Indecon Report on Benchmarking of Ireland's Payments Industry

Final Report

Prepared for the

Department of Finance

by

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www.indecon.ie

11 December 2018

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Glossary

Account Information Service Provider (AISP): AISP's are authorised payment service providers that consumers and companies can use to get a 360-degree view of their finances.

Acquirer: An acquirer is a bank or financial institution that enables a merchant to accept card payments for products or services. The term acquirer indicates that the bank accepts or "acquires" card transactions from the card-issuing banks within an association, for example Visa and MasterCard.

Application Programme Interface (API): APIs give developers access to predefined functions so they don't have to be built from scratch every time.

Automated clearing house (ACH): an electronic clearing system in which payment orders are exchanged among participants (primarily via electronic media) and handled by a data-processing centre.

Automated teller machine (ATM): an electromechanical device that allows authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services.

Batch (bulk payments): a group of orders (payment orders and/or securities transfer orders) to be processed together.

Beneficiary: a recipient of funds (payee) or securities. Depending on the context, a beneficiary can be a direct participant in a payment system and/or a final recipient.

Blockchain: Blockchain is a peer-to-peer database where changes are reflected across the network.

Card Association: A card association is a network of issuing banks and acquiring banks that process payment cards of a specific brand. Some well-known payment card association brands are Visa, MasterCard, American Express, Discover, Diners Club, and JCB.

Card Issuer: A card issuer is a financial institution, often a bank, that issues a payment card to a cardholder and administers their account. A card issuer usually manufactures and issues a card that belongs to a card association.

Card Not Present: The card is not physically present at the time of the transaction. MOTO and Internet are "card not present" transactions. Additional data (CSC, AVS, 3-D Secure) is captured as a security measure.

Card Present: The card is physically presented to a merchant at the time of the transaction. Swiped, keyed and ICC are "card present" transactions.

Cardholder: A cardholder is a person to whom a payment card has been issued by a card issuer.

Central bank money: liabilities of a central bank, in the form of either banknotes or bank deposits held at a central bank, which can be used for settlement purposes.

Cheque: a written order from one party (the drawer) to another (the drawee; normally a credit institution) requiring the drawee to pay a specified sum on demand to the drawer or a third party specified by the drawer.

Chip card: a card with an embedded microprocessor (chip) loaded with the information necessary to enable payment transactions.

Clearing: The process of transmitting, reconciling and in some cases confirming payment instructions prior to settlement; it may include netting of instructions and the calculation of final positions for settlement.

Credit card (card with a credit function): a card that enables cardholders to make purchases and/or withdraw cash up to a prearranged credit limit.

Credit institution: a credit institution is a company duly authorised to carry out banking transactions on a regular basis (i.e. to receive deposits from the public, carry out credit transactions, make funds available and manage means of payment).

Credit transfer: a payment instrument allowing a payer to instruct the institution with which its account is held to transfer funds to a beneficiary.

Cross-border payment: a payment where the financial institutions of the payer and the payee are located in different countries.

DCC: an abbreviation for Dynamic Currency Conversion. Dynamic Currency Conversion is a service that allows international customers the option to pay for goods in their own currency at the point of sale, rather than in the local currency.

Debit Card: Debit cards are similar to credit cards, except that the funds are immediately withdrawn from the cardholder's bank account. Credit card charges, on the other hand, are billed to the cardholder each month, and interest charges may be added.

Direct debit: a payment instrument for the debiting of a payer's payment account whereby a payment transaction is initiated by the payee on the basis of authorisation given by the payer.

Direct participant: a participant in a transfer system that can perform all activities allowed in the system without using an intermediary (including, in particular, the direct inputting of orders in the system and the performance of settlement operations).

European Banking Authority (EBA): Established in 2011, the EBA is a regulatory agency of the European Union. Its objective is to maintain EU financial stability and to safeguard the banking sector.

Electronic data interchange (EDI): the exchange between commercial entities, in a standardised electronic format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments.

Electronic Funds Transfer (EFT): An automated transfer of funds using an electronic medium.

Electronic money: a monetary value, represented by a claim on the issuer, which is: 1) stored on an electronic device (e.g. a card or computer); 2) issued upon receipt of funds in an amount not less in value than the monetary value received; and 3) accepted as a means of payment by undertakings other than the issuer.

Electronic money institution (EMI): a term used in EU legislation to designate a payment service provider governed by a simplified regulatory regime because its activity is limited to the issuance of electronic money and the provision of financial and non-financial services closely related to the issuance of electronic money.

Electronic Wallet: Also known as an e-wallet, it allows the user to charge payment for goods and services to their card without using the card.

EMV: EMV is a global standard for the processing of card payments using an integrated circuit card (ICC) based payment application and ICC capable Point of Sale (POS) terminals and ATMs. The EMV standard takes its name from the card schemes Europay, MasterCard, and Visa that developed it.

Encryption: The process of translating data into secret code (encoding) to ensure secure transmission. An effective way to help ensure data security, it is also referred to as end-to-end encryption (E2EE).

European Payments Council: The EPC a membership organisation created in 2002 by the major European banks.

Four-party card scheme: a card scheme where the stakeholders involved are: 1) the issuer; 2) the acquirer; 3) the cardholder; and 4) the card acceptor. By contrast, in a three-party card scheme, the issuer and the acquirer are the same entity.

Interchange Fees: Interchange Fees are wholesale fees set by card schemes that require payments from the merchant's bank (Acquirer) to the cardholder's bank (Issuer) on every transaction. The cost of Interchange Fees is typically passed on to the merchant in the form of a Merchant Service Fee.

Merchant: A merchant is a business (for example a shop, online store, restaurant, hotel, airline) that accepts a payment card as a method of paying for goods or services.

Multi-currency pricing (MCP): is a financial service which allows businesses to price goods and services in a variety of foreign currencies, while continuing to receive settlement and reporting in their home currency.

Offline Authorisation: The transaction is not sent to the card issuer for authorisation.

Online Authorisation: The transaction is sent to the card issuer for authorisation.

Open Banking: Refers to the opening up of banking systems to third parties to allow them to provide services directly to their joint customers

Payment Gateway: Software on a third-party provider's server that handles the transmissions between merchant and processor that are required to complete an electronic transaction.

Payment Initiation Service Provider (PISP): A PISP is a regulated payment service provider that offers companies, retailers, merchants etc. an online solution for accepting electronic payments through credit transfers. This may take the form of software-as-a-service (SaaS) model that connects, for instance, the website of the seller or merchant with the online banking platform of the payer's bank, so a credit transfer can be enacted and completed.

POS: Abbreviation for Point-of-Sale, which is the place where a customer makes payment. While POS once referred specifically to credit card terminals at the cash register, technology has expanded its application to include mobile, wireless and virtual terminals.

PSD2: Payment Services Directive 2: The second Payment Services Directive is an EU Directive that regulates payment services and payment service providers throughout the EU and EEA. PSD2 updates and replaces the Payment Services Directive 2007.

Reachability: a credit institution is "reachable" if it can execute a credit transfer order and/or a direct debit instruction sent by any other bank in a particular currency area.

Real-Time Processing: The ability to approve or decline a payment card transaction in seconds while the customer waits.

Retail payment: a non-time-critical payment of relatively low value. These payments are typically made outside of the financial markets and are both initiated by and made to individuals and non-financial institutions.

RTGS (real-time gross settlement): A payment system in which processing and settlement take place in real time (continuously).

SEPA: Single Euro Payments Area: Supported by PSD1 and launching in 2008, SEPA is a payment integration initiative of the European Union to ensure the same terms regardless of where the payment starts and ends.

Surcharging: Surcharging provides merchants with the ability to charge customers for the use of particular payment methods.

Systemic risk: the risk that the inability of one participant to meet its obligations in a system will cause other participants to be unable to meet their obligations when they become due, potentially with spillover effects threatening the stability of or confidence in the financial system.

Systemically important payment system: a payment system which has the potential to trigger systemic risks in the event of it being insufficiently protected against the risks to which it is exposed.

TARGET2: the real-time gross settlement system for the euro. TARGET2 settles payments in euro in central bank money and functions on the basis of a single IT platform, to which all payment orders are submitted for processing.

Executive Summary

Introduction

This report represents an independent evidence-based study of payment usage in Ireland, which benchmarks the Irish experience to other countries in order to get a better understanding of payments in Ireland. Following a competitive tender, Indecon Research Economists were appointed by the Minister for Finance to complete this study to inform future policy development.

Background to Research

Payments play a crucial role in a modern economy, and the way in which payments are made is changing rapidly. The goals of this research project are to:

- Identify the current position, trends and the likelihood of change with respect to payments in Ireland;
- To, where possible, benchmark Ireland against the EU average and against selected individual countries; and
- To consider the economic and other risks of adopting or not adopting electronic payments.

Electronic payment systems represent a way of paying for goods or services electronically, as opposed to a manual, 'paper based' system of payments such as cash or cheques. Examples include payment by direct debit or a payment using a credit card, or via contactless methods. Developments in electronic payments are likely to impact on a wide range of sectors including transportation, retailing, health and professional services as well as the financial sector. Electronic payments and FinTech companies may also provide access to finance for start-up companies and facilitate companies to trade internationally.

Developments in the payments sector raise a number of complex issues which will be influenced by policy, market and technological factors. It should be noted that while there are significant benefits for enterprise and for consumers of enhanced electronic payments, there are also risks. Policymakers therefore should seek to develop the industry and payments systems in Ireland in a way that supports financial stability, consumer protection, and enhances competitiveness.

Benchmarking Ireland's Payments Usage

There is a global trend towards the increased take-up of electronic payments. Non-cash transaction volumes are currently rising faster than any other time in the last decade, with volumes growing at over ten per cent per annum.[1] While historically Ireland has been a relatively cash-intensive economy, significant progress has been made and a rapid increase in the take-up of electronic payments is evident. In overall terms, Ireland had 237 electronic payments per capita in 2016, of which two-thirds relate to card payments. Ireland is ranked 10th out of 27[2] European countries for the combined use of card payments, credit transfers and direct debits, and is ahead of the EU average. Ireland's overall ranking reflects a high ranking in terms of card usage (8th).

[1] CapGemini and BNP Paribas (2017) "World Payments Report 2017."

[2] Data on Direct Debits unavailable for Denmark.

The highest usage of electronic payments can be seen in Sweden and Finland followed by the Netherlands. The figures for SEPA include payments related to traditional banks, but also new entrants such as Revolut[3] and N26,[4] while the card payment statistics include payments using ApplePay or GooglePay.

Number of e-Payment Transactions Per Capita, 2016						
	Card	Rank (out of 27)	Credit Transfer + Direct Debit	Rank (out of 27)	Total Card, CT, DD	Rank (out of 27)
Sweden	319	1	162	4	**481**	**1**
Finland	280	2	165	3	**445**	**2**
Netherlands	232	4	192	2	**424**	**3**
UK	250	3	127	8	**376**	**4**
Luxembourg	216	6	136	7	**351**	**5**
Estonia	217	5	109	11	**326**	**6**
Belgium	151	9	153	6	**304**	**7**
France	165	7	115	9	**280**	**8**
Germany	49	23	208	1	**258**	**9**
Ireland	**158**	**8**	**79**	**15**	**237**	**10**
Czech Republic	71	17	159	5	**229**	**11**
Latvia	124	11	80	14	**203**	**12**
Portugal	145	10	53	21	**198**	**13**
Austria	74	16	109	10	**184**	**14**
Slovenia	79	14	97	12	**176**	**15**
Poland	83	12	64	17	**147**	**16**
Croatia	64	19	82	13	**146**	**17**
Lithuania	82	13	63	20	**145**	**18**
Slovakia	67	18	75	16	**142**	**19**
Spain	75	15	64	18	**138**	**20**
Hungary	54	22	63	19	**117**	**21**
Cyprus	59	20	32	24	**91**	**22**
Malta	57	21	29	26	**86**	**23**
Italy	43	24	36	22	**79**	**24**
Greece	28	25	29	25	**57**	**25**
Bulgaria	13	27	35	23	**48**	**26**
Romania	18	26	13	27	**30**	**27**
EU	**117**		**109**		**225**	

Source: ECB, 2017. *Note: Denmark not included as figure for Direct Debits for Denmark not published by ECB.*

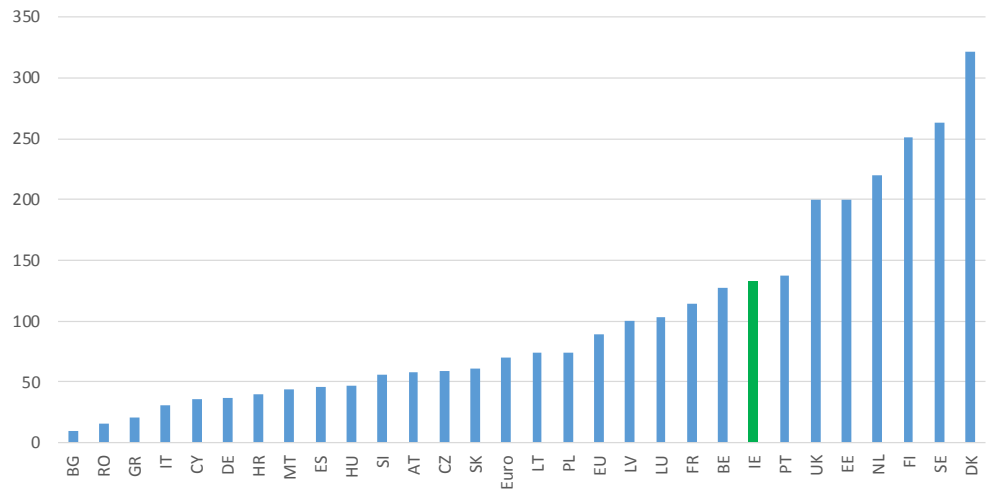
Despite the growth in electronic payment, cash and cheques continue to be important payment mechanisms in Ireland. Since 2012, however, there has been a notable reduction in the annual number of ATM withdrawals per capita, and a fall in the number of cheques issued per capita. The evidence suggests that Ireland is currently experiencing a very marked change in behaviour and a move towards electronic-based payments.

[3] https://blog.revolut.com/swift-sepa-how-international-money-transfers-actually-work/

[4] https://support.n26.com/read/000001427?locale=en

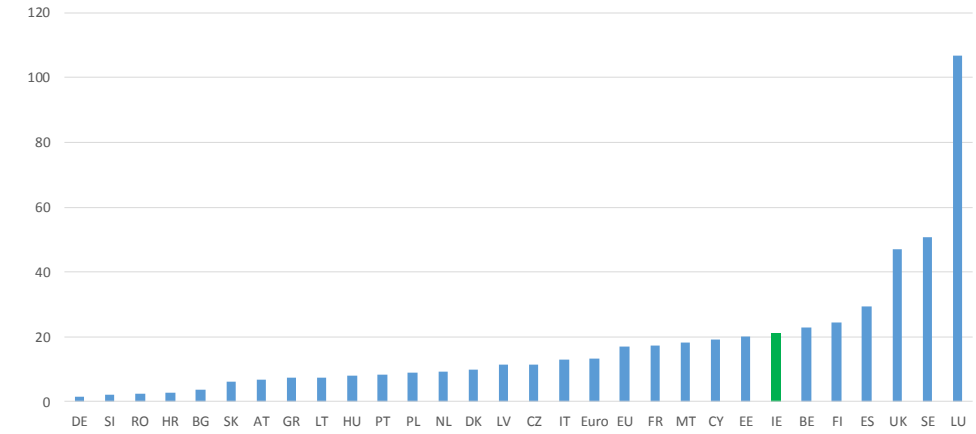
Ireland's rate of usage of Debit and Credit Cards is now higher than most other European countries, though is below the levels observed in Scandinavian countries, which were among the first to embrace card payments. The growth in card usage in Ireland is likely to have been influenced by a number of policy initiatives including the reduction in the interchange fees, and the restructuring of stamp duty announced in Budget 2016.

Debit Card Payments per capita in EU 2016



Note: Includes debit cards, and cards with a debit and/or delayed debit function.

Credit Card Payments per capita in EU 2016

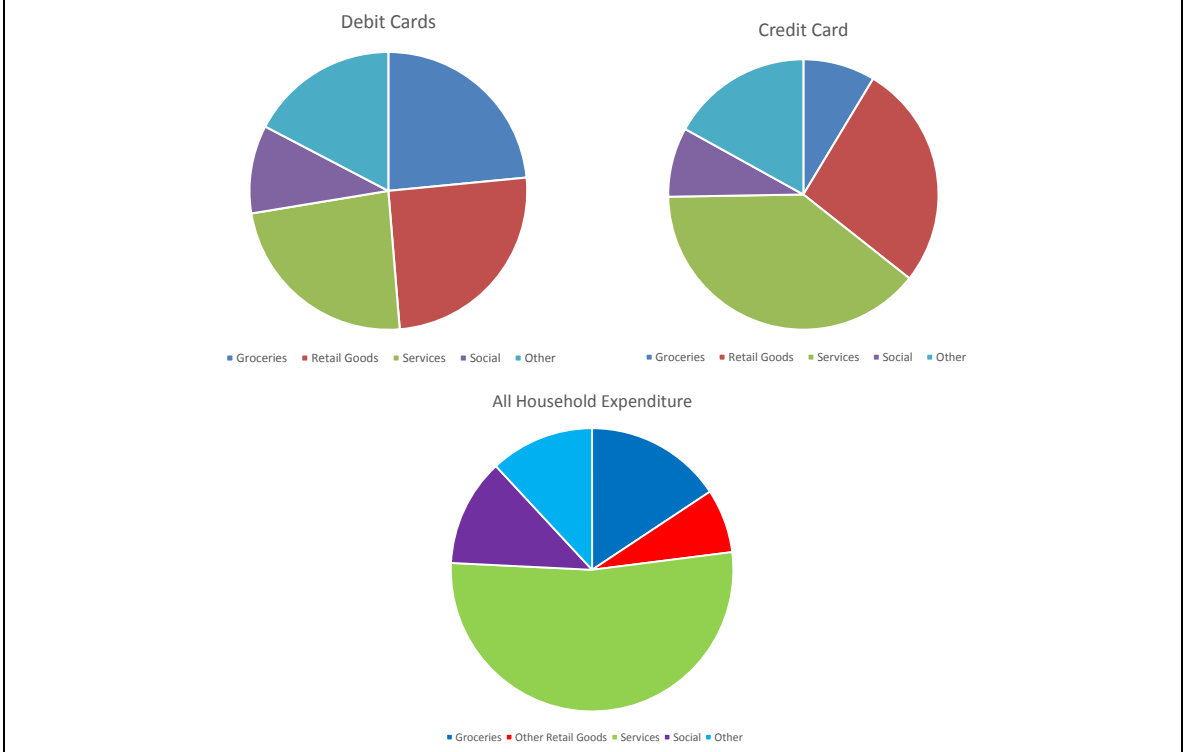


Note: Includes credit cards, and cards with a credit and/or delayed debit function

Source: ECB, 2017.

In examining the sectors where debit and credit cards are used most in Ireland, the data shows that approximately one quarter of debit card expenditure is on groceries, and another quarter is on other retail goods. The mix of credit card expenditure is different with less spend on retail goods and a higher share of spend on services. In terms of future development, it is interesting to compare the debit and credit card spend to overall household expenditures. This shows that the percentage of debit and credit card spend is lower on services than the share of consumer expenditures accounted for by services. This is likely to change over time as the service sector adapts to electronic payments and as ways of making it easier for consumers to use electronic payments accelerate.

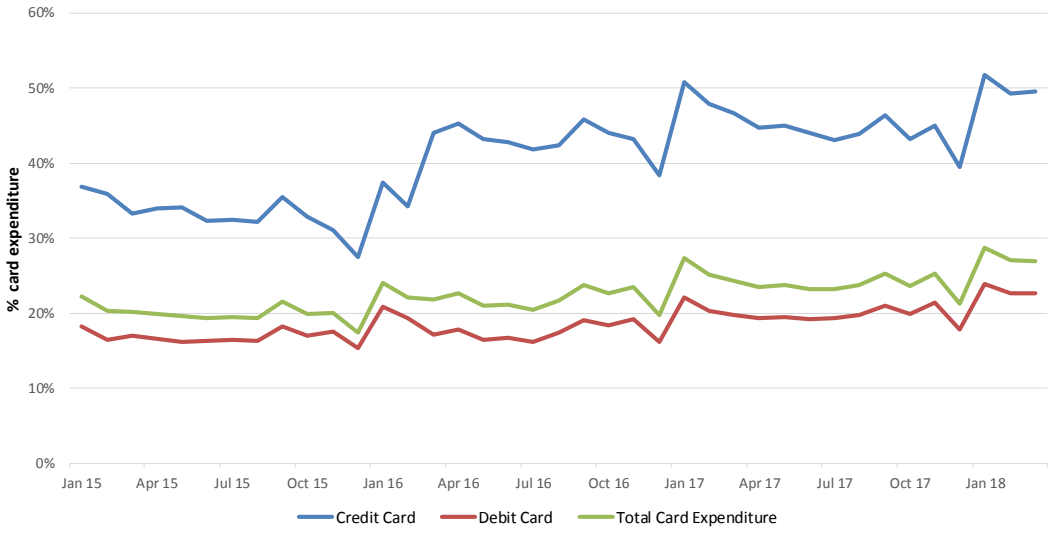
Composition of Debit and Credit Card Expenditure in Ireland



Source: Central Bank of Ireland for Debit and Credit Transactions (2018) and CSO HBS (2015/6) for All Expenditures

As well as shifts in the sectoral pattern of expenditures, there have been important changes in the extent of online transactions. This highlights the need for Irish enterprises to ensure that their businesses can facilitate online transactions. The evidence shows that almost half of Irish credit card expenditure is now made online, compared to just over 20% for debit card transactions. The trend for both types of cards has been upwards, as online expenditure increases in popularity.

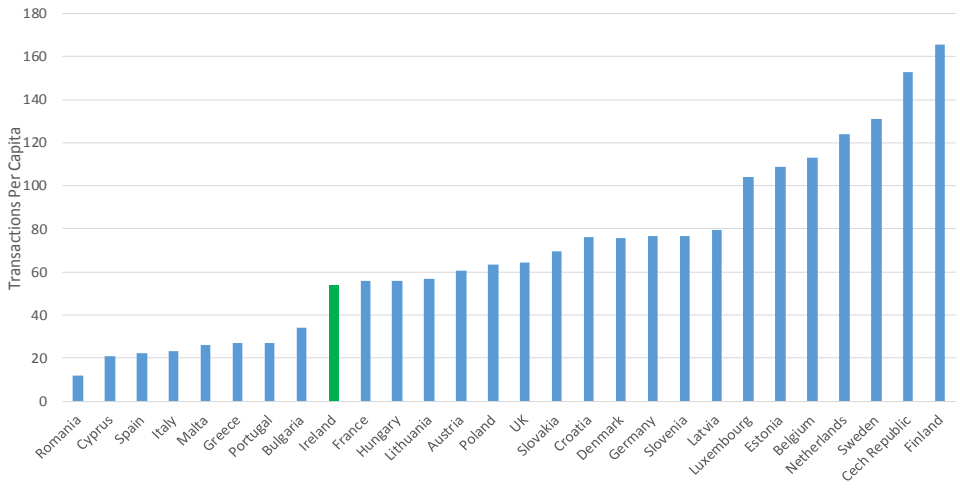
Percentage of Irish Card Expenditure Online, 2015-2018



Source: Central Bank of Ireland

In terms of benchmarking of the number of credit transfers annually, Ireland ranked 19th out of 27 European countries, but there is an upward trend and Ireland experienced significant growth in these transactions over the period since 2012. It is also of note that Ireland's level of credit transfers per capita is much higher than in the eight countries where levels are lower than Ireland.

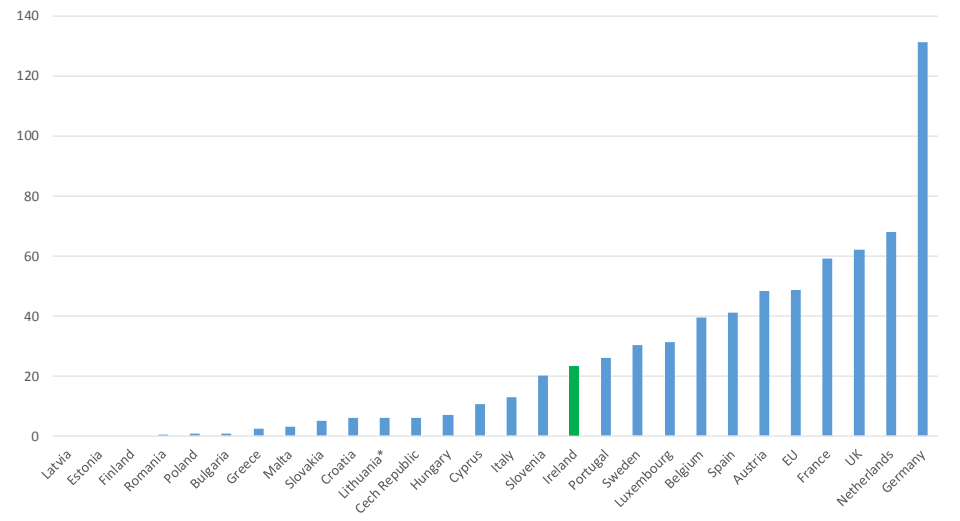
Credit Tansfers per capita, 2016



Source: ECB, 2017

Ireland's levels of direct debit per capita relative to other EU countries shows that we have a higher level of usage than sixteen other EU countries. Very high levels are evident in Germany[5], the Netherlands and the UK.

Direct Debits per capita, 2016

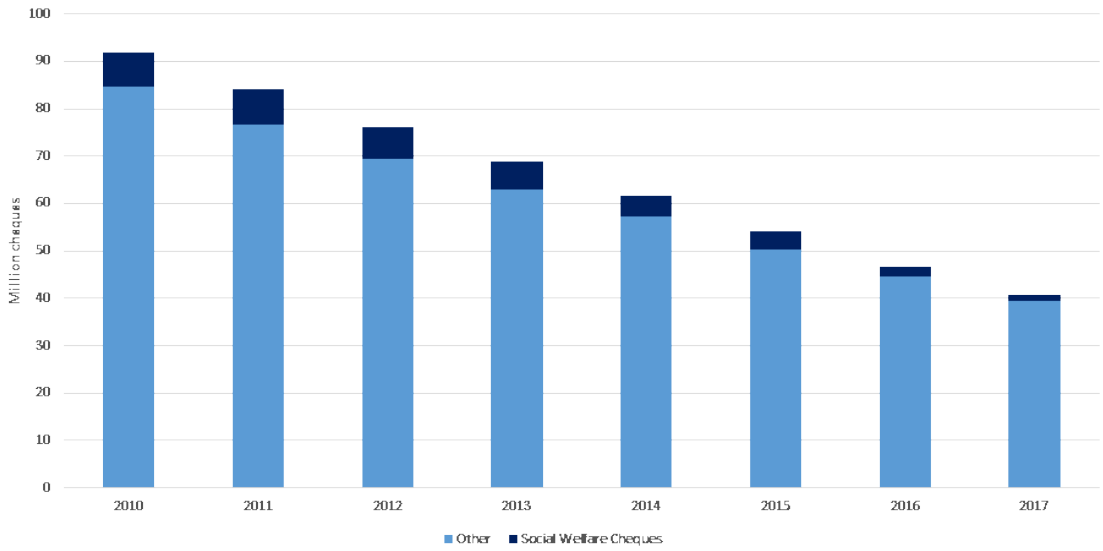


Source: ECB, 2017. *Figures not available for Denmark. Figures for Lithuania refer to 2015.*

[5] In part the high figure for Germany relates to ELV/OLV which are point-of-sale transactions which are processed as direct debits. These are in character more akin to card payments.

The transformation of the payments sector in Ireland can be seen by examining the trend in cheques written which shows a significant decline with numbers halving in less than six years. This is in part due to the reduction in the number of cheques issued by the Department of Employment Affairs and Social Protection. Despite this decline Ireland is one of only a relatively small number of European countries that continue to widely use cheques. However, it should be noted that per capita cheque usage in Ireland is now less than eight per annum, which compares with 237 e-Payments per capita per annum. While cheques remain used in some niche areas of the economy and among particular demographic groupings, they now play a minor role in the broader economy.

Cheque Usage in Ireland, 2010-2017



Source: Central Bank of Ireland, Department of Employment Affairs and Social Protection

Payment Systems and Infrastructure

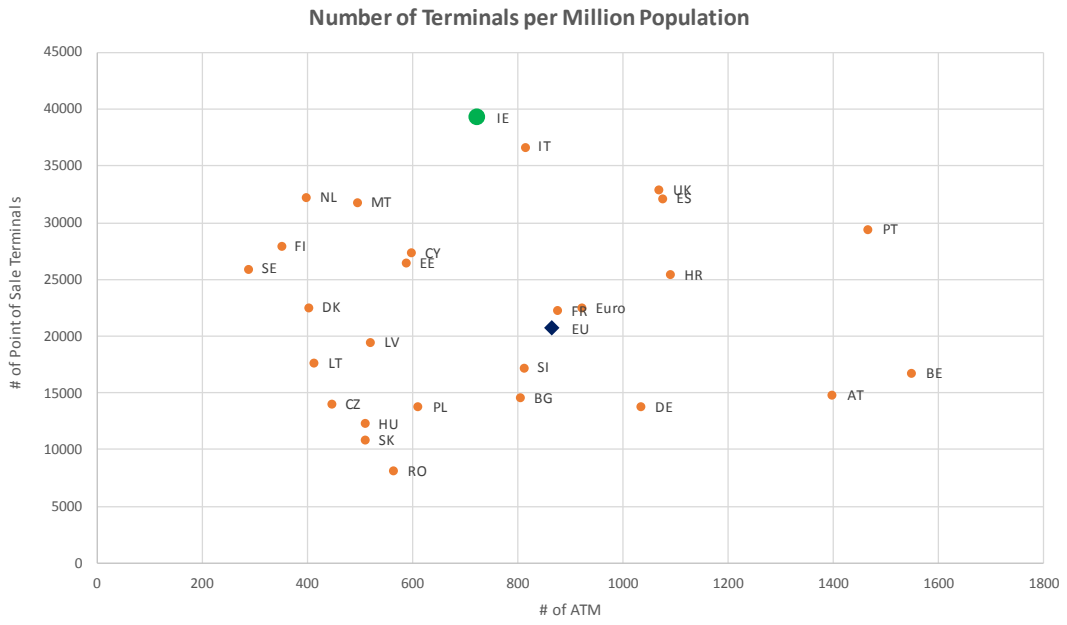
The changes in the payment sector reflects the rapid evolution of payments infrastructure. Ireland's ability to migrate to e-payments is impacted by our access to payments infrastructures. Since the migration to SEPA, the core payments infrastructure on which Irish payments is based is either European or global.[6] Ireland has also migrated away from its domestic legacy Laser debit card scheme[7] to VISA and MasterCard branded cards. Since the advent of SEPA, Ireland's only indigenous payment systems infrastructure is the Irish Paper Clearing Company CLG (IPCC). All of the other payment systems currently in use are 'pan-European' or global and these comprise of:

- TARGET2 – the Eurosystem's real-time, gross settlement system, which is used for large-value payments;
- EURO1 – a private sector, pan-European system operated by a private company – EBA Clearing – that is used for processing large-value, same-day euro transactions;
- STEP2 – the pan-European retail payment system operated by EBA Clearing. STEP2 is used to process all euro-denominated 'retail' payments (e.g., credit transfers); and
- Payment cards (credit/debit/ATM) in Ireland are for the most part provided via the Visa and MasterCard international card schemes.

[6] UCC (2016) "Role of Digitalisation and innovation in creating a true single market for retail financial services and insurance."
[7] These were often co-branded with international schemes to facilitate greater acceptance both online and internationally.

