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Whither Cash in Payments?

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Contents

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Abstract

The use of cash (banknotes and coin) in making payments has been in relative decline in Ireland and in other European countries for some time now, as a substitution to card payments by the public has occurred. The adoption of contactless payment technology in recent years and the current pandemic appear to be accentuating the decline of cash as a payment instrument but a demand for cash for this purpose can be expected to remain in place over time. Central banks, in conjunction with payment providers, then will need to continue to supply and distribute banknotes and coin to the public against the backdrop of a falling but likely substantial demand for cash.

[1] Irish Economic Analysis Division. This article has benefitted considerably from the comments of Central Bank colleagues. The author would like to thank Raquel Dias for discussion on the data used and other issues in this area. The views expressed here are, nevertheless, those of the author and do not necessarily reflect those of the Central Bank of Ireland or the European System of Central Banks.

1. Introduction

The decline of cash in payments has come into focus in recent years and during the current pandemic as the public increases its use of card payments. This article considers some of the issues raised by this development. Initially, it discusses the historical role of cash in payments and its other use as a store of value. An overview of cash and card payment developments in Ireland since the changeover to euro notes and coins in 2002 up to the onset of the pandemic in early 2020 is then considered. Data for five other EU member states and the UK over the same timespan are also included for comparative purposes. Those countries have different levels of cash and card usage to Ireland, which give an indication of the range of preferences for cash across Western Europe. In general, there appears to be a downward trend in the demand for cash in payment data backed up by empirical assessments (and the graphical analysis presented here) that can be largely attributed to a replacement of card payments for cash, although the extent of this substitution varies across individual countries. A review of cash and card usage since last spring suggests that a further move away from cash to cards occurred since the onset of the pandemic.

Looking ahead, the introduction of contactless payments as a substitute for cash in small-value payments in recent years and the network effects generated by the adoption of this technology and card payments more generally would suggest that cash's place in payments will continue to decline over time. A demand for cash in payments, however, can be expected to persist. Not all members of the public will want to use electronic means of payment owing to their habits, an appreciation of the anonymity and privacy that cash confers on its users, and it not being subject to cyber-attacks and such like (summed up in the phrase "cash does not crash"). Cash is also preferred for budgeting purposes among many households and surveys show that certain demographics would find it difficult to manage without it. The heterogeneity of payment preferences across the euro area and the common currency also draws attention to the need for cash to be accepted in payment across member states. The Eurosystem's cash strategy indicates that it aims to safeguard the future of cash, inter alia, by ensuring the availability of euro cash, supporting access to it, and making sure cash is accepted everywhere.[2]

This article then considers how the use of cash in payments has changed over time and may develop in the future. It does so by assessing relevant data and studies on cash usage. Since payment cards (debit cards, credit

[2] For more on the Eurosystem cash strategy: https://www.ecb.europa.eu/euro/cash_strategy/html/index.en.html

cards) are the closest substitute for cash in many transaction types and will influence future cash usage, developments in card payments are also considered, and, in particular, how they have been substituting for cash. The structure of the article is as follows: in the next section, the role that cash plays in economic activity and society more generally is discussed. Sections 3 and 4 discuss, in turn, developments in cash and card payments since the early 2000s up to 2019. Section 5 considers changes in retail payment practices since the onset of the pandemic and how it has been affecting cash usage in consumer payments. Section 6 draws together the empirical evidence and other contributions to assess whether a demand for cash in payments can be expected to persist over time. Section 7 concludes.

2. The role of cash in economic activity

The economics literature typically outlines three functions of cash, and money more generally. Those are that it provides the economy's medium of account (units of it define prices), acts as the medium of exchange (it intermediates the exchange of goods and services), and is a store of value for its holders to hold their wealth in.[3] The latter two functions sustain the demand for money (and allow it provide the unit of account). The money supply comprises central bank-issued notes and coins, customer deposits at commercial banks, and bank settlement balances held at the central bank, with the first two of those held by the non-bank public.

Cash takes the form of physical notes and coin and is the oldest general means of payment.[4] [5] Bank deposits have been transferrable by an expanding range of methods over time. Some of the older instruments include cheques, bank giro/draft, credit transfers, direct debits and credit cards. More recently, debit cards have become popular payment instruments.[6] The introduction and adoption of each of those instruments would have had an impact on cash usage and on other cashless instruments. Demand for some payment forms, most notably cheques, has declined in

[3] Many overviews of money also state that it provides a standard of deferred payment, i.e. that it allows its holder to use the medium at a future date in the purchase of goods and services.
[4] See Cronin and McGuinness (2010, p. 58) for a synopsis of the historical development of money.
[5] Cash is issued by central banks in modern payment systems and is a source of income to them. A decline in the amount of cash outstanding would diminish this income source, although this is not considered further here.
[6] The payment statistics section on the European Central Bank (ECB) website provides an in-depth description of payment instruments used in EU member states (see: https://sdw.ecb.europa.eu/reports.do?node=1000004051).

recent decades with the introduction of new non-paper payment methods.[7] Some instruments, such as direct debits, have substituted for cash in, for example, the payment of utility bills but are often been ill-suited to smaller-value payments made by cash. Credit cards and, more significantly, debit cards have become a substitute for cash in such payments over the last twenty years or so. While card payments have long been used at a physical point of sale by the card holder inputting a personal identification number (PIN), the latter half of the 2010s has accentuated the capability of payment cards through the introduction of contactless payment. The growth of e-commerce also sees cards being used to buy goods remotely that would previously have been bought over the counter with cash.

Besides its medium of exchange function, cash also meets the public's demand to hold its wealth in a liquid, ready-to-use format - its store of value feature - and that must be borne in mind when attempting to understand the role it plays in payments. Cash has a fixed nominal value, a quality that is attractive when inflation rates and nominal interest rates are low or negative and when there is an elevated level of economic uncertainty. It is also legal tender and, as it is issued by a central bank, bears little or no settlement risk (there is a risk that the bank note is fraudulently copied).[8] These attributes, along with the anonymity of cash transfers and the ease with which notes and coin can be exchanged, are also of attraction in a medium of exchange.

