# Money talks !

## Nowcasting real economic activity with payment systems data

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EUROSYSTEM

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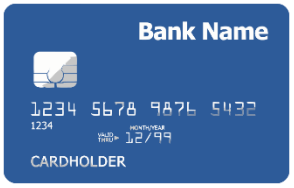
# Payment systems data: what are we addressing here?

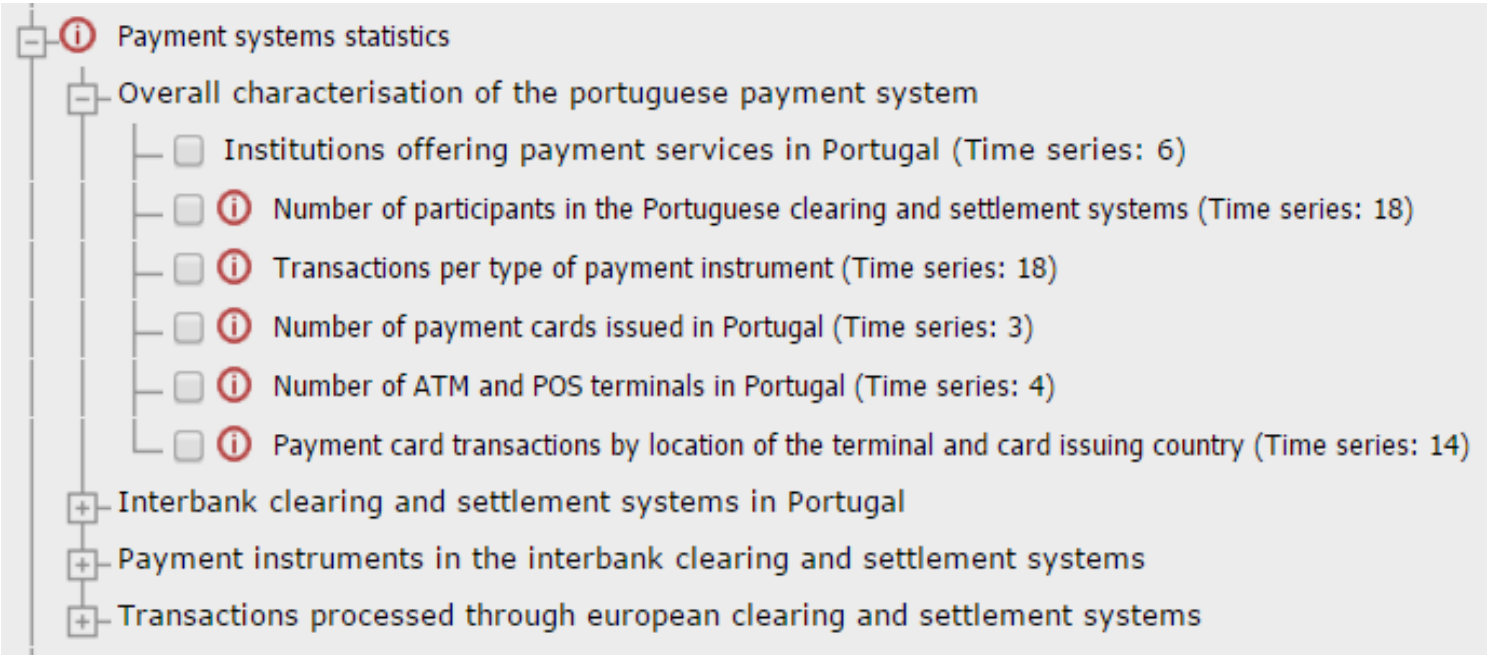
- "A **Payment system** is a set of instruments, procedures and rules for the transfer of funds between or among participants" (BIS, 2012)
- Payment systems are generally categorized in:
  - **Retail payment systems**: funds transfer system that handles with large volume of relatively low-value payments




  - **Large-value payment systems:** funds transfer system that handles large-value and high-priority payments, which are operated by central banks

# Payments data disseminated by *Banco de Portugal*

- This information is compiled and disseminated via the *Banco de Portugal*'s statistical dissemination tool (BP *Stat*)



