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*Whither loose change? The diminishing demand for small  
denomination currency  
by Gene Amromin and Sujit Chakravorti*

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Discussion by Francesco Columba

The usual disclaimer applies. The opinions are those of the discussant only and in no way involve the responsibility of the Bank of Italy.

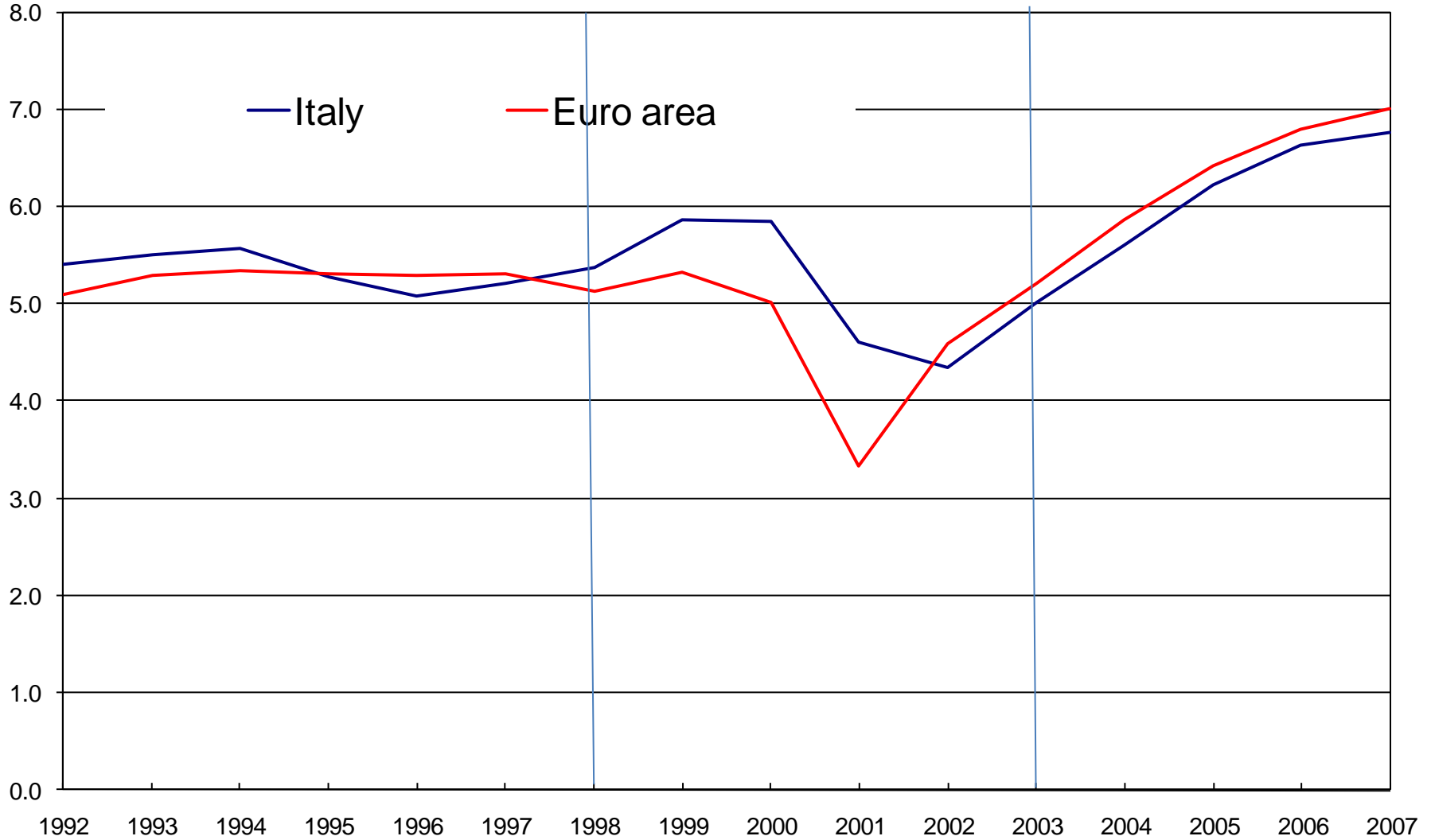


## Outline of the paper

- Is the private sector holding less cash to make and accept payments?
- Stylized facts: growth of debit card usage and electronic payments in the '90s and of non-cash transactions over 2001-2005
- currency/GDP ratio stable (eg UK, Japan, Euro area)
- Main findings with 1988-2003 data for 10 OECD countries :
  - Increase in POS decreases small notes demand
  - Increase of self-employed and of bank branches increase small notes demand
  - Increase of ATM decreases medium notes
  - Increase of short term interest rate decreases large notes demand
  - Increase of bank branches increases large notes demand



### Currency/GDP (percentages)





## Theoretical issues

- Baumol-Tobin framework: reduction in transaction costs as increase of debt card and credit card payments, proxied by the number of terminals
- Attanasio, Guiso and Jappelli (JPE '02), Alvarez-Lippi (NBER '07) on ATM terminals
- POS , credit cards and bank branches similar effects in B-T
- Aggregate money demand for monitoring monetary developments: individual money demand from surveys is microfounded.
- Supply side issues: control for financial institutions branches, terminals networks, banking consolidation, M&A, central banks branches



## Empirical issues: I

- Problems for aggregate currency demand
  - Heterogeneity not only along notes size but also within countries: disaggregated data at state or county level may help
  - Estimation technique (AGJ, JPE '02, Lippi & Secchi, JME forth), FE clustered
  - One more category of notes than in Drehmann et al. '02)
- 1) How effect of POS on small notes relates to Raa & Shestalova, JBF '04 who find that small notes preferred for low value transaction while debt cards for large value ones



## Empirical issues: II

- 2) a priori effect of bank branches similar to those of POS & ATM but coefficients of opposite sign
- 3) share of self-employed: disentangling black economy and fixed cost of terminals effects on small notes
- 4) time trends: execution or change-making, credit cards



## Policy implications

- Role of currency as store of wealth and underground transactions: limited participation and financial education
- Seigniorage: black economy, foreign demand
- Price stickiness
- Monetary unions expansion
- Foreign reserves