The anonymity and privacy that cash confers on its holder also makes it difficult to understand the extent to which it is held for use as a medium of exchange or as a store of value. Lalouette and Esselink (2018) note that the value of euro banknotes in circulation relative to GDP has been rising over time, indicating that more than increased transactions demand is affecting its growth.[9] They argue that most euro banknotes in circulation are used as a store of value in the euro area or are held abroad. They estimate that about one-quarter of notes in circulation (by value) in 2017 were being used for transaction purposes. Bech *et al.* (2018) are of the view that its store of value property is supporting cash demand.[10]

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[7] The number of cheques written in Ireland is in steep decline. ECB SDW data indicate that cheques sent have declined from 31.6 per capita in 2006 to 6.5 in 2019.

[8] Bank note fraud is very low among euro banknotes. ECB data indicate that some 24 counterfeit banknotes were detected per one million genuine banknotes in 2019. See: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200124~242b62d123.en.html

[9] At end-November 2020, euro currency in circulation amounted to €1,350 billion.

[10] Another use of cash is for making payments in the underground economy. Recent studies by Jobst and Stix (2017), Seitz *et al.* (2018) and Deutsche Bundesbank (2019), however, do not find this to be a large source of demand for euro cash.

A related issue here is that there will also be a foreign demand for cash, i.e. from outside the jurisdiction in which the currency is issued, for both store of value and medium of exchange purposes. This demand is particularly strong for the US dollar and the euro. A longstanding view was that some 70 per cent of US dollar currency by value was held overseas although more recent estimates suggest less than one half of US cash issue is held abroad (Rogoff, 2016). Deutsche Bundesbank (2018a) states that there has been an increase in foreign demand for and domestic hoarding of euro banknotes issued in Germany since 2010.

Cash providing medium of exchange and store of value functions to its holder then presents a practical difficulty in ascertaining what proportion of the stock of currency is held for payment purposes. In the euro area, there is also the difficulty that it is not possible to assess the outstanding cash stock at a member state level. One means of addressing this issue is to assume that large denomination notes are more likely to be held for store of value purposes, while smaller denomination notes and coin are mainly demanded for transactions. The unweighted average value of cash withdrawals at automated teller machines (ATM s) in 2019 across the seven countries surveyed below is €142 and thus it seems reasonable to assume that such withdrawals are for use in exchange.[11] Consequently, ATM withdrawals are used here as an indirect means of assessing changes in cash usage in payments over time, supplementing reference to specific surveys and empirical studies.[12] Card payments are relatively easy to quantify given the records trail that they leave.

In the following three sections, the use of cash and cards in payments since the introduction of the euro cash in 2002 up to and including the current pandemic are considered. A survey of developments over the seventeen-year period from 2002 to 2019 indicates a substitution of cards for cash in retail payments occurring in general. In recent years, contactless payment

[11] The average ATM withdrawal amount in Ireland in 2019 was €139. The average over-the-counter withdrawal at banks in 2018 was €541 (source: https://www.centralbank.ie/statistics/data-and-analysis/payments-services-statistics, author's calculations).

[12] ATMs are not the only means of withdrawing cash with over-the-counter (OTC) services also being an important method of acquiring cash at source and the reliance on ATMs and OTC services for cash withdrawal varies across countries. Esselink and Hernandez (2017) indicate that 61 per cent of cash in the euro area is sourced through ATMs. The amount of cash withdrawn from ATMs in 2015 was almost four times that withdrawn over the counter. ATM withdrawals then can be used as an indicator of general patterns of cash use in payments.
Post offices are an important means by which cash enters the Irish economy, particularly through social payments. Indecon (2018, p.8) indicates that there was a 24 per cent fall in social welfare benefits dispersed in cash between 2014 and 2017. While this reflected a drop in unemployment numbers, there was also an increase in direct payments to bank accounts.

technology is allowing cards to be used in small-value payments - previously largely the preserve of cash - which would appear to be reducing further the prominence of cash in payments. The impact of the current pandemic on the cash-cards dynamic would seem to be adding to the substitution that is occurring.

3. The use of cash in payments since the introduction of euro banknotes and coin

The introduction of euro banknotes and coin in the euro area in 2002 is a suitable juncture from which to identify trends in how cash and its close substitutes, specifically debit and credit cards, are being used by the public in payments. The focus here is on comparing Ireland with a selection of other, mainly euro area countries as data for the euro area as a whole would mean that the heterogeneity of payment preferences at the member state level would be lost. Along with data for Ireland (IE), the figures that follow also contain values for euro area member states Austria (AT), Germany (DE), the Netherlands (NE), and Finland (FI). Sweden (SE) and the United Kingdom (UK) are also considered.

Both Austria and Germany are known as countries with a strong attachment to using cash in payments.[13] Close to 80 per cent of all payment transactions were made by cash in Austria and Germany in 2011 (Bagnall *et al.*, 2016). Finland, the Netherlands and Sweden have embraced electronic payments over the past twenty years or so. Sweden has seen a well-publicised shift in recent years away from cash to electronic payments, including through the use of the mobile-based Swish payment system. A recent Sveriges Riksbank (2020) survey indicates that less than 10 per cent of people in Sweden in 2020 had paid for their last purchase in cash, against 39 per cent in 2010. The UK is another country that has seen a large shift from cash to electronic payments over time and has been the focus of some recent in-depth payment studies, including the Access to Cash report (2019) that is referred to below. The ATM data used here comprise withdrawals made with cards issued by resident payment system

[13] Rusu and Stix (2017) note that the predominant role that cash plays in Austria has not changed in the past 20 years. They suggest that this could be owing to low acceptance of payment cards and consumer preferences. Neither can sociodemographic factors such as age and class explain the preference for cash or cards. In 2016, 82 per cent of all payments were made in cash, while cash accounts for 47 per cent of payments greater than €100.

providers (PSPs) at both resident PSP and non-resident PSP terminals.[14] [15] [16]

Figure 1 shows the average number of ATM withdrawals per capita at three-year intervals between 2004 and 2019. These have declined steadily over time in the Netherlands, Finland and Sweden. They have remained relatively unchanged in the other four countries and were high by number in Ireland in 2019, at 31 per capita. ATM withdrawals have long been the preferred facility for accessing cash in Ireland (Cronin and McGuinness, 2010).