# Payments data as a tool to nowcast the consumption of non-durable goods and services

- Two major arguments for the usage of ATM and POS data in nowcasting the consumption of non-durable goods (Esteves, 2009):
  - Data are ***truly* associated** with the reality it seeks to portray
  - Data are **available very frequently** and in a **timely manner** – "*typically just a couple of days after the end of the month*" (Esteves, 2009)
- The forecasting performance of these data can be benchmarked against relevant competing indicators: **Retail trade sales, consumer confidence level and consumption of electricity**

$$\Delta^4 C_t = c_o + \sum_{i=1}^{4} \alpha_{t-i}\, \Delta^4 C_{t-i} + \beta_t \Delta^4 I_t$$

Forecasting performance evaluation equation

Year-on-year growth rate of the consumption of non-durables

Different competing indicators

Source: Esteves (2009)

# Payments data as a tool to nowcast the consumption of non-durable goods and services

- Using the previous model, the computation of the **root mean square error** for the out of sample forecasting with the different competing indicators depicts the forecasting quality of payment systems data:

Out of sample period: 2005q1 to 2009q2

| | Single equation forecasts | |
|---|---|---|
| | Yoy | Δyoy |
| Retail trade | 0.36 | 0.33 |
| Consumer confidence | | |
| Electricity consumption | 0.54 | 0.57 |
| ATM/POS data | 0.35 | 0.34 |

Out of sample period: 2007q1 to 2009q2

| | Single equation forecasts | |
|---|---|---|
| | Yoy | Δyoy |
| Retail trade | 0.40 | 0.34 |
| [illegible] | 0.62 | 0.50 |
| consumption | 0.62 | 0.64 |
| ATM/POS data | 0.37 | 0.33 |

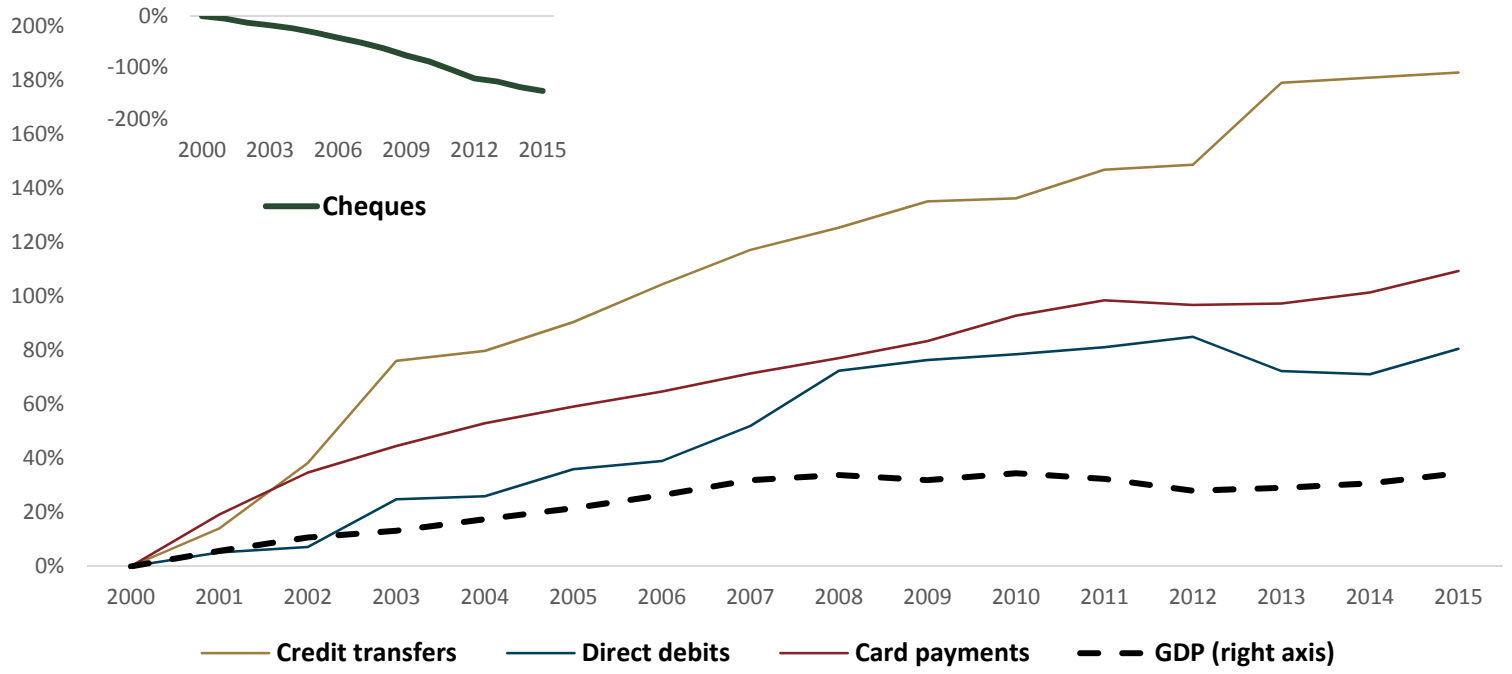
**Smaller forecasting errors, with the advantage of being relatively cheaper and more timely**

