

List of recent NCBs publications in the field of cash

Eurosystem Research Network on Cash (EURECA)

1. Euro banknote and coin demand

1.1. Trends

Deutsche Bundesbank (2013), "Current and projected development of coin circulation in Germany", *Monthly Report*, January.

Deutsche Bundesbank (2018), "The demand for euro banknotes at the Bundesbank", *Monthly Report*, March.

Jobst, C. and Stix, H. (2016), "Florin, crown, schilling and euro: an overview of 200 years of cash in Austria", *Monetary Policy & the Economy*, Issue 3, pp. 94-119.

Jobst, C. and Stix, H. (2017), "Doomed to Disappear? The Surprising Return of Cash Across Time and Across Countries", *CEPR Discussion Papers* 12327.

Schautzer, A. and Stix, H. (2019). "Approaching 20 years of euro cash in Austria: What has changed, and what's next?", *Monetary Policy & the Economy*, Issue Q1-Q2/19, pp. 99-112.

1.2. Estimates and modelling

Politronacci, E., Ninlías, É., Palazzeschi, E. and Torre, G. (2017), "The demand for cash in France: review of evidence", in Deutsche Bundesbank (eds.), *International Cash Conference 2017 – War on cash: Is there a future for cash?*, Frankfurt am Main, pp. 92-147.

Politronacci, E., Ninlías, É., Palazzeschi, E. and Torre, G. (2018), "How many banknotes are circulating in France?", *Billet* No 71.

Rua, A. (2018) "Modelling currency demand in a small open economy within a monetary union", *Economic Modelling*, Vol. 74, pp. 88-96.

Rua, A. (2019) "Modelling the demand for euro banknotes", Working Paper, No 5/2019, Banco de Portugal, Lisbon.

1.3. Transaction demand

Altmann, M. and Bartzsch, N. (2014), "The volume of euro coins held for transaction purposes in Germany", in Deutsche Bundesbank (eds.), *International Cash Conference 2014 – The usage, costs and benefits of cash – revisited*, Frankfurt am Main, pp. 437-475.

Arango, C., Bouhdaoui, Y., Bounie, D., Eschelbach, M. and Hernandez, L. (2018), "Cash remains top of wallet! International evidence from payment diaries", *Economic Modelling*, Vol. 69(c), pp. 38-48.

- Bartzsch, N. and Seitz, F. (2016), "What can biology tell us about transaction balances?", *Applied Economics Letters*, Vol. 24, No 5, pp. 355-358.
- Bounie D., François, A., Moret, A. and Politronacci, E. (2018), "Use of cash in France: the payment method of choice for low-value purchases", *Bulletin de la Banque de France*, No 220, article 2.
- Deutsche Bundesbank (2012), "The use of cash and cashless payment instruments: a microeconomic analysis", *Monthly Report*, October.
- Deutsche Bundesbank (2014), "Cash withdrawals at the point of sale: motives for use and implications for cash holdings", *Monthly Report*, June.
- Deutsche Bundesbank (2015), "Euro coins held for transaction purposes in Germany", *Monthly Report*, April.
- Eschelbach, M. and Schmidt T. (2013), "Precautionary motives in short-term cash management – evidence from German POS transactions", Discussion Paper, No 38/2013, Deutsche Bundesbank, Frankfurt am Main.
- Eschelbach, M. (2017), "Pay cash, buy less trash?", in Deutsche Bundesbank (eds.), *International Cash Conference 2017 – War on cash: Is there a future for cash?*, Frankfurt am Main, pp. 512-536.
- Huynh, K.P., Schmidt-Dengler, P. and Stix, H. (2014), "The Role of Card Acceptance in the Transaction Demand for Money", *CEPR Discussion Papers* 10183.
- Van der Horst, F. and Matthijsen, E. (2013). "The irrationality of payment behavior", *DNB Occasional Studies*, Vol.11, No 4.
- Von Kalckreuth, U., Schmidt, T. and Stix, H. (2013), "Choosing and using payment instruments: evidence from German microdata", *Empirical Economics*, Vol. 46, No 3, pp. 1019-1055.
- Von Kalckreuth, U., Schmidt, T. and Stix, H. (2014), "Using Cash to Monitor Liquidity: Implications for Payments, Currency Demand, and Withdrawal Behavior", *Journal of Money, Credit and Banking*, Vol. 46, No 8, pp. 1753-1786.

1.4. Store of value demand

- Stix, H. (2013), "Why do people save in cash? Distrust, memories of banking crises, weak institutions and dollarization", *Journal of Banking & Finance*, Vol. 37, No 11, pp. 4087-4106.