Moving from the volume of ATM withdrawals to their value, Figure 2 shows the amount withdrawn as a percentage of personal consumption.[17] This has declined over time in Ireland, suggesting less of a reliance by consumers on cash in conducting their purchases. Using this metric, Ireland is still relatively reliant on cash by comparison to the other countries. Another way of looking at the value of ATM withdrawals is to express them on a per capita basis. Figure 3 shows that the average amount withdrawn in Ireland is high compared to other countries in the graph.[18] As with the previous charts, the ATM data point to a broadly unchanged reliance on cash in Austria and Germany over time, while withdrawals in the remaining four countries have fallen over time. Figure 4 shows the average ATM withdrawal amount being relatively unchanging over time for most countries.

[14] Data on the number of payments cards outstanding, ATMs, and EFTPOS terminals are not displayed here so as to focus on ATM transactions data. Esselink and Hernandez (2017) indicate that card ownership has little explanatory power over general payment behaviour.
[15] Data from independent ATM providers are excluded. These have a significant presence in Ireland with BPFI (2018) estimating that "through acquisitions or new installations, independent ATM providers have increased their share of ATMs deployed to one quarter of all ATMs in Ireland".
[16] Another means of attaining cash is at point of sale through the "cashback" facility that many retail outlets offer their customers. Data for use of that facility are not considered here.
[17] This denominator is used given the distortions associated with the GDP measure for Ireland in recent years. It is also chosen on the assumption that most cash withdrawals at ATMs are made by consumers.
[18] All data in Figure 3 are deflated using the country's HICP deflator (base year: 2015).

Fig 1: Average number of ATM withdrawals withdrawals per capita

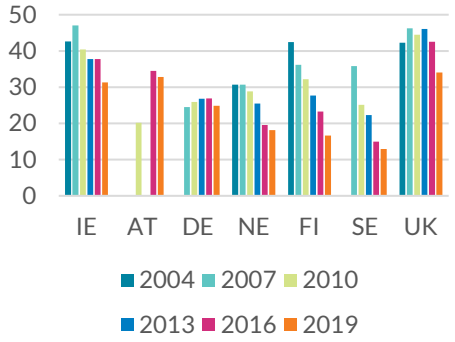


Fig 2: ATM withdrawals as a percentage of personal consumption

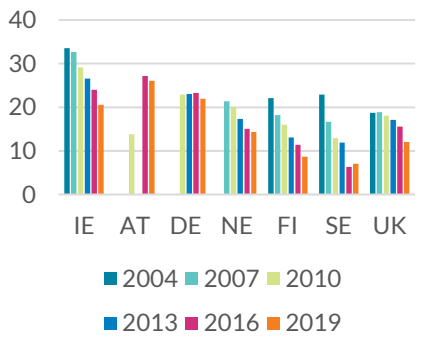


Fig 3: ATM withdrawals per capita - Value (€, real)

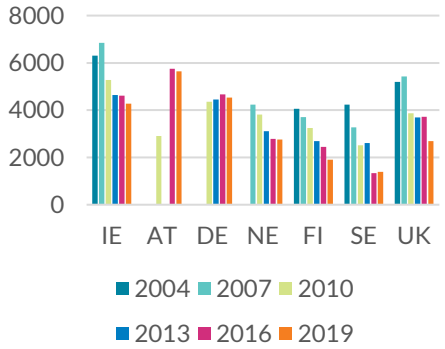
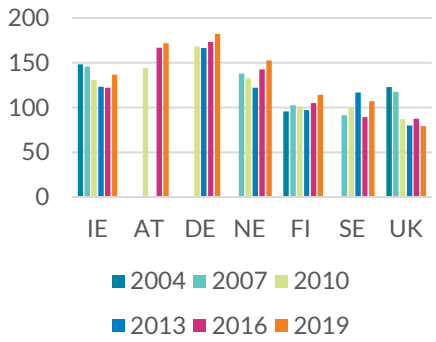


Fig 4: Average ATM withdrawals (€, real)



Source: ECB SDW, AMECO, Own calculations.

4. The use of cards in payments since the introduction of euro banknotes and coin

Alongside the charts above, card payment data give an illustration of countries' relative reliance on cash and cards over time. Figure 5 shows the number of card payments per capita per annum increasing over time in all seven countries with the largest rises in payment numbers in the chart occurring between 2016 and 2019, with the exception of Sweden where the increase between 2013 and 2016 was greater.[19] The average number of card payments in Ireland rose from 160 in 2016 to 262 in 2019. Card usage in Ireland is still lower than the other countries with the exception of Austria and Germany, but higher than the euro area average of 136 payments in 2019. The reason for a pickup over time in card usage in many countries can be explained by consumers' attitudes to cards, including their safety and acceptability in payments, and costs (Jonker, 2013).

[19] Card payment data here are those based on payments made by cards issued by resident PSPs.