**Source: Esteves (2009)**

# Using payments data as a crisis performance indicator

- Typically, payments data are **strongly associated with key macroeconomic variables**

**No. of transactions with cashless payment instruments in Portugal *vs.* GDP (cumulative growth rates)**

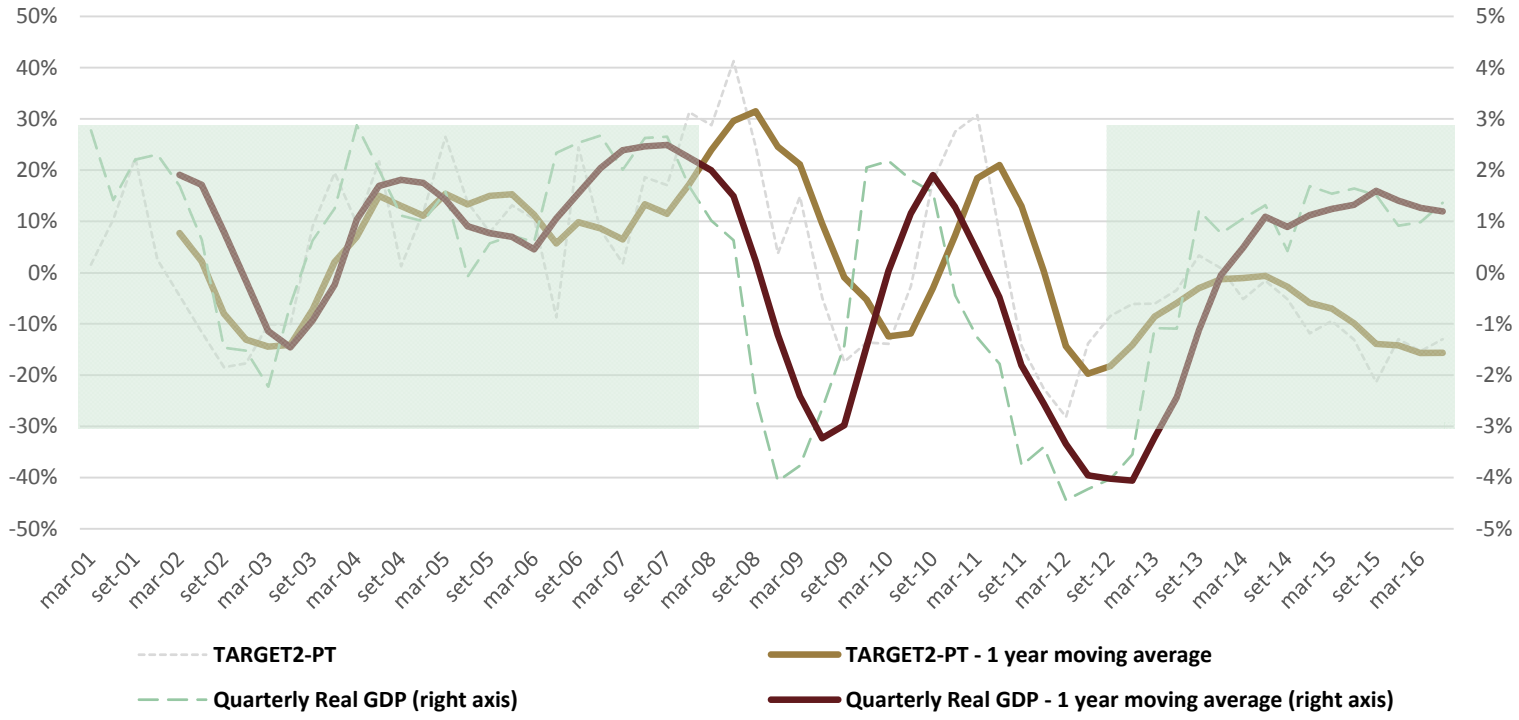



**Source: *Banco de Portugal***

# Using payments data as a crisis performance indicator

- These data can be used to **monitor the performance of the economy!**

**Value of customer operations settled through TARGET2-PT and real GDP (Growth rates)**

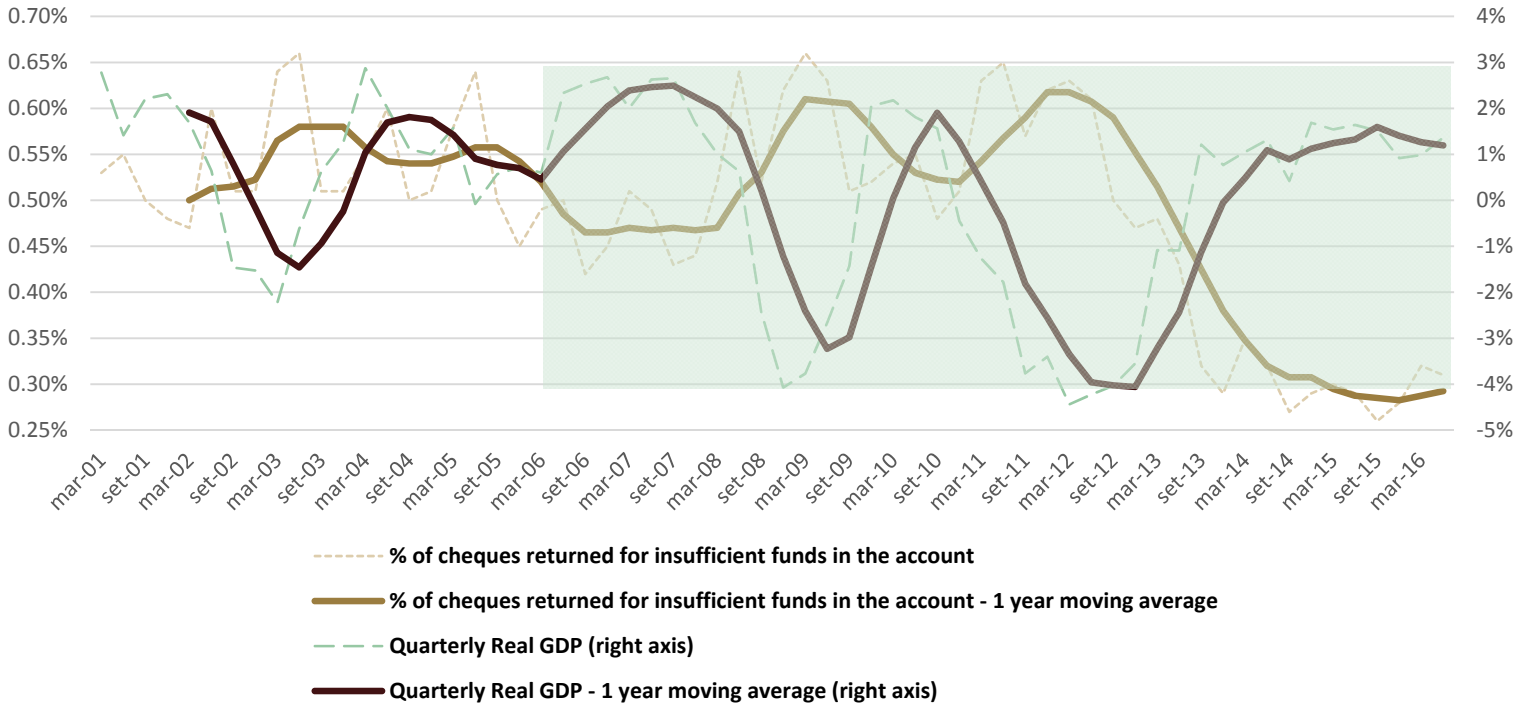