1.5. Foreign demand

- Bartzsch, N., Rösl, G. and Seitz, F. (2011), "Foreign demand for euro banknotes issued in Germany: estimation using direct approaches", *Discussion Paper*, No 20/2011, Deutsche Bundesbank, Frankfurt am Main.
- Bartzsch, N., Rösl, G. and Seitz, F. (2011), "Foreign demand for euro banknotes issued in Germany: estimation using indirect approaches", *Discussion Paper*, No 21/2011, Deutsche Bundesbank, Frankfurt am Main.
- Bartzsch, N., Rösl, G. and Seitz, F. (2012), "A simple way to capture currency abroad", *Applied Economics Letters*, Vol. 19, No 15, pp. 1511-1514.

Bartzsch, N., Rösl, G. and Seitz, F. (2013), "Estimating the foreign circulation of banknotes", *Economics Letters*, Vol. 119, No 2, pp. 165-167.

Bartzsch, N., Rösl, G. and Seitz, F. (2013), "Currency movements within and outside a currency union: The case of Germany and the euro area", *The Quarterly Review of Economics and Finance*, Vol. 53, No 4, pp. 393-401.

Bartzsch, N. and Uhl, M. (2017), "Domestic and foreign demand for euro banknotes issued in Germany", in Deutsche Bundesbank (eds.), *International Cash Conference 2017 – War on cash: Is there a future for cash?*, Frankfurt am Main, pp. 251-286.

Beckmann, E. and Scheiber, T. (2012), "The Impact of Memories of High Inflation on Households' Trust in Currencies", *Focus on European Economic Integration*, Issue 4, pp. 80-93.

Beckmann, E. and Scheiber, T. (2012), "Not So Trustworthy Anymore? The Euro as a Safe Haven Asset in Central, Eastern and Southeastern Europe", *Focus on European Economic Integration*, Issue 2, pp. 65-71.

Beckmann, E. and Stix, H. (2015), "Foreign currency borrowing and knowledge about exchange rate risk", *Journal of Economic Behavior & Organization*, Vol. 112(C), pp. 1-16.

Beckmann, E., Roitner, A. and Stix, H. (2015), "A Local or a Foreign Currency Loan? Evidence on the Role of Loan Characteristics, Preferences of Households and the Effect of Foreign Banks", *Focus on European Economic Integration*, Issue 1, pp. 24-48.

Beckmann, E. (2019), "Household Savings in Central Eastern and Southeastern Europe: How Do Poorer Households Save?", *Policy Research Working Paper Series 8751*, The World Bank.

Brown, M. and Stix, H. (2015), "The euroization of bank deposits in Eastern Europe", *Economic Policy*, Vol. 30, No 81, pp. 95-139.

Deutsche Bundesbank (2011), "Foreign demand for euro banknotes issued in Germany", *Monthly Report*, January.

Deutsche Bundesbank (2019), "The mixing of euro coins in Germany", *Monthly Report*, December.

Stix, H. (2011), "Euroization: what factors drive its persistence? Household data evidence for Croatia, Slovenia and Slovakia", *Applied Economics*, Vol. 43, No 21, pp. 2689-2704.

Tenhofen, J., Assenmacher, K. and Seitz, F. (2017), "The Use of Large Denomination Banknotes in Switzerland", in Deutsche Bundesbank (eds.), *International Cash Conference 2017 – War on cash: Is there a future for cash?*, Frankfurt am Main, pp. 148-199.

1.6. Illicit use of cash

Ardizzi, G., Petraglia, C., Piacenza, M. and Turati, G. (2014), "Measuring the underground economy with the currency demand approach: a reinterpretation of the methodology, with an application to Italy", *Review of Income and Wealth*, Vol. 60, No 4, pp. 747-772.

Ardizzi, G., De Franceschis, P. and Giammatteo, M. (2018), "Cash payment anomalies and money laundering: An econometric analysis of Italian municipalities", *International Review of Law and Economics*, Vol. 56, pp. 105-121.

Bartzsch, N., Schneider, F. and Uhl, M. (2019), "Cash use in Germany: Macroeconomic estimates of the extent of illicit cash use in Germany", Deutsche Bundesbank, Frankfurt am Main.

Deutsche Bundesbank (2019), "Cash demand in the shadow economy", *Monthly Report*, March.

Giammatteo, M. (2019), "Cash use and money laundering: An application to Italian data at bank-municipality level", *UIF working paper*, (13).

Immordino, G. and Russo, F.F. (2018), "Cashless payments and tax evasion", *European Journal of Political Economy*, Vol. 55, pp. 36-43.

2. Euro banknote and coin supply

2.1. Cash cycle and infrastructure

Calderini, M., Longo, A., Rinaldi, R., Rocco, G. and Sasso, F. (2019), "Il ciclo del contante in Italia", *BANCARIA*, No 12, December. (English version available on request to authors: The cash cycle in Italy: trends, players and strategies).