Fig 5: Average number of card payments capita

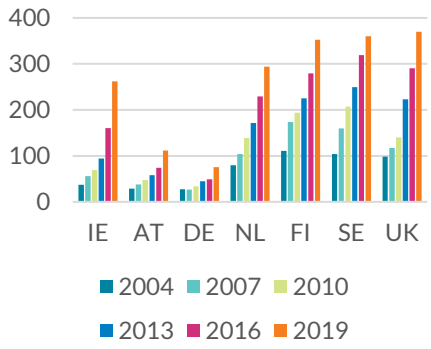
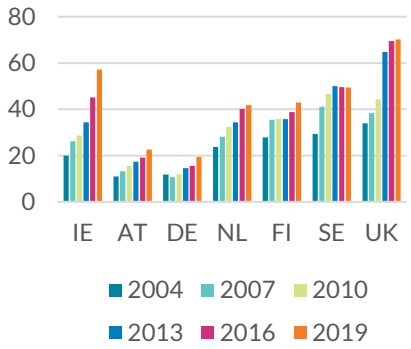


Fig 6: Card payments (as a percentage of Personal Consumption)



Source: ECB SDW, AMECO, Own calculations.
Note: Card payments with cards issued by resident PSPs.

Moving to the variables where the value of payments is used, Figure 6 shows card payments as a percentage of personal consumption rising steadily over time while a similar pattern is evident in Figure 7 where average (real) card payment values per capita are shown. As with Figure 5, there are large rises in these two charts for Ireland in recent years. The UK's entries in these charts are relatively high, reflecting an embracing of card payments that saw the volume of debit card payments come to exceed cash payments in 2017 (Access to Cash, 2019). Figure 8 indicates that average (real) card payments have declined over time. Average payments in 2019 range from a high of €53 in Germany to lows of €27 in the Netherlands, Finland and Sweden.

Card payments can take place at a physical terminal (termed electronic transfer at point of sale, or EFTPOS) or remotely. This latter capability facilitates e-commerce, i.e. buying goods on-line. Among the five euro area member states, Figure 9 shows that over the short, recent timespan of 2015 to 2019, average card payments have been declining steadily for both forms of card payments while the average remote payment is higher than that at an EFTPOS.

The data presented here then indicate a rising adoption of electronic payments in the countries covered, with Ireland's take-up of card payments being particularly noticeable in recent years. Indecon (2018) ranks Ireland at tenth among 27 European countries for the combined use of card payments, direct debits and credit transfers and at eighth for card usage. Among the factors that it identifies as being behind the move towards card payment in Ireland are greater acceptance of cards by retailers, increased popularity of contactless functionality, and the availability of non-traditional payment providers. Policy initiatives are also identified as playing a role, including changes in stamp duty and reductions in

interchange fees, the introduction of electronic banking in many post offices and credit unions, and greater accessibility owing to the transposition of the Payment Accounts Directive. A reduction in the proportion of households that are "unbanked" (i.e. do not have a bank account) since the mid-2000s also increases the scope for more electronic payments.

Fig 7: Card payments (€, real) per capita

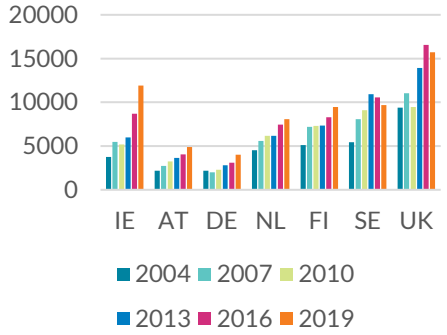
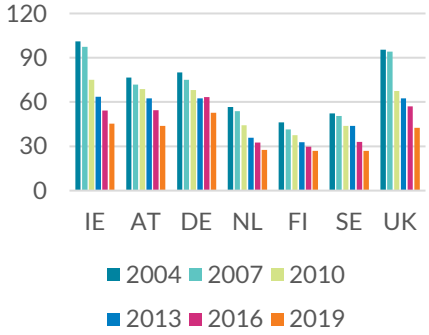


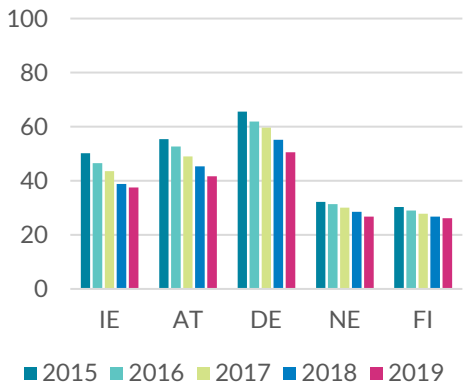
Fig 8: Average card payment (€, real)



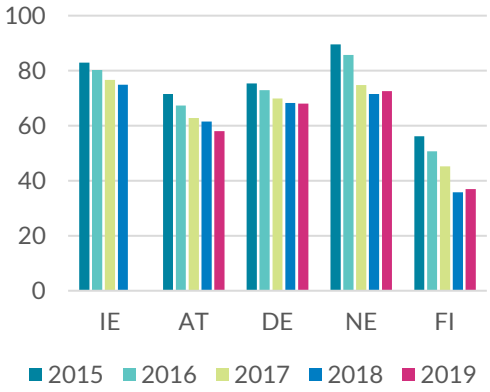
Source: ECB SDW, AMECO, Own calculations.
Note: Card payments with cards issued by resident PSPs.

Fig 9: Average Card Payment (€, real)

At EFTPOS



Remote Payment



Source: ECB SDW, AMECO, author's calculations.
Note: Card payments with cards issued by resident PSPs.

Developments in card payments and other electronic retail payments in recent years

Consumers have seen changes to how they can use a card at a physical POS in recent years. This includes the ability to "tap-and-go" whereby a payment can be made by bringing a payment card, or other mobile device, into close contact with a card reader without the input of a PIN, thus reducing transaction times and making the card payment easier. The improved attractiveness of cards in small-value payments has coincided

with a pronounced rise in their use. In the UK, there was a 97 per cent increase in contactless payments in 2017 alone (UK Finance, 2019). Some indication of how contactless card payments are being adopted in Ireland is to be found in commentaries and data provided by Banking and Payments Federation of Ireland (BPFI). BPFI (2017) indicates that 4.2 million debit cards and over one million credit cards in Ireland had a contactless payment feature by end-2017. Contactless payments amounted to €2.86 billion by value in 2020Q3 with 182 million such payments occurring in that quarter (BPFI, 2020).

