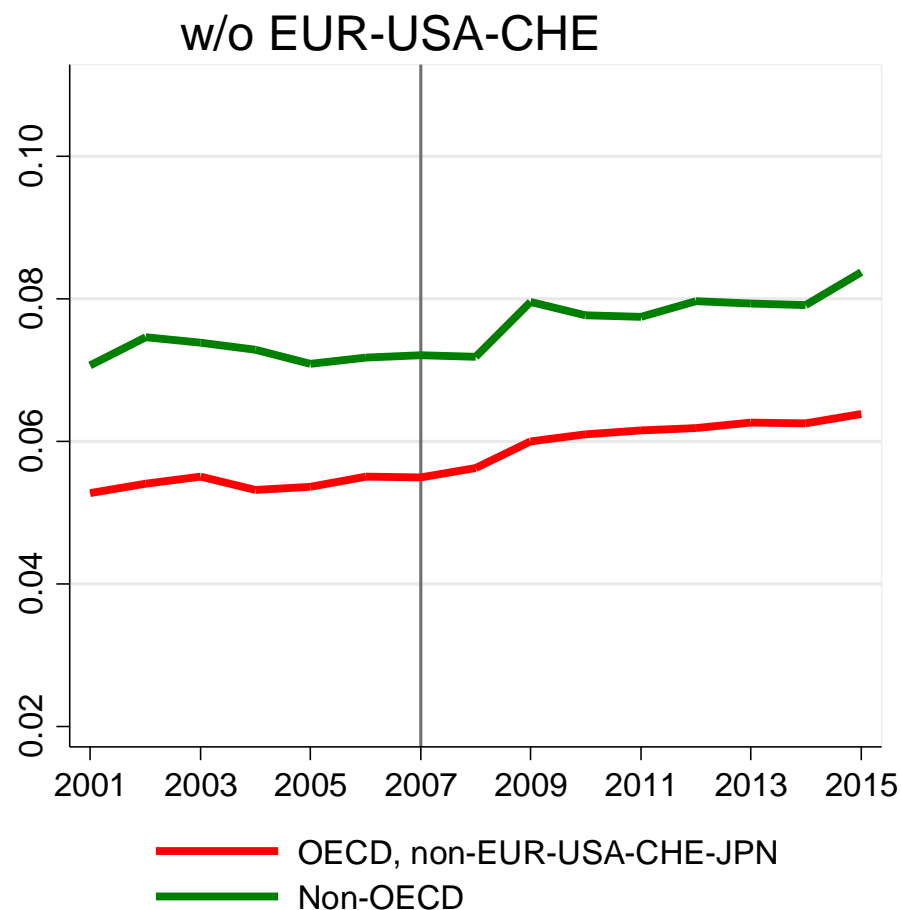
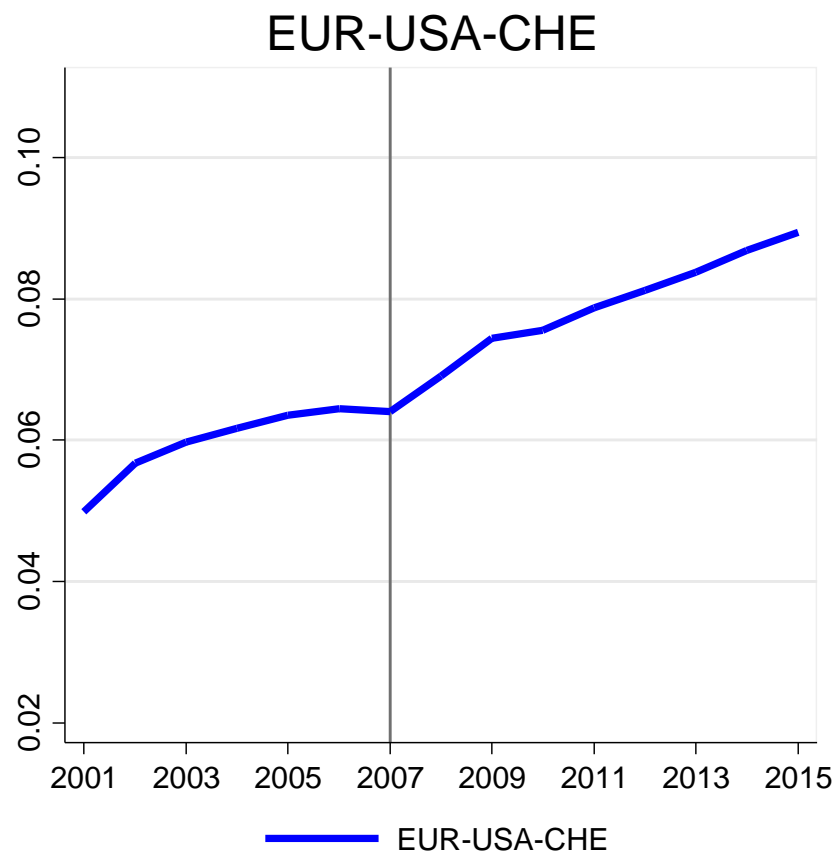
- Foreign Demand
- Lower interest rates