There are differences as to the number of ATM and Point of Sale terminals in different countries. The next figure shows that Ireland has a lower than average number of ATMs compared to the EU, but a higher than average number of Point of Sale terminals.

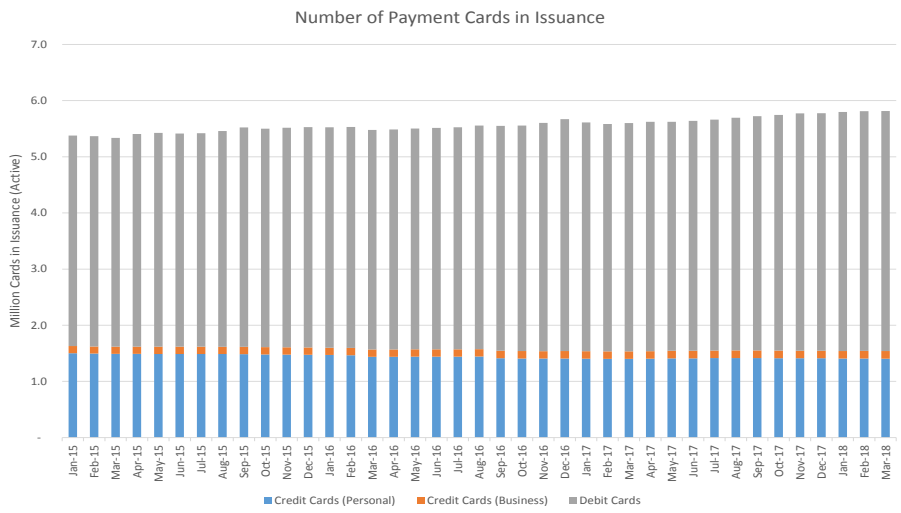
Number of ATMs and Point of Sales Terminals per million population



Source: ECB (2017). *Luxembourg and Greece report a high number of POS terminals per million (287,000 and 59,000 respectively) and are excluded to ensure the graph is readable.*

An important element of payment infrastructure relates to the number of cards in issuance. As can be seen in Figure 3.4 below, the aggregate number of cards in issuance is now close to six million in Ireland.

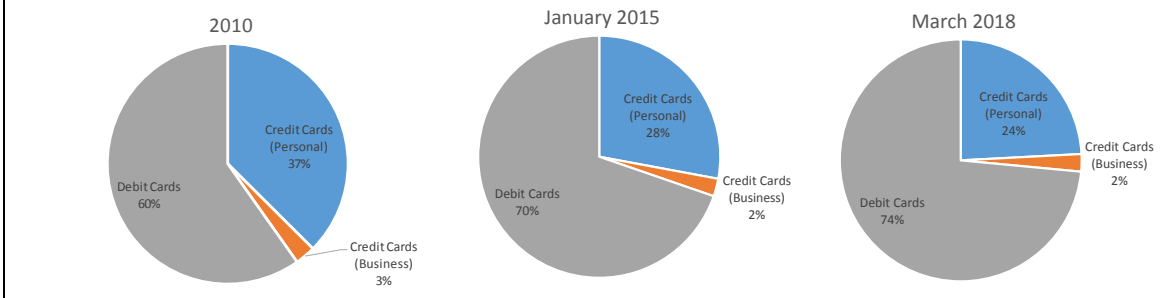
Number of Payment Cards in Issuance, 2015-2018



Source: Central Bank of Ireland

Debit cards now account for 74% of all cards in issuance in Ireland. This highlights the importance of debit cards in considering the future of Irish electronic payments. The evidence also shows a strong increase in the share of debit cards which may reflect the mainstream rollout of contactless card functionality on debit cards from 2015.

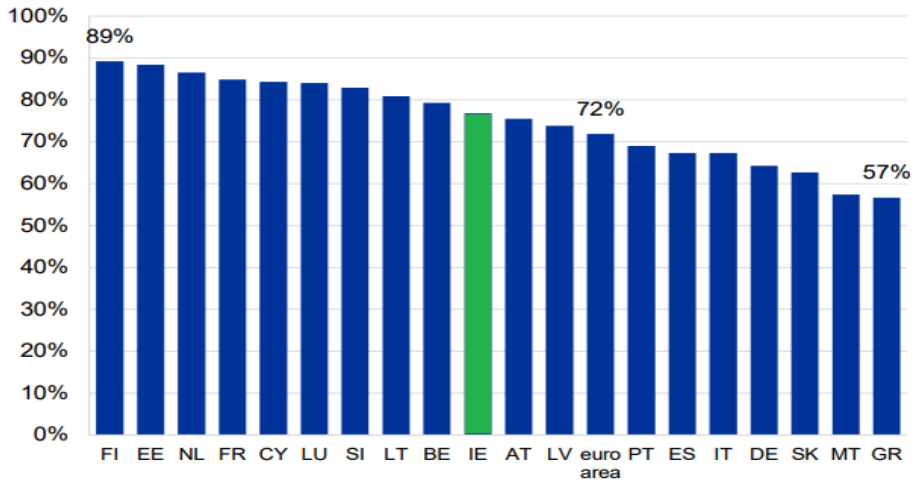
Breakdown of Irish Cards in Issuance by Function, 2010-2018[8]



Source: Central Bank of Ireland

The development of payment infrastructure in Ireland has altered consumer perceptions and behaviour. Survey evidence with Irish consumers indicates a slightly higher perceived availability of non-cash alternatives than the EU average as shown in the next figure.

Pereception of Availability of Non-Cash forms of Payment, 2016[9]



Source: Esselink and Hernández (2017)[10]

[8] Note that the Central Bank statistics only include personal debit cards. Business debit cards are increasingly in issuance, though are thought to constitute a very small proportion of the total number of payment cards in issuance in Ireland.

[9] Figures for Germany relate to 2014.

[10] "The use of cash by households in the euro area", ECB Occasional Paper.

New Payment Technologies

Payments technology is evolving very rapidly, enabled by regulatory measures to open up payment markets to competition on a pan-European basis. Given the rate of innovation within payments, it is not possible to definitively predict which FinTech developments will gain widespread acceptance. However, there are a number of areas which merit ongoing monitoring. These include:

- Instant Payments;
- Access to accounts under PSD2;
- Distributed ledger technology;
- Cryptocurrencies; and
- Central bank issued digital currency.

Value of Competition/Collaboration in Payments

Payment systems are commonly characterised by a series of collaborative arrangements alongside competition in downstream provision of payment services ('upstream cooperation combined with downstream competition'). Historically, there was a high level of collaboration by the main Irish banks regarding their payment systems. This was driven by the need to provide the core 'upstream' infrastructure on which paper and electronic payment systems depend. Since the migration to SEPA, the core payments infrastructure on which Irish electronic payments are based are now either European or global, which has lessened the need for collaboration between the Irish banks. Irish banks have also migrated away from the domestic legacy Laser debit card scheme to VISA and MasterCard branded cards.

For paper-based payments, domestic collaboration continues to exist in the form of the Irish Paper Clearing Company which was formed in 2002. ATM services in Ireland are provided by banks directly to their customers, though a series of bilateral agreements exist between the banks to allow access by customers of the ATMs of competitor banks. ATM processing can also be achieved in Ireland via card schemes.

While the core payment infrastructure which underpins electronic payments made in Ireland is now provided on a global basis, there are still potential opportunities for collaboration. For example, the roll-out of mobile-based Instant Payment solutions in Ireland is an area of potential collaboration, such as is already seen with SWISH in Sweden. However, market segments such as this are increasingly typified by competition in parallel to collaboration. For example, mobile phone and Internet-initiated transactions and instant or close to instant P2P payments are also provided by, for example, PayPal, Square, Venmo, Alipay or Google Wallet, among others. New FinTech applications which compete with existing payment services from banks may explain why open banking arrangements are being developed for Europe. With open banking, third-party firms are allowed to access an individual's bank financial information – with the consent of the account holder - and can make transactions and initiate other financial arrangements on their behalf, in competition with the account holding bank. This will further open the payments market and can represent new forms of competition for existing banks.

Indecon believes that the extent of co-operation in the payment sector should be determined by market participants rather than by policy direction, subject to ensuring compliance with relevant Irish and EU competition law.

Payments and the Enterprise Economy

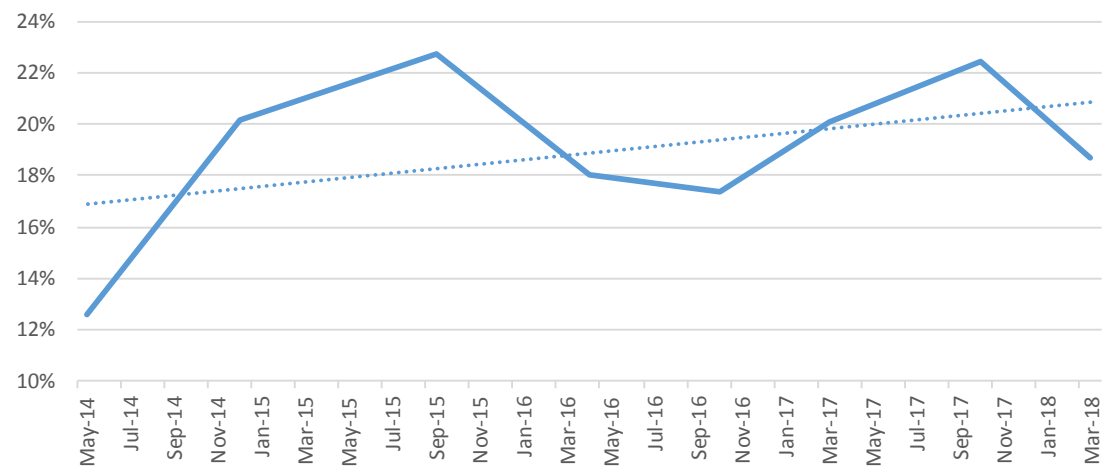
It is useful to consider the role of payments in the real economy and this is influenced by the costs and convenience of different payment methods. The costs faced by enterprises for each form of payment is sensitive to the value of the transaction involved. Typically Chip & PIN is used for larger transaction values, while the average value for cash and contactless transactions is similar, indicating that these are direct

competitors. In Ireland, the use of cash is common for small-value transactions, although the rate of use of contactless payment is rising rapidly.

The length of time per transaction depends to an extent on the average value of the transaction, even when a particular payment method is considered. For very large enterprises, economies of scale may allow for lower average cost levels. New evidence presented in this study shows that direct cost per transaction by card of a large retailer in Ireland compared to a retailer in the same sector in the UK suggests that the costs were 0.09% lower in Ireland (as a percentage of transaction value) than in the UK. This is due in part to the lower cap on interchange fees on debit cards in Ireland.

In considering the readiness of enterprises in Ireland to respond to the developments in electronic payments, it is of note that around one in five have a website which includes the ability for consumers to make payments. This is illustrated in the next figure. Given the evidence on the percentage of online credit card payments presented earlier in this report, this suggests the need for further progress by enterprises in Ireland to embrace the use of e-payments.

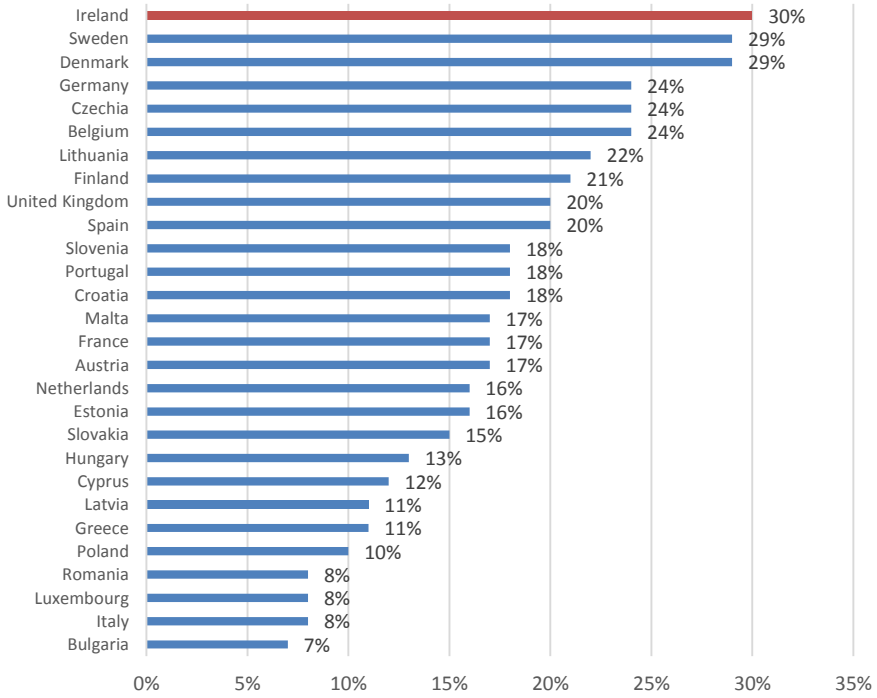
Percentage of SMEs with Websites with Online Payment functionality, 2014-2018



Source: Dot i.e. Digital Health Index, various editions. Note: Trendline is shown as the dotted line.

Of note is that the number of enterprises selling online is greater than the number of firms which offer the ability for consumers to make online payments. Survey evidence provided by the Eurostat suggests that around 30% of Irish enterprises are selling online and indeed the survey results suggest that this is higher than in other European countries. Encouragingly, the evidence also indicates that eCommerce turnover from enterprises in Ireland as a percentage of total sales was higher than in the other EU countries.

Enterprises selling online (at least 1% of turnover)



Source: Eurostat

There are a number of current initiatives in this area which are designed to assist businesses to have the capacity to respond to changes in the usage of electronic payments. Indecon notes for example that in September 2018 the Department of Business, Enterprise and Innovation, launched a €625,000 pilot competitive scheme to support retailers to strengthen their online trading capabilities in order to compete internationally. The purpose of this scheme is to support Irish owned SMEs to embed a more sophisticated online trading (e-tailing) strategy in their business model.

In supporting businesses to develop their digital presence to avoid missed opportunities the Department of Communications, Climate Action and Environment introduced a Trading Online Voucher Scheme and teamed up with the Local Enterprise Offices to roll out the scheme under the National Digital Strategy. This offers a small business the opportunity to develop their website or digital marketing strategy by availing of vouchers of up to €2,500 or 50% of expenditure.

Economic and Risk Analysis

Our economic analysis of electronic payments suggests that there are benefits and also costs of adopting e-payments. The economic benefits supporting the move to a higher level of adoption of electronic payments include potentially lower costs to consumer and enterprise and also enhanced competitiveness. Electronic payments can also facilitate the development of innovative firms.

The economic costs of electronic payments include potential loss in economic activity from competition from overseas and the exclusion of more vulnerable members of Irish society. A key economic cost is the greater level of risk if there is a systematic failure in the electronic payment systems. A summary of the costs and benefits and risks of adopting e-payments is presented in the figure below.

Economic Costs and Benefits of Adopting e-Payments	
Economic Benefits	**Economic Costs**
Reduce resource costs of facilitating payments. For countries with the greatest take-up of e-Payments, the average cost of the Payment System is estimated at 0.8% of GDP, rising to 1.2% for those countries with a relatively paper-based payment system.[11]	Increase competition from abroad for retailers and other producers and could reduce domestic economic activity
Make tax evasion and other illegal activities difficult. Doubling of card payments could lead to reduction of shadow economy by 0.6–3.7% of GDP and increase government revenues by 0.1–0.8% of GDP.	Dependency on more sophisticated electronic means may exclude more vulnerable members of society.
Improvements in competitiveness	Risk of greater impact if there is a systematic failure of electronic payments system.
Paper currency and coins may be a public health and physical criminal risk	
Support enterprise development and facilitate other digital innovations (e.g. web commerce, and shared economy services.	
Source: Indecon	

The above costs and benefits of adopting e-payments is related to the potential risks and potential benefits of advances in technology concerning how FinTech is changing financial products. These are presented in the table below.

Potential Benefits and Potential Risks of Advances in Technology	
Speed and convenience: FinTech products tend to be delivered online and so are easier and quicker for consumers to access. **Greater choice**: Consumers benefit from a greater choice of products and services because they can be bought remotely, regardless of location. **Cheaper deals**: FinTech companies may not need to invest money in a physical infrastructure like a branch network so may be able to offer cheaper deals to consumers. **More personalised products**: Technology allows FinTech companies to collect and store more information on customers so they may be able to offer consumers more personalised products or services.	**Unclear rights**: FinTech companies may be new to the financial industry and use different business models. This can make it harder to ascertain which ones are regulated, and what consumer rights are if something goes wrong. **Making rash decisions**: Products that are bought instantly online without meeting anyone face-to-face may make it easier for consumers to make uninformed decisions. **Technology-based risks**: Products bought online may leave consumers more exposed to technology-based risks. E.g., personal data being mis-used or a consumer falling victim to cybercrime.
Source: Central Bank of Ireland	

[11] ECB (2012)

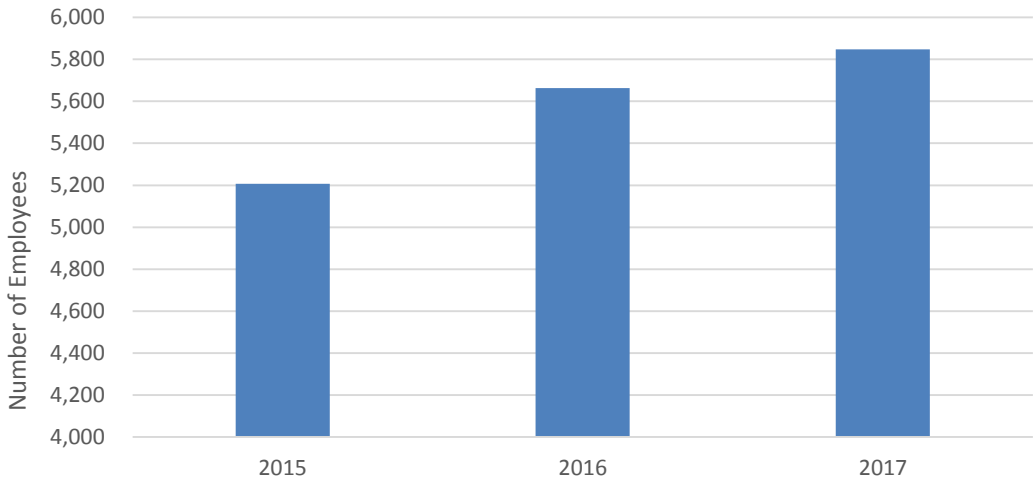
The adoption of e-payments increases certain risks. The two key risks are presented in the table below.

Risks of Adopting Electronic Payments
Ownership and Control Risks/fears regarding ownership and control of the payment system. This was raised in 2018 by the Swedish Central Bank and the Norwegian Central Bank.
Outage Lack of an alternative in case of an outage.
Source: Indecon

Irish FinTech Payments Sector

In recent years, enterprises involved in electronic payments which are a sub-sector of the FinTech industry have developed in Ireland. These firms are typically export oriented, with the aim to service European and international markets. New evidence obtained for this study has demonstrated the economic scale of the payments sector in Ireland. This excludes traditional domestically focused payment firms, such as the main retail banks, Credit Unions or An Post. The employment in the payment sector in Ireland is estimated to have reached 5,800 in 2017. This includes both indigenous and foreign-owned firms. The sector has also shown growth in recent periods.

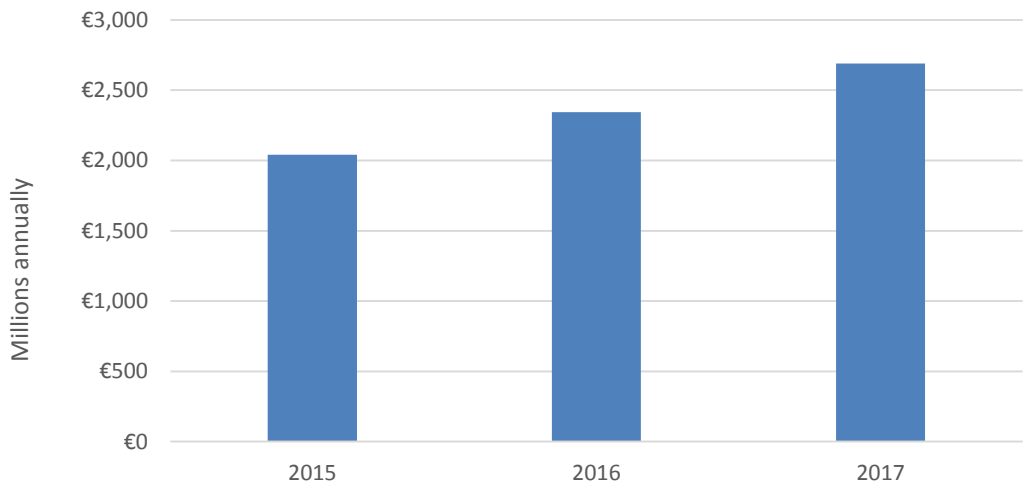
Employment in Ireland's Payment FinTech Industry, 2015-2017



Source: Annual Employment Service (ABSEI) Indecon are grateful to the Department of Business, Innovation and Enterprise and to Enterprise Ireland for access to aggregate data from ABSEI. Note: Figures for 2017 are provisional

The level of annual sales of the payment sector in 2017 was €2.7bn. This indicates the payment sector is a significant sub-sector and is growing at a relatively fast rate.

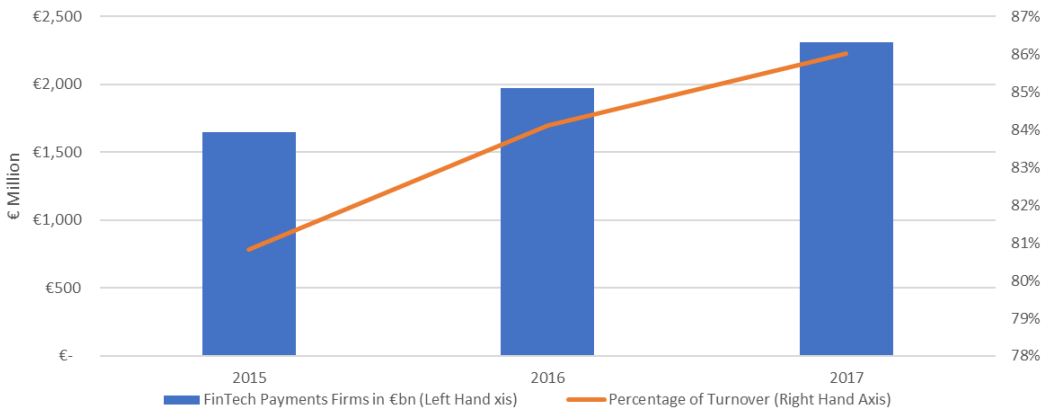
Turnover of Ireland's Payment FinTech Industry, 2015-2017



Source: ABSEI. Note, Figures for 2017 are provisional

The international focus of the sector is reflected in the levels of exports which in 2017 were estimated to be €2.3bn.

Exports of Ireland's Payment FinTech Industry, 2015-2017



Source: ABSEI

In addition to the direct employment of 5,848 employees in 2017 in the sector, a further 3,734 jobs can be associated by the activity of the industry in terms of indirect impacts, and a further 5,948 jobs in terms of induced impacts. This gives an overall employment impact of 15,566 in 2017. Indecon would, however, note that there is a very high opportunity cost for skilled labour in the Irish economy and all economic activity impacts on other sectors. One interesting feature of the payment sector is the regional location of many firms. Some illustrative examples of payment firms with operations outside of Dublin are presented in the table below.

Example of Payments Firms based in Irish Regions		
Name of Company	**Summary of Activities**	**Location**
		South-East
Bluefin Payment Systems Ireland	Payment Security Company	Waterford
Paytient Payments	Payment platform for Dentists	Gorey, Co. Wexford
		South-West
Fexco	DCC, MCP, FX, Treasury, Tax Refunds, Corporate Payments	Killorglin, Co Kerry
Monex Financial Services	DCC, MCP	Killarney, Co Kerry
Continuum Commerce	DCC, MCP	Tralee, Co Kerry
		Mid-East
Vesta Payment Solutions Limited	Credit card payment protection systems	Dundalk
Yapstone	Multilingual Customer Support	Drogheda
PerfectCard	Prepaid Mastercard	Kilcoole, Wicklow
Sentenial	SEPA Payments	Maynooth, Co. Kildare
Smart Transfer	Prepaid Mastercard / Gift Card	Naas, Co. Kildare
eComm Merchant Solutions	Payment Gateway	Navan, Co Meath
		West
Applied Communications Ireland	Electronic payments processing services and development	Limerick
Source: IDA Ireland, Website Database and Enterprise Ireland		

Implications from Findings

A number of issues arise from the empirical evidence on the developments of payments in Ireland and the comparison with other countries presented in this report. Some key conclusions from the analysis are as outlined below:

1. **Ireland has made very significant progress in moving from a cash-dependent economy towards electronic payments.**

The scale of progress made in a number of areas may be greater than was previously assumed. While the highest usage of electronic payments can be seen in the Scandinavian countries, Ireland now has a higher number of e-payment transactions per capita compared to the EU average and Ireland's card usage is 35% higher than the EU average. The transformation of the payments sector in Ireland can be seen by examining the evidence on cheques written which shows numbers halving in less than six years.

2. **The rapid advancement in electronic payments has benefits for the Irish economy including improvements in efficiency and convenience, but there are also some concerns about security and the continuity of payment systems in Ireland, which suggests the need for contingency planning to provide for the risk of an outage in electronic payments.**

This is particularly the case given the absence of an indigenous payment system. This suggests that while measures to encourage greater use of electronic payments should continue, a one hundred per cent cashless society is unlikely to be an appropriate objective especially as cash can act as a safety net if electronic payment systems fail.

3. **There have been important changes in electronic payments impacting on the enterprise sector. These include the fact that almost half of Irish credit card expenditure is now made online and while Irish enterprise compares well to other European countries, further progress is needed to embrace the use of e-payments.**

This highlights the need to ensure that Irish enterprises can facilitate online transactions. An issue in considering how prepared are enterprises in Ireland to respond to the developments in electronic payments is related to the fact that only around one in five SMEs have online payment functionality.

4. **The evidence in the report indicates that there is a risk that some segments of Ireland's society could be excluded by an acceleration of a move to electronic payments.**

In this regard the availability and take-up of payments accounts with basic features over the past two years is of note and is a welcome development.

5. **The report has demonstrated the significance of the payments industry in Ireland and for the first time has provided quantitative estimates of the scale of the sector.**

This indicates direct employment of approximately 5,848 individuals and a wider knock-on impact on the economy. One notable feature of the payment sector is the regional location of many firms.

Conclusion

It is hoped that evidence in this report will facilitate policy development to promote the use of electronic payments in Ireland in a way which takes account of the benefits and risks and of the complexities of the issues involved.

1 Introduction, Background and Methodology

1.1 Introduction

This report represents an independent evidence-based study of payment usage in Ireland, which benchmarks the Irish experience to other countries in order to get a better understanding of payments in Ireland. Following a competitive tender, Indecon Research Economists were appointed by the Minister for Finance to complete this study to inform future policy development.

1.2 Background to Research

Payments play a crucial role in a modern economy, and the way in which payments are made is changing rapidly. The goals of this research project are to:

- Identify the current position, trends and the likelihood of change with respect to payments in Ireland;
- To, where possible, benchmark Ireland against the EU average and against selected individual countries; and
- To consider the economic and other risks of adopting or not adopting electronic payments.

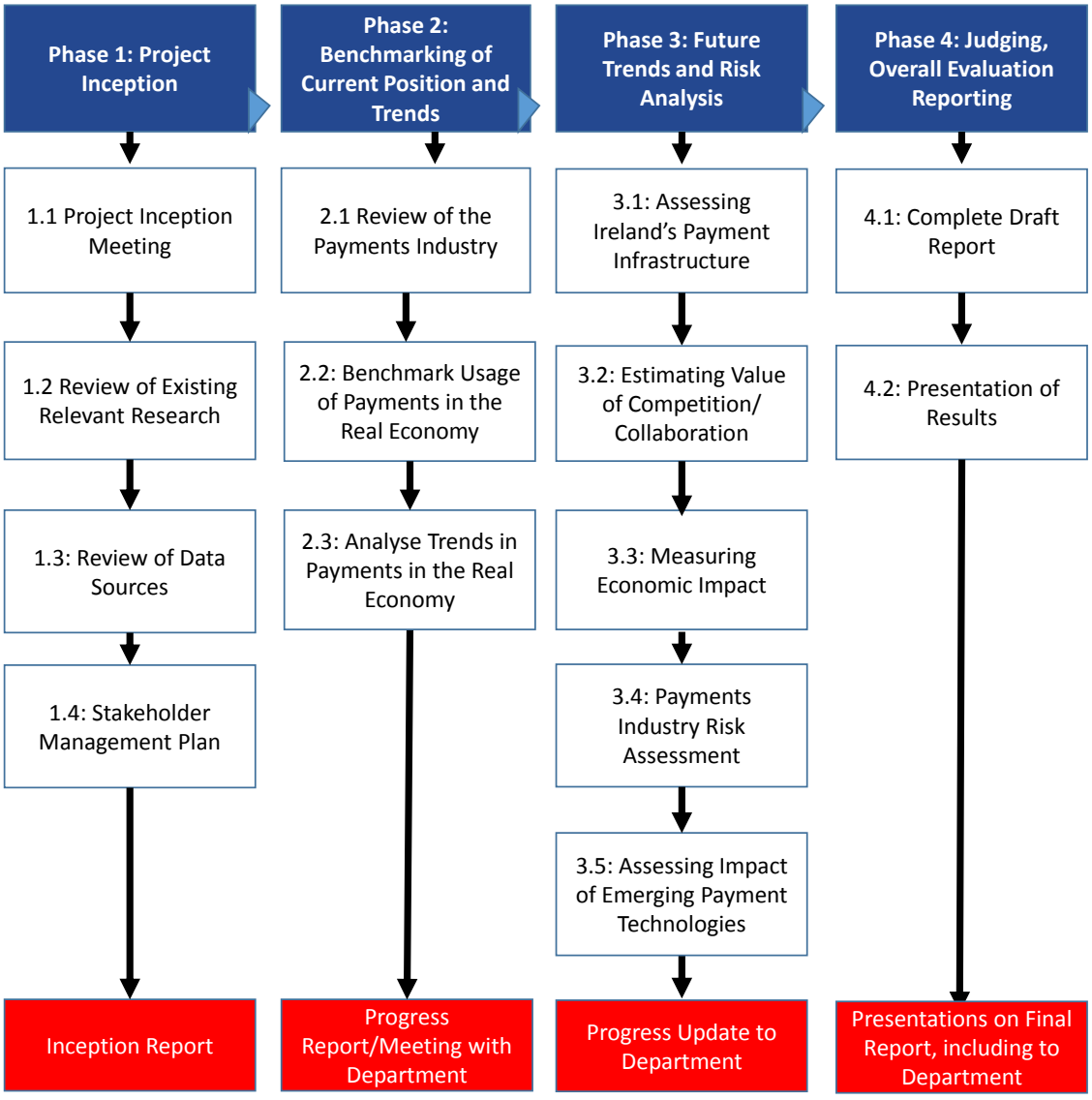
Electronic payment systems represent a way of paying for goods or services electronically, as opposed to a manual, 'paper based' system of payments such as cash or cheques. Examples include payment by direct debit or a payment using a credit card, or via contactless methods. Developments in electronic payments are likely to impact on a wide range of sectors including transportation, retailing, health and professional services as well as the financial sector. Electronic payments and FinTech companies may also provide access to finance for start-up companies and facilitate companies to trade internationally.

Developments in the payments sector raise a number of complex issues which will be influenced by policy, market and technological factors. It should be noted that while there are significant benefits for enterprise and for consumers of enhanced electronic payments, there are also risks. Policymakers therefore should seek to develop the industry and payments systems in Ireland in a way that supports financial stability, consumer protection, and enhances competitiveness.