Several policy approaches, including at a pan-European level, have arisen in recent years that can influence retail payment developments and, in particular, encourage electronic payments. Among those is the Single Euro Payments Area (SEPA), which promotes the harmonisation of payment standards in the European Union and in some non-EU countries, in particular for direct debits and credit transfers. It has done so by removing technical, legal and market barriers between countries. Its benefits include improved convenience and cost effectiveness in making payments across Europe (Central Bank of Ireland, 2020). The Payment Services Directive (PSD2) provides for the entry of new players into payment services. There is also a move towards allowing instant retail payments to be made where payments are processed in real time and funds are made available for use to recipients immediately. The Eurosystem launched Target Instant Payment Settlement (TIPS) in November 2018 to allow payment service providers to offer fund transfers to their customers in real time and on an ongoing basis with settlement occurring in central bank money.[20] The SEPA Instant Credit Transfer (SCT Inst), which provides near-instantaneous pan-European credit transfers, is in operation in a number of European countries.[21] Interventions such as the Interchange Fees Regulation can influence payment behaviour by, in this case, introducing a cap on certain interchange fees on payment cards.

There are also policy initiatives in Ireland to promote the adoption of electronic payments such as support to small-and-medium enterprises (SMEs) to develop on-line trading (e-tailing) strategies (Indecon, 2018). The National Payment Plan, launched in 2013, recommended a significant increase in the use of secure and efficient electronic payment methods, identification of measures that supported innovative electronic payment methods, and the adoption of SEPA standards.

[20] See Central Bank of Ireland (2020) for more detail on these policies.
[21] Pricing policy in relation to ATM and card usage will influence consumer payment choices and the payment services that retailers use or encourage. Any future changes in pricing policy by payment providers to retailers or consumers (by retail banks or ATM providers) could affect usage.

Box: Banknote returns to the Central Bank and cash-based personal consumption expenditure

By David Cronin and Niall McInerney

The Central Bank operates at a critical point in the cash distribution system in Ireland. It supplies the banknotes and coin that are distributed through the banks and other payment services providers to the general public for use in payments. It is also a recipient of cash returns, which can arise when notes and coin have become unfit for use through wear and tear or when there is a surplus of cash among the public. Understanding what drives the cycle of issues and returns (what might be called the cash cycle) is important for managing the cash distribution system. This is particularly the case when the use of cash in payments is changing substantially, as has been outlined in this paper.

The less cash that is used in the economy the less will be the wear-and-tear of cash, in particular banknotes, that will arise and consequently there will be lower returns of such cash to the central bank, all else being equal.[22] A measure of the amount of personal consumption expenditure (PCE) paid for by cash captures the extent to which banknotes are used in the economy and it should then have explanatory power over cash returns, with cash returns rising (falling) as cash-based PCE increases (decreases). A measure of cash-based PCE was constructed, on a quarterly basis, for Ireland by deducting spending made by debit cards and personal credit cards and the housing expenditure component of PCE (which it is assumed is not paid for in cash) from total PCE. This quarterly, seasonally-adjusted (SA) series is plotted over the period 2002Q1 (when euro banknotes and coin were introduced) to 2019Q4 in Figure A alongside total PCE. Both series increased in the early-to-mid 2000s before declining after mid-2008 as the Irish economy experienced a sharp downturn. Total PCE started to pick up once more in 2013 as economic performance improved but cash-based PCE continued to fall as card-based expenditure increased. The divergence between total PCE and cash-based PCE has grown over time.

In Figure B, total note returns (by number of pieces), on a seasonally-adjusted basis, to the Central Bank are plotted alongside the cash-based PCE series of Figure A. After 2002-3, both series moved broadly in proportion to one another up for a considerable period. In recent years, there has been a sharper downward movement in notes returns to what occurred previously and that is not matched by an accentuated decline in

[22] Bauer and Littman (2007).

cash consumption. Formal econometric tests indicate a long-run proportional relationship between the two series when a structural break, which is identified as occurring in 2017Q2, is allowed for.

Two factors that may help explain this recent development are structural changes in the cash distribution system and the take-up of contactless payments by the public. On the latter, all major Irish banks had introduced contactless cards by 2017. BPFI data indicate an almost nine-fold increase in contactless payments between 2016Q1 and 2019Q4, with the total value of such payments rising by a similar magnitude. The lower-value cash payments replaced by contactless payments are likely to require more currency pieces (i.e., a greater number of notes) relative to the expenditure amount involved than the higher-value cash transactions that are substituted by chip-and-pin payments. Consequently, the introduction and adoption of contactless payments may be a factor in the large fall in note returns relative to cash-based personal consumption in recent years.

Fig A: Consumer spending and its cash-based component (€ mn., SA)