Additional explanations:

- Shadow economy
- Crisis effect after 2007/08:
 - Portfolio rebalancing: shift from deposits to cash (confidence, uncertainty)
 - Temporary fall in income: Agents hold currency according to their permanent income and have not adjusted their expectations of permanent income (Friedman and Schwartz, 1963)

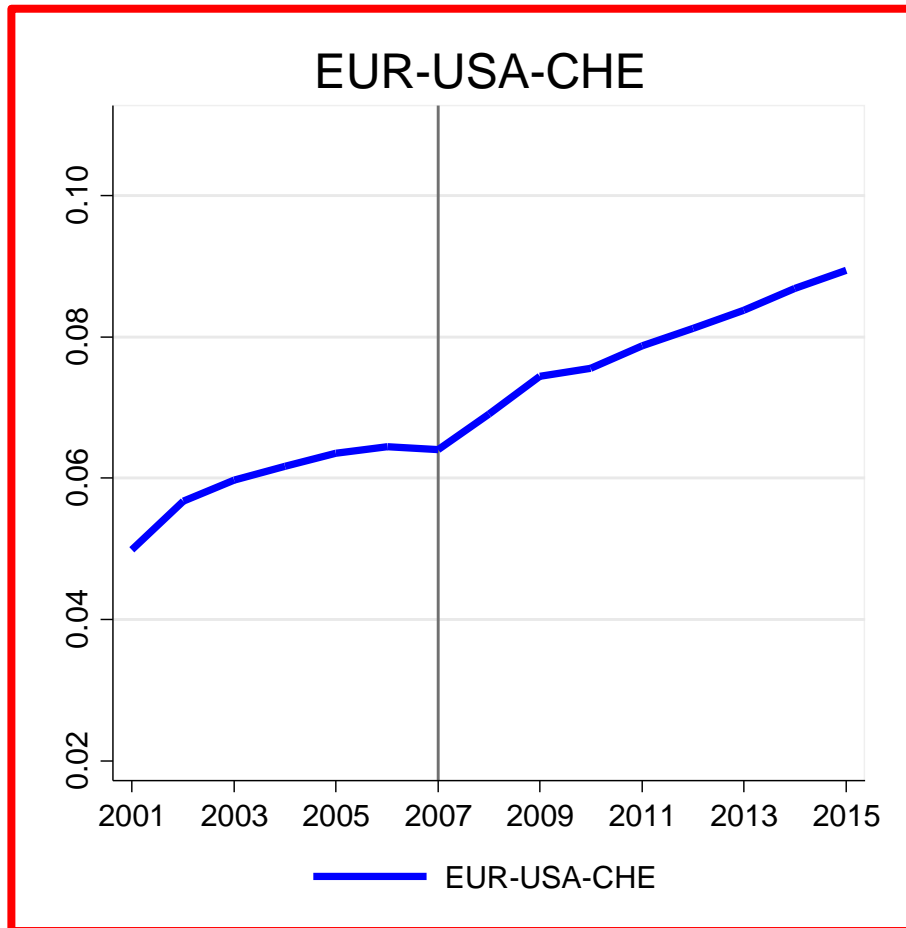
Study large set of economies

- Data on 80 economies, 60 used in estimation
- Separate economies by foreign demand