Deutsche Bundesbank (2011), "The banknote cycle and banknote recycling in Germany", *Monthly Report*, January.

Jiménez, C. and Tejero, H. (2018), "Bank branch closure and cash access in Spain", *Financial Stability Review*, Banco de España, No 34, pp. 35-56, Madrid, May.

Marchand, A. and Palazzeschi, E. (2013), Innovation at work: introducing the first banknote in the Europa series, *Quarterly selection of articles - Bulletin de la Banque de France*, Banque de France, No 32, pp. 113-135, Winter.

Narodowy Bank Polski (2018), "Report on Cash Circulation in Poland in 2018", *Research Papers*.

2.2. Euro banknote quality and design

Banque de France et al. (2019), "Etat des lieux de l'accès du public aux espèces en France métropolitaine", *Banque de France Publications*. (English version in preparation: "Report on public access to cash in Metropolitan France").

De Heij, H. (2012), "Designing banknote identity", *DNB Occasional Studies*, Vol. 10, No 3.

De Heij, H. (2010), "Banknote design for retailers and public", *DNB Occasional Studies*, Vol. 8, No 4.

De Heij, H. (2017), "A Model for Use-centered Design of Payment Instruments Applied to Banknotes: Upid-Model", Thesis, Tilburg University.

De Heij, H. (2017), "The Banknote Designer and the Banknote Design Manager. Who Does What?", *International Banknote Designers Association*.

Ortuño, R., Sánchez, J.M., Álvarez, D., López, M. and León, F. (2020), "Neurometrics applied to banknote and security features design", *Banco de España Occasional Papers*, No 2008.

Van der Horst, F., Eschelbach, M., Sieber, S. and Miedema, J. (2017), "Does banknote quality affect counterfeit detection? Experimental evidence from Germany and the Netherlands", *Journal of Economics and Statistics*, No. Vol. 237, No 6, pp. 469-497.

Van der Horst, F. (2016), "The halo effect of banknotes — Arguments for good banknote design", *IBDA INSIGHT* 11, pp. 62-63.

3. Cost of payment methods

Banco de Portugal (2017), "Social costs for retail payment instruments in Portugal: 2016", Lisbon, March.

Cabinakova, J., Knümann, F., and Horst, F. (2019), "The costs of cash payments in the retail sector: Study to determine and evaluate the costs arising from cash payments in the retail sector", Deutsche Bundesbank, Frankfurt am Main.

Deutsche Bundesbank (2019), "The costs of payment methods in the retail sector", *Monthly Report*, June.

Jonker, N. (2011), "Card acceptance and surcharging: the role of costs and competition", *Review of Network Economics*, Vol. 10, No 2, article 4.

Jonker, N. and Plooi, M.A. (2013), "Tourist Test interchange fees for card payments: down or out?" *Journal of Financial Market Infrastructures*, Vol. 1, No 4, pp. 51-72.

Jonker, N. (2013), "Social costs of POS payments in the Netherlands 2002 - 2012: Efficiency gains from increased debit card usage", *DNB Occasional Studies*, Vol. 11, No 2.

4. Others

4.1. Cash and other means of payments

Ardizzi, G. (2013), "Card versus cash: empirical evidence of the impact of payment card interchange fees on end users' choice of payment methods", *Journal of Financial Market and Infrastructures*, Vol. 1, No. 4, pp. 73-105.

Croatian National Bank (2019), "Payment Cards and Card Transactions – 2018", June, Zagreb.

Hernandez, L., Jonker, N. and Kosse, A. (2017), "Cash versus debit card: the role of budget control", *Journal of Consumer Affairs*, Vol. 51, No 1, 91-112.

Hondroyannis, G. and Papaoikonomou, D. (2017), "The effect of card payments on VAT revenue: new evidence from Greece", *Economics Letters*, Vol. 157, pp. 17-20.

Hondroyannis, G. and Papaoikonomou, D. (2020), "The effect of card payments on VAT revenue in the euro area: evidence from a panel VECM", *Journal of Economic Studies*, Vol. ahead-of-print, No ahead-of-print.

Jonker, N., Plooi, M.A. and Verburg, J. (2017), "Did a public campaign influence debit card usage? Evidence from the Netherlands", *Journal of Financial Services Research*, Vol. 52, No 1-2, pp. 89-121.

Jonker, N., Hernández, L., de Vree, R. and Zwaan, P. (2018), "From cash to cards: How debit card payments overtook cash in the Netherlands", *DNB Occasional studies*, Vol. 16, No 1.

Manikowski, A. (2017), "Analysis of the denomination structure of the Polish currency in the context of the launch of the new 500 zloty banknote", *Bank & Credit*, Vol. 48, No 5, pp. 495-530.