**Source:** ***Banco de Portugal***

# Using payments data as a crisis performance indicator

- These data can be used to **monitor the performance of the economy!**

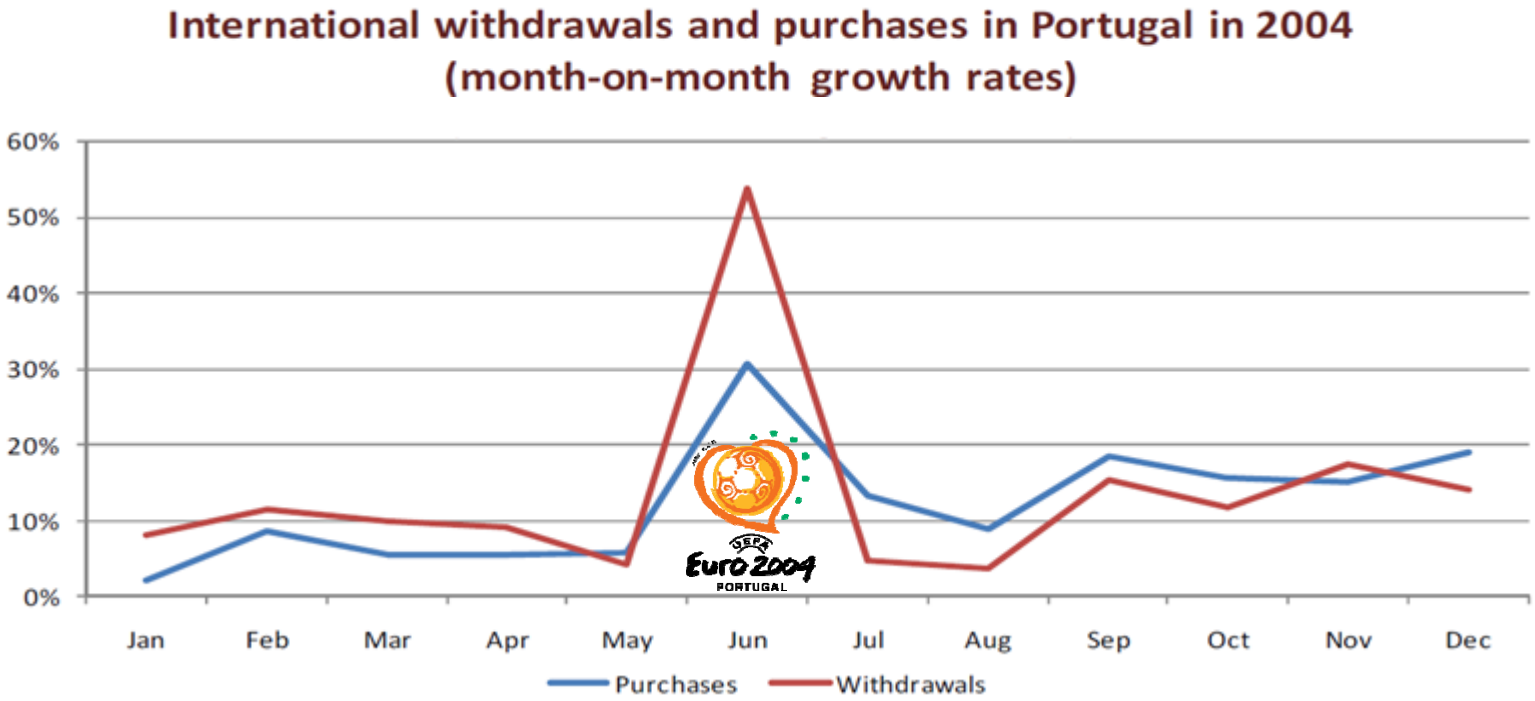
**Percentage of cheques returned for insufficient funds in the accounts and GDP growth rates**




**Source:** ***Banco de Portugal***

# Using payments data as a tool for short term macroeconomic monitoring

- But this is not all! One can also use payment systems data to monitor the impact of extemporaneous events




**Source:** ***Banco de Portugal***

# Conclusions and way forward

- Cashless payment instruments are **continuously gaining more importance** and the data they generate can be very useful for statisticians
- Payment systems data are:
  - **widely available** from international organizations and, typically, from national central banks and **free of charge**
  - **available very frequently** and in a **timely manner –** just a few days after the end of the month
  - ***truly related*** with macroeconomic phenomena
  - allowing the monitoring of the consumption of non-durables, with an improvement in the **availability/cost relation** and with **comparable quality**

**An opportunity for statisticians and researchers worldwide!**

# Thank you for your attention!

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