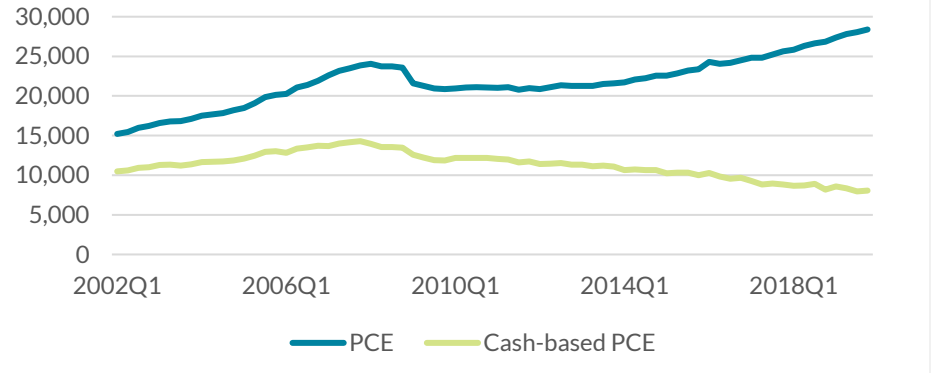
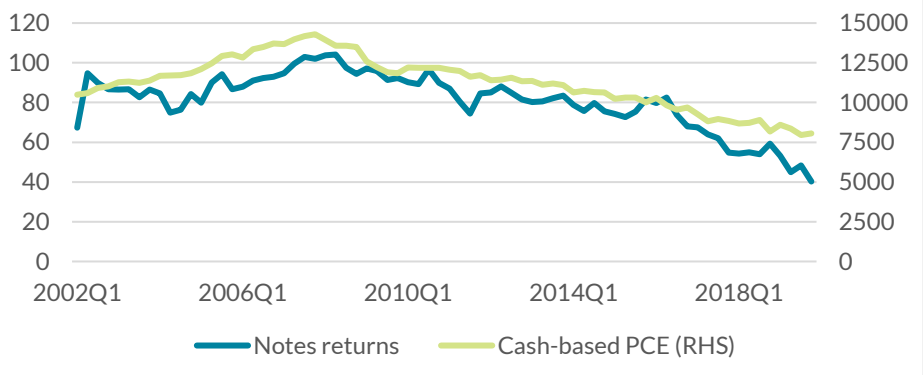


Fig B: Note returns (mn.s of pieces, SA) and cash-based PCE (€ mn., SA)



Source (Fig A & B): Central Bank of Ireland, Central Statistics Office, ECB Statistical Data Warehouse, Own calculations.

5. Effects of the current pandemic on cash demand

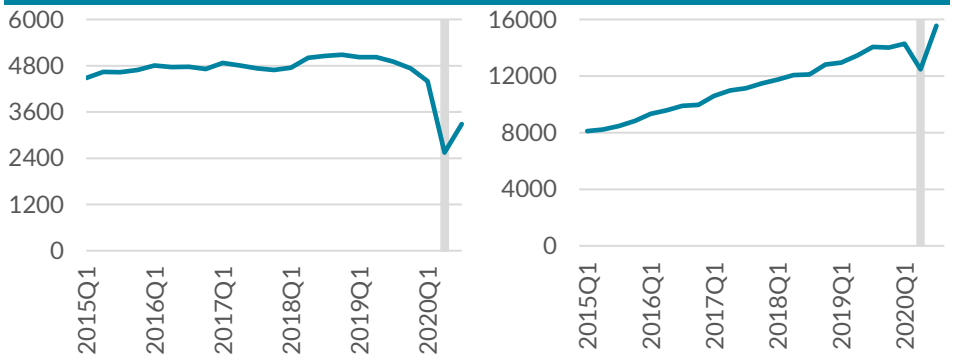
The immediate effect of the Covid-19 pandemic on cash was to see a spike in the demand to hold cash in the euro area. Cash withdrawals in Europe in mid-March were comparable to the week before Christmas (Panetta, 2020). This may not be unexpected as consumers will have large immediate outlays on in-store purchases of essential items when a crisis of this nature arises. They will also have a precautionary demand for cash to hold.

Hopkins and Sherman (2020) report that there was a decline in card spending and ATM withdrawals in Ireland from mid-March up until early-April, with the first set of restrictions having been announced by Government on 12 March and with less opportunity to spend in retail outlets arising thereafter. While fewer ATM withdrawals occurred, the average ATM withdrawal amount increased. ATM transactions values increased in the months after April but remained well below corresponding 2019 months. In contrast, the value of POS transactions by debit cards were much higher than 2019 levels from mid-year, with June to October 2020 transactions some 17 per cent higher compared to the same months in 2019.[23] The value of ATM withdrawals for the June to October 2020 period was one third lower than a year previously.

The two panels of Figure 10 illustrate the effects of the pandemic on the (seasonally-adjusted) amounts withdrawn at ATMs and expended at POS, respectively, on a quarterly basis between 2015Q1 and 2020Q3. The left hand panel shows that ATM withdrawals had remained relatively steady over time up until 2020. There was then a drop in the amount withdrawn in 2020Q1 and a more substantial reduction in the second quarter. There was some recovery in 2020Q3 but withdrawal amounts remain much lower than previously. Card transactions (the sum of debit card POS transactions and new spending on personal credit cards) also dipped in 2020Q2 but have broadly maintained the trend increase witnessed over recent years.

[23] Some Irish retail banks waived contactless fees at the onset of the public health crisis in the spring.

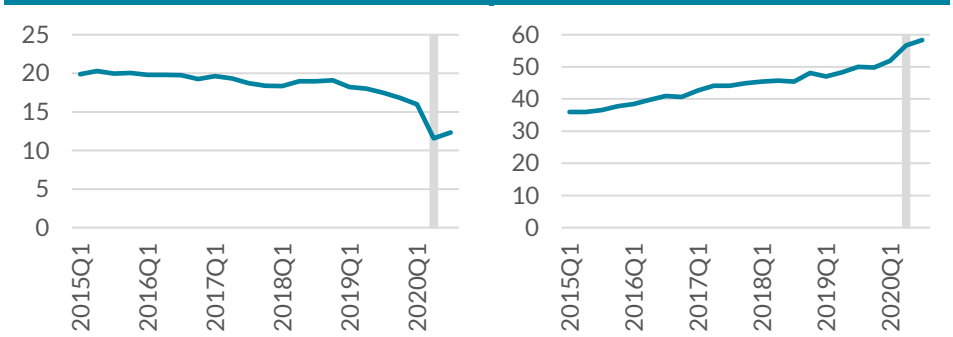
Fig 10: ATM and POS transactions (€m, SA)



Source: Central Bank of Ireland, author's calculations.
Note: Shaded area is 2020Q2.