Pfister, C., Adam, D., Bachellerie, A., Barthélémy, J., Coffinet, J., Couillault, B., Fisher, Y., IsslameRocher, N., Lasalle, J., Lopez-Vernaza, A., Martin, C., Politronacci, E. and Potier, L. (2020), "Central Bank Digital Currency", *Banque de France Publications*.

Van der Cruijisen, C., Hernandez, L., and Jonker, N. (2017), "In love with the debit card but still married to cash", *Applied Economics*, Vol. 49, No 30, pp. 2989-3004.

Van der Cruijisen, C. and Van der Horst, F. (2016). "Payment behaviour: the role of sociopsychological factors", *DNB Working Paper*, No 532.

Van der Cruijisen, C. and Van der Horst, F. (2019), "Cash or card? Unravelling the role of socio-psychological factors", *De Economist*, Vol. 167, No 2, pp. 145-175.

Van der Cruijisen, C. and Knobens, J. (2018), "Ctrl+C Ctrl+pay: Do people mirror payment behaviour of their peers?", *DNB Working Paper*, No. 611.

Van der Cruijisen, C. and Plooi, M. (2018), "Drivers of payment patterns at the point-of-sale: Stable or not?" *Contemporary Economic Policy*, Vol. 36, No 2, pp. 363-380.

Van der Horst, F., Miedema, J., Schreij, D. and Meeter, M. (2018). "Effects of payment instruments on unhealthy purchases". *DNB Working Paper*, No. 582.

Van der Horst, F. and Miedema, J. (2018), "Effects of card payments on supermarket purchases", *IBDA INSIGHT* 15, 77-78.

4.2. Survey results

Bagnall, J. Bounie, D., Huynh, K.P., Kosse, A., Schmidt, T., Schuh, S. and Stix, H. (2016), "Consumer Cash Usage: A Cross-Country Comparison with Payment Diary Survey Data", *International Journal of Central Banking*, Vol. 12, No 4, pp. 1-61, December.

Bank of Lithuania (2019), "Review of the Survey of the Habits of Lithuanian Residents in Using Payment Services (2018)".

Beckmann, E., Reiter, S. and Stix, H. (2018), "A geographic perspective on banking in Central, Eastern and Southeastern Europe", *Focus on European Economic Integration*, pp. 26-47.

De Nederlandsche Bank (2015), "Card or cash? Customer preferences dictate retailers' approach", *DNBulletin*.

De Nederlandsche Bank (2018), "Cash or cards? The customer decides", *DNBulletin*.

De Nederlandsche Bank (2019), "A biennial study about knowledge and appreciation of euro banknotes among the Dutch", Report prepared for De Nederlandsche Bank by Motivaction.

De Nederlandsche Bank (2020), "Dutch retailers continue to accept cash", *DNBulletin*.

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Deutsche Bundesbank (2012), "Payment behaviour in Germany in 2011 – An empirical study of the utilisation of cash and cashless payment instruments", Frankfurt am Main.

Deutsche Bundesbank (2015), "Payment behaviour in Germany 2014: Third study of the utilisation of cash and cashless payment instruments", Frankfurt am Main.

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Hernandez, L., 't Hoen, R. and Raat, J. (2017), "Survey shortcuts? Evidence from a payment diary survey," *DNB Working Papers*, No 546.

Jonker, N., Kosse, A. and Hernández, L. (2012), "Cash usage in the Netherlands: Who, where, when and whenever one wants?" *DNB Occasional Studies*, Vol. 10, No 2.

Jonker, N., and Kosse, A. (2013), "Estimating cash usage: The impact of survey design on research outcomes," *De Economist*, Vol. 161, No 1, 19-44.

Rinaldi, R. (2017), "Cash payments evolution in Italy", *BANCARIA*, No 11, November, pp. 20-29.

Ritzberger-Grünwald, D. and Stix, H. (2018), "How Austrians bank and pay in an increasingly digitalized world – results from an OeNB survey", *Monetary Policy & the Economy*, Issue Q3/18, pp. 52-89.

Rusu, C. and Stix, H. (2017), "Cash and card payments – recent results of the Austrian payment diary survey", *Monetary Policy & the Economy*, Issue Q1/17, pp. 1-35.

Schmidt, T. (2014), "Consumers' recording behaviour in payment diaries – Empirical evidence from Germany", *Survey Methods: Insights from the Field*, August 2014.

Sieber, S. and Schmidt, T. (2017), "The influence of an up-front experiment on respondents' recording behaviour in payment diaries: evidence from Germany", *Journal of Official Statistics*, Vol. 33, No 2, pp. 427-454.

4.3. Environmental impact of cash

Hanegraaf, R., Larcin, A., Jonker, N., Mandley, S. and Miedema, J. (2020), "Life cycle Assessment of Cash Payments in the Netherlands", *International Journal of Lifecycle Assessment*, Vol. 25, pp. 120-140.