1.3 Methodological Approach to Review

This review study was completed on the basis of a rigorous methodological approach, based on a four-phased work programme. An overview of this work programme, including associated research, engagement and analytical elements, is presented in the next figure.

Figure 1.1: Description of Methodological Approach to Review



Source: Indecon

1.4 Report Structure

The remainder of the report is structured as follows:

- Section 2 sets out how Ireland's payment usage patterns have changed in recent years, and to benchmark these internationally;
- Section 3 gives an overview of Ireland's payment systems infrastructure, and examines recent and upcoming developments in payments, as well the value of competition in the market and the disruptive effects of new technology;
- Section 4 examines payments and the enterprise economy, including the capacity of businesses to embrace the use of e-payments and the costs associated with that;
- In Section 5, the report reports an economic and risk analysis on the payments industry in Ireland;
- In Section 6, the report examines the economic impact of the export-oriented payments industry, in terms of employment, size of sector, geographical distribution, and contribution to the economy; and
- Section 7 provides the key conclusions from the analysis.

1.5 Acknowledgements and Disclaimer

Indecon would like to acknowledge the valuable assistance and inputs to this evaluation provided from the Department of Finance. Specifically, we would like to acknowledge the inputs of Gary Tobin, Emma Cunningham, John Phelan, John O'Callaghan and Jane Hughes. Particular thanks are also due to Julie Sinnamon, Rowena Dwyer, Eileen O'Neill, Giles O'Neill and Eoin Fitzgerald of Enterprise Ireland and to David Hegarty, Maurice Dagg, Cormac Nolan of the Department of Business, Enterprise and Innovation for facilitating access to information on the Irish payments industry. We would also like to acknowledge the inputs of officials from the National Cyber Security Centre in the Department of Communications, Climate Action and Environment, in particular Dr. Richard Brown, as well as the inputs of Finian McCluskey in the Department of Employment Affairs and Social Protection. We also appreciate the inputs of the Central Bank of Ireland, in particular William Molloy, John Geelon and Peter Hopkins.

We would also like to thank other organisations and individuals for their useful inputs, including: Maurice Crowley, Richard Walsh and Sharon Brennan of the Banking and Payments Federation Ireland; Michael Concannon of the FinTech and Payments Association of Ireland, as well as all participants of the FPAI Payments Working Group; Philip Konopik of Visa Ireland; Jennifer Duncan and Sonya Geelon of MasterCard; Robert Cowle of Vocalink; JB McCarthy and Fergal Carton of the Financial Services Innovation Centre in University College Cork; John Rice of An Post; Barry Manning of Danske Bank; and Ruth McCarthy of Fexco. We would also like to thank other organisations which provided useful comparative material on an anonymous basis which aided in the international benchmarking of Ireland's payment landscape against international peers. Indecon would also like to acknowledge the valuable inputs from Professor David Humphrey of Florida State University.

The usual disclaimer applies and responsibility for the analysis and findings in this independent report remains the sole responsibility of Indecon.

2 Benchmarking Ireland's Payments Usage

2.1 Introduction

There is a global trend towards the increased take-up of electronic payments. Non-cash transaction volumes are currently rising faster than any other time in the last decade, with volumes growing at over ten per cent per annum.[12] While historically Ireland has been a relatively cash-intensive economy, significant progress has been made and a rapid increase in the take-up of electronic payments is evident.

In this section we examine the uptake of the main payment methods in Ireland and compares Ireland's patterns to those of other EU countries. The research also shows trends in usage over recent years, in particular how Ireland's patterns of payment usage have changed compared with the rest of Europe.

2.2 Overview of Usage Patterns

In overall terms, Ireland had 237 electronic payments per capita in 2016, of which two-thirds relate to card payments. Ireland is ranked 10th out of 27[13] European countries for the combined use of card payments, credit transfers and direct debits, and is ahead of the EU average. Ireland's overall ranking reflects a high ranking in terms of card usage (8th). (See Table 2.1).

The ranking of 8th in terms of card usage represents a significant improvement since 2012. Ireland's relative position in terms of Credit Transfer and Direct Debit also represents an improvement over the same time period. Overall, Ireland's ranking for electronic payments shows that while the move towards greater use of electronic payments has been evident across Europe, the progress of Ireland has been faster.

The highest usage of electronic payments can be seen in Sweden and Finland followed by the Netherlands. Ireland is ahead of 17 countries, and the lower level of electronic payments in these countries reflects both different choices of payment channel, as well as lower average household disposable income in these countries. The figures for SEPA include payments related to traditional banks, but also new entrants such as Revolut[14] and N26,[15] while the card payment statistics include payments such as ApplePay or GooglePay.

[12] CapGemini and BNP Paribas (2017) "World Payments Report 2017."

[13] Data on Direct Debits unavailable for Denmark.

[14] https://blog.revolut.com/swift-sepa-how-international-money-transfers-actually-work/

[15] https://support.n26.com/read/000001427?locale=en

Table 2.1: Number of e-Payment Transactions Per Capita, 2016						
	Card	Rank (out of 27)	Credit Transfer + Direct Debit	Rank (out of 27)	Total Card, CT, DD	Rank (out of 27)
Sweden	319	1	162	4	**481**	**1**
Finland	280	2	165	3	**445**	**2**
Netherlands	232	4	192	2	**424**	**3**
UK	250	3	127	8	**376**	**4**
Luxembourg	216	6	136	7	**351**	**5**
Estonia	217	5	109	11	**326**	**6**
Belgium	151	9	153	6	**304**	**7**
France	165	7	115	9	**280**	**8**
Germany	49	23	208	1	**258**	**9**
Ireland	**158**	**8**	**79**	**15**	**237**	**10**
Czech Republic	71	17	159	5	**229**	**11**
Latvia	124	11	80	14	**203**	**12**
Portugal	145	10	53	21	**198**	**13**
Austria	74	16	109	10	**184**	**14**
Slovenia	79	14	97	12	**176**	**15**
Poland	83	12	64	17	**147**	**16**
Croatia	64	19	82	13	**146**	**17**
Lithuania	82	13	63	20	**145**	**18**
Slovakia	67	18	75	16	**142**	**19**
Spain	75	15	64	18	**138**	**20**
Hungary	54	22	63	19	**117**	**21**
Cyprus	59	20	32	24	**91**	**22**
Malta	57	21	29	26	**86**	**23**
Italy	43	24	36	22	**79**	**24**
Greece	28	25	29	25	**57**	**25**
Bulgaria	13	27	35	23	**48**	**26**
Romania	18	26	13	27	**30**	**27**
EU	**117**		**109**		**225**	

Source: ECB, 2017. *Note: Denmark not included as figure for Direct Debits for Denmark not published by ECB.*

Despite the growth in electronic payment, cash and cheques continue to be important payment mechanisms in Ireland. Since 2012, however, there has been a notable reduction in the annual number of ATM withdrawals per capita, and a fall in the number of cheques issued per capita. The next table shows the comparison of paper-based transactions, namely ATM withdrawals and cheques.

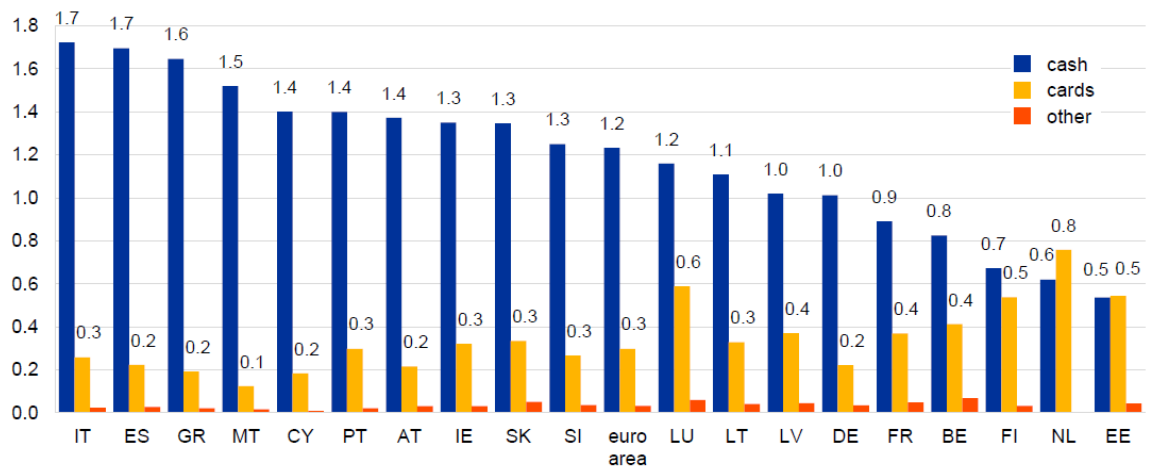
Table 2.2: Number of Paper-Based Transactions Per Capita, 2016						
	ATM Withdrawals	**Rank (out of 27)**	**Cheque**	**Rank (out of 27)**	**Total ATM, Cheque**	**Rank (out of 27)**
France	25	13	32	1	**57**	**1**
Malta	31	5	19	2	**50**	**2**
Portugal	45	1	6	6	**50**	**3**
UK	42	2	7	5	**49**	**4**
Ireland	33	4	8	4	**41**	**5**
Cyprus	20	17	17	3	**37**	**6**
Austria	34	3	0	13	**34**	**7**
Estonia	28	6	0	15	**28**	**8**
Belgium	27	9	1	9	**28**	**9**
Latvia	27	7	0	15	**27**	**10**
Croatia	27	8	0	15	**27**	**11**
Germany	26	10	0	12	**27**	**12**
Slovenia	26	11	0	15	**26**	**13**
Luxembourg	25	12	0	11	**26**	**14**
Finland	22	14	0	15	**22**	**15**
Greece	21	16	1	10	**22**	**16**
Spain	20	19	1	8	**21**	**17**
Lithuania	21	15	0	15	**21**	**18**
Netherlands	20	18	0	15	**20**	**19**
Italy	17	23	3	7	**20**	**20**
Poland	19	20	0	15	**19**	**21**
Slovakia	18	21	0	15	**18**	**22**
Czech Republic	17	22	0	15	**17**	**23**
Bulgaria	16	24	0	15	**16**	**24**
Sweden	14	25	0	15	**14**	**25**
Romania	12	26	0	13	**13**	**26**
Hungary	12	27	0	15	**12**	**27**
EU	**24**		**6**		**30**	

Source: ECB (2017). *Note: Figures for cash withdrawals not published by the ECB for Denmark.*

A single ATM withdrawal of cash may be used to finance numerous transactions, or may be used for some other purpose, such as a store of value. As such, it is useful to compare the statistics above regarding number of ATM withdrawals[16] with statistics relating to the number of reported transactions, as shown in the next figure. It shows that Ireland has a higher number of cash transactions than the Euro-area average. The Netherlands and Estonia report a higher number of card than cash transactions on a daily basis.

[16] Other sources of cash are 'Over The Counter' (OTC) in bank branches, Credit Unions or Post Offices, as well as through cash-back at the point of sale. Comparative international figures for OTC withdrawals or cash back are not available, though are thought to represent a relatively small aggregate value compared to ATM withdrawals.

Figure 2.1: Number of Transactions per Person per Day, 2017[17]

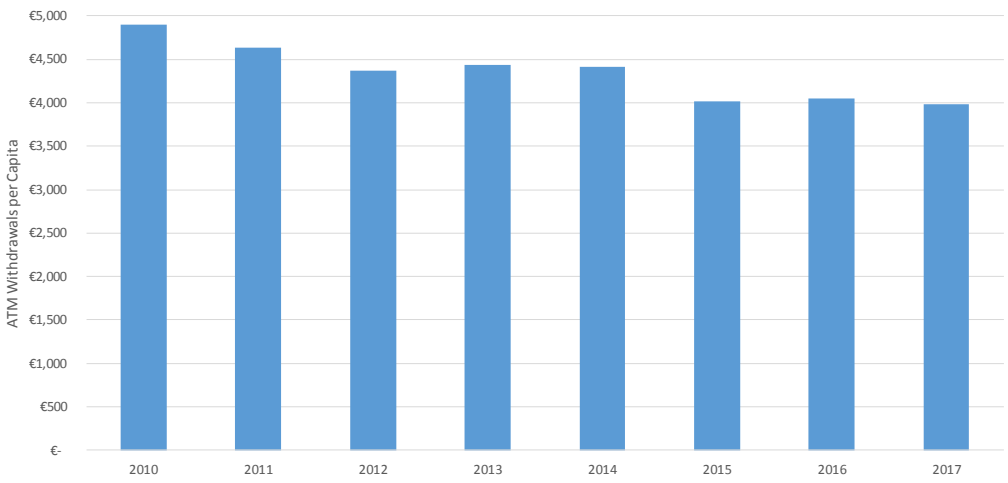


Source: Esselink and Hernández (2017)

2.3 Cash Usage

Cash enters the Irish economy in a number of ways, the most important of which is through the ATM network and though the Post Office network[16]. The next figure shows that the value of ATM withdrawals per capita in Ireland, which was four thousand euro in 2017, has been in decline for a number of years.

Figure 2.2: Value of ATM Withdrawals in Ireland per Capita, 2010-2017

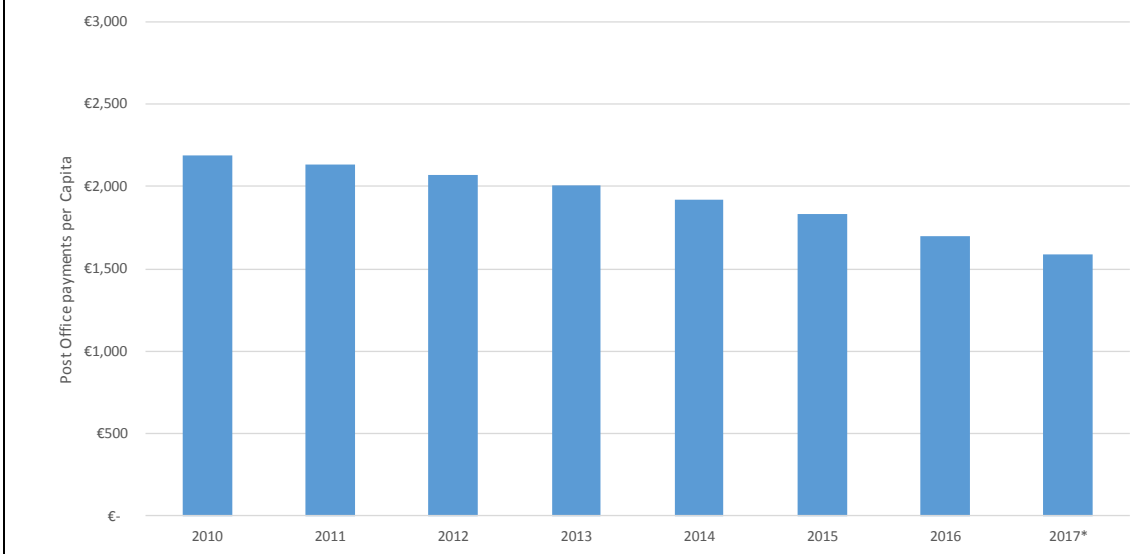


Source: ECB (2017) and BPFI

[17] Figures for Germany refer to 2014.

There has also been a gradual decline in the value of social welfare cash dispensed via Irish post offices over the last number of years (see next figure). The provisional aggregate for 2017 of €7.6bn represents a 24% fall on 2014 levels. This is due to number of factors including the decline in the Live Register and increased take-up of direct payment into current accounts as a form of payment.

Figure 2.3: Value of Social Welfare Cash Withdrawals in Ireland per Capita, 2010-2017



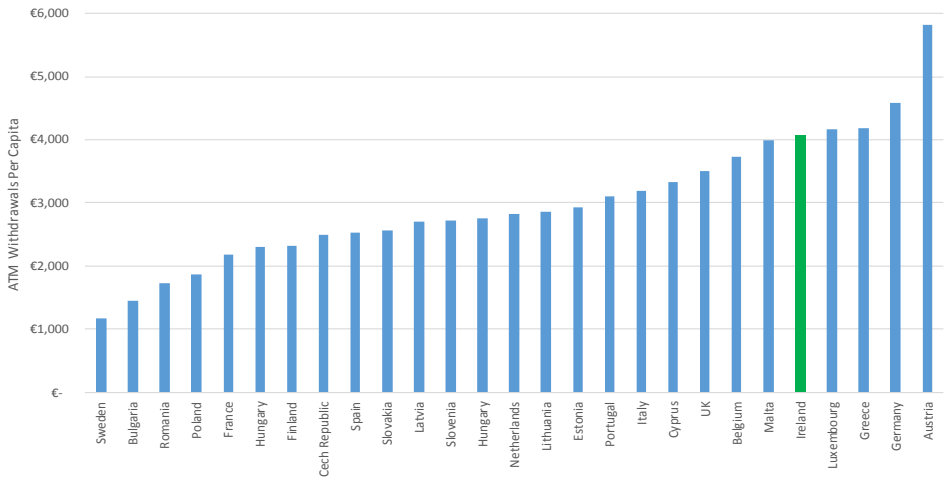
Source: Department of Employment Affairs and Social Protection. *Note 2017 figure for Social Welfare is provisional. These figures relate only to social welfare payments paid in cash over the counter in post offices.*

In Ireland, there is a clear shift away from cash usage, though cash remains an important form of payment. This suggests that Ireland is currently experiencing a very marked change in behaviour and a move towards electronic based payments. This is expected to continue.

Ireland is also experiencing a marked change relative to Europe. Average ATM withdrawals in Ireland fell 7% from 2012 to 2016 although Europe experienced an increase. The country in Europe with the lowest levels of ATM withdrawal is Sweden. Separate survey-based evidence shows that the reported 'cash in wallet' of consumers is highest in Germany (€103), Luxembourg (€102) and Austria (€89) and is far lower in Finland (€56), Netherlands (€44) and Belgium (€58).[18] The figure for Ireland was €69.

[18] ECB (2017)

Figure 2.4: Value of ATM Withdrawals per Capita, 2016



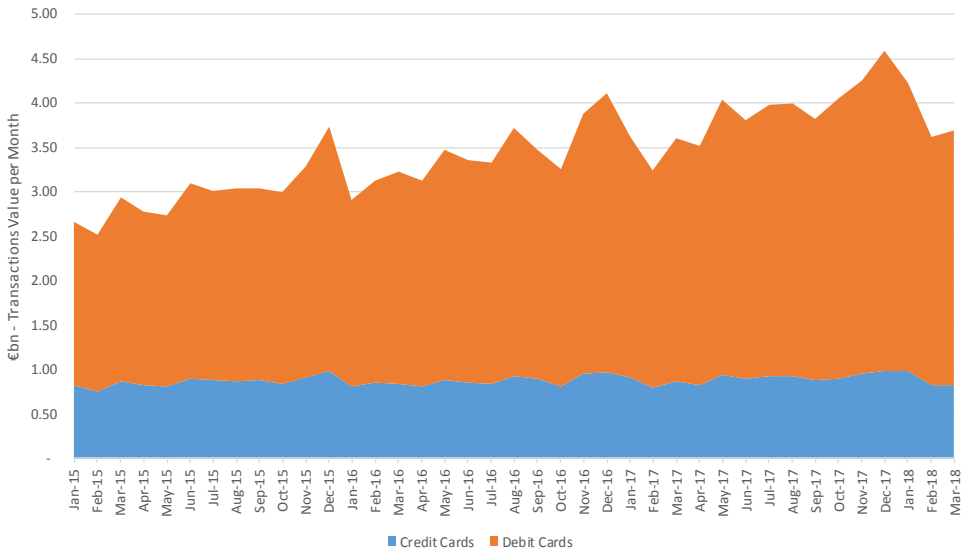
Source: ECB (2017) *Note: Figures for cash withdrawals not published by the ECB for Denmark.*

Ireland's higher average ATM withdrawal figure is due to the number of transactions per annum, as the average withdrawal size is slightly below average EU levels.

2.4 Debit and Credit Card Usage

There has been a sharp increase in the use of payment cards in Ireland in recent years, which is driven almost entirely by the increased use of debit cards. The monthly value of card payments in Ireland averages around €4bn, of which 77% is by Debit Card. Debit Card expenditure is currently increasing at 16% per cent year-on-year, while Credit Card expenditure is broadly flat.

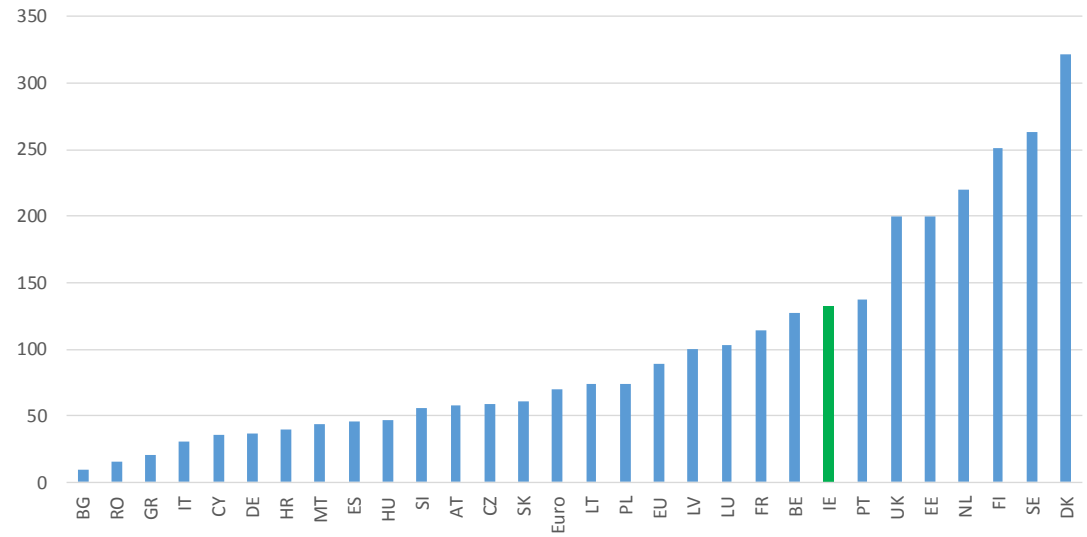
Figure 2.5: Value of Card Payments, 2015-2018



Source: Central Bank of Ireland

Ireland's rate of usage of Debit is now higher than most other European countries, though is below the levels observed in Scandinavia as can be seen from the next table. The Scandinavian countries were among the first to embrace card payments.

Figure 2.6: Debit Card Payments per capita in EU, 2016

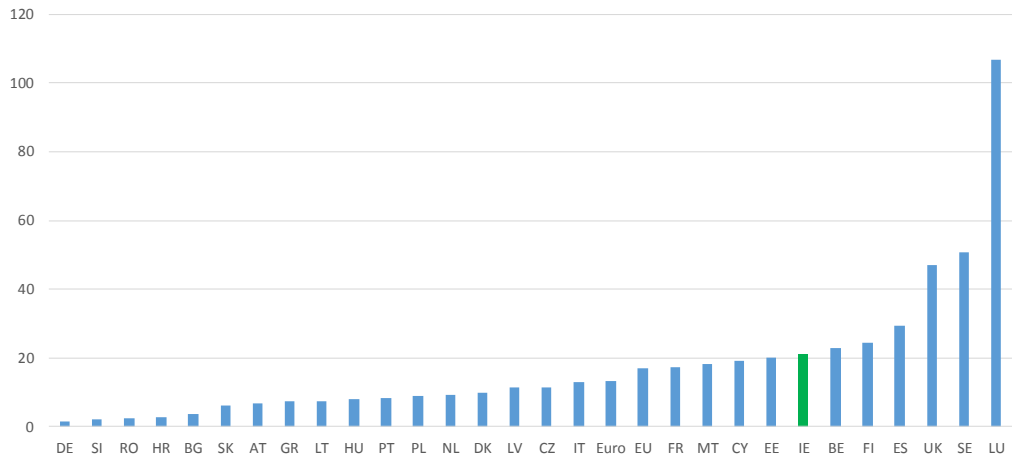


Note: Includes debit cards, and cards with a debit and/or delayed debit function.

Source: ECB, 2017

An analysis of credit card payments per capital in the EU presented in Figure 2.7 also demonstrates that credit card payment usage in Ireland is higher than most of the EU countries.

Figure 2.7: Credit Card Payments per capita in EU, 2016

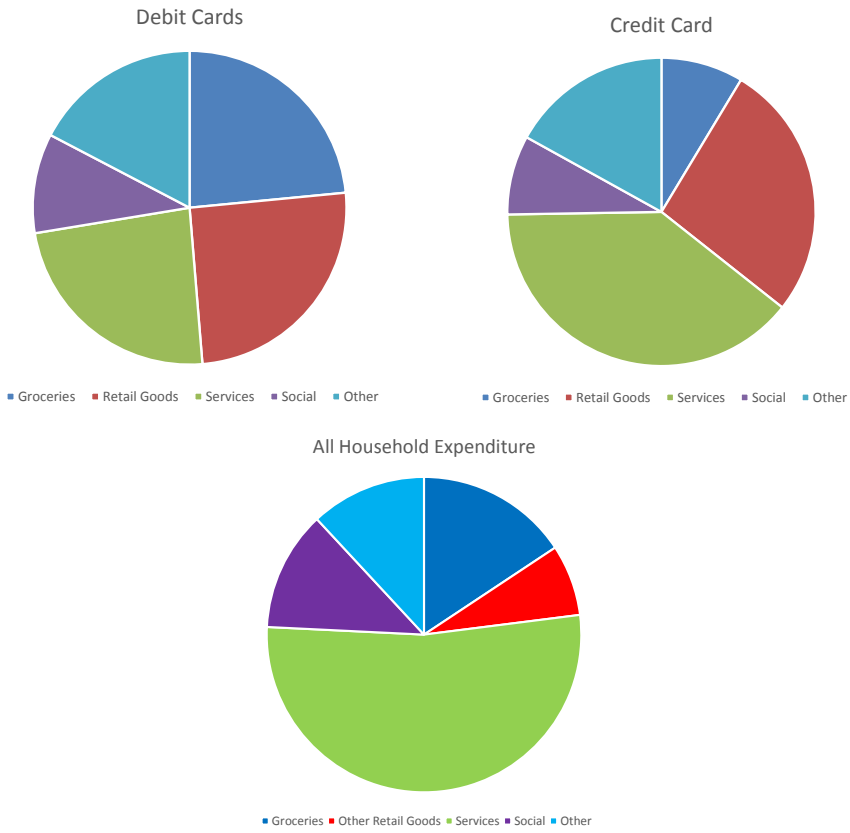


Note: Includes credit cards, and cards with a credit and/or delayed debit function

Source: ECB, 2017

In examining the sectors where debit and credit cards are used most in Ireland, the evidence shows that approximately one quarter of debit card expenditure is on groceries, and another quarter is on other retail goods. The mix of credit card expenditure is different with less spend on retail goods and a higher share of spend on services. In terms of future development, it is interesting to compare the debit and credit card spend to overall household expenditures. This shows that people are still more likely to pay for services with cash. This is likely to change over time as the service sector adapts to electronic payments and as ways of making it easier for consumers to use electronic payments accelerate.

Figure 2.8: Composition of Debit and Credit Card Expenditure in Ireland



Source: Central Bank of Ireland for Debit and Credit Transactions (2018) and CSO HBS (2015/6) for All Expenditures

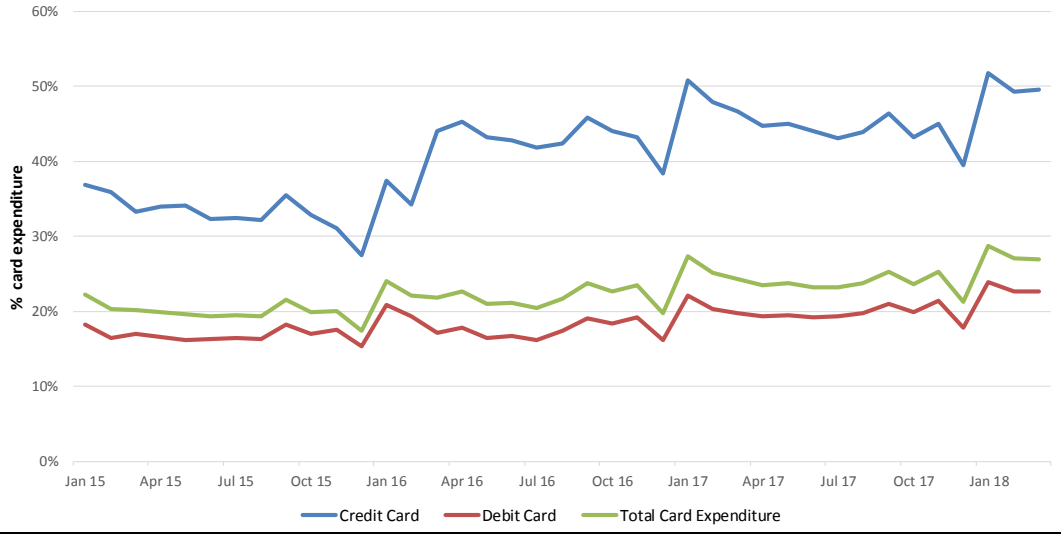
The evidence on the growth in Debit Card expenditure shows that very significant increases have been evident on debit card expenditure on services, including utilities, dining/entertainment, health and other services. Table 2.3 shows the breakdown of household expenditure using Debit and Credit Cards by sector.

Table 2.3: Debit and Credit Card Usage in Ireland by Sector								
	Debit Card				Credit Card			
	2016	2017	Q1 2018	2016-17	2016	2017	Q1 2018	2016-17
	€bn			%	€bn			%
Groceries/Perishable	7.3	8.2	2.1	12%	1.0	1.0	0.2	3%
Clothing	1.9	2.1	0.4	11%	0.6	0.6	0.1	-1%
Electrical Goods	0.7	0.8	0.2	16%	0.3	0.4	0.1	3%
Hardware	1.9	2.3	0.5	18%	0.6	0.6	0.1	3%
Total Goods	*15.3*	*17.7*	*4.3*	*15%*	*4.0*	*4.1*	*0.9*	*4%*
Transport	2.0	2.2	0.6	10%	1.5	1.5	0.4	-1%
Accommodation	1.0	1.2	0.3	22%	0.9	1.0	0.2	8%
Education	0.4	0.4	0.1	5%	0.2	0.2	0.0	-5%
Health	0.6	0.8	0.2	24%	0.2	0.3	0.1	12%
Utilities	1.0	1.3	0.4	29%	0.2	0.2	0.1	14%
Professional Services	1.3	1.7	0.4	27%	0.6	0.7	0.2	8%
Services	*6.5*	*7.7*	*2.1*	*19%*	*3.7*	*3.8*	*1.0*	*4%*
Restaurants/Dining	1.6	2.1	0.6	28%	0.5	0.5	0.1	8%
Entertainment	1.1	1.3	0.3	15%	0.4	0.4	0.1	2%
Dining/entertainment	*2.9*	*3.5*	*0.9*	*23%*	*0.9*	*0.9*	*0.2*	*6%*
Other	5.9	6.8	1.5	15%	1.9	1.9	0.4	*0%*
Total	**30.6**	**35.7**	**8.9**	**17%**	**10.4**	**10.8**	**2.6**	**4%**
Source: Central Bank of Ireland Payment Statistics, CSO Retail Sales Index								

As well as shifts in the sectoral pattern of expenditures, there have been important changes in the extent of online transactions. The evidence shows that almost half of Irish credit card expenditure is now made online, compared to just over 20% for debit card transactions. The trend for both type of cards has been upwards, as online expenditure increases in popularity. This highlights the need for Irish enterprises to ensure that their businesses can facilitate online transactions.

There is some evidence of a seasonal 'dip' in the proportion of card sales that are online. Online card expenditure typically peaks in November. This may reflect differences in the timing of expenditure in advance of the Christmas season with online purchases peaking in November to ensure a December delivery, and offline card expenditure at point of sale typically peaking in December.