In Figure 11, these transaction values are shown relative to personal consumption up to 2020Q3. While there had been a slow steady decline in ATM withdrawals as a proportion of consumption up to end-2018, there was a more noticeable decline during 2019. This was added to in the second quarter of 2020, with some recovery as the economy opened up more extensively in the third quarter but with withdrawals still at much lower levels than in previous years. In contrast, POS transactions as a percentage of personal consumption ratcheted up sharply in the second quarter during this period of lockdown and were marginally higher again in 2020Q3. Inter alia, these developments likely reflect changes in the pattern of spending within the consumption basket and where consumers can and cannot buy goods and services during the pandemic, changes which it cannot be adjudged at this time as to whether they will be permanent or temporary in nature.[24]

Fig 11: ATM and POS transactions as a percentage of personal consumption (SA)



Source: CSO, Central Bank of Ireland, author's calculations.
Note: Shaded bar indicates 2020Q2

[24] See Byrne *et al.* (2020) for a discussion of how Covid-19 has affected consumption developments in Ireland.

Among card payments, those made by contactless means rose sharply during 2020. For example, as the Irish economy re-opened in large part in the third quarter, the volume of contactless payments increased by 36 per cent over 2019Q3 and their value by 76 per cent (BPFI, 2020). This source also indicates a rise in the average value of contactless payments from €12.03 to €15.86 over that period.[25]

The pandemic has caused a sharp fall in economic activity in Ireland and beyond. On its own, this will reduce the demand for cash for spending purposes. Economic recession and an uncertain outlook also tend to boost the demand for cash as a store of value. Consequently, while the effects of the pandemic persist, there may be two opposing forces pulling at the demand for cash. On the one hand, a lower demand for cash in payments can be expected due to less economic activity and an increased rate of substitution from cash to card payments. On the other hand, there may be a greater demand for cash to hoard. Such effects could be expected to have differing effects on the demand for particular notes, with small-denomination notes and coin being in less demand relative to large-denomination notes. Goodhart and Ashworth (2020) find cash in circulation surged in the United States, the euro area and several other countries in response to the onset of the pandemic, with a diminished demand for cash in payments being more than offset by increased hoarding of banknotes.[26]

As noted above, there has been a shift away over time from the use of cash to cards and other cashless instruments in payments across the euro area and beyond. This, in part, reflects a move from purchase at a physical point-of-sale to on-line spending in recent years. In the UK, many "reluctant" consumers there have been learning to use electronic alternatives to cash during the pandemic and appear happy with the change; part of this might be out of the need to make goods purchases on-line rather than over the counter in a shop (Thomas and Megaw, 2020; Kaminska, 2020). A smaller "high street" retail presence in the future, including through the effects of the crisis on the viability of SMEs and changes in consumer preferences in favour of online shopping, would also reduce the demand for cash.

The issues raised by Covid-19 could decline in importance were the virus to diminish as a health issue (including concerns around the use of payment media, including cash) and many consumers were to revert to pre-pandemic shopping habits. On shopping habits, the pandemic has seen a reallocation in Ireland from spending outside the home to within (Byrne *et al.*, 2020).

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[25] Contactless payment limits have increased to €50 in Ireland since 1 April 2020.
[26] The same authors (Ashworth and Goodhart, 2020) also document the spike in currency demand in several countries at the peak of the 2008 financial crisis.

Such a shift would cause a change in payment method from cash to card at this time, but could be rewound in some or large part in the future.

6. Will a demand for cash in payments persist over time?

This survey of payment preferences from before the pandemic indicates that heterogeneous payment habits arise in Europe but that there is a move towards the substitution of cards for cash in payments. The current pandemic would appear to be adding to a shift in payment patterns away from cash. At the root of these changes are technological developments that have improved the efficiency of card payments and electronic payments in general and have allowed cards become a viable alternative for most cash payments. Some of these apply at the wholesale level and others at the retail level. Bech *et al.* (2017) note that a move from net settlement to real-time gross settlement has allowed quicker settlement at the wholesale level while faster retail payments are also now occurring as payee funds availability can be coupled (instant transfer) or decoupled (deferred transfer). Electronic payment instructions can now be more quickly transmitted by near-field technology allowing contactless payments to be made at a point-of-sale.

These efficiency gains in electronic payments are enhanced by increased usage among the population. The widespread adoption of a technology can help to reduce pecuniary and non-pecuniary costs to individual users, which in turn leads to a larger network of users arising. This is particularly the case for payments, which can benefit from substantial economies of scale. At some point, the rise in the number of users makes the payment instrument attractive to other parties and they adopt it for use in transactions. This network effect expands the use of the instrument, often in a non-linear manner. Public authorities and other agencies, including PSPs, can speed up the adoption of new instruments through promoting them and putting in place supporting infrastructure. Not only can this increase the demand for the instrument but it can lead it to replace existing payment methods. Esselink and Hernandez (2017), for example, indicate that increasing the provision of card payment infrastructure causes cash usage to fall. The pricing of payment services (including the relative cost of using and ATM and POS facilities) and cross-subsidisation of certain services can influence payment choices among the public. The cost savings from a societal perspective that can arise from the adoption of new payment technologies can be considerable and can act as a spur to their promotion among the public.

Reflecting the growth in card payments in recent years, studies, from before the pandemic, forecast the demand for cash in payments to decline in the years ahead. UK Finance (2019) estimated that cash's share of payments in the UK would decline from 28 per cent in 2017 to 9 per cent in 2028. There is also evidence that coin demand is falling more rapidly than that for notes (Access to Cash, 2019). The discussion in the last section suggests that the pandemic may add to the move away from notes and coins in payments.

A sharp decline in cash's share of payments, however, does not imply that the demand for it will eventually disappear. Network effects fostering a greater use of card payments does not necessarily extend to everyone adopting the new technology. This is proving to be the case for cash where consumers may prefer not to use cards for various reasons. One is that many consumers are in the habit of using cash and do not see the need to change how they make payments and would not expect to be forced to do so. Cash is perceived to have the advantage of helping to maintain anonymity in payments, something that would be of attraction to those concerned about privacy.[27] It can also help prove beneficial in making person-to-person transactions and informal transfers and is useful in expenditure budgeting and avoiding falling into debt. Although prone to being lost or stolen, cash does not crash (physical money is a time-tested technology) whereas electronic payment systems are vulnerable to failure and cyber-attacks. This is an important attribute of cash relative to electronic payment methods and is a basis for arguing that a cash reserve should be retained as a contingency in the event of a systemic failure in the wider payment system.