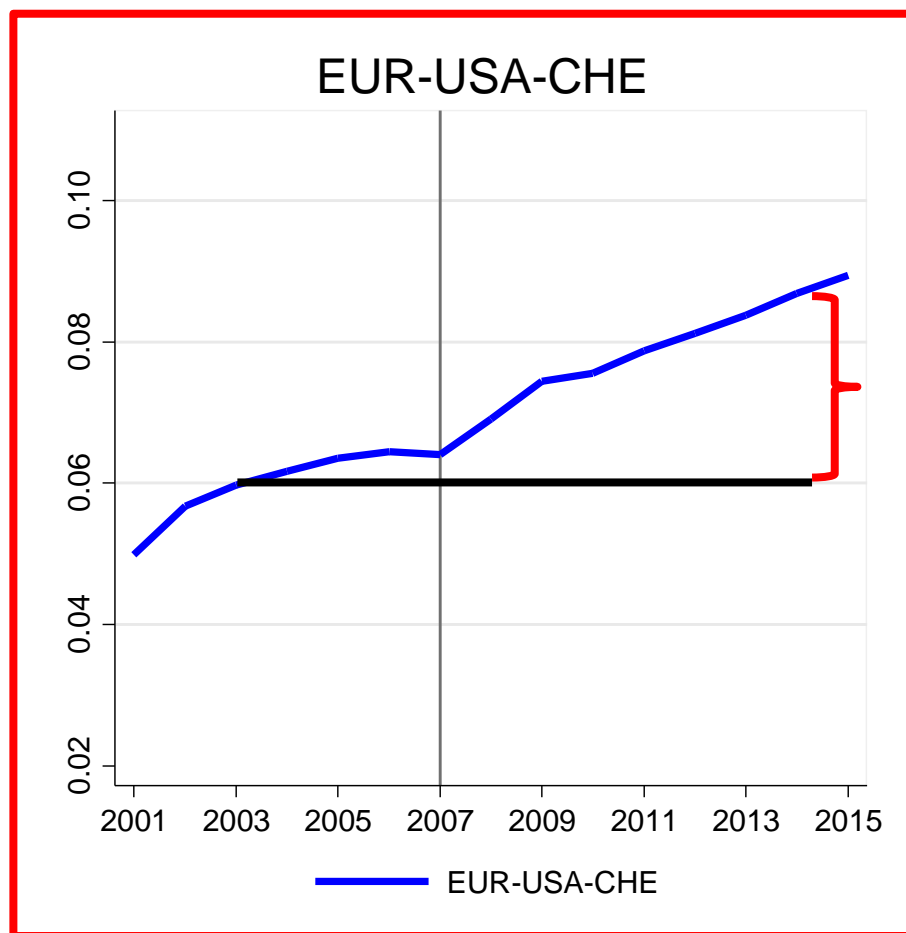
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Back-of-the envelope calculation:

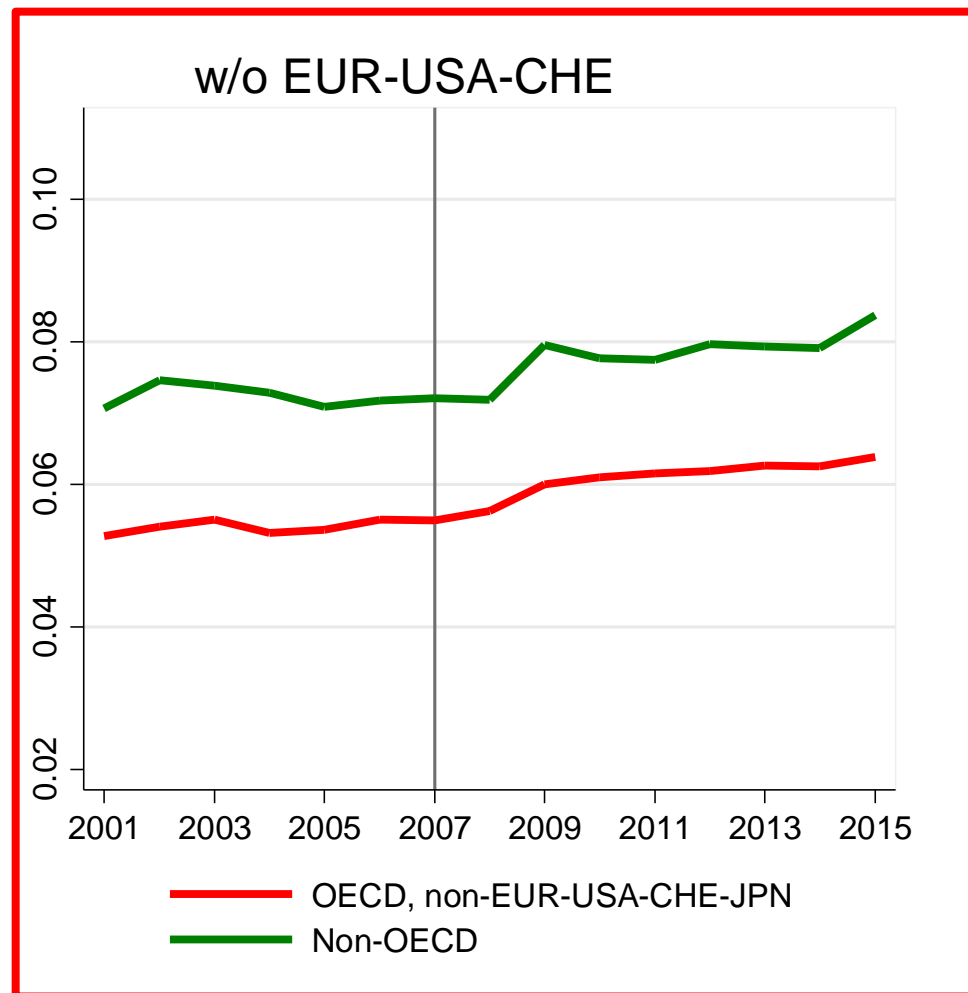
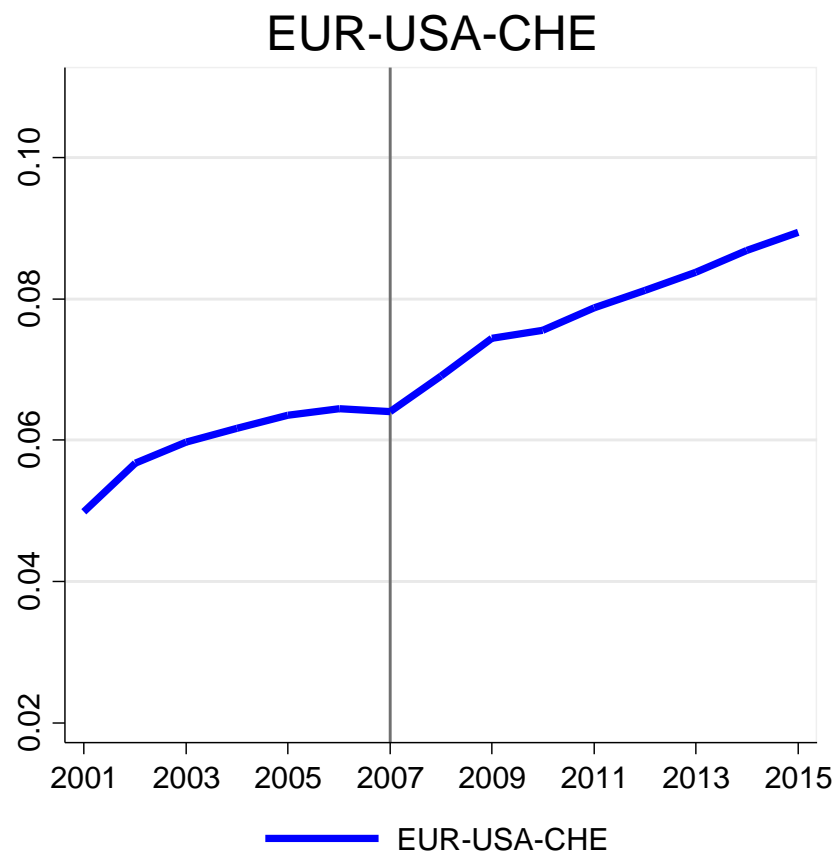
~1/3 foreign demand

~1/3 explained domestic (interest rates, GDP)