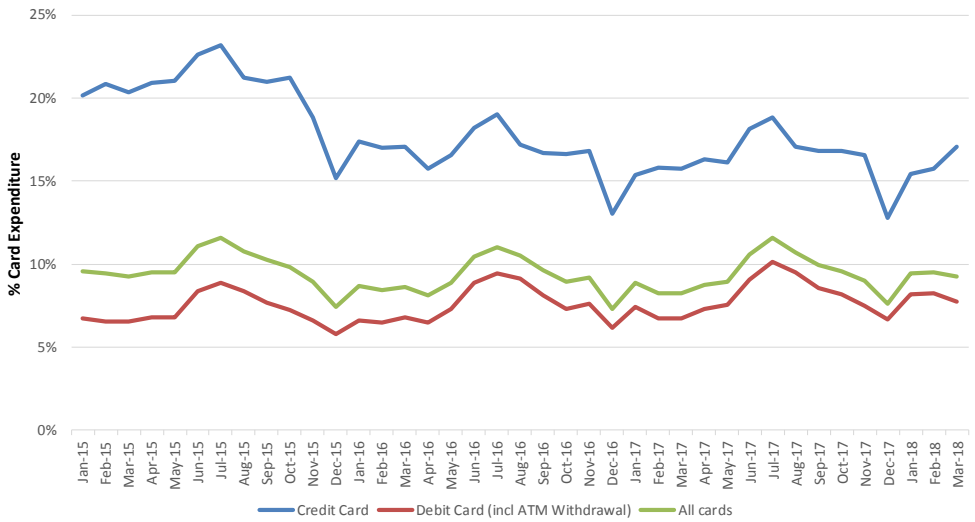
Figure 2.9: Percentage of Irish Card Expenditure Online, 2015-2018



Source: Central Bank of Ireland

Irish credit card usage outside Ireland has been declining as a percentage of total card expenditure, while debit card usage has increased. This is illustrated in the next figure which covers 2015-2018. The total share of card expenditure on payments outside of Ireland has been broadly flat, at just under 10%. Over this period there was a rollout of internationally branded cards to replace cards issued under the domestic Laser Card scheme. This may have had the effect of increasing consumer use of debit cards as a substitute for credit cards while abroad, possibly due to greater of acceptance of international branded debit cards. These figures relate to expenditures where the physical card is present during payment and so excludes online purchases from Ireland.

Figure 2.10: Rate Percentage of Card Expenditure Outside Ireland, 2015-2018



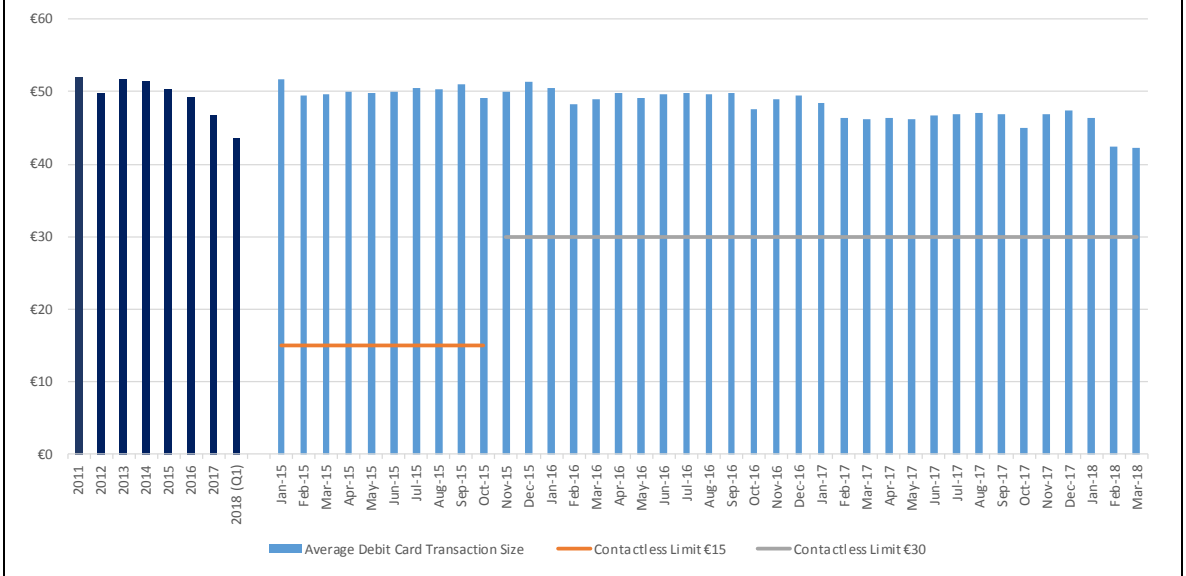
Source: Central Bank of Ireland

A number of factors have been driving card usage, particularly for debit cards, in recent years. These include:

- increase in the limit for contactless transactions;
- increased popularity of contactless functionality;
- increased acceptance by retailers;
- availability of non-traditional providers;
- introduction of electronic banking in many Credit Unions and by An Post;
- restructuring of stamp duty announced in Budget 2016;
- reduction of interchange fees under the Interchange Fee Regulation;
- greater accessibility of payment accounts as a consequence of the transposition of the Payment Accounts Directive.

Cards with contactless functionality were first introduced in 2011, though take-up required a change in POS terminals which slowed adoption rates initially. Awareness and usage of contactless has subsequently increased significantly with contactless transactions posting a 124% increase from 2016 to 2017. In total, contactless volumes in 2017 (224.3m) represented 28% of total card transactions in that year. This has had the effect of lowering the average debit card transaction value as consumers increasingly use cards for low-value transactions which were traditionally the preserve of cash.

Figure 2.11: Value of Average Irish Debit Card Transaction, 2011-2018

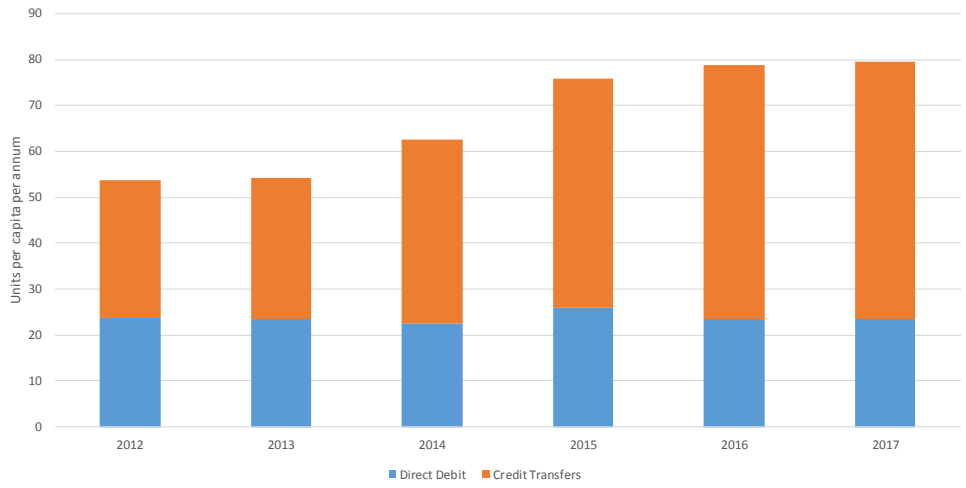


Source: Central Bank of Ireland. *Figure is shown in annual terms from 2011-2018, and monthly from 2015-2018.*

2.5 Credit Transfers and Direct Debit

There has been growth in the volume of credit transfers in Ireland in recent years, though direct debit usage has remained largely stable. This is notable given the migration to SCT (SEPA Credit Transfer) and SDD (SEPA Direct Debit) in 2014. The migration involved a more significant change in terms of direct debits, as the SDD scheme has significantly enhanced consumer protection measures compared with the previous domestic scheme.

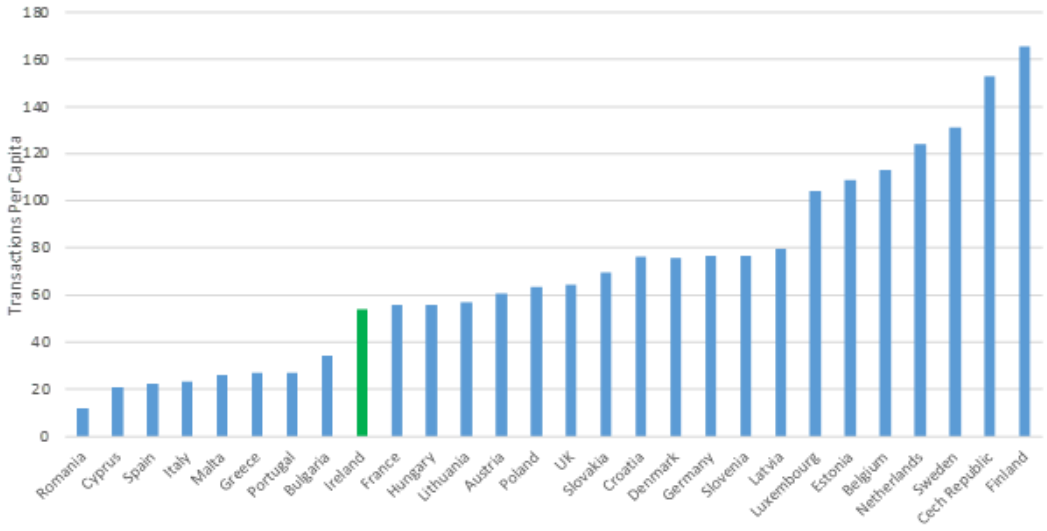
Figure 2.12: Irish Credit and Debit Tansfers per capita, 2012-2017



Source: Central Bank of Ireland

In terms of benchmarking of the number of credit transfers annually, Ireland ranked 19th out of 27 European countries, but there is an upward trend and Ireland experienced significant growth in these transactions over the period since 2012. It is also of note that Ireland's level of credit transfers per capita is much higher than in the eight countries where levels are lower than Ireland.

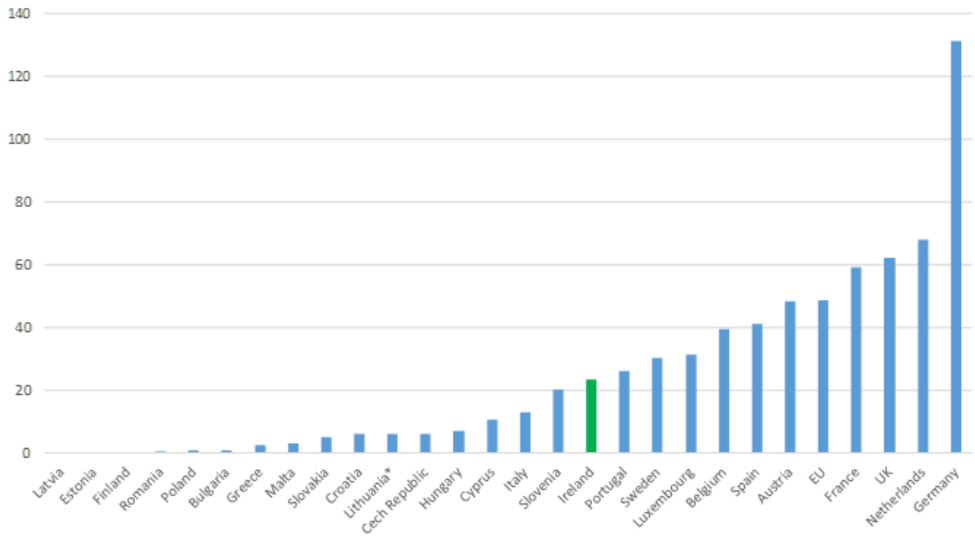
Figure 2.13: Credit Tansfers per capita, 2016



Source: ECB, 2017

Ireland's levels of direct debit per capita relative to other EU countries shows that we have a higher level of usage than sixteen other EU countries but are significantly below the levels in a number of countries and this is particularly marked in comparisons with Germany[19], the Netherlands and the UK.

Figure 2.14: Direct Debits per capita in EU, 2016



Source: ECB, 2017. *Figures not available for Denmark. Figures for Lithuania refer to 2015.*

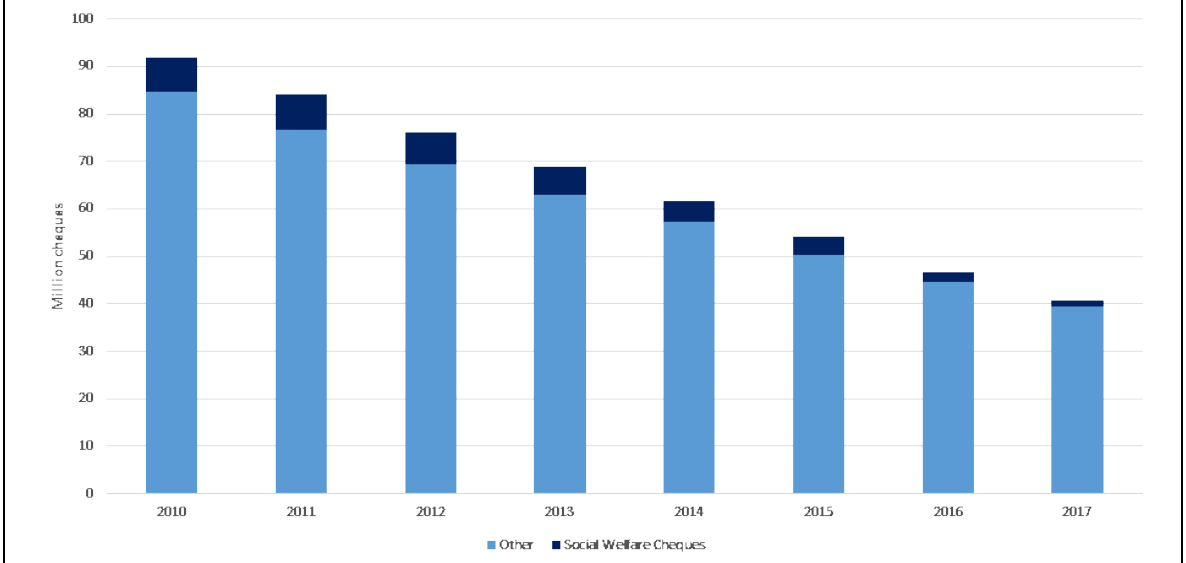
[19] In part the high figure for Germany relates to ELV/OLV which are point-of-sale transactions which are processed as direct debits. These are in character more akin to card payments.

2.6 Cheques

The transformation of the payments sector in Ireland can be seen by examining the evidence on cheques written which shows a significant decline with numbers halving in less than six years. This is in part due to the reduction in the number of cheques issued by the Department of Employment Affairs and Social Protection.

Despite this decline Ireland is one of only a relatively small number of European countries that continue to widely use cheques. However, it should be noted that per capita cheque usage in Ireland is now less than eight per annum, which compares with 237 e-Payments per capita per annum. While cheques remain used in some niche areas of the economy and among particular demographic groupings, they now play a minor role in the broader economy.

Figure 2.15: Change in Cheque Usage in Ireland, 2015-2018



Source: Central Bank of Ireland, Department of Employment Affairs and Social Protection

2.7 Summary of Findings

- There is a global trend towards the increased take-up of electronic payments. Non-cash transaction volumes are currently rising faster than any other time in the last decade, with volumes growing at over ten per cent per annum.[20] While historically Ireland has been a relatively cash-intensive economy, significant progress has been made and a rapid increase in the take-up of electronic payments is evident. In overall terms, Ireland had 237 electronic payments per capita in 2016, of which two-thirds relate to card payments. Ireland is ranked 10th out of 27 European countries for the combined use of card payments, credit transfers and direct debits, and is ahead of

[20] CapGemini and BNP Paribas (2017) "World Payments Report 2017."

the EU average. Ireland's overall ranking reflects a high ranking in terms of card usage (8th).

- The highest usage of electronic payments can be seen in Sweden and Finland followed by the Netherlands. The figures for SEPA include payments related to traditional banks, but also new entrants such as Revolut[21] and N26[22], while the card payment statistics include payments such as ApplePay or GooglePay.
- Despite the growth in electronic payment, cash and cheques continue to be important payment mechanism in Ireland. Since 2012, however, there has been a notable reduction in the annual number of ATM withdrawals per capita, and a fall in the number of cheques issued per capita. The evidence suggests that Ireland is currently experiencing a very marked change in behaviour and a move towards electronic based payments.
- Ireland's rate of usage of Debit and Credit Cards is now higher than most other European countries, though it is below the levels observed in Scandinavian countries, which were among the first to embrace card payments. The growth in card usage in Ireland is likely to have been influenced by a number of policy initiatives including the reduction in the Interchange Fee Regulation and the restructuring of stamp duty announced in Budget 2016.
- In examining the sectors where debit and credit cards are used most in Ireland, the data shows that approximately one quarter of debit card expenditure is on groceries, and another quarter is on other retail goods. The mix of credit card expenditure is different with less spend on retail goods and a higher share of spend on services. In terms of future development, it is interesting to compare the debit and credit card spend to overall household expenditures. This shows that the percentage of debit and credit card spend is lower on services than the share of consumer expenditures accounted for by services. This is likely to change over time as the service sector adapts to electronic payments and as ways of making it easier for consumers to use electronic payments accelerate.
- As well as shifts in the sectoral pattern of expenditures, there have been important changes in the extent of online transactions. This highlights the need for Irish enterprises to ensure that their businesses can facilitate online transactions. The evidence shows that almost half of Irish credit card expenditure is now made online, compared to just over 20% for debit card transactions. The trend for both type of cards has been upwards, as online expenditure increases in popularity.
- In terms of benchmarking of the number of credit transfers annually, Ireland ranked 19th out of 27 European countries, but there is an upward trend and Ireland experienced significant growth in these transactions over the period since 2012. It is also of note that Ireland's level of credit transfers per capita is much higher than in the eight countries where levels are lower than Ireland.

[21] https://blog.revolut.com/swift-sepa-how-international-money-transfers-actually-work/

[22] https://support.n26.com/read/000001427?locale=en

- Ireland's levels of direct debit per capita relative to other EU countries shows that we have a higher level of usage than sixteen other EU countries. Very high levels are evident in Germany, the Netherlands and the UK.
- The transformation of the payments sector in Ireland can be seen by examining the trend in cheques written which shows a significant decline with numbers halving in less than six years. This is in part due to the reduction in the number of cheques issued by the Department of Employment Affairs and Social Protection. Despite this decline Ireland is one of only a relatively small number of European countries that continue to widely use cheques. However, it should be noted that per capita cheque usage in Ireland is now less than eight per annum, which compares with 237 e-Payments per capita per annum. While cheques remain used in some niche areas of the economy and among particular demographic groupings, they now play a minor role in the broader economy.

3 Payment Systems and Infrastructure

3.1 Introduction

The changes in the payment sector reflect the rapid evolution of payments infrastructure. Since the migration to SEPA, the core payments infrastructure on which Irish payments are based is either European or global.[23] Ireland has also migrated away from its domestic legacy Laser debit card scheme[24] to VISA and MasterCard branded cards.

This section gives an overview of the existing payment infrastructure. It also reviews the potential for new technologies, the risks inherent in payment systems, and the potential value of competition and collaboration in the payment industry.

3.2 Payment System Overview

Since the advent of SEPA, Ireland's only indigenous payment systems infrastructure is the Irish Paper Clearing Company CLG (IPCC). All of the other payment systems currently in use are 'pan-European' or global and comprise:

- TARGET2 – the Eurosystem's real-time, gross settlement system, which is used for large-value payments;
- EURO1 – a private sector, pan-European system operated by a private company – EBA Clearing – that is used for processing large-value, same-day euro transactions;
- STEP2 – the pan-European retail payment system operated by EBA Clearing. STEP2 is used to process all euro-denominated 'retail' payments (e.g., credit transfers); and
- Payment cards (credit/debit/ATM) in Ireland are for the most part provided via the Visa and MasterCard international card schemes.

An example of how these payment systems operate to facilitate a typical payment in practice is illustrated in the next figure. In all, eight separate steps can be identified as follows:

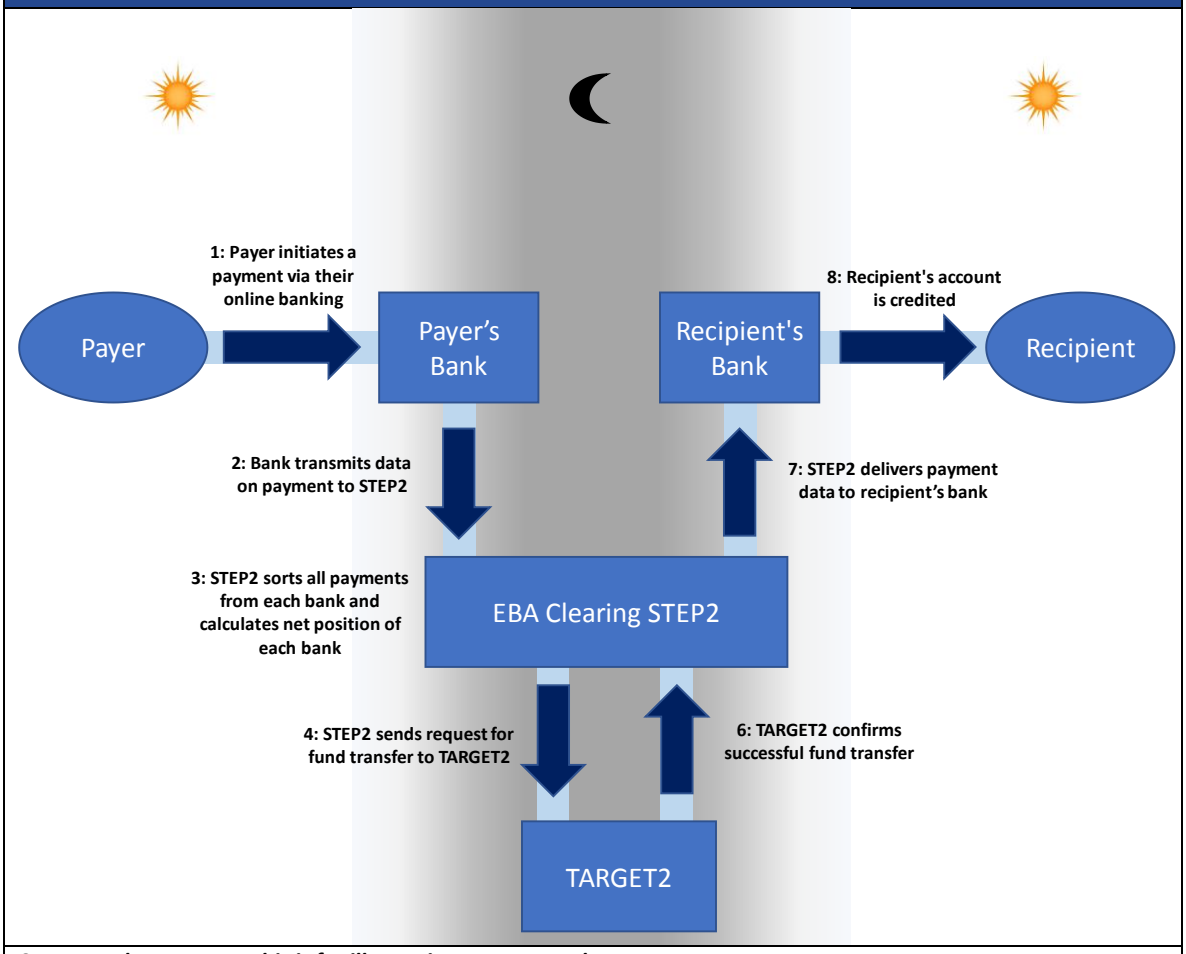
1. The process is initiated when a payer uses (for example) their online bank account to initiate a transfer to another person or business;
2. The payer's bank then transmits the payment data to STEP2;
3. STEP2 then sorts these payments and calculates whether each bank, based on inflows and outflows, is a net payer or a net recipient;
4. STEP2 then requests that this net payment is made via TARGET2;
5. TARGET2 transfers funds between banks using the central bank accounts of each bank. TARGET2 will credit banks which have a positive net position, and will debit banks which have a negative net position;

[23] UCC (2016) "Role of Digitalisation and innovation in creating a true single market for retail financial services and insurance."

[24] These were often co-branded with international schemes to facilitate greater acceptance both online and internationally.

6. TARGET2 then confirms to STEP2 that funds have been transferred as requested;
7. STEP2 then delivers payment data to the recipient's bank, in this case including the list of accounts to be credited and debited, and the amount in each case; and
8. The recipient's bank then credits the account of the recipient.

Figure 3.1: Transmission of a SEPA Credit Transfer



Source: Indecon. Note: This is for illustrative purposes only.

In Ireland currently, the payer initiates a payment any time during the day up to a bank's cut-off time (typically mid/late afternoon), and this then is 'batched' and processed overnight to allow for next-day crediting in the recipient's bank account. The transmission process is similar for Direct Debits. Note that if the recipient has their account in the same bank as the payer, then the payment will route through the bank's internal system and the transfer can be affected without recourse to STEP2 or TARGET2. A brief discussion of the main elements of the payment system is given next.

TARGET2

TARGET2 is the real-time gross settlement (RTGS) system owned and operated by the Eurosystem.[25] TARGET stands for Trans-European Automated Real-time Gross Settlement Express Transfer system and TARGET2 is the second generation of the system. Payment transactions in TARGET2 are settled one-by-one on a continuous basis, in central bank money with immediate finality. There is no upper or lower limit on the value of payments. TARGET2 settles payments related to monetary policy operations, interbank and customer payments, and payments relating to the operations of all large-value net settlement systems and other financial market infrastructures handling the euro, such as securities settlement systems or central counterparties.

TARGET2 is operated on a single technical platform. Business relationships are established between the TARGET2 participants and the respective central bank. TARGET2 participation can be achieved directly or indirectly via a direct participant. The current Ireland-based participants in TARGET2 are shown in the next table. Note, some Irish financial institutions (e.g. Credit Unions and An Post) effectively clear through banks which have access to the TARGET2, without formally becoming indirect participants.

Table 3.1: TARGET2 Participants, Ireland

Direct Participants	Indirect Participants
Allied Irish Banks plc.	Intesa Sampaolo
Bank of Ireland Treasury	Bank of America
Bank of Montreal Ireland Plc.	Merrill Lynch
Danske Bank	Citibank Europe plc.
Depfa Bank plc.	KBC Bank Ireland plc.
Elavon Financial Services DAC	ING Bank NV Dublin Branch
EBS Limited	KBC Bank NV
Permanent TSB plc.	Scotiabank Ireland Ltd
Investec Bank plc.	Rabobank Ireland plc.
Ulster Bank Ireland Ltd.	EAA Covered Bond Bank plc.
Central Bank	
Central Bank - Irish Paper Clearing	
NTMA	

Source: ECB (www.ecb.europa.eu). ECB TARGET2

[25] https://www.ecb.europa.eu/paym/t2/html/index.en.html

In terms of the value processed, TARGET2 is one of the largest payment systems in the world. TARGET2 is based on a technically centralised platform, the single shared platform (SSP), and all participants, irrespective of their location, have access to the same services, functionalities and interfaces.[26] TARGET2 has contingency arrangements in place based on the concept of a two-region/four-site architecture. There are two regions for payment processing and accounting services, and each region has two separate sites. Regular region rotations are applied, thus ensuring full readiness and preparation in both regions in case of an event. The aim of this architecture is to enable TARGET2 to minimise operational risk.

EURO1

EURO1 is the private sector large-value payment system for single same-day euro transactions at a pan-European level.[27] It is owned by 51 major European banks. The EURO1 system processes transactions of high priority and urgency, and primarily of large amount, both at a domestic and at a cross-border level. EURO1 is overseen by the European Central Bank with the participation of National Central Banks of the Eurosystem. EURO1 was launched in 1998 to provide a net settlement infrastructure with immediate finality for all processed payments for large-value payments in the single currency environment. The system now has 48 participant banks and processes on average over 200,000 payments per day with an average total value of €200bn. Allied Irish Banks is a participant bank.

The main advantage of using EURO1 rather than TARGET2 is that it saves costs on liquidity, as EURO1 allows banks exchange their payments and only settle the net figure late in the day. Ultimately, all (netted) payments go through TARGET2. EURO1 is the only direct competitor of TARGET2 in the landscape of large-value payment systems denominated in euro. Euro area businesses making large value payments can route them directly to TARGET2 or send them via the EURO1 system. TARGET2 is often preferred for urgent payments, because it processes the transaction instantaneously when it arrives, meaning that funds can reach the payee within minutes. Payments by either route should reach their destination on the day they are sent.[28] In 2017, EURO1 processed 10% of the value and 37% of the volume settled by large-value payment systems in euro.

STEP2

STEP2 provides processing and settlement of SEPA Credit Transfers and SEPA Direct Debits to its participants all across SEPA.[29] It is owned and operated by 51 major banks throughout Europe through EBA Clearing. As well as STEP2, EBA Clearing operates EURO1 (discussed above) and STEP1, a payment system for single euro payments for small and medium-sized banks. Both EURO1 and STEP2 have been identified as Systemically Important Payment Systems (SIPS) by the European Central Bank, though STEP1 has not. Participating banks settle their STEP2 obligations by paying a net calculated amount in TARGET2. STEP2 first

[26] http://www.ecb.europa.eu/pub/pdf/other/t2disclosurereport201606.en.pdf?8341c2a74d87b322292738afa9c331a3

[27] https://www.ebaclearing.eu/services/euro1/overview/

[28] https://www.ebaclearing.eu/Settlement-process-N=E1_Settlementprocess-L=EN.aspx

[29] https://www.ebaclearing.eu/services/step2-t-platform/settlement-and-processing-cycles/

creates bilateral gross obligations and reports them to the banks, calculates the multilateral net positions and sends these multilateral net amounts to TARGET2.

The Irish participant banks in STEP2 (i.e. direct participants) are listed in Table 3.2. As a direct participant, a bank can send/receive payments directly to the scheme. If a bank is an indirect participant (i.e. is "SEPA reachable") its payments have to be routed through a direct participant. An indirect member must find and maintain a relationship with a direct participant, including any fees which might be imposed for the service. This can have an impact on the speed payments are transmitted to customers. As a direct participant, a bank can decide what cycles they transmit payments in throughout the day, giving greater control. An indirect participant can only participate in the cycles that their direct member is using. Direct participants also have a representative on the EBA board. Some Irish banks achieve access through their parent company (e.g. Ulster Bank via RBS), while others are known as SEPA reachable.

Table 3.2: Irish STEP2 Direct Participants
Allied Irish Banks Plc
Bank of Ireland
BNP Paribas, Ireland
Source: Downloaded from: https://www.ebaclearing.eu/services/step2-sct/participants/ on 26.10.18

Following an initial assessment prior to the commencement of STEP2, detailed oversight assessments are carried out in relation to changes to the system. Functional changes to the system and changes to its rules typically are subject to an oversight assessment. The Eurosystem will continue to assess the four systemically important payment systems of the euro area to meet the requirements of the SIPS (Systemically Important Payment Systems) Regulation. This regulation covers TARGET2, EURO1, STEP2 and CORE(FR).[30]

Payment cards

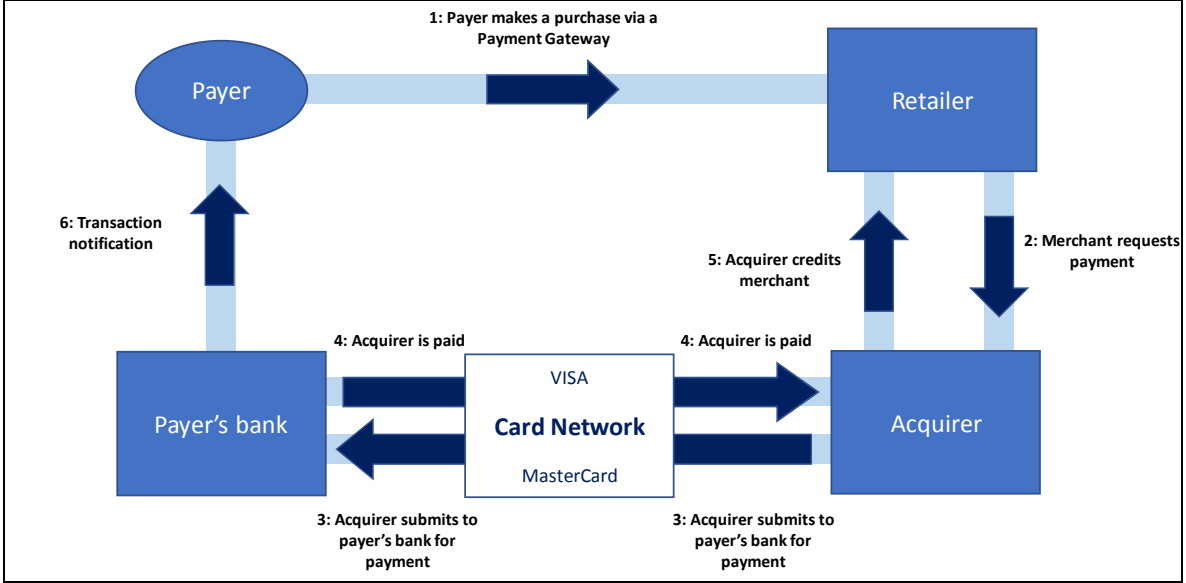
Ireland had a domestic legacy debit card scheme - the Laser Card scheme – which was maintained and operated by Laser Card Services Ltd., a not-for-profit body owned by four of the largest financial institutions in Ireland. From 2007, the financial institutions which had issued Laser cards began to replace them with Visa or MasterCard debit cards. Laser cards were finally withdrawn from the market on 28 February 2014. A majority of debit cards issued in Ireland are Visa branded, and both Visa and MasterCard are estimated to have significant shares in the Irish credit card market.

[30] CORE (FR) is a French retail payment system which allows participants to combine and submit domestic retail transactions for clearing, with multilateral net positions settled daily in TARGET2-Banque de France.

Table 3.3: Card Brands for Main Irish Banks		
	Debit Cards	**Credit Cards**
Bank of Ireland	VISA	MasterCard
AIB	VISA	VISA and MasterCard
Ulster Bank	VISA	MasterCard
Permanent TSB	VISA	VISA
KBC	MasterCard	MasterCard
EBS	MasterCard	N.A.
Source: Indecon based Bank websites, accessed as of 13th June 2018		

A graphic representation of the payment transmission mechanism for card payment (whether credit card or debit card) for a typical four party scheme is shown below. Merchants who wish to accept debit or credit cards as a form of payment have to pay a portion of the sale price of the goods or services being sold. Any merchant who wishes to accept card payments from its customers must in general go through a payment service provider called 'an acquirer'. The merchant typically rents the physical Point of Sale (POS) terminal from the acquirer, but may buy it from the acquirer or other supplier. The acquirer also completes post-sale processing. The acquirer interacts with the various global and national card schemes (e.g. Visa and MasterCard) and can usually accept payments from any of the scheme branded cards. In turn, the card schemes have direct relationships with the main high-street banks which issue cards to their customers (called 'the issuing banks')[31].

Figure 3.2: Transmission of a Card Payment



Source: Indecon. Note: This is for illustrative purposes only.

[31] Adapted from the National Payments Plan, 2013.

Both VISA and MasterCard are publicly-owned companies. Each work with issuing banks, such as AIB and Bank of Ireland, who distribute branded cards to their customers. Scheme rules for cards are developed by the card schemes themselves. While no single set of scheme rules exist for payment cards such as exists (for example) for SEPA Credit Transfers, the last number of years has seen a number of regulatory interventions which have reduced the scope for card schemes to vary scheme rules. Most notable of these interventions was the Interchange Fee Regulation, which not only set limits on interchange fees, but also imposed other requirements such as:

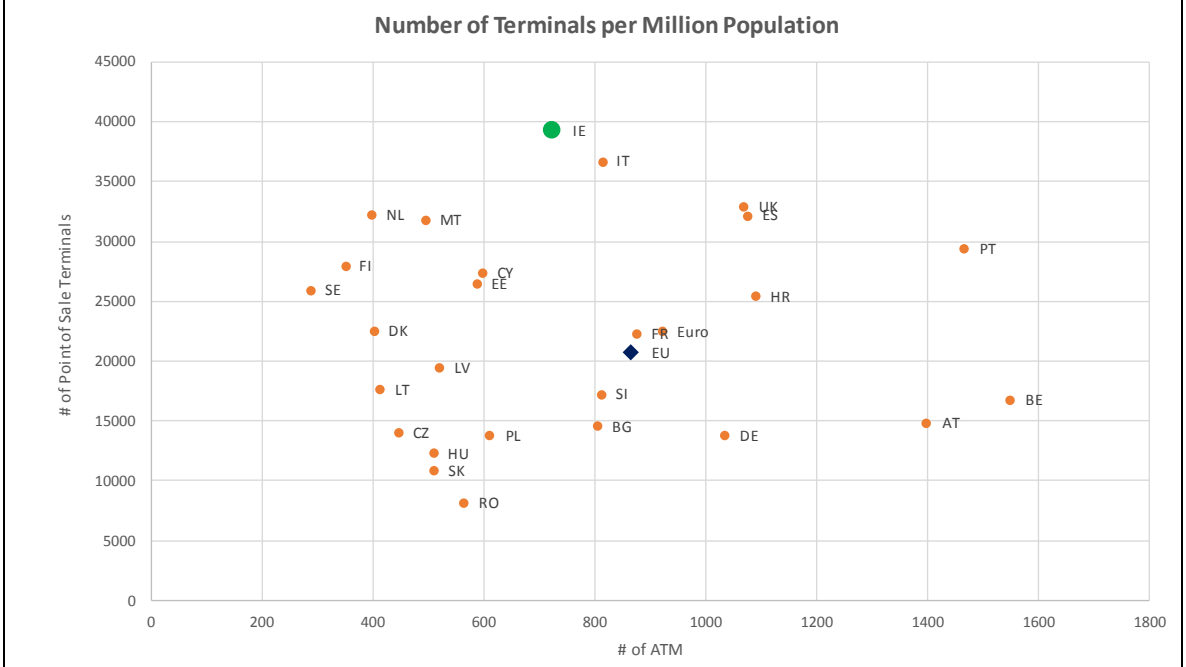
- Independence of the card schemes own processing activities;
- Restricting requirements that card schemes place on retailers in terms of the cards they must accept; and
- Specifying the information on fees that must be provided to retailers.

Other EU regulations set out other requirements which further limit the scope of card schemes to set their own rules. For example, PSD2 prohibits retailers from surcharging card payments on cards covered by the Interchange Fee Regulation.

3.3 Consumer Facing Payment Infrastructure

There are differences as to the number of ATM and Point of Sale terminals in different countries. The next figure shows that Ireland has a lower than average number of ATMs compared to the EU, but a higher than average number of Point of Sale terminals.

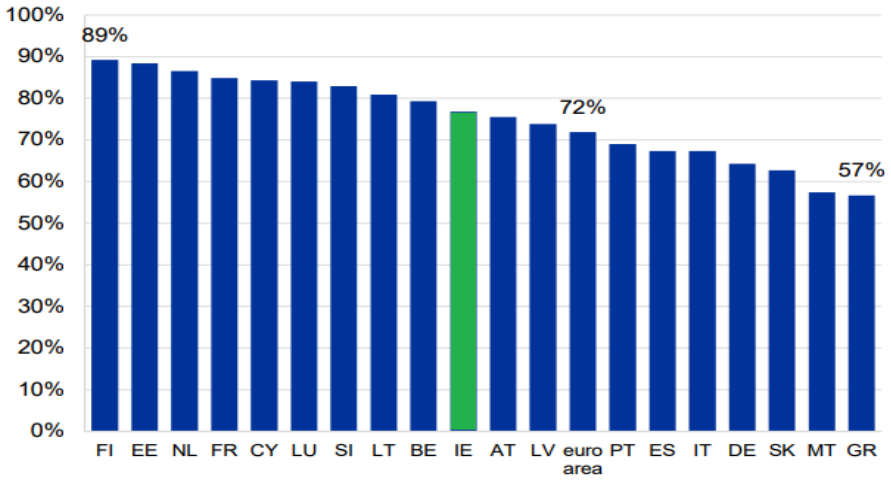
Figure 3.3: Number of ATMs and Point of Sales Termianls per million population, 2016



Source: ECB (2017) *Luxembourg ad Greece report a high number of POS terminals per million (287,000 and 59,000 respectively) and are excluded to ensure the graph is readable.*

The development of payment infrastructure in Ireland has altered consumer perceptions and behaviour survey evidence of Irish consumers indicates a slightly higher perceived availability of non-cash alternatives than the EU average as shown in the next figure.

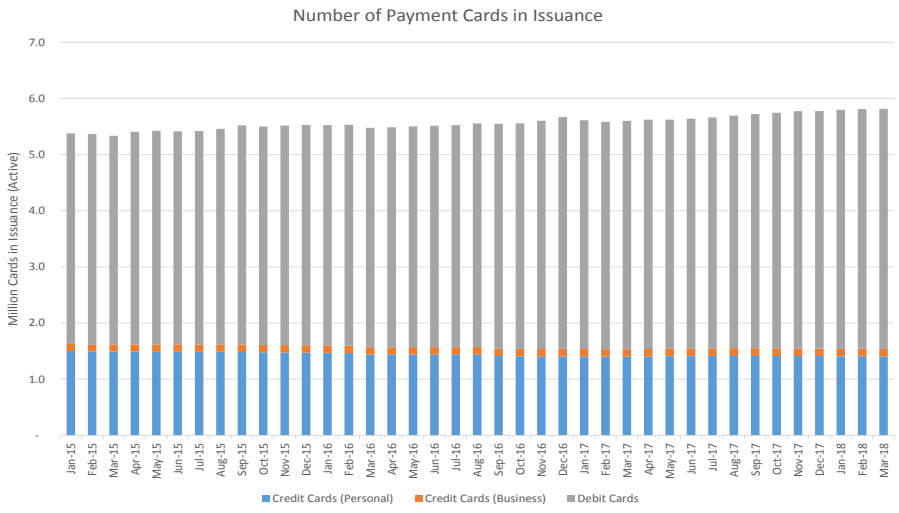
Figure 3.4: Pereception of Availability of Non-Cash forms of Payment, 2016



Source: Esselink and Hernández (2017)

An important element of payment infrastructure relates to the number of cards in issuance. As can be seen in Figure 3.4 below, the aggregate number of cards in issuance is now close to six million in Ireland.

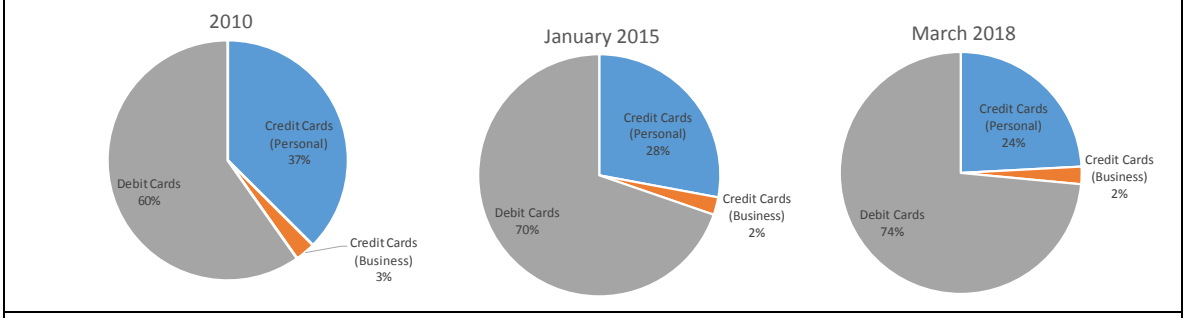
Figure 3.5: Number of Payment Cards in Issuance, 2016



Source: Central Bank of Ireland

Debit cards now account for 74% of all cards in issuance in Ireland. This highlights the importance of debit cards in considering the future of Irish electronic payments. The evidence also shows a strong increase in the share of debit cards which may reflect the fact that contactless cards came in fully in 2015.

Figure 3.6: Breakdown of Irish Cards in Issuance by Function, 2010-2018[32]



Source: Central Bank of Ireland

3.4 New Payment Technologies

Payments technology is evolving very rapidly, enabled by regulatory measures to open up payment markets to competition on a pan-European basis. Given the rate of innovation within payments, it is not possible to definitively predict which FinTech developments will gain widespread acceptance. However, there are a number of areas which have evolved which merit ongoing monitoring. These include:

- Instant Payments;
- Access to accounts under PSD2;
- Distributed ledger technology
- Cryptocurrencies; and
- Central bank issued digital currency.

Instant Payments

Instant payments have been defined as electronic retail payment solutions that are available 24 hours a day, 7 days a week, that result in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer. This is irrespective of the underlying payment instrument used (credit transfer, direct debit or payment card) and of the underlying arrangements for clearing and settlement that make this possible.[33] The advantages of instant payments, as set out by the ECB, are shown in the next table.

[32] Note that the Central Bank statistics only include personal debit cards. Business debit cards are increasingly in issuance, though are thought to constitute a very small proportion of the total number of payment cards in issuance in Ireland.

[33] http://www.ecb.europa.eu/paym/retpaym/instant/html/index.en.html

Table 3.4: Advantages of Instant Payments		
Consumers	**Business/Government**	**Payment Service Providers**
• Make and receive payments 24/7/365 with immediate transfer of funds • Optimise cash usage with increased flexibility and convenience • Enable immediate person-to-person mobile payments • Provide for emergency payments at any time • Facilitate future innovative payment products via smart devices	• Make and receive payments 24/7/365 with immediate transfer of funds • Improve cash flow and process of payment reconciliation • Increase efficiency of e-invoicing and e-billing • Optimise working capital management • Reduce late payments and decreasing financial risk • Speed up check-out processes at a physical point-of-sale	• Leverage for new business opportunities (e.g. through value-added product offerings to consumers, corporates and merchants) • Strengthen the relationship with current customers • Promote new customer acquisition and subsequent retention • Provide a competitive advantage in the market place • Future-proof core infrastructure
Source: ECB (2018)[34]		

The European Payments Council (an alliance of European banking and payments industry representative bodies) designed a SEPA instant credit transfer scheme that went live on 21 November 2017 with 585 participating payment service providers in 8 countries. It has since grown to 1,093 participating payment service providers (25% of payment service providers in the EU) across 16 countries.

The scheme allows the electronic transfer of money – currently up to €15,000 – across Europe in less than ten seconds, at any time and on any day of the year, including weekends and holidays. The transactions covered by the scheme must be denominated in euros.

The Euro Retail Payments Board (a high-level strategic body chaired by the ECB that brings together the supply and demand sides of the euro retail payments markets) notes that the foundations for instant payments are now in place, but that there is still work to be done to ensure take-up. It has urged market participants to swiftly implement instant payments with pan-European reach and to encourage end user take-up by providing innovative and efficient end user solutions[35]. The European Commission also supports the development of a fully integrated instant payment system in the EU, both to reduce the risks and the vulnerabilities in retail payment systems and to increase the autonomy of existing payment solutions[36]. The Commission specifically references the risks inherent in the market dominance of a small number of non-European card schemes, and sees a role for a European Instant Payments scheme to mitigate against that risk.

Irish B2B (Business to Business) payments often rely on trade credit, with customers taking on average 20 days to pay.[37] Because of this, widespread adoption of instant payments at business level may need to overcome the hurdle that immediate payment raises working

[34] https://www.ecb.europa.eu/paym/retpaym/instant/html/index.en.html

[35] Annual Report of the Euro Retail Payments Board 2017-2018; July 2018. https://www.ecb.europa.eu/paym/retpaym/shared/pdf/ERPB_annual_report_2017-18.pdf

[36] EU Commission (2018) "Towards a stronger international role of the euro."

[37] Intrum (2018), "European Payment Report 2018."

capital costs for early adopters. This would happen where a company pays invoices immediately using instant payment, but has to wait 20 days for its creditors to pay. This could be addressed either by making a simultaneous change in payment practices or by incentivising early payment through offering discounts (e.g. for payment within 10 days). The business case for companies in terms of instant payments may be stronger if it links a firm's internal electronic accounting system with an electronic invoice and payment, although an initial investment would be needed.

The net benefit of immediate people-to-business (P2B) payments may be small compared to the advantages in terms of convenience, although this will depend on the scale and nature of transactions. Initially, users may be younger adults, especially where instant payments can be made with a mobile phone.

Increasingly across Europe national banks are collaborating in the development of mobile payments-based payment solutions which are being driven both by consumer demand and the potential from competition from non-banks as a result of PSD2 (see also Section 3.5). The key element of these services is the linking of a mobile number to an account, which in turn facilitates mobile to mobile payments without the payer knowing the bank account details of the payee. The availability of SEPA Inst. will allow for the interoperability between similar schemes in other countries across the SEPA area. It is not expected that SEPA Inst. will replace national schemes, but rather supplement them and run in parallel. A number of Irish banks are currently exploring the establishment of a mobile account-to-account service for the Irish market.

One of the better-known services is SWISH in Sweden, a low-cost mobile phone network application for P2P (no cost) and P2B (low cost) payments that has substituted for cash and card transactions. It was developed and is run by a set of seven banks in Sweden. The stated purpose was to make P2P money transfers between individuals that have accounts at these seven banks. This was later expanded to P2B transactions. For consumers, SWISH is more convenient than cash for P2P transactions and reduces cash handling costs for retailers and banks. The SWISH real-time mobile payments platform is now used by over half of the Swedish population[38]. Given 78% of Irish people already use their phones to bank and/or make everyday payments, a cross-bank mobile account-to-account service would likely be well received in Ireland[39].

The ECB has developed a new service for the settlement of instant payments for SEPA Inst. payments. The new service, TARGET instant payment settlement (TIPS), allows payment transactions to be settled instantly, eliminating credit risk for participants. TIPS builds on the SEPA instant credit transfer scheme so that individuals and firms can make instant retail payments across Europe.[40]

[38] FINASTRA (2018), "SCT Inst—Accelerating the Pace of Commerce in Europe."
[39] VISA (2017) "Annual Digital Payments Study."
[40] https://www.europeanpaymentscouncil.eu/sites/default/files/kb/file/2017-11/EPC090-16%20v2.0_QA_SCT%20Inst%20scheme_Updated%20November%202017.pdf

Access to accounts under PSD2

Bank ownership of customer data has long given incumbents a competitive advantage by enabling banks to leverage the customer relationship and offer and provide additional services.

With the growth in digital provision of financial services, jurisdictions around the world are looking at access to customer data as a means of promoting competition in service provision. By offering services that use customer banking data to give consumers additional value, third parties may disintermediate banks' interaction with customers.

Within the EU, the revised Payment Services Directive ("PSD2") aims to open the EU payment market to companies offering payment services, based on them gaining access – with customer permission - to information about the payment account. PSD2 adapts the rules to cater for emerging and innovative payment services, including internet and mobile payments, while at the same time ensuring a more secure environment for consumers, creating a level playing field for new market entrants.

PSD2 was transposed in Ireland through the European Union (Payment Services) Regulations 2018 (S.I. No. 6 of 2018) by the common transposition deadline of 13 January 2018. One of the more significant changes brought about by PSD2 was the introduction of two new categories of payment service providers to be regulated.

These new categories are:

1. Account information service providers - an account information service provider can access payment accounts to provide a user with aggregated online information for their accounts held with multiple providers, and
2. Payment initiation service providers - a payment initiation service provider is authorised by consumers to initiate payments on their behalf with the effect that the customer can pay an online merchant directly from their bank account, without the need for a payment card.

In Ireland, both of these categories of new service providers are regulated by the Central Bank. The two services have the potential to significantly drive competition and consumer choice in payments and banking. Because some of the security measures contained in PSD2 will not apply until 14 September 2019, which is the date of entry into force of standards on strong customer authentication and common and secure open standards of communication, it is still unclear what the full impact of PSD2 will be on the payments market in Europe. However, the potential for new and disruptive technologies is significant.

Banks within Europe are currently developing standards for application programming interfaces (API) that will allow providers of account information services and providers of payment initiation services to access payment accounts, though only with the consent of the account holder. An API Evaluation Group has been established to evaluate standardised API specifications and to make recommendations aimed towards API specifications convergence on a European level. APIs have to be available for use by September 2019.

From that time, a customer can buy from the website of an online retailer and, as part of that process, authorise a payment initiation service provider to contact their bank and

initiate the payment to the retailer, with the payment taken from the account of customer and transferred to the account of the retailer.

An account information service provider could use the application programming interfaces to scan a large range of banks, compare their respective offerings and find the best-priced product for the customer's needs, as determined by the transaction data that the customer has consented to share.[41]

Card payments are unlikely to be significantly disrupted by bank transfers, at least in the short term. This is on the basis of the ubiquity and widespread acceptance of card payments, the relatively low cost of card payments, and the existence of well-defined rules in card schemes, developed and refined over four decades, on protection of the consumer and liability of the merchant and issuer when things go wrong.

With time there is the potential for significant changes but much will depend on user take-up of the new offerings which in turn might be expected to depend on the nature of those in terms of cost, convenience, security, etc. High take-up could see banks disintermediated from their traditional role in payments, leaving them with less information on customer behaviour and less control over the customer relationship.

Other countries are also looking at various forms of opening access to account information held by banks. In Australia, all major banks will be required to make available to customers data on credit and debit card, deposit and transaction accounts from July 2019[42]. In the UK, the Open Banking initiative initially requires the nine largest banks and building societies to make consumer data available through Open Banking.

Distributed ledger technology

There have been a number of important new developments over the last 10 years in terms of digital technologies for payments, clearing, and settlement with cryptocurrencies to the fore of the digital wave. Cryptocurrencies are a digital means of payment in a distributed network, without the need for a trusted third party. The 'money' comprises of lines of computer code and transactions are recorded in a virtual ledger, ensuring that there can be no double spending. This differs from the traditional model that requires a trusted third party (such as a bank) to confirm the validity of the transaction.

Virtual ledgers are made possible through the use of distributed ledger technology, which provides a new way to keep ownership records and transfer ownership from one user to another, often with little to no information about the identity of the owner.

Distributed ledger technology is being explored, and has in some cases been implemented, for its potential to improve the efficiency of the existing global payments infrastructure, particularly in respect of cross-border payments where the traditional system of correspondent banking payments and transactions costly, complex and slow.

IBM, for example, with IBM Blockchain World Wire is working on an integrated network for real-time clearing and settlement which would allow banks and financial institutions to send

[41] The International Banker (2018), "PSD2: Opening Up Banking."
[42] https://www2.deloitte.com/au/en/pages/financial-services/articles/open-banking.html

and settle payments around the globe with finality in a matter of seconds, eliminating enduring challenges that have long hampered the cross-border payments industry.

Ripple, a real-time gross settlement system and remittance network that uses a centralised common ledger, is seeking to enable the near instant and direct transfer of money between two parties. Banks and payment service providers can use Ripple software to move money between different foreign currencies, as an alternative to using Swift.[43] Ripple is reported to have said earlier this year that distributed ledgers are not yet scalable or private enough for banks[44]. With the launch of Santander One Pay FX in April 2018, Santander began offering a blockchain-based international payments service to retail customers based on a Ripple-enabled mobile app[45].

JPMorgan, Royal Bank of Canada and ANZ have been testing an Interbank Information Network that uses blockchain technology to achieve near-instant resolution of issues where they arise with international payments, and over 70 banks are reported to have joined this network[46].

Swift, the interbank messaging service that handles over half of all high-value cross-border payments, earlier this year reported that it had completed a "proof of concept" test of distributed ledger technology to reconcile international payments between the accounts of 34 banks. It concluded that further progress is needed on the distributed ledger technology before it will be ready to support "production-grade applications in large-scale, mission-critical global infrastructures[47]".

Mastercard is working on distributed ledger technology, initially to be implemented to simply and make faster business-to-business cross-border payments. CirclePay, Messenger and WeChat all continue to build payment-based messaging platforms to enable efficient and faster lower-value P2P payments, including cross-border transactions.

It is still too early to say how distributed ledger technology will affect payments. The challenges identified with scalability and privacy may have technological solutions. Certainly, ledger technology, whether distributed or centralised, may have application beyond payments and may replace record keeping for important documents related to transactions such as record keeping for securities custody transactions at banks; property titles in real estate transactions; and record keeping for shipped cargo[48].

Cryptocurrencies

Digital currency includes all electronic forms of money that represent a store of value, medium of exchange (or payment) and unit of account. Unlike cash in the form of banknotes and coins that can only be issued by a central bank, it is possible for anyone to issue a digital

[43] Neyer and Geva (2017)

[44] https://www.reuters.com/article/us-blockchain-ripple/banks-unlikely-to-process-payments-with-distributed-ledgers-for-now-says-ripple-idUSKBN1J92JG

[45] https://www.cnbc.com/2018/04/12/santander-launches-blockchain-based-foreign-exchange-using-ripple-tech.html

[46] https://www.ft.com/content/41bb140e-bc53-11e8-94b2-17176fbf93f5

[47] https://www.ft.com/content/966f5694-22c6-11e8-ae48-60d3531b7d11

[48] The Economist (2018b)

currency. Indeed, there are over 2,100 cryptocurrencies at present, and this number is growing.

The most common example of privately issued cryptocurrencies is Bitcoin. Bitcoin and other similar crypto-currencies are not a liability of any institution and there is no trusted institution standing behind them. This means that they are independent from fiat money and are not backed by other assets[49], which contributes to dramatic price volatility.

Many cryptocurrencies have been associated with extreme price volatility in recent years. As such many cryptocurrencies may not to be suitable as a store of value. Since an asset can only act as a medium of exchange if people are prepared to treat it as a store of value, and as a unit of account only if it is used as a medium of exchange, Bitcoin does not meet the three basic functions of money. Cryptocurrencies generally fail to fulfil the roles of money owing to the high volatility they experience in value, reflecting at least in part that many cryptocurrencies have neither intrinsic value nor any external backing. However, in recent years, there have been a number of 'asset-backed' cryptocurrencies that are backed by more traditional collateral such as fiat currencies or commodities (e.g. gold).[50]

In addition, cryptocurrencies are essentially a bearer instrument; if someone acquires cryptocurrency by fraud or theft, the original owner has limited means of redress. As such, they present intrinsic challenges around investor and consumer protection and the prevention of money laundering.

The more heavily-used cryptocurrencies face severe capacity constraints compared with other payment systems[51], which can slow transaction times and increase the cost of a transaction.

Cryptocurrencies, and distributed ledger technologies, are of growing interest to policymakers, and the Department of Finance earlier this year published a discussion paper on virtual currencies and blockchain technology, and announced the subsequent creation of an internal working group to monitor further developments in this area.

Central bank issued digital currency

At the same time as developments in technology have allowed the development new forms of digital currencies, some counties are experiencing a fall in the use of cash. As cash use falls, this reduces the potential for cash as an alternative to existing payment systems. In Sweden, more than half of all bank branches no longer handle cash, and seven out of ten consumers say they can manage without cash. (Arvidsson, Hedman, and Segendorf 2018)[52].

[49] Brainard, 2018; Cryptocurrencies, Digital Currencies, and Distributed Ledger Technologies: What Are We Learning? 15 May 2018.

[50] USD Coin issued by Circle (1:1 ratio of US Dollars:USD Coin): https://www.circle.com/en-ie/usdc and Royal Mint Gold: https://www.royalmint.com/invest/bullion/digital-gold/

[51] The Future of Money; Speech given by Mark Carney, Governor of the Bank of England to the inaugural Scottish Economics Conference, Edinburgh University; 2 March 2018.

[52] Going Cashless - The governor of the world's oldest central bank discusses his country's shift toward digital money. Stefan Ingves. IMF June 2018. Finance & Development, page 11.

Cash now accounts for just 13 percent of payments in stores, according to a study of payment habits in Sweden (Riksbank, 2018)[53]. Use of cash is also falling in Norway, Denmark, and Finland (Kireyev, 2017), but not by much in the Euro area. As the use of cash declines in a country, the ability of the central bank to promote a safe and efficient payment system diminishes. A question remains whether the infrastructure of cryptocurrencies could be combined with the trust inherent in existing fiat currencies to create a central bank issued digital currency.

A central bank issued digital currency could take one of two forms. The first of those would be universally available, allowing anyone to hold the currency. The second would be confined to financial institutions.

A universally available central bank issued digital currency – essentially an electronic version of physical cash - would mean that substitution between deposits in central bank issued digital currency and bank deposits becomes possible, as it would allow customers to move deposits from bank accounts and place them instead with the central bank. This risks disintermediating banks as deposit-takers and so carries implications both in terms of bank lending to individuals and businesses and in terms of financial stability.

It would also carry implications for seigniorage and for the transfer of monetary policy. Sweden is investigating the possibility of giving the general public access to digital currency in the form of an e-krona.[54] Significant investment in new infrastructure would be required to create, issue and maintain a digital currency network and digital currency increases the risk of consumers losing large sums of money if they lost the device on which their digital currency is stored (Bascand 2018[55]). A universally available central bank issued digital currency would also be vulnerable to outages and cyberattacks. Given the technological shortcomings in distributed ledger technologies already mentioned, including the problems with scalability and privacy, a universally available seems unlikely in the short term.

Some countries are examining alternative forms of digital currency. Confining a central bank issued digital currency to financial institutions would allow settlement of inter-bank transfers on a distributed ledger. The Bank of Canada[56] and the Monetary Authority of Singapore[57] are involved with projects to examine the possibility of this digital currency in this form in order to replacement legacy wholesale payments systems that are becoming outdated.

The key advantage to having a universally available central bank issued digital currency is the ability to instantly clear and settle payments, but SEPA instant credit transfer and the TARGET instant payment settlement will offer this ability by conventional means shortly (see earlier discussion in this section regarding Instant Payments).

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[53] In 2007, the value of cash in circulation in society was SEK 112 billion. Today, just over SEK 50 billion remains. https://www.riksbank.se/en-gb/press-and-published/notices-and-press-releases/debate-articles/payments-in-the-future-and-legal-protection-for-the-swedish-krona/

[54] https://www.riksbank.se/en-gb/press-and-published/notices-and-press-releases/debate-articles/payments-in-the-future-and-legal-protection-for-the-swedish-krona/

[55] In search of gold: Exploring central bank issued digital currency ; Geoff Bascand, Deputy Governor, Reserve Bank of New Zealand; 26 June 2018

[56] https://www.bankofcanada.ca/research/digital-currencies-and-FinTech/FinTech-experiments-and-projects/

[57] https://www.straitstimes.com/business/companies-markets/singapore-wary-of-issuing-digital-currencies-to-public-mas-chief

3.5 Value of Competition/Collaboration in Payments

Payment systems are commonly characterised by a series of collaborative arrangements alongside competition in downstream provision of payment services ('upstream cooperation combined with downstream competition')[58]. The cost structure of 'upstream' payment system infrastructure is often characterised by a predominance of fixed costs over variable costs, which can give rise to the emergence of a 'natural monopoly' which implies that the market in question may be more efficiently served by a single supplier rather than by two or more competing suppliers. Competition at the 'downstream' system operator level can result in lower fees, increased convenience and improved services. It may also promote innovation which may, for example, open up payment services to people who do not have a bank account or cannot qualify for a credit card.

Historically, there was a high level of collaboration by the main Irish banks regarding their payment systems. This was driven by the need to provide the core 'upstream' infrastructure on which paper and electronic payment systems depend. In 2001, five clearing companies operated in Ireland which were co-owned by the Irish retail banks, and which came under the auspices of IPSO (the Irish Payment Services Organisation). IPSO's shareholders as of 2001 included the main Irish-owned banks, the foreign retail banks with a presence in Ireland, and the Central Bank. A list of the five companies which operated under the remit of IPSO along with their function and current status is shown in the next table.

Table 3.5: Collaborations between Irish Banks

Company	Function	Current Status (2018)
Irish Paper Debit Clearing Co Ltd	Formed to create, maintain and operate a payment, clearing & settlement system for domestic paper debits.	Merged into The Irish Paper Clearing Company in 2002. Current members (as of 2018) are AIB, Bank of Ireland, BNP Paribas (Dublin), Central Bank of Ireland, Danske Bank, Permanent TSB and Ulster Bank Ireland.
Irish Paper Credit Clearing Co Ltd	Formed to create, maintain and operate a payment, clearing & settlement system for domestic paper credits.	
Irish Retail Electronic Payments Clearing Co Ltd (IRECC)	Formed to create, maintain and operate an electronic funds transfer payment, clearing and settlement system for domestic electronic payments.	With the migration from domestic electronic payment schemes to the Single Euro Payment Area (SEPA) IRECC and IRIS were closed in 2014.
Irish Real Time Interbank Settlement Co Ltd (IRIS)	IRIS was the Irish RTGS (real-time gross settlement) system. IRIS was a component of TARGET, the former RTGS system which processed euro through national RGTS systems of the ESCB and the European Central Bank.	
Laser Card Services Ltd.	Formed to create, maintain and operate the Laser Debit card scheme.	Abolished in 2014 as banks had independently migrated to internationally branded card schemes, notably VISA and MasterCard.

Source: Indecon

[58] London Economics (2014)

Since the migration to SEPA, the core payments infrastructure on which Irish electronic payments are based are now either European or global, which has lessened the need for collaboration between the Irish banks. Prior to the advent of SEPA, the banks operated the Irish Retail Electronic Payments Clearing Company Ltd. (IRECC) and the Irish Real Time Interbank Settlement Co Ltd (IRIS) to create, maintain and operate an electronic funds transfer payment, clearing and settlement system for domestic electronic payments. Following the migration to the Single Euro Payment Area (SEPA), IRECC and IRIS were liquidated. Irish banks have also migrated away from the domestic legacy Laser debit card scheme to VISA and MasterCard branded cards. This in part was driven by the prospective high fixed costs of modernising the Laser Card scheme to allow for greater international acceptance, improve fraud prevention measures etc. Out of necessity, non-SEPA countries typically display more collaborative behaviours and structures, as they need to provide the core 'upstream' infrastructure on which payment systems depend. As such, a simple comparison of countries in terms of the extent of collaboration in payments may be misleading.

For paper-based payments, domestic collaboration continues to exist in the form of the Irish Paper Clearing Company which was formed in 2002. ATM services in Ireland are provided by banks directly to their customers, though a series of bilateral agreements exist between the banks to allow access by customers of the ATMs of competitor banks. ATM processing can also be achieved via the VISA and MasterCard schemes. An alternative potential model is for the establishment of a centralised utility to operate ATMs, such as is done in Finland[59].

In 2010 the European Commission[60] and the main Irish-owned banks agreed market access commitments. In particular, the banks committed to providing new entrants to the Irish banking market with access to the bank clearing system; debit card access to the ATM network; provision of market intelligence; access to cash supply and distribution services; and access to foreign exchange supply and distribution services. Further, they committed to offer these on 'fair, reasonable, and non-discriminatory terms' which would only allow them recoup incremental costs.

While the core payment infrastructure which underpin electronic payments made in Ireland is now provided on a global basis, there are still potential opportunities for collaboration. For example, Section 3.4 discussed collaboration in the roll-out of a mobile-based Instant Payment solution in Ireland. Further, that section also gave the example of the successful rollout of SWISH in Sweden. However, market segments such as this are increasingly typified by competition in parallel to collaboration. For example, mobile phone and Internet-initiated transactions and instant or close to instant P2P payments are also provided by, for example, PayPal, Square, Venmo, Alipay or Google Wallet, among others. In such cases, collaboration among banks is in part being driven by the threat of competition from (often) non-bank providers.

[59] Otto. is Finland's interbank ATM network which is owned and operated by Automatia.

[60] The publicly available decision in relation to this relates specifically to Bank of Ireland. See: http://ec.europa.eu/competition/state_aid/cases/233382/233382_1163194_133_2.pdf

New FinTech applications which compete with existing payment services from banks may explain why open banking arrangements are being developed for Europe. With open banking, third-party firms are allowed to access an individual's bank financial information – with the consent of the account holder - and can make transactions and initiate other financial arrangements on their behalf, in competition with the account holding bank. This will further open the payments market and can represent new forms of competition for existing banks.

Indecon believes that the extent of co-operation in the payment sector should be determined by market participants rather than by policy direction, subject to ensuring compliance with relevant Irish and EU competition law[61].

3.6 Summary of Findings

- The changes in the payment sector reflect the rapid evolution of payments infrastructure. Since the migration to SEPA, the core payments infrastructure on which Irish payments is based is either European or global.[62] Ireland has also migrated away from its domestic legacy Laser debit card scheme[63] to VISA and MasterCard branded cards. Ireland's ability to migrate to e-payments is impacted by our access to payments infrastructures. Since the advent of SEPA, Ireland's only indigenous payment systems infrastructure is the Irish Paper Clearing Company CLG (IPCC). All of the other payment systems currently in use are 'pan-European' or global and these comprise of:
    - TARGET2 – the Eurosystem's real-time, gross settlement system, which is used for large-value payments;
    - EURO1 – a private sector, pan-European system operated by a private company – EBA Clearing – that is used for processing large-value, same-day euro transactions;
    - STEP2 – the pan-European retail payment system operated by EBA Clearing. STEP2 is used to process all euro-denominated 'retail' payments (e.g., credit transfers); and
    - Payment cards (credit/debit/ATM) in Ireland are for the most part provided via the Visa and MasterCard international card schemes.
- There are differences as to the number of ATM and Point of Sale terminals in different countries. Ireland has a lower than average number of ATMs compared to the EU, but a higher than average number of Point of Sale terminals.
- An important element of payment infrastructure relates to the number of cards in issuance. The aggregate number of cards in issuance is now close to six million in Ireland.

[61] European competition law derives mostly from articles 101-109 of the Treaty on the Functioning of the European Union (TFEU).

[62] UCC (2016) "Role of Digitalisation and innovation in creating a true single market for retail financial services and insurance."

[63] These were often co-branded with international schemes to facilitate greater acceptance both online and internationally.

- Debit cards now account for 74% of all cards in issuance in Ireland. This highlights the importance of debit cards in considering the future of Irish electronic payments. The evidence also shows a strong increase in the share of debit cards which may reflect the fact that contactless cards came in fully in 2015.
- The development of payment infrastructure in Ireland has altered consumer perceptions and behaviour. Survey evidence with Irish consumers indicates a slightly higher perceived availability of non-cash alternatives than the EU average.
- Payments technology is evolving very rapidly, enabled by regulatory measures to open up payment markets to competition on a pan-European basis. Given the rate of innovation within payments, it is not possible to definitively predict which FinTech developments will gain widespread acceptance. However, there are a number of areas which merit ongoing monitoring. These include:
    - Instant Payments;
    - Access to accounts under PSD2;
    - Distributed ledger technology
    - Cryptocurrencies; and
    - Central bank issued digital currency.
- Payment systems are commonly characterised by a series of collaborative arrangements alongside competition in downstream provision of payment services ('upstream cooperation combined with downstream competition'). Historically, there was a high level of collaboration by the main Irish banks regarding their payment systems. This was driven by the need to provide the core 'upstream' infrastructure on which paper and electronic payment systems depend. Since the migration to SEPA, the core payments infrastructure on which Irish electronic payments are based are now either European or global, which has lessened the need for collaboration between the Irish banks. Irish banks have also migrated away from the domestic legacy Laser debit card scheme to VISA and MasterCard branded cards.
- For paper-based payments, domestic collaboration continues to exist in the form of the Irish Paper Clearing Company which was formed in 2002. ATM services in Ireland are provided by banks directly to their customers, though a series of bilateral agreements exist between the banks to allow access by customers of the ATMs of competitor banks. ATM processing can also be achieved via the VISA and MasterCard schemes.
- While the core payment infrastructure which underpin electronic payments made in Ireland is now provided on a global basis, there are still potential opportunities for collaboration. For example, the roll-out of mobile-based Instant Payment solutions in Ireland is an area of potential collaboration, such as is already seen with SWISH in Sweden. However, market segments such as this are increasingly typified by competition in parallel to collaboration. For example, mobile phone and Internet-initiated transactions and instant or close to instant P2P payments are also provided by, for example, PayPal, Square, Venmo, Alipay or Google Wallet, among others.

New FinTech applications which compete with existing payment services from banks may explain why open banking arrangements are being developed for Europe.

- Indecon believes that the extent of co-operation in the payment sector should be determined by market participants rather than by policy direction, subject to ensuring compliance with relevant Irish and EU competition law.

4 Payments and the Enterprise Economy

4.1 Introduction

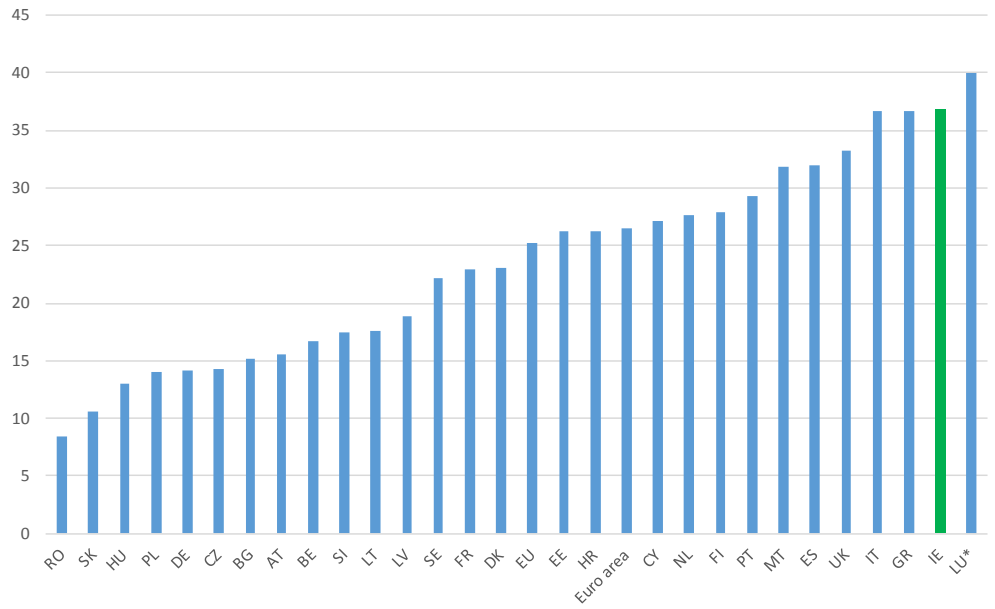
In this section we examine payments and the enterprise economy, including the capacity of businesses to embrace the use of e-payments and the costs associated with the choice of accepting different forms of payment.

4.2 Cost to Merchants of Payment Acceptance

Methods of payment are examples of what economists call two-sided markets. Broadly speaking, a two-sided market is one in which 1) two sets of agents (e.g. consumers and merchants) interact through an intermediary or platform, and 2) the decisions of each set of agents affects the outcomes of the other set of agents. The success of a payment system requires both consumer usage and merchant acceptance. In this section we review the capacity of merchants to embrace the use of electronic payments, and the costs associated with this decision.

The capacity and willingness of merchants to accept card payments can be gauged in the first instance by the number of payment terminals in Ireland relative to the rest of Europe. As can be seen in the next table, Ireland has one of the highest numbers of terminals per thousand population in Europe, second only to Luxembourg.

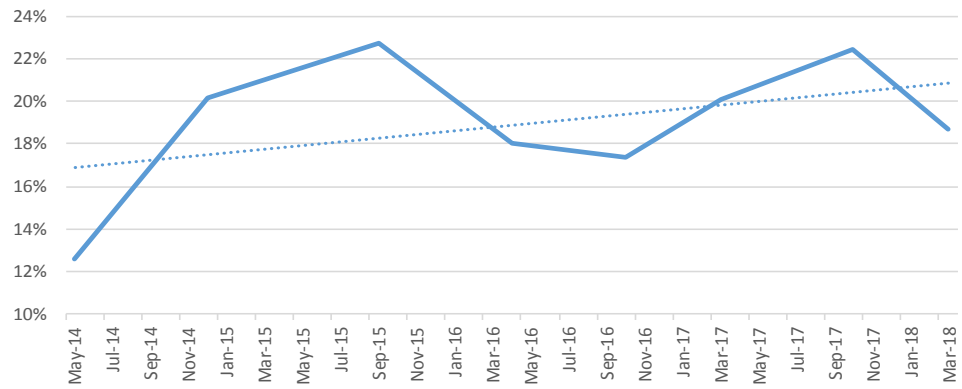
Figure 4.1: Number of Card Terminals Per Thousand Population, 2015-2017



Source: ECB (2018). *Note: given the volatility in the reported series, the 2015-2017 average is shown. Note also that Luxembourg's total (269) far exceeds that of the rest of Europe, and is shown in truncated form in the graph.*

Businesses can also accept payments online. A survey of Irish SMEs suggests that only around one in five have a website which includes the ability for consumers to make payments. This is illustrated in the next figure. This is consistent with previous estimates quoted by Local Enterprise Office that only 23% of small businesses use eCommerce in any meaningful way[64]. Given the evidence on the percentage of online credit card payments presented earlier in this report, this suggests the need for further progress by enterprises in Ireland to embrace the use of e-payments.

Figure 4.2: % of SMEs with Websites with Online Payment functionality, 2014-2018

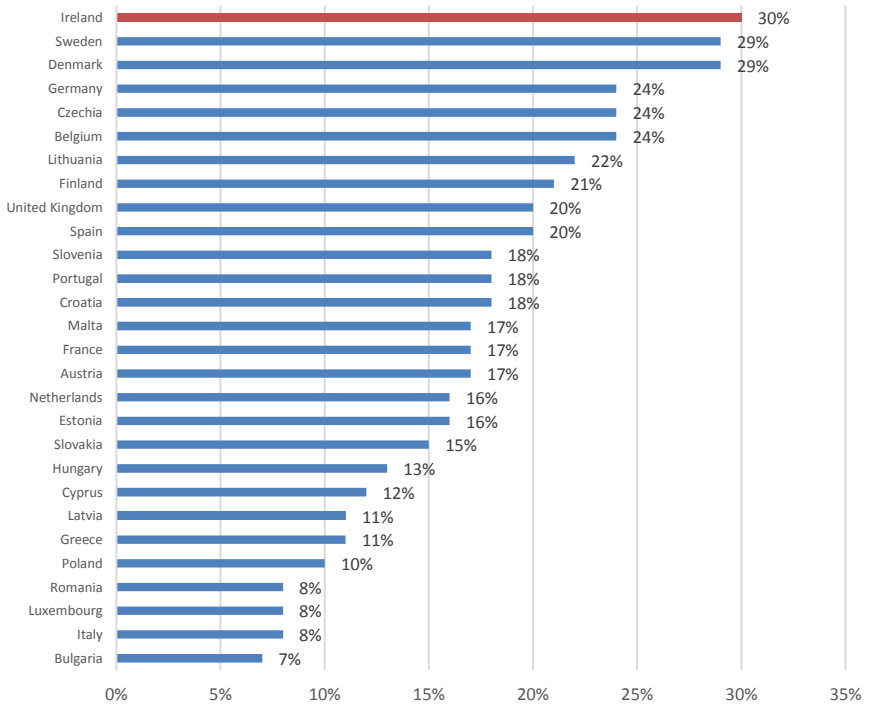


Source: Dot i.e. Digital Health Index, various editions. Note: Trendline is shown as the dotted line

Of note is that the number of enterprises selling online is greater than firms with the ability for consumers to make online payments. Survey evidence provided by the Information Society suggests that around 30% of Irish enterprises are selling online and indeed the survey results suggest that this is higher than in other European countries. Encouragingly, the evidence also indicates that eCommerce turnover from enterprises in Ireland as a percentage of total sales was higher than in the other EU countries.

[64] https://www.localenterprise.ie/Fingal/Financial-Supports/Trading%20Online%20Vouchers/

Figure 4.3: Enterprises selling online (at least 1% of turnover)



Source: Eurostat

E-sales can be done via websites or apps (web sales) or in an automated way via Electronic Data Interchange (EDI) type messages; enterprises may offer one or both options to their clients[65]. EDI is the secure, automated exchange of electronic documents, such as purchase orders, invoices and delivery notes, between businesses or trading partners using a standardised format that allows different computer systems to communicate with each other.[66] The figures in the table below suggests that while only 16% of Irish enterprises turnover comes from sales via websites or apps, this is higher than in any other EU country.

[65] https://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics

[66] https://www.truecommerce.com/uk-en/resources/faq-eng/what-is-edi

Table 4.1: Importance of E-Commerce for Enterprises			
	Enterprises' total turnover from e-commerce	Enterprises' turnover from web sales	Enterprises' turnover from EDI-type sales
Greece	4%	3%	1%
Bulgaria	5%	2%	3%
Cyprus	5%	3%	2%
Romania	8%	4%	4%
Latvia	9%	5%	4%
Italy	10%	4%	7%
Croatia	11%	4%	7%
Lithuania	13%	7%	5%
Malta	13%	5%	8%
Austria	14%	3%	11%
Luxembourg	14%	N.A.	N.A.
Netherlands	15%	7%	7%
Poland	15%	5%	10%
Estonia	16%	7%	10%
Spain	16%	6%	10%
Portugal	16%	6%	11%
Slovenia	16%	3%	13%
France	19%	6%	13%
Sweden	19%	8%	11%
Hungary	20%	6%	14%
Germany	21%	7%	14%
Finland	21%	6%	14%
Norway	21%	10%	10%
Slovakia	22%	6%	16%
Denmark	23%	7%	16%
Belgium	31%	13%	19%
Czech	31%	9%	22%
Ireland	33%	16%	18%
Source: Eurostat			

There are a number of current initiatives in this area which are designed to assist businesses to have the capacity to respond to changes in the usage of electronic payments. Indecon notes for example that in September 2018 the Department of Business, Enterprise and Innovation, launched a €625,000 pilot competitive scheme to support retailers to strengthen their online trading capabilities in order to compete internationally. The purpose of this scheme is to support Irish owned SMEs to embed a more sophisticated online trading (e-tailing) strategy in their business model.

In supporting businesses to develop their digital presence to avoid missed opportunities the Department of Communications, Climate Action and Environment introduced a Trading Online Voucher Scheme and teamed up with the Local Enterprise Offices to roll out the scheme under the National Digital Strategy. This offers a small business the opportunity to

develop their website or digital marketing strategy by availing of vouchers of up to €2,500 or 50% of expenditure. The evidence in the table shows significant levels of take-up of this scheme.

Table 4.2: Trading Online Vouchers and Mentoring Participants

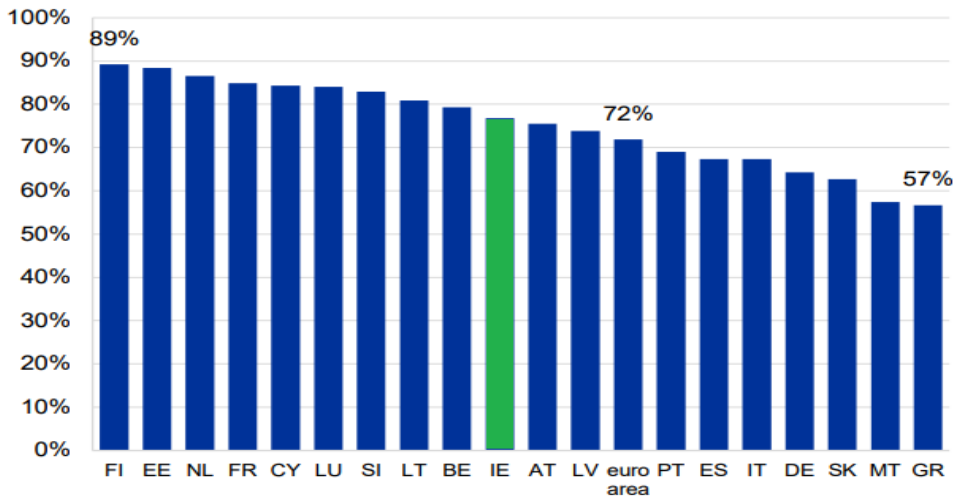
Authority	No. of Trading Online Vouchers Approved by the LEO in 2016	No. of Participants who Received Mentoring from 01/01/2016 to 31/12/2016
Carlow County	22	147
Cavan County	14	98
Clare County	37	43
Cork City	35	203
Cork County	102	629
Donegal County Council	25	26
Dublin City	104	1,154
Dun Laoghaire-Rathdown	74	389
Fingal County	51	748
Galway City	N/A	N/A
Galway County	54	69
Kerry County	64	138
Kildare County	25	344
Kilkenny County	28	303
Laois County	18	218
Leitrim County	18	107
Limerick City and County	58	232
Longford County	12	67
Louth County	39	124
Mayo County	22	191
Meath County	11	229
Monaghan County	22	71
Offaly County	14	190
Roscommon County	18	265
Sligo County	27	163
South Dublin County	37	420
Tipperary County	33	143
Waterford City and County	49	180
Westmeath County	25	105
Wexford County	45	132
Wicklow County	58	436
TOTALS	**1,141**	**7,564**

Source: National Oversight and Audit Commission Performance Indicators in Local Authorities 2016

The extent to which consumers use cards may also be influenced by their perception of the availability of non-cash forms of payment. Survey evidence on Irish consumers reported

perceptions indicate a slightly higher perceived availability of non-cash alternatives than the EU average as shown in the next figure.

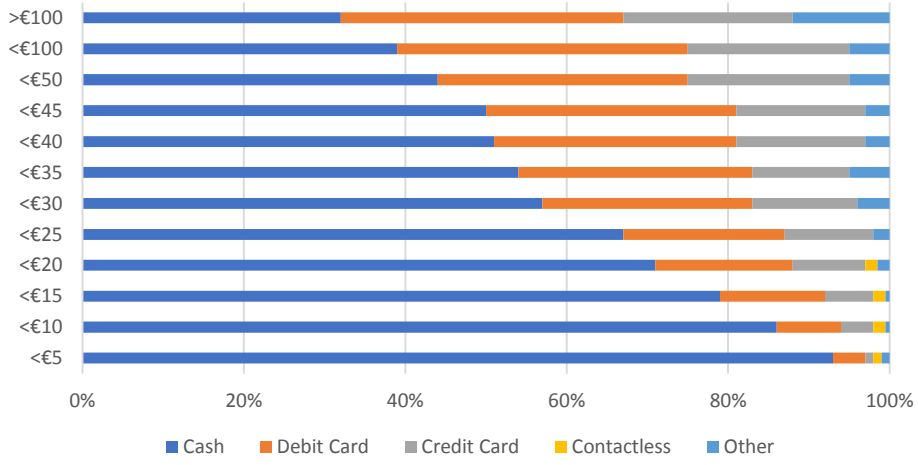
Figure 4.4: Perception of Availability of Non-Cash forms of Payment, 2016[67]



Source: Esselink and Hernández (2017)[68]

The choice of payment means is influenced by the average size of transaction that a merchant typically faces. Cash remains by far the most used form of payment for small transactions (less than €45), though cards are more frequently used for higher value purchases and account for 20% of all POS payments in total.[69]

Figure 4.5: Payment Method by Transaction Value in Europe



[67] Figure for Germany relates to 2014.

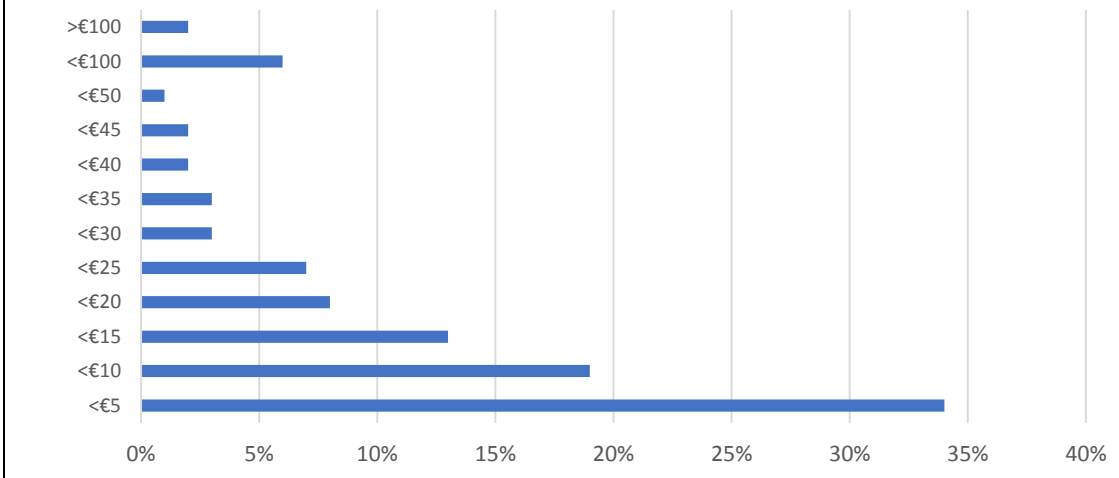
[68] "The use of cash by households in the euro area", ECB Occasional Paper.

[69] ECB (2017)

Source: Esselink and Hernández (2017)[70]

More than one in three transactions are for less than €5. The current dominance of cash for such lower value transactions in part explains the continued popularity of cash. However, this also shows the potential for contactless, as 84% of all transactions are for values less than the current contactless limit of €30.

Figure 4.6: Number of Transactions by Value in Euro Area

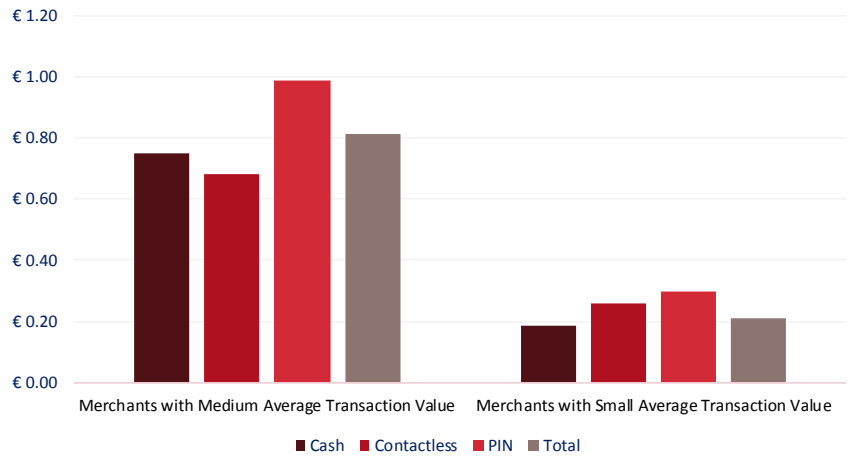


Source: Esselink and Hernández (2017)

The available evidence on the cost of cash versus payments by electronic means in Ireland is very limited. However, new survey evidence by one card company obtained by Indecon for this study suggests that the relative cost of cash varies with transaction value as is shown in the next table. An issue with all estimates of the costs of different payment mechanisms is the difficulty in obtaining precise estimates of certain elements of costs such as the value and costs of holding cash and the implications of alternative mechanisms in terms of internal operating costs including staff costs as well as any capital costs involved. All average estimates should therefore be considered as illustrative of the potential costs of different options and these may differ by enterprise characteristics.

[70] "The use of cash by households in the euro area", ECB Occasional Paper.

Figure 4.7: Average Cost in € per Transaction by Retailer Type in Ireland

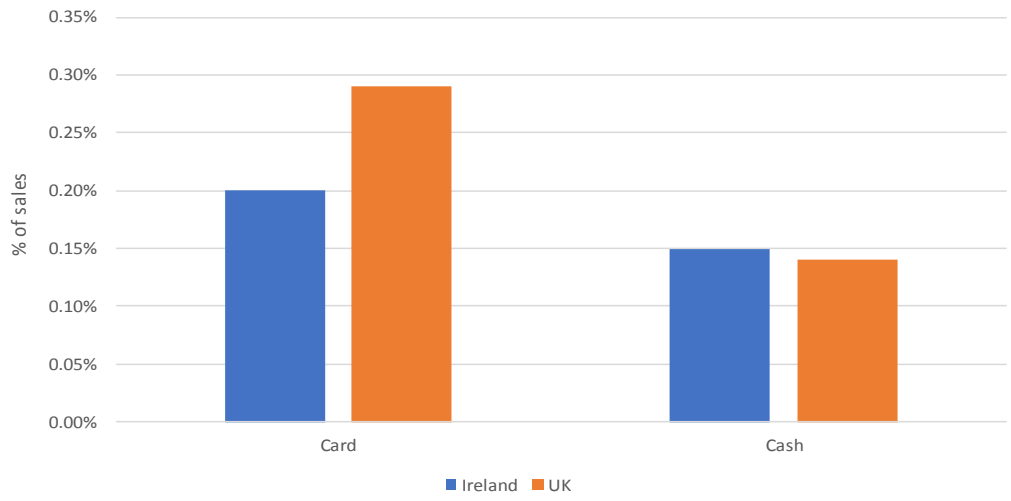


Source: VISA (2017). Note: This includes estimates of 'front office' costs.

For large retailers, economies of scale may allow for lower average cost levels. The next table reports anonymous data provided to Indecon for the average cost per transaction by payment type for a larger retailer[71] in Ireland, and a large retailer in the same sector in the UK. The figures show that the estimated direct average cost as a percentage of sales appears to be lower for cash than for card. Indecon would note that the cash costs are only the costs paid to external providers such as banks and security companies and do not include any internal store costs faced by the retailers in handling cash and therefore do not fully represent the overall costs faced by retailers. A marked difference in cost is reported between card transactions in Ireland and in the UK, with costs in Ireland being lower than in the UK. This lower estimate for the cost of accepting cards in Ireland was partly driven by the EU cap on interchange fees on debit cards effective 1 January 2016 with the Irish government decision to cap at 0.1%, making Ireland's debit card interchange rate one of the lowest in Europe. The equivalent figure in the UK is 0.2%.

[71] Note that the figures quoted relate only to the external cost of payments. This will distort any comparison between payment types, given in particular that internal (back-office) costs for cash tend to be a higher proportion of the cost of cash than for card, as illustrated for smaller retailers as above.

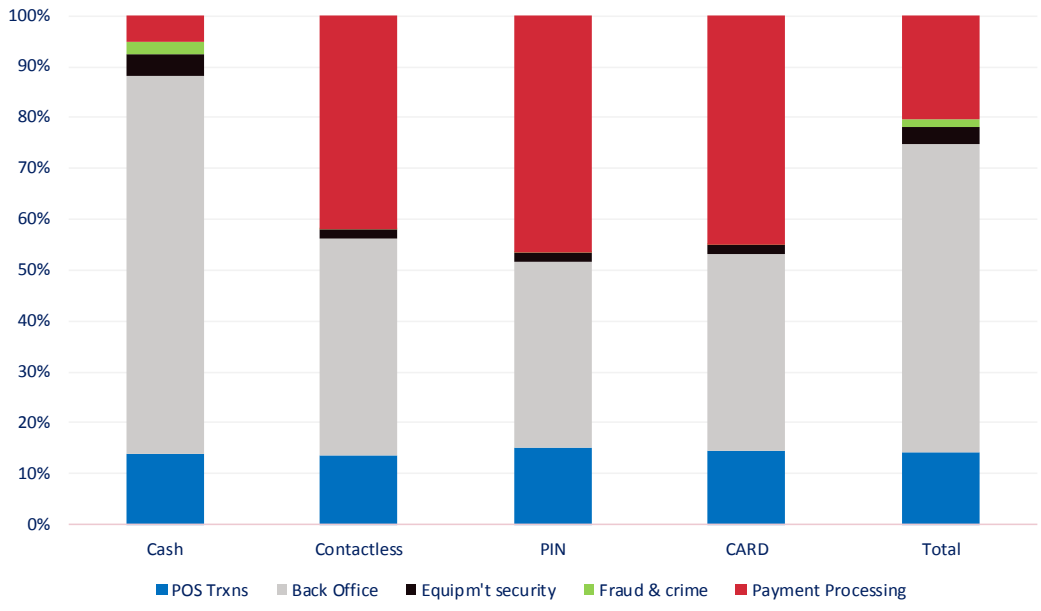
Figure 4.8: Illustrative Average Cost as a Percentage of Sales for Large Retailers



Source: Indecon. Figures for one large retailer in Ireland and from a large retailer in the same sector in the UK.

Estimating back office costs is very difficult but a study involving retailer interviews and some other Visa research provided to Indecon suggests that back office costs may be the single most important source of cost in payment system. This however, is likely to vary by type of retailer and further independent research is required to derive more comprehensive independent data on this.

Figure 4.9: Decomposition of Costs by Payment Type



Source: VISA (2017)

4.3 Payment Speeds

An important non-cash consideration is the average time to complete a transaction. A faster transaction time can benefit both the consumer and the merchant and is an important determinant of the overall 'convenience' by which different payment methods are judged. For example, while cheques were previously commonly used in Ireland at the Point of Sale, the emergence of the much faster and more secure debit card has resulted in the virtual phasing out of the practice of accepting cheques in Irish retailers. The development of contactless payments is another key development which is changing payment patterns.

The primary stated advantage for contactless technology is the speed of the transaction when compared with a traditional Chip & Pin transaction. The time taken to complete a transaction is not only dependent on the method of payment, but also depends on the context of the payment.

For example, one study of Irish retailers suggested that for transactions with larger values, consumers had a slower speed of transaction even for the same payment methods (i.e. cash transactions for low value transactions took a shorter time period than cash transactions for higher value transactions, and similarly for contactless and Chip & Pin transactions)[72]. This may be because a retailer is building a relationship with the consumer, because other aspects of the transaction take longer (e.g. packing), or because the consumer is more likely to wait for a receipt for certain transactions. It should also be noted that the take-up and familiarity with contactless has shown very rapid increase in usage of this technology. It is possible that there are still 'learning effects' among retailers and consumers in the use of contactless, and that improved transaction times for contactless transactions may be observed in the future. More generally, the efficiency of a merchant in dealing with card payments and administration makes a significant impact on the cost of acceptance. Finally, internet speed will have an impact on Chip & Pin transactions, but not on the speed of a contactless transaction. One of the main differences between traditional card payments and a contactless transaction is that for contactless the transaction is not sent for authorisation to the issuer. However, there are certain checks that are done on the cards by the terminal, in particular the number of offline transactions allowed before the user has to input a PIN code[73].

4.4 Payments and Consumers

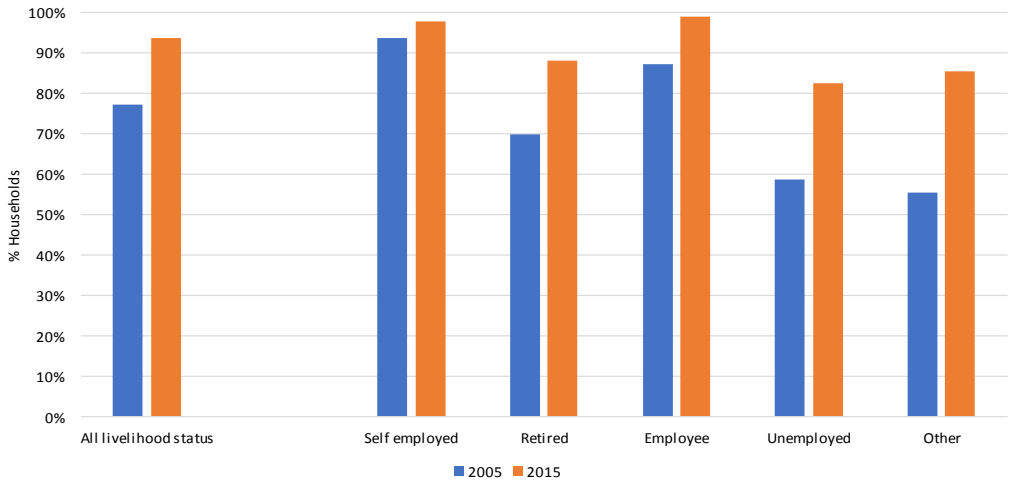
One of the factors which influences the rate of take-up of electronic forms of payment has been access to a bank current account. Access to a current account has historically been necessary to access a payment card, or to avail of other electronic forms of payment, such as paying by direct debit. Access to a current account has increased dramatically over the last decade. While in 2005, 22.8% of all households did not use a bank account, by 2015 this had fallen by almost three-quarters to just 6.3% of all households (see next figure). While

[72] VISA (2017). This study on Irish merchants was conducted by PSE Consulting/PSE on behalf of Visa, and the field work was conducted between February and March 2017. The fieldwork consisted of a three-hour visit involving stopwatch timing of up to 50 POS transactions, followed by a face to face merchant interview to obtain estimates of end to end costs.

[73] www.verdict.co.uk/electronic -payments-internatioal/comments/tap-and-go-overdrawn-does-offline-nfc-pose-risk-4646567/

use of a current account for employees is now almost universal (99.1%), the rate of current account use among the unemployed has also risen, from 58.8% in 2005 to 82.5% by 2015. The figure below shows the percentage of households with access to a current account by livelihood status. In section 2.5, the reasons for increased take-up of cards and therefore electronic accounts were discussed, which included: greater accessibility of payment accounts as a consequence of the transposition of the Payment Accounts Directive; reduction of interchange fees under the Interchange Fee Regulation; increased acceptance by retailers; restructuring of Stamp Duty announced in Budget 2016; introduction of electronic banking in many Credit Unions and by An Post; availability of non-traditional accounts through providers like N26 and Revolut; higher disposable income; increase in the limit for contactless transactions; and the increased popularity of contactless functionality.

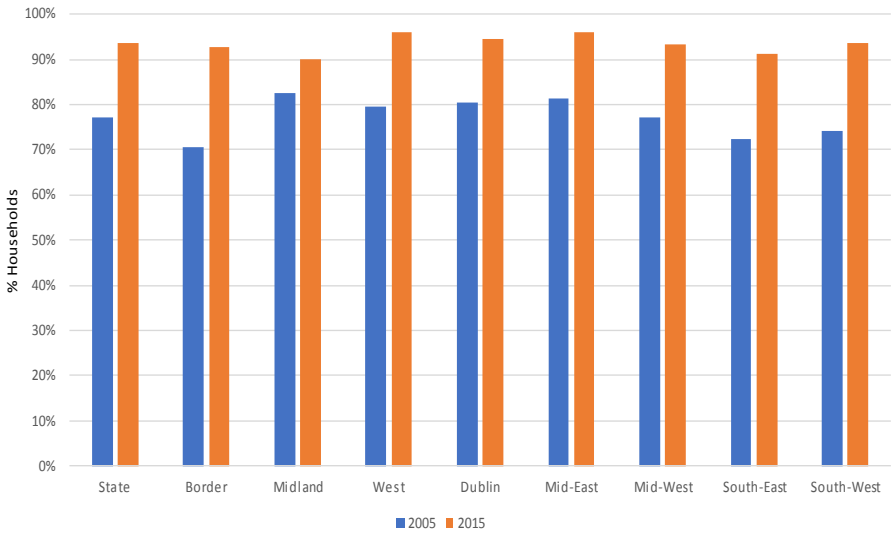
Figure 4.10: Households (%) by Livelihood Status with Use of a Current Account



Source: Indecon Analysis of CSO Household Budget Survey Data

A similar trend can be seen with regard to take-up of current accounts by region within Ireland, as shown in the next figure. Historically, current account use has been higher in rural areas than urban areas, with the percentage of households with access to an account of 79.8% and 75.6%, respectively, in 2005. While by 2015 the use of a bank account remains stronger in rural areas (95.2%) than in urban areas (93.1%), in both the use of bank accounts is now more common.

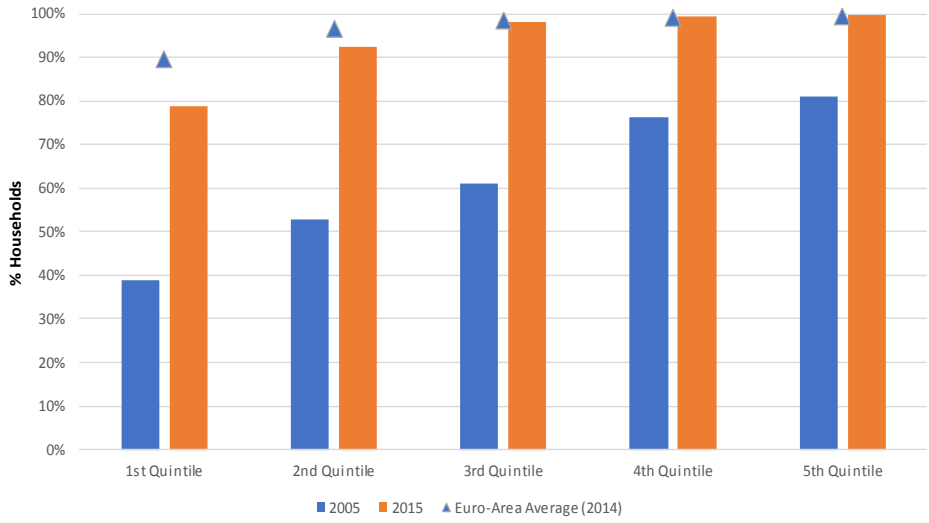
Figure 4.11: Households (%) by Region with Use of a Current Account



Source: Indecon Analysis of CSO Household Budget Survey Data

The proportion of low-income households with access to a current account in Ireland has more than doubled in ten years and significant improvements were recorded across all income ranges.

Figure 4.12: Households (%) by Income Level with Use of a Current Account

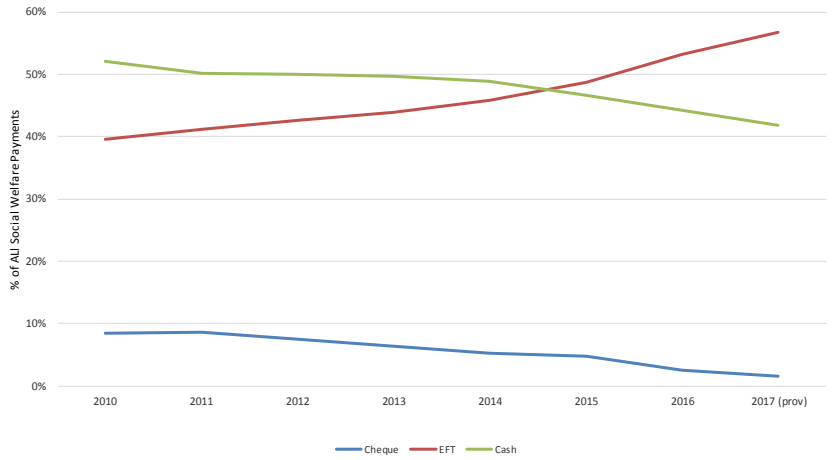


Source: Indecon Analysis of CSO Household Budget Survey Data, Banque de France and ECB

One important aspect of developments in electronic payments in Ireland is the increased take-up of electronic payments for social welfare payments. This is illustrated in the figure below. The figure shows that 40% of social welfare payments were made by electronic funds

transfer in 2010, and that this had risen to 57% by 2017.[74] There is also evidence that the rate of migration to electronic payments has accelerated since 2015.

Figure 4.13: Percentage of Social Welfare Payments in Ireland by Payment Method



Source: Department of Employment Affairs and Social Protection

In the future, traditional current accounts as a means of addressing financial exclusion may reduce in importance. For example, the use of mobile phone numbers or other identifiers as proxies for bank accounts is also serving to overcome the cultural and logistical issues that obstruct low income and rural consumers and businesses from accessing the benefits of financial services. One illustration of this is Thailand's new 'PromptPay' real-time payment infrastructure which allows for faster access to money and provides the basis for banks and other third-party providers to launch new financial products and services. There are now more than 36 million Thai citizens and 23 banks signed up to PromptPay.[75] PromptPay uses a Thai Phone Number, Thai ID or Company registration number as a proxy / forwarder which links to the citizen's bank account. 97% of the Irish population now have a Smartphone[76].

Research on consumer priorities in choosing a form of payment illustrated that a number of factors were reported as important by consumers, including habit, a feeling of control over finances, and convenience[77]. The cost of making payments was reported as a reason for choosing one payment over another, though was not one of the most important drivers for the choice of payment method. The table below reports on the perceptions of consumers regarding payment costs.

[74] Source: Department of Employment Affairs and Social Protection. Figures for 2017 are provisional.

[75] Financial Inclusion Accelerated: How Real Time Payments are Bringing Millions of People into the Economic Fold. Kapron (2018)

[76] Ipsos MORI for Mobile Consumer Survey.

[77] VISA (2017)

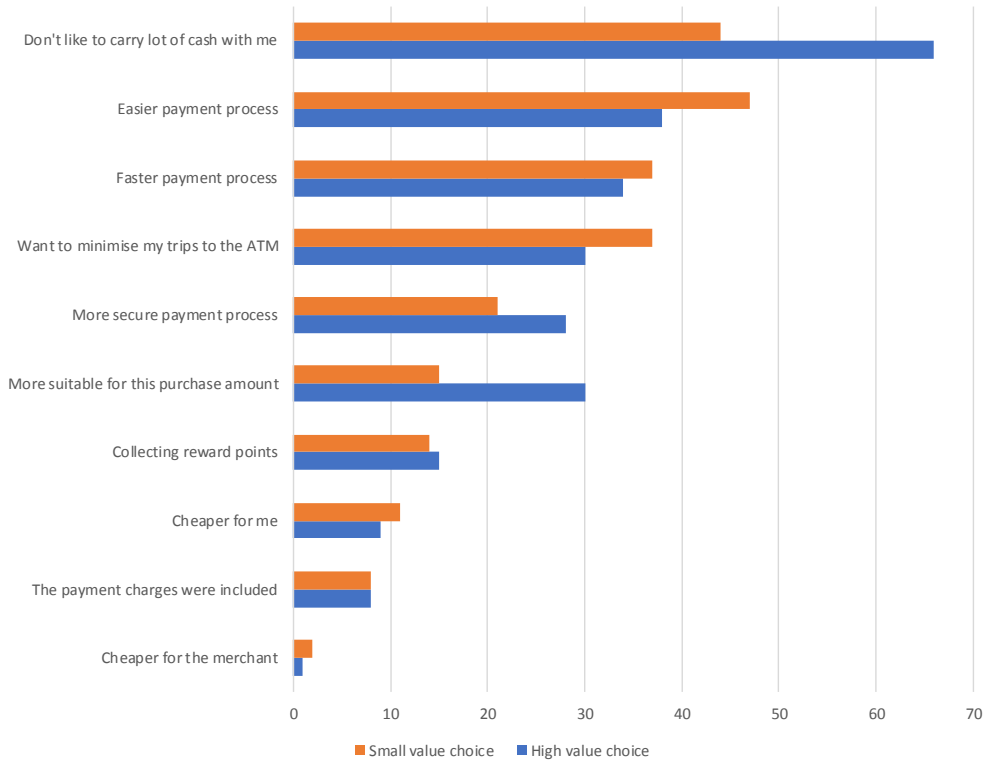
Figure 4.14: Perceptions of Payment Costs in Eurozone Countries					
	You always pay a fee per withdrawal	**You sometimes pay a fee at ATMs**	**You never pay a fee for withdrawing cash at ATMs**	**You do not know what fees you pay for withdrawals**	**Don't know**
Euro area	6%	26%	60%	7%	0%
MT	3%	9%	81%	3%	4%
PT	2%	4%	75%	17%	2%
ES	3%	21%	74%	2%	0%
CY	8%	7%	70%	11%	5%
FR	3%	29%	62%	6%	0%
EE	5%	18%	61%	16%	1%
GR	4%	26%	60%	9%	1%
AT	10%	11%	59%	21%	0%
FI	4%	17%	58%	19%	1%
BE	7%	16%	57%	20%	0%
LV	2%	31%	55%	12%	1%
IT	10%	35%	53%	3%	0%
IE	**27%**	**19%**	**38%**	**14%**	**1%**
LT	15%	25%	37%	23%	0%
LU	5%	48%	36%	10%	1%
SI	13%	44%	31%	12%	1%
SK	20%	43%	27%	9%	0%
Source: Esselink and Hernández (2017)					

Esselink and Hernández (2017)[78] conclude that the key driver of payment method is purchase value. For small amounts, European consumers are more likely to pay by cash than for high amounts. Individual habits also present very strong barriers to using alternative payment methods, while there is a strong individual preference for convenience over cost. The primary reason for consumers choosing to pay by card was that they didn't like to carry a lot of cash. This was reported by two-thirds of respondents in making large transactions, and 44% of respondents in relation to small transactions (see next figure). Other motivations included that paying by card was easier, faster, and more secure. A study of Irish consumers behaviour found that the main drivers for the choice of paying by card for consumers are also habit and convenience, as well as speed.[79]

[78] Esselink and Hernández: "*The use of cash by households in the euro area*"; ECB Occasional Paper Series; No 201 / November 2017.

[79] VISA (2017)

Figure 4.15: Consumers' Drivers in Choosing to Pay by Card



Source: European Commission (2013)

A European Commission study[80] investigated whether, given the fact that cost differences for different payment choices are often hidden to the consumer, more transparency of payment charges changed consumer behaviour in a way which enabled more price competition. The study concluded that the consumers' habits and beliefs as well as the immediate decision context (e.g. purchase value for offline shopping) drive the choice behaviour of consumers, while awareness of payment costs had no influence at all.

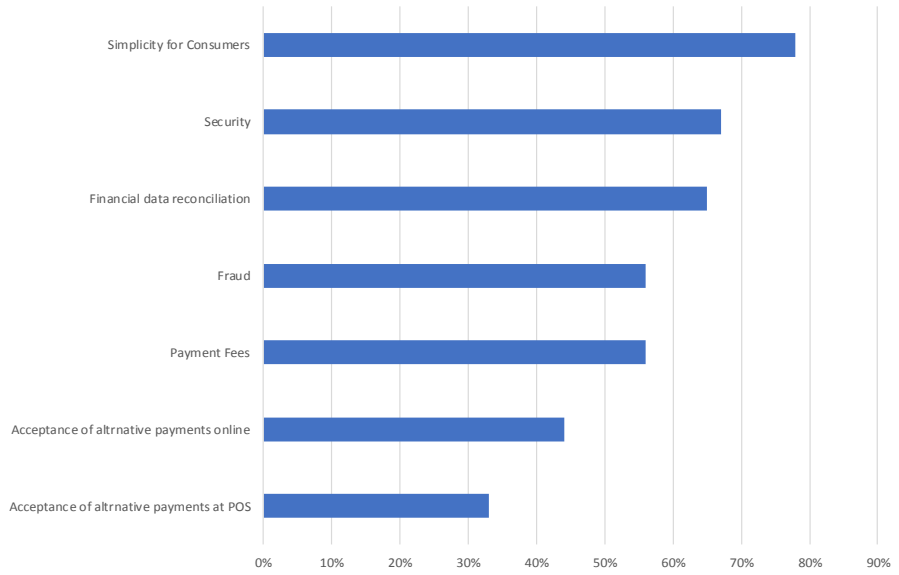
The consumers' self-recognised importance of 'habit' to explain their own payment behaviour can also help explain the relatively slow change in payment methods the world over. A study in the Netherlands, a relatively card-intensive country, showed that while seven out of ten Dutch consumers report to prefer using the debit card, only seven out of twenty actually pay mostly by debit card.[81] This may in part be related to the average transaction size. The persistence of habits also explains why the substitution of cash by debit cards has been at a slower pace than some expected. Evidence from surveys of Irish consumers who use cash indicate that the choice of which payment they choose is related to the personal past experience of the user.

[80] EC (2013), "Study on the effects of information disclosure on consumer choice of payment instruments."

[81] van der Cruijsen et al (2015), "In love with the debit card but still married to cash."

In terms of payment options a merchant provides, a survey of European retailers identified three challenges to accepting payments: simplicity for consumers (78%), security (67%), and financial data reconciliation (65%). Other issues, which are less important though still significant for more than 50% of retailers, include managing fraud and payment fees (both 56%).

Figure 4.16: Key Challenges in Accepting Payments for Merchants



Source: Edgar, Dunn & Company (2016) Payment trends in the European retail sector

A survey of merchants in Ireland in 2017 cited security, speed and cashflow into their bank account as benefits of card acceptance, with fees being the single most cited issue[82]. That survey also showed a number of perceived benefits for accepting cash, including that it gave the merchant access to immediate value and the speed of the transaction. The issues that merchants faced in accepting cash were dominated by concerns regarding risk, though merchants also cited costs of cash acceptance as an issue.

4.5 Summary of Findings

- It is useful to consider the role of payments in the real economy and this is influenced by the costs and convenience of different payment methods. The typical costs faced by enterprises for each form of payment are sensitive to the value of the transaction involved. Typically Chip & PIN is used for larger transaction values, while the typical value for cash and contactless transactions is similar, indicating that these are direct

[82] VISA (2017)

competitors. In Ireland, the use of cash is common for small-value transactions, although the rate of use of contactless payment is rising rapidly.

- The length of time per transaction depends to an extent on the average value of the transaction, even when a particular payment method is considered. For very large enterprises, economies of scale may allow for lower average cost levels. New evidence presented in this study shows that direct cost per transaction by payment type of a large retailer in Ireland compared to a retailer in the same sector in the UK suggests that the costs were 0.09% lower in Ireland (as a percentage of transaction value) than in the UK. This is likely due in part to the lower cap on interchange fees on debit cards in Ireland.
- In considering the readiness of enterprises in Ireland to respond to the developments in electronic payments, it is of note that around one in five have a website which includes the ability for consumers to make payments. Given the evidence on the percentage of online credit card payments presented earlier in this report, this suggests the need for further progress by enterprises in Ireland to embrace the use of e-payments.
- Of note is that the number of enterprises selling online is greater than firms with the ability for consumers to make online payments. Survey evidence provided by the Information Society suggests that around 30% of Irish enterprises are selling online and indeed the survey results suggest that this is higher than in other European countries. Encouragingly, the evidence also indicates that eCommerce turnover from enterprises in Ireland as a percentage of total sales was higher than in the other EU countries.
  - There are a number of current initiatives in this area which are designed to assist businesses to have the capacity to respond to changes in the usage of electronic payments and to develop their digital presence to avoid missed opportunities. The Department of Communications, Climate Action and Environment has, for example, introduced a Trading Online Voucher Scheme and teamed up with the Local Enterprise Offices to roll out the scheme under the National Digital Strategy. This offers a small business the opportunity to develop their website or digital marketing strategy by availing of vouchers of up to €2,500 or 50% of expenditure.

5 Economic and Risk Analysis

5.1 Introduction

The evidence in this report shows that the payment system in Ireland is currently experiencing rapid change and this reflects developments in other countries. This is being driven by the rollout of new payment functionality, such as contactless payments, as well as the emergence of new business models. This switch to electronic payments presents a number of complex policy issues and there are implications for the economy and for users of electronic economic and consumer payments.

5.2 Economic Analysis of Cash versus e-Payments

Our economic analysis of electronic payments suggests that there are benefits and also costs of adopting e-payments. The economic benefits supporting the move to a higher level of adoption of electronic payments includes potentially lower costs to consumers and enterprises, and also enhanced competitiveness. Electronic payments can also facilitate the development of innovative firms.

The economic costs of electronic payments include potential loss in economic activity to competition from overseas and the exclusion of more vulnerable members of Irish society. A key economic cost is the greater level of risk if there is a systematic failure in the electronic payment systems. A summary of the costs and benefits and risks of adopting e-payments is presented in the figure below.

Figure 5.1: Economic Costs and Benefits of Adopting e-Payments	
Economic Benefits	**Economic Costs**
Reduce resource costs of facilitating payments. For countries with the greatest take-up of e-Payments, the average cost of the Payment System is estimated at 0.8% of GDP, rising to 1.2% for those countries with a relatively paper-based payment system.[83]	Increase competition from abroad for retailers and other producers and could reduce domestic economic activity
Make tax evasion and other illegal activities difficult. Doubling of card payments could lead to reduction of shadow economy by 0.6–3.7% of GDP and increase government revenues by 0.1–0.8% of GDP.	Dependency on more sophisticated electronic means may exclude more vulnerable members of society.
Improvements in competitiveness	Risk of greater impact if there is a systematic failure of electronic payments system.
Paper currency and coins may be a public health and physical criminal risk	
Support enterprise development and facilitate other digital innovations (e.g. web commerce, and shared economy services.	
Source: Indecon	

The above costs and benefits of adopting e-payments is related to the potential risks and potential benefits of advances in technology concerning how FinTech is changing financial products. These are presented in the figure below.

[83] ECB (2012)

Figure 5.2: Potential Benefits and Potential Risks of Advances in Technology

Speed and convenience: FinTech products tend to be delivered online and so are easier and quicker for consumers to access.

Greater choice: Consumers benefit from a greater choice of products and services because they can be bought remotely, regardless of location.

Cheaper deals: FinTech companies may not need to invest money in a physical infrastructure like a branch network so may be able to offer cheaper deals to consumers.

More personalised products: Technology allows FinTech companies to collect and store more information on customers so they may be able to offer consumers more personalised products or services.

Unclear rights: FinTech companies may be new to the financial industry and use different business models. This can make it harder to ascertain which ones are regulated, and what consumer rights are if something goes wrong.

Making rash decisions: Products that are bought instantly online without meeting anyone face-to-face may make it easier for consumers to make uninformed decisions.

Technology-based risks: Products bought online may leave consumers more exposed to technology-based risks. E.g., personal data being mis-used or a consumer falling victim to cybercrime.

Source: Central Bank of Ireland

From an economic perspective an expansion of electronic payments is likely to make some form of tax evasion more difficult. In addition, there are potential economic benefits in facilitating trade and in enhancing enterprise competitiveness. However, there are also significant costs and risks of adopting electronic payments which need to be considered.

Depending on consumer behaviour and the readiness of Irish enterprises to adopt online trading, a move towards electronic payments could result in business from Irish consumers being diverted to overseas suppliers. (There are, however, also opportunities for Irish enterprises to gain a share of international markets).

A feature of electronic payments is also that they facilitate the development of innovative service provision. These include shared economy applications such as AirBnB, Uber, Peer to Peer Lending, as well as AutoPayment, a wide range of services including public transport provision, MyTaxi, Parking, Toll Roads.[84]

There may also be some health benefits from electronic payments as paper currency and coins may pose a public health risk, particularly when associated with the simultaneous handling of food and could lead to the spread of infections[85]. Cash also creates a physical risk of theft for retailers, particularly cash-dependent small businesses which cannot afford sophisticated security and cash transportation services.

There are a number of risks of adopting or non-adopting e-payments. These include the fact that dependency on more sophisticated electronic means may exclude more vulnerable

[84] Steve Huckle, Dr. Suparna Bhattacharya, Martin Whine, Natalia Beloff, "Internet of Things, Blockchain and Shared Economy Applications" Procedia Computer Science 98 (2016) 461-466. Also see L. Gomes, "The Future of Micropayments", Forbes Nov. 2009.

[85] Angelakis et al (2014), "Paper money and coins as potential vectors of transmissible disease."

members of society unless measures are taken to assist such individuals to adapt to changing circumstances.

One of the most significant risks concerns the impact of the failure of electronic systems. An example of such an incident occurred in Ireland in 2012, which saw a disruption to banking services as a result of a failure that occurred on the IT systems used to process daily banking transactions of a bank. There have also been very significant outages in the UK and in other countries. This highlights the ability of cash to act as a backstop in case of a failure in electronic payments. In countries such as Sweden, the risks of the absence of cash as an alternative payment mechanism have been recognised.

The adoption of e-payments increases certain risks. The two key risks are presented in the table below.

Figure 5.3: Risks of Adopting Electronic Payments

Ownership and Control Risks/fears regarding ownership and control of the payment system. This was raised in 2018 by the Swedish Central Bank and the Norwegian Central Bank.
Outage Lack of an alternative in case of an outage.

Source: Indecon

5.3 Risks to Payment Infrastructures

These risks are important as the payment system is a core component of the financial system, alongside markets and institutions. If modern economies are to function smoothly, economic agents have to be able to conduct transactions safely and efficiently. Payment, clearing and settlement arrangements are of fundamental importance for the functioning of the financial system and the conduct of transactions between economic agents in the wider economy. Private individuals, merchants and firms need to have effective and convenient means of making and receiving payments.

The contribution of a country's payment system to financial stability is twofold. First, depending on the structure of a country's large value payment network settlement failure rules, the unexpected failure of a (large or small) participant could lead to the reversal of a large share of that day's payments, severely disrupting the operation of financial markets. A second payment system threat to financial stability is the possibility that a natural disaster or terrorist event could shut down the RTGS system. This would severely disrupt Ireland and other EU Member States payment systems and financial markets, and potentially threaten financial stability. The measures taken to ensure that both TARGET2 and EURO1

are protected from such threats were discussed in section 3.2 above. The failure of a single participant to settle its end-of- day position, however, would not lead to a cascade of additional failures as posted collateral is available to cover a failure to settle that would fund a short-term Central Bank loan to make settlement. The Settlement Finality Directive (SFD) adopted in May 1998 regulates designated systems used by participants to transfer financial instruments and payments. It guarantees that transfer orders which enter into such systems are also finally settled, regardless of whether the sending participant has become insolvent or transfer orders have been revoked in the meantime. The participants to designated systems may be:

- financial institutions, e.g. banks
- systems operators, such as central securities depositories (CSDs) or central counterparties (CCPs)

Cyber-attacks are growing rapidly and pose a substantial risk to the stability of the overall financial sector. There are a number of estimates of the potential cost of cybercrime, for example Lloyd's of London estimates that a single global cyber-attack could result in damages of as much as USD 121bn.[86] Beyond financial loss, cyber-attacks can disrupt business, financial markets and contribute to a broader loss of confidence. The risk from cyber threats applies not only to the availability of systems, but also to the confidentiality and integrity of the data they contain.

Internationally, the financial services sector has been a target of cyber-crime due to both the attractiveness of financial gain and access to confidential financial data. The global financial sector in 2016 was attacked 65% more often than any other sector, resulting in more than 200 million records being breached, a 937% increase over 2015 when just under 20 million were breached.[87] The ECB have warned that cyber threats can potentially impact the financial ecosystem, including central banks themselves, and this in turn has implications for financial stability and the Eurosystem's reputation.[88]

Given the interconnectedness of the global financial system, a regulatory landscape has evolved to reflect this, including through standard-setting bodies and institutions – e.g. the Directive on the security of network and information systems, the General Data Protection Regulation, the Revised Payment Service Directive (PSD2), the guidance from the Committee on Payments and Market Infrastructures (CPMI) and the International Organisation of Securities Commissions (IOSCO), the G7 fundamental elements of cyber security, etc. The Eurosystem cyber resilience strategy for FMIs (Financial Market Infrastructures) was agreed in 2017, which aims to develop a range of tools which can be used by the regulators and markets, to facilitate effective cyber resilience and marry regulation with actual structures, solutions and processes to implement appropriate actions.

[86] Lloyds's of London. "Counting the cost: Cyber exposure decoded." 17 July 2017.

[87] IBM "Security trends in the financial service sector." April 28, 2017.

[88] Speech by Marc Bayle de Jessé, Director General Market Infrastructure and Payments, ECB, November 2017.

A computer security incident response team (CSIRT) is an entity that is assigned the responsibility for coordinating and supporting the response to a computer security event or incident. CSIRTs can be created for nation states or economies, governments, commercial organisations, educational institutions, and even non-profit entities. The goal of a CSIRT is to minimise and control the damage resulting from incidents, provide effective guidance for response and recovery activities, and work to prevent future incidents from happening.

In Ireland, a CSIRT (the National Cyber Security Centre) was established in 2011. The Irish National Cyber Security Strategy refers to financial services as a critical economic infrastructure. The Cybersecurity Strategy of the European Union, published in 2013, was the first comprehensive policy put forward by the European Commission related to cyberspace security issues. The Strategy prioritises several policy areas for the EU's international cyberspace: strengthening the information systems in the EU, confidence-building in online services, and capacity-building strategies involving international partners, the private sector and civil society.

In the Financial Sector, PSD2 already covers many of the areas which are covered in the Cyber-Security Directive. PSD2 requires that a payment services provider must inform the national competent authority (in Ireland's case, the Central Bank) if it experiences a 'major operational or security incident'. Under the Network and Information Systems Directive (NIS)[89], banks and operators of financial infrastructure are also required to notify the National Cyber Security Centre in the case of a major incident. At a bank level, the Irish banks also have access to FSI-ISAC (Financial Services, Information Sharing and Analysis Centre), a London based organisation for collaboration and early warning on critical security threats facing the global financial services sector. They also participate in the Cyber Defence Alliance.

The European Payment Council's overview of the most important threats in the payments landscape in 2017 had the following conclusions concerning contemporary payment threats:[90]

- The organisation and sophistication of recent cyberattacks have shown a greater degree of professionalism of cybercriminals;
- The number of (D)DoS attacks is still growing and they are frequently targeting the financial sector;
- The main attack focus has shifted away from malware to social engineering attacks;
- Social engineering attacks and phishing attempts are still increasing and they remain instrumental, often in combination with malware, with a shift from targeting customers, retailers and SMEs to company executives, employees, financial institutions and payment infrastructures;

[89] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2016:194:FULL&from=EN and Statutory Instrument No. 360/2018 - European Union (Measures for a High Common Level of Security of Network and Information Systems) Regulations 2018.

[90] EPC (2017), "2017 Payment Threats and Fraud Trends Report."

- Malware remains a major threat, more in particular ransomware has been on the rise during the past year, requiring new mitigating measures;
- There is a continuation of botnets and because of the high volume of infected consumer devices (e.g. PCs, mobile devices, etc.) severe threats remain;
- Multi-vector attacks are on the rise and have been targeting a number of financial institutions over the past year;
- Mobile devices are increasingly becoming an attractive target for cyber criminals, along with the IoT devices; and
- The adoption of cloud services and big data analytics technologies which result in data stored 'everywhere' are bringing opportunities and risks to businesses.

The analysis in this section highlights that there are risks to payment infrastructures. The nature of such risks requires that there is contingency planning for outage of one or more major payment systems in Ireland.

5.4 Impact of Brexit on Payments Industry

The Brexit process was set in train by the UK's decision in a June 2016 referendum to leave the European Union. The process of the UK formally leaving the EU began in March 2017, when the UK triggered Article 50 of the Lisbon Treaty. The UK has two years from that date to negotiate a withdrawal agreement with the EU and is expected to leave the EU in March 2019. An agreement on a transition phase is possible.

The decision by the UK to leave the EU has significant potential effects on the payments sector in the UK and potentially in Ireland. What effects Brexit will have will depend critically on the nature of the subsequent EU/UK relationship.

The level of regulatory convergence within the European payments market is high. Common rules have been developed aimed at opening up national markets to the provision of financial services directly from one Member State to another through the creation of a pan-EU/EEA authorisation regime. There are nine different 'passports' for different types of financial services, including payments services as set out in the Payment Services Directive (PSD2). These are not available to non-EU/non-EEA firms. As a result, outside of the EEA the UK would face significant regulatory barriers to providing cross-border payment services to customers in Ireland and other EU Member States. PSD2 does not currently provide for equivalence which would allow non-EU/non-EEA firms to access the single market.

Many financial technology companies seeking a European presence have established offices in London (see section 6.7 for a further discussion). From there, UK-based firms have been able to 'passport' into other European countries. If the UK does end up exiting the EU, any companies with FCA licenses will have to apply for the license with a different regulator, such as the Irish Central Bank, German BaFin or Swedish FI. Many UK based firms have already set this process in train as part of contingency planning for Brexit and will have EU27 authorisations in advance of the withdrawal date.

In the event of no agreement on a future relationship, UK-based payment services providers may lose direct access to central payments infrastructure – such as TARGET2 and the Single Euro Payments Area (SEPA). The UK government has confirmed that it will seek to align its payments legislation to maximise the likelihood of remaining a member of SEPA as a third country.

As the geographical scope of SEPA already extends beyond the EU and EEA, including several third countries and territories, it is possible that the UK could continue in the scope of the SEPA schemes provided it fulfils the eligibility criteria.

The potential for the UK to retain its important role in the international payments industry depends to a degree on the willingness or otherwise of the UK to remain harmonised with EU laws in this area.

The UK domestic regulators have been aggressive advocates for consumer protection, as can be seen via the Payment Protection Insurance (PPI) enforcement and regulations related to current account switching[91]. The PSR (Payment System Regulator) was specifically established in 2015 to ensure that payment systems are operated and developed in a way that promotes the interests of users; to promote effective competition; and to promote innovation in payments. The UK also was one of the leaders with respect to open banking and may continue to pursue European standardisation in accordance with PSD2 to ensure continued interoperability with the rest of Europe.

Along with licensing, Brexit has the potential to complicate operations for major processors and cross-border acquirers that have turned to London as a hub[92]. This is because European privacy and data security laws require these processing centres to be based in the EU. If the UK is treated as a third country, a number of companies may have to relocate their payments processing operations to a country within the EU. The UK Government has stated that it 'wanted to explore a UK-EU model for exchanging and protecting personal data that could build on the existing adequacy model'[93] in GDPR. This agreement could form part of any Free Trade Agreement reached with the EU. The UK Government has also committed to continuing with the implementation of GDPR[94]. The non-binding draft political declaration between the EU and UK states that the EU will begin the adequacy assessment after withdrawal with a view to having a decision before the end of 2020[95]. In the event of a no-deal Brexit the EU has stated that it would not implement a data adequacy decision [96]

In Ireland, the broader financial sector is closely connected to both the UK and Europe, with Ireland acting as an 'export platform' for many firms who wish to service clients in Europe.

[91] First Annapolis (2016), Initial Perspective on Brexit and Payments.

[92] https://www.thepaypers.com/expert-opinion/brexit-what-it-could-mean-for-the-payments-industry/765531

[93] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/639853/The_exchange_and_protection_of_personal_data.pdf

[94] https://pwc.blogs.com/fsrr/2017/12/tackling-the-brexit-data-challenge-.html

[95] https://www.consilium.europa.eu/media/37059/20181121-cover-political-declaration.pdf

[96] https://eur-lex.europa.eu/resource.html?uri=cellar:3dd5b905-e829-11e8-b690-01aa75ed71a1.0001.02/DOC_1&format=PDF

As shown in section 6, 86% of sales of Irish payment firms are exported. However, despite having a significant and growing payments subsector within Ireland, the number of institutions which are authorised by the Central Bank of Ireland is currently relatively small[97].

The Central Bank of Ireland reported in early 2018 that Brexit is driving an expansion in both the size and complexity of the internationally-orientated section of the Irish financial services industry[98]. In late-2017 they reported that the volume of application activity is 'now significantly higher than normal levels and represents a multiple of the number of applications for Payment Institution/e-Money Institution authorisation that the Central Bank received previously. However, the fact that a firm seeks to be authorised in Ireland does not necessarily mean a significant increase in employment or economic activity here.

According to IDA Ireland, there is significant and intense competition across the EU for the emerging Brexit foreign direct investment opportunities. Post Brexit, Ireland will become the only English-speaking country in the EU and may be considered as a potential investment location for payments firms looking for access to the EU markets. These along with the traditional foreign direct investment factors of access to skills, talent, corporate taxes rates, data protection, legal system and availability of commercial office space and housing are all key considerations for prospective investors and existing companies.

Ireland also faces challenges in attracting such firms, though many of these challenges are not unique to Ireland. Companies across several sectors are looking for technology and software engineering skills, so the competition for technology talent can be intense. Firms are hiring locally and internationally and benefit from Ireland's ability to attract skilled inward migrants. A Department of Business, Enterprise and Innovation study[99] on the impact of Brexit on the broader financial sector in Ireland predicted a moderate expansion of two per cent above the non-Brexit baseline.

5.5 Summary of Findings

- The evidence in this report shows that the payment system in Ireland is currently experiencing rapid change and this reflects developments in other countries. This is being driven by the rollout of new payment functionality, such as contactless payments, as well as the emergence of new business models. This switch to electronic payments presents a number of complex policy issues and there are obvious economic and consumer benefits but also some risks.
- The economic benefits of the move to a higher level of adoption of electronic payments include potentially lower costs to consumers and enterprises and also the facilitation of increased market sales for firms in Ireland. Electronic payments can also facilitate the development of innovative firms and provide competition to

[97] http://registers.centralbank.ie/DownloadsPage.aspx

[98] https://www.centralbank.ie/news-media/press-releases/brexit-driving-expansion-financial-services-governor-lane-31-January-2018

[99] https://dbei.gov.ie/en/Publications/Publication-files/Ireland-and-the-Impacts-of-Brexit.pdf

traditional banking players. In addition, an expansion of electronic payments could make tax evasion and other illegal activities more difficult. However, there are also costs and risks of adopting electronic payments which need to be considered. For example, increased competition from abroad for retailers and other businesses could potentially reduce economic activity in Ireland. There are also potential financial stability and other risks which are now being given increased attention.

- The scale of economic benefits is evident but there is also a need to take account of and ensure appropriate policies are in place to address potential risks. Indecon notes that some of these benefits and risks are clearly interrelated with operating digitally, rather than simply due to e-payments issues.

6 Irish FinTech Payments Sector

6.1 Introduction and Background

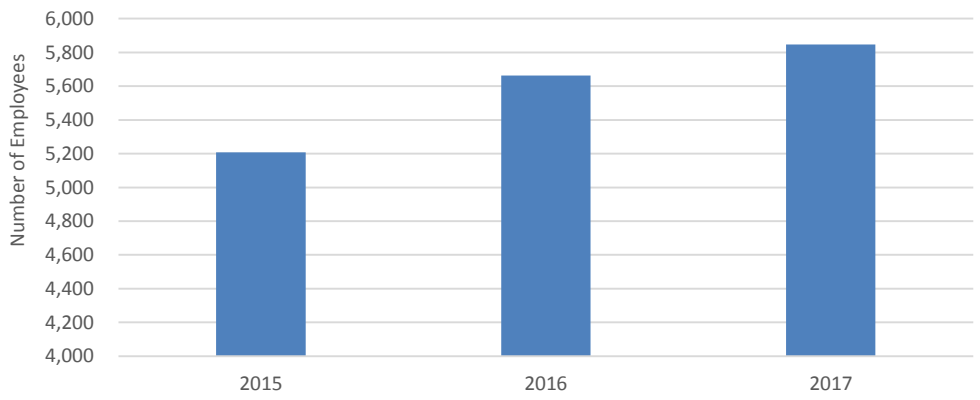
In recent years, a subsector of the FinTech sector developed in Ireland based on the payment sector. These firms are typically export oriented serving European and international markets.

New evidence obtained for this study has demonstrated the economic scale of the payments sector in Ireland. The evidence is focused on the agency supported enterprises. These include security firms and domestically focused payment activities.

6.2 Economic Contribution

Employment in the payment sector in Ireland is estimated to have reached 5,800 in 2017. This includes both indigenous and foreign-owned firms. The sector has also shown significant growth in recent periods.

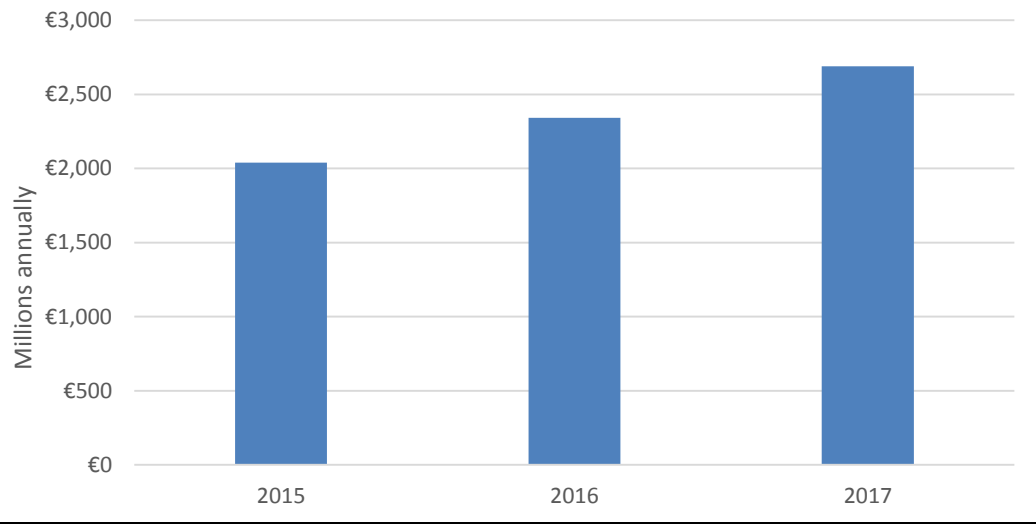
Figure 6.1: Employment in Ireland's Payment FinTech Industry, 2015-2017



Source: Annual Employment Service (ABSEI) Indecon are grateful to the Department of Business, Innovation and Enterprise and to Enterprise Ireland for access to aggregate data from ABSEI. Note: Figures for 2017 are provisional

The level of annual sales of the payment sector in 2017 is estimated to be of the order of €2.7bn. This indicates the payment sector is a significant sub-sector and is growing at a relatively fast rate.

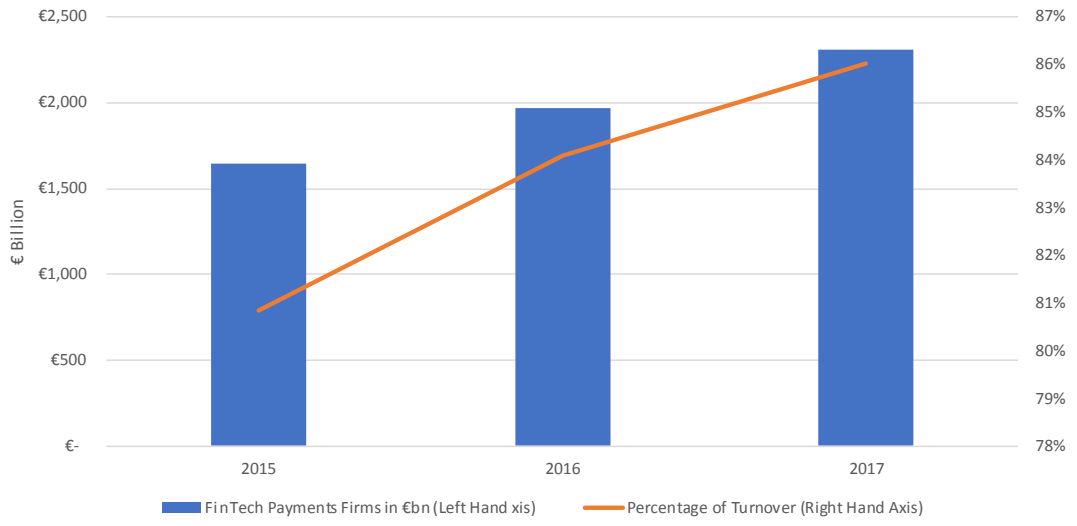
Figure 6.2: Turnover of Ireland's Payment FinTech Industry, 2015-2017



Source: ABSEI. Note, Figures for 2017 are provisional

The international focus of the sector is reflected in the levels of exports which in 2017 were estimated to be around €2.3bn.

Figure 6.3: Exports of Ireland's Payment FinTech Industry, 2015-2017



Source: ABSEI

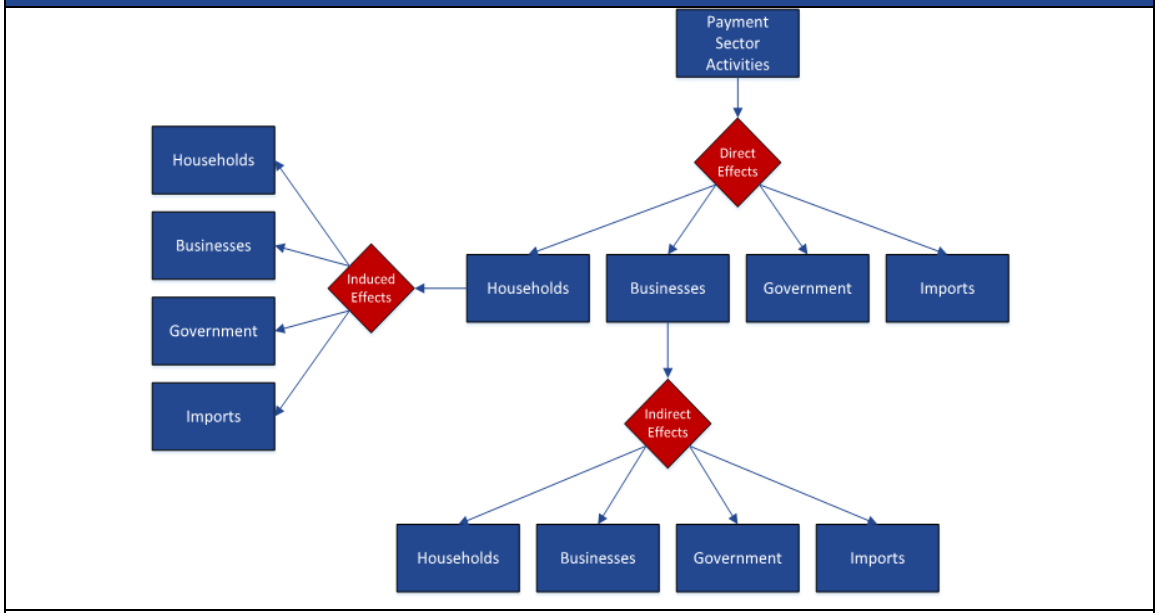
6.3 Measuring Economy Wide Impacts

The supply side of the model was modelled using the RAS technique[100] to assess the economic linkages across sectors. This allowed the team to calculate the Leontief Inverse and calculate the sectoral multipliers using matrix algebra. Direct, Type I, and Type II multipliers have been derived for use in this study. These can be explained as follows:

- Direct multipliers allow for the estimation of the direct effects of economic activity in terms of Gross Value Added and employment.
- Type I multipliers estimate the indirect impacts of economic activity. Indirect impacts include the knock-on business activity that is supported through direct economic activity, e.g., the positive economic impacts of upstream suppliers would be captured by this multiplier. Type I multipliers are concerned with knock-on *business-related* activity.
- Type II multipliers include both indirect and induced effects. Induced effects are concerned with the knock-on impact of household consumption due to direct economic activity. This will include the impact of additional employment wages directly supported through the activity of the payments industry. As such, Type II impacts are concerned with *business and household-related* activity.

The figure below presents these impacts graphically.

Figure 6.4: Graphical Description of Economic Multipliers



Source: Indecon

[100] https://ec.europa.eu/eurostat/cros/content/ras-method_en

In terms of the Irish payment industry, the next table sets out the broader economic impact of the sector in Ireland. The input-output model has estimates for 'Financial Services' multipliers which we used in our analysis.

In addition to the direct employment of 5,848 employees in 2017 in the sector, a further 3,734 jobs can be associated by the activity of the industry in terms of indirect impacts, and a further 5,948 jobs in terms of induced impacts. This suggests an overall estimate of employment impact of the payment sector of approximately 15,500. Indecon would however note that there is a very high opportunity cost for skilled labour in the Irish economy and all sectors of the economy have impacts on other parts of economic activity.

Table 6.1: Overall Economic Impacts – Employment 2017

	Direct	Indirect	Induced	Overall Economic Impact
Total Payment/FinTech Sector	5,848	3,734	5,984	15,566

Source: Indecon analysis

6.4 Sectoral and Geographic Spread

One interesting feature of the payment sector is the regional location of many firms. Examples of payment firms with operations outside of Dublin are presented in the table below.

Table 6.2: Example of Payments Firms based in Irish Regions

Name of Company	Summary of Activities	Location
		South-East
Bluefin Payment Systems Ireland	Payment Security Company	Waterford
Paytient Payments	Payment platform for Dentists	Gorey, Co. Wexford
		South-West
Fexco	Dynamic Currency Conversion (DCC), Multi-Currency Pricing (MCP), Foreign Exchange (FX), Treasury, Tax Refunds, Corporate Payments	Killorglin, Co Kerry
Monex Financial Services	DCC, MCP	Killarney, Co Kerry
Continuum Commerce	DCC, MCP	Tralee, Co Kerry
		Mid-East
Vesta Payment Solutions Limited	Credit card payment protection systems	Dundalk
Yapstone	Multilingual Customer Support	Drogheda
PerfectCard	Prepaid Mastercard	Kilcoole, Wicklow
Sentenial	SEPA Payments	Maynooth, Co. Kildare
Smart Transfer	Prepaid Mastercard / Gift Card	Naas, Co. Kildare
eComm Merchant Solutions	Payment Gateway	Navan, Co Meath
		West
Applied Communications Ireland	Electronic payments processing services and development	Limerick

Source: IDA Ireland, Website Database and Enterprise Ireland

6.5 Regulation of Non-Banks in the Payments Market in Ireland

At the European level, the payments market is regulated, among other things, by the Payment Services Directive of 2015 which defines payment services and establishes who is allowed to undertake such activities in the EU. The Directive also includes other provisions, for example in relation to access to payment systems, disclosure requirements, liability for fraudulent use, charges for the use of payment instruments, execution time and accrual of interest[101, 102].

There are a number of classes of providers of payment services which are not necessarily credit institutions, including:

- Credit Unions;
- Payment Institutions;
- E-Money Institutions;
- An Post; and
- The Central Bank, European Central Bank & other Member State Central Banks.

In addition to providing payment services, e-Money institutions may also issue electronic money, or e-money, which can be stored electronically on a card or on a server, issued against prepayment and accepted by persons other than the issuer. Credit institutions – or banks – are allowed to provide payment services and issue e-money, and may receive deposits and grant credit and, as such, they are subject to stricter requirements, for example the Capital Requirements Directive (2013). The next table summarises the institutions that are authorised to provide payment services in the EU, and what services they are authorised to provide.

Figure 6.5: Institutions Authorised to Provide Payment Services in the EU

	Deposits and Lending	Issue Electronic Money	Provide Payment Services
Credit Institutions	Yes	Yes	Yes
E-Money Institutions	No	Yes	Yes
Payment Institutions	No	No	Yes

Source: Indecon

All three types of institution are allowed to perform cross-border activities in the EU, provided they are authorised to do so by the supervisory authorities in their home member

[101] Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market

[102] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L2366&from=en

state.[103] While there is a long-observed 'home-bias' for credit institutions[104] which rose following the financial crisis, many of the new wave of payment institutions are cross-border in nature. In terms of economic impact, the most important consideration is the presence of an institution within a territory, and the resultant impact on employment, expenditure on goods and services, taxation impacts etc. Where a company is authorised is of less direct importance, as long as they are free to operate in Ireland. A relatively small number of payment institutions and electronic money institutions are authorised in Ireland, representing only a proportion of the total number of payments-related FinTech firms based in Ireland. The firms that are regulated in each of these categories are listed in the table below. In all, eleven Payment Institutions and two e-Money institutions are currently authorised by the Irish Central Bank. It should be noted that not all FinTech firms doing payments related work need to be authorised. By way of comparison, 10 payment institutions and two e-money institutions are authorised in Denmark, while 5 payment institutions and no e-money institutions were registered in Austria.

Table 6.3: Payment Service Providers Authorised by Central Bank of Ireland, July 2018
Register of Payment Institutions
AvantCard Barclaycard International Payments Limited AIB Merchant Services CurrencyFair Limited CUSOP Payments Limited FEXCO Corporate Payments Fire Financial Services Limited Chase Paymentech Europe Limited PrimaFinance Debt Solutions TransferMate Western Union Payment Services Ireland Limited
Register of Electronic Money Institutions
Facebook Payments International Limited PerfectCard DAC
Source: Central Bank of Ireland

6.6 Impediments/Advantages to Expansion of Payments Sector

A number of factors may affect the rate at which the payment sector develops. Evidence suggests that countries witness more FinTech start-up formations when the economy is

[103] Danish Payments Council (2016), "Report on Non-Banks in the Payments Market."

[104] Saka (2016), "Domestic banks as lightning rods? Home bias during Eurozone crisis."

well-developed and venture capital funding is readily available[105]. Factors such as the number of secure Internet servers and mobile telephone subscriptions, also appear correlated with a stronger development of the FinTech sector. The international evidence suggests that the start-up rate for payment firms in particular appears to show a negative and statistically significant relationship with the number of bank branches, which may indicate that these firms might be forming to move into business areas from which traditional banks withdraw.

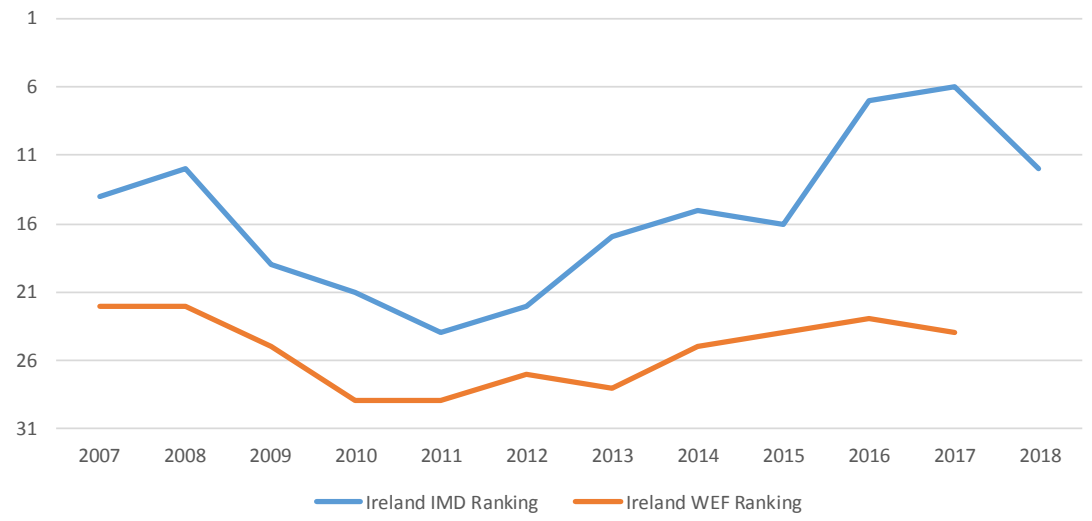
Payment firms in Ireland cover a wide range of functions, sizes and length of time in operation in Ireland. One of the principal differences that this sector faces compared to some others, even in the FinTech sector, is the highly regulated nature of some sub-sectors of the industry. One of the great uncertainties for payment firms in Ireland currently is the potential impact that Brexit will have on their firms and on the industry more generally. For those firms who need to operate within regulated sub-sectors, the main impact of Brexit would appear to be where there may be a need to be regulated in two jurisdictions and the consequent cost/complexity of that. However, the coming years may see further growth in the number of firms located here for the purpose of having a regulated base in the EU. The impact of Brexit is discussed in more detail in section 5.4.

Changing macro-conditions within Ireland are also likely to affect the rate of firm start-up and the expansion of the sector. As with all exporting orientated firms in Ireland, payments firms are facing increased cost pressures and capacity constraints due to the fast growth being experienced domestically. According to the National Competitiveness Council, while cost and price pressure has been modest in recent years, Ireland remains a relatively expensive country in which to live and work. Cost pressures are increasingly evident in areas such as property, labour costs, credit and services prices. Unemployment has now fallen to 5.1%, with increases in the rate of wage growth.

Since 2011, the trend in Ireland's international competitiveness ranking, as measured by the IMD and WEF, has generally been upward. Following the onset of the international financial crisis in 2007/8 there was an initial fall in Ireland's competitiveness ranking as Ireland's dual banking and sovereign debt crisis emerged. Ireland is now ranked 12th in the IMD's World Competitiveness Yearbook 2018 and is ranked 24th in the WEF Global Competitiveness Report 2017/2018.

[105] Haddad and Hornuf (2018)

Figure 6.6: Ireland's Global Competitiveness Rankings, 2007-2018



Source: National Competitiveness Council

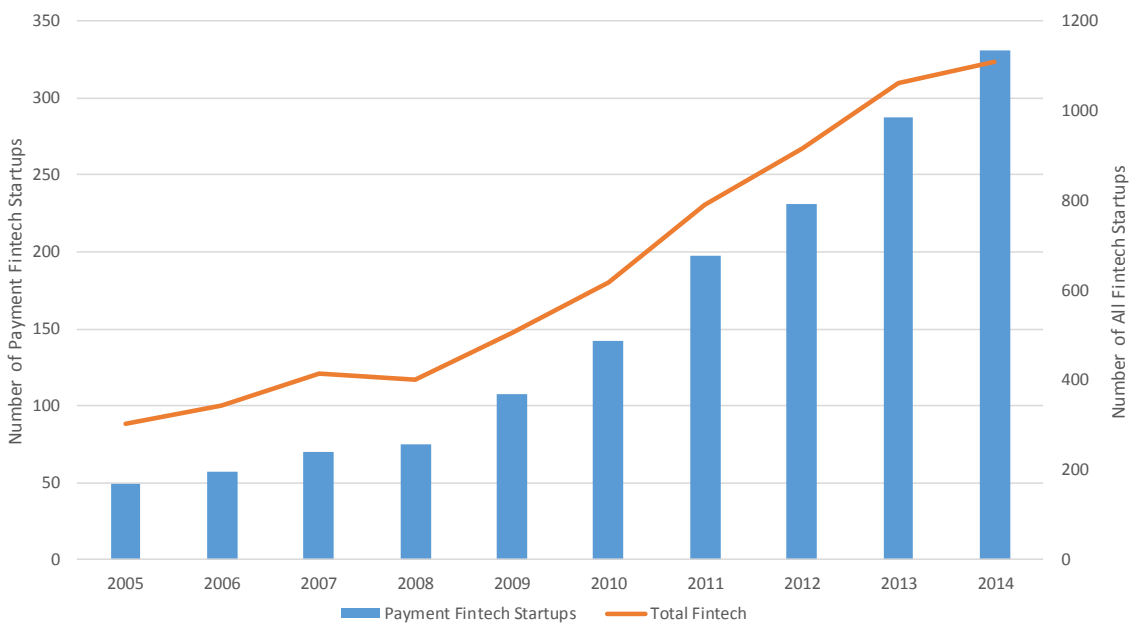
Looking to the future, IDA Ireland considers that there is a significant potential for further growth in the payments sector in Ireland. Ireland is attracting investment in the payments sector because of access to a large customer base within the EU; the fact that Ireland has a well-educated, skilled and cost-effective workforce; several relevant research centres; and generous incentives to develop financial technology. Ireland is the European home for global innovation labs for companies such as Mastercard, Accenture, Deloitte, Google, Consensys, BNP Paribas and Citi.

Further, Enterprise Ireland is also supporting a number of initiatives to promote growth in this sector, including a €750k Blockchain and Deep Tech fund. Enterprise Ireland is the world's second biggest FinTech investor and the third largest venture capitalist in Europe, investing in over 80 deals for FinTech companies.

6.7 Size of Industry Compared with Other Countries

The FinTech and payments industry globally are currently experiencing rapid growth. The total number of FinTech start-ups rose 267% from 2005 to 2014. Payments start-up firms constituted 30% of all of these firms in 2014, having experienced growth of 576% over the same period. More recently, the overall investment across venture capital, private equity and mergers and acquisitions in the first half of 2018 were already above 2017's total annual results, indicating that the period of rapid growth for the sector is still ongoing.