In assessing whether consumers will prefer cash or cards, Bjorklund (2017) identifies four factors driving payment choice at the point-of-sale: payment instrument attributes, transaction-specific characteristics, demographic factors, and habit, and argues that the latter two can explain the preference among many consumers for continuing to use cash. As well as the effects of the relative costs of instruments and perceived characteristics such as user-friendliness, speed and safety, Arango-Arango *et al.* (2018) show that cash usage depends on the income and education of the user and transaction size. According to Access to Cash (2019), income levels play a greater role than age in consumers' preferences for cash, with poverty a factor influencing cash usage. Inherited cultural factors can also mean that payment habits are slow to change (Kemppainen, 2019).

[27] Reserve Bank of New Zealand (2019, p. 25) sums up these points as cash providing "privacy, ability to live off the grid, and an ability to avoid the banking system."

Yet, a stigma is developing around the "cash shopper" that may affect the payment choices of some. A refusal by a vendor to accept payment in cash reduces consumer choice and may lead to social isolation. Based on extensive payment diary data, Van der Cruijsen and Knoben (2018) find that payment behaviour is influenced strongly by the environment that people live in, "especially when strong social cohesion arises." Sveriges Riksbank (2020) finds in a survey of people in Sweden that the elderly and those living in rural areas have a negative view on the use of cash declining. Access to Cash (2019) found that cash is a necessity for 47 per cent of the UK population while 17 per cent would struggle without cash. It also reports that the issue of cash acceptance by merchants and retailers is often a bigger issue in the reduction in cash payments than consumers' ability to draw down cash.

Consumers, even those that rarely use it, appear in the main to support cash's continued availability and use. Deutsche Bundesbank (2018b) notes that 88 per cent of respondents to a survey it conducted rejected calls to restrict the use of or do away with cash. The Bank for International Settlements (2020) is of the view that the pandemic has illustrated the divide between those who are comfortable with and have access to electronic alternatives to cash and those who are not, with low-income and vulnerable groups facing difficulties in making payments and receiving funds. The crisis also shows that a large proportion of the public will persist in using cash even during a pandemic.[28] This speaks to the tension that arises between some retailers who wish not to handle cash and a desire on many consumers' part to have a choice in the payment method that they use at a point of sale or who are uncomfortable with electronic payment methods.[29]

There is also a euro area dimension to cash payments. While recent studies (Bagnall *et al.*, 2016; Esselink and Hernandez, 2017) emphasise the heterogeneity in payment behaviour across the euro area, reflecting institutional and cultural differences between member states, euro notes and coin are shared as a common currency across 19 countries. The acceptability and transportability of euro cash across a wide geographical area supports its attraction. Consequently, there may be an expectation among the public that euro notes and coin will continue to be welcome and accepted in other member states.

[28] Using data from an April 2020 survey, Chen *et al.* (2020) report that a majority of Canadians (64 per cent) did not change away from using cash during that early part of the pandemic although their use of cash did fall.
[29] Reddan (2021) provides examples of Irish high street outlets that have moved to a cashless payment system of late.

There will likely then remain a demand for cash in payments in the years ahead and a need for consumer preferences for this medium to be protected. There is also a supply side argument for cash as it could be used to address any failure of electronic payments owing, for example, to cyber-attacks. Non-payment uses of cash will also sustain demand for it, in particular its store of value property. Schautzer and Stix (2019) attribute the rise in euro cash demand since 2007 to the prevalence of low nominal interest rates (which reduce the opportunity cost of holding cash), increased domestic hoarding (including in response to greater economic uncertainty), and a rise in foreign demand.

7. Conclusion

This article has shown that there has been a move away from using cash in payments to card payments over time but the extent of that change differs across countries. It is to be expected that the move to using electronic payment methods over cash will continue in the years ahead, including through the effects of the current pandemic. This does not mean that demand for banknotes and coin will disappear. Cash's imminent demise has been mistakenly declared in the past but it continues to remain popular both as a medium of exchange and as a store of value.[30] Looking ahead, there will remain a preference among many people, including the elderly and socially disadvantaged and those who value the privacy and anonymity that comes with cash, to continue using physical banknotes and coin over an intangible digital medium. Other holders and users of cash will take comfort in it being issued by a central bank. Central banks are considering the issuance of central bank digital currencies (CBDCs) in part to address that desire on some cash holders' part by a digital form. CBDCs would be central bank liabilities offered in digital form to the public to be used for the same purposes that they hold physical cash. The ECB (2020) issued a report on the possible issuance of a digital euro. It would be intended as a complement to cash, with it being up to citizens as to which they prefer to use in payments.

A demand for cash to use in payments (as well as to hold for store of value purposes) can be expected over the long run. The ultimate suppliers of cash in modern payment systems, central banks, will then need, in conjunction with other payment providers, to continue to supply and distribute banknotes and coin to the public in the future against the

[30] As Schautzer and Stix (2019, p. 100) state, "one could probably state that the best manifestation of the bounded knowledge about the demand for cash is that cash has repeatedly been declared to be outdated and doomed to disappear – while in actual fact cash demand has continued to grow." Amromin and Chakravorti (2009) cite a number of academic and financial press contributions from between 1967 and 2007 to the effect that cash would soon become redundant.

backdrop of a falling but likely substantial demand for cash. This is the case with the euro, with the Eurosystem indicating its commitment to ensuring that all citizens have access to euro banknotes and coins across the euro area and that those media will remain reliable, acceptable and attractive to the public.

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