~1/3 unexplained domestic

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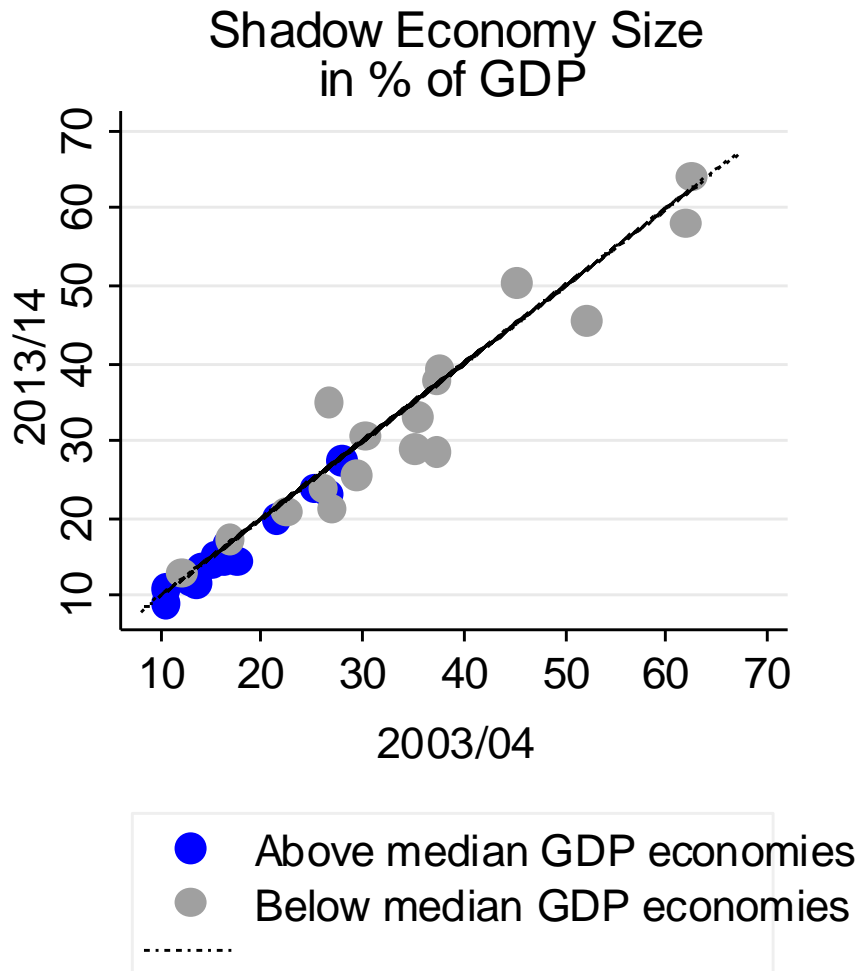


Can evolution of demand for currency be explained by a standard money demand model?

- Focus on changes over time, fixed effects panel model
- Currency demand reacts to interest rates → Part of increase due to lower interest rates
 - Reaction smaller as interest rates approach zero
- No effect of size of shadow economy
- In higher GDP economies: Demand for currency is higher after 2009 than it should be according to GDP and interest rates
 - On average +15%

→ Reason for the shift?

Shadow Economy Declined in Most Economies



Change from 2003/04 to
2013/14:

- High Income OECD: decrease in 30 out of 32 economies
- Euro Area: Increase only in Spain, Portugal and Cyprus
- USA, GBR, JPN slight decrease

Source of Shadow Economy Data: F. Schneider

Which other factors behind level shift?

1. Use permanent income instead of period income → does not explain entire unexplained shift
2. Alternatively: Study whether cash demand differs by financial crisis exposure and financial crisis experience
 - No data on confidence / trust
 - Compare groups of economies. 80% of richer economies had financial/banking crises
 - Results (with caution):
 - Higher cash demand in economies with a financial crisis in 2007/08, a financial crisis before 2007/08
 - No higher cash demand in economies without a financial crisis

Conclusions

- Demand for currency has been remarkably resilient over a longer period
- Use of cash for transactions has gradually declined
- In recent years, demand for currency has increased not only in the Euro Area and the US but also in many other economies
- In higher GDP economies: cannot fully be explained by evolution of interest rates and GDP

Conclusions

- Cash as a safe haven asset

“The more uncertain the future, the greater the value of [the] flexibility [of cash] and hence the greater the demand for [it] is likely to be.”

(Friedman and Schwartz, 1964, p. 673).

- Conjecture: important reason for increase in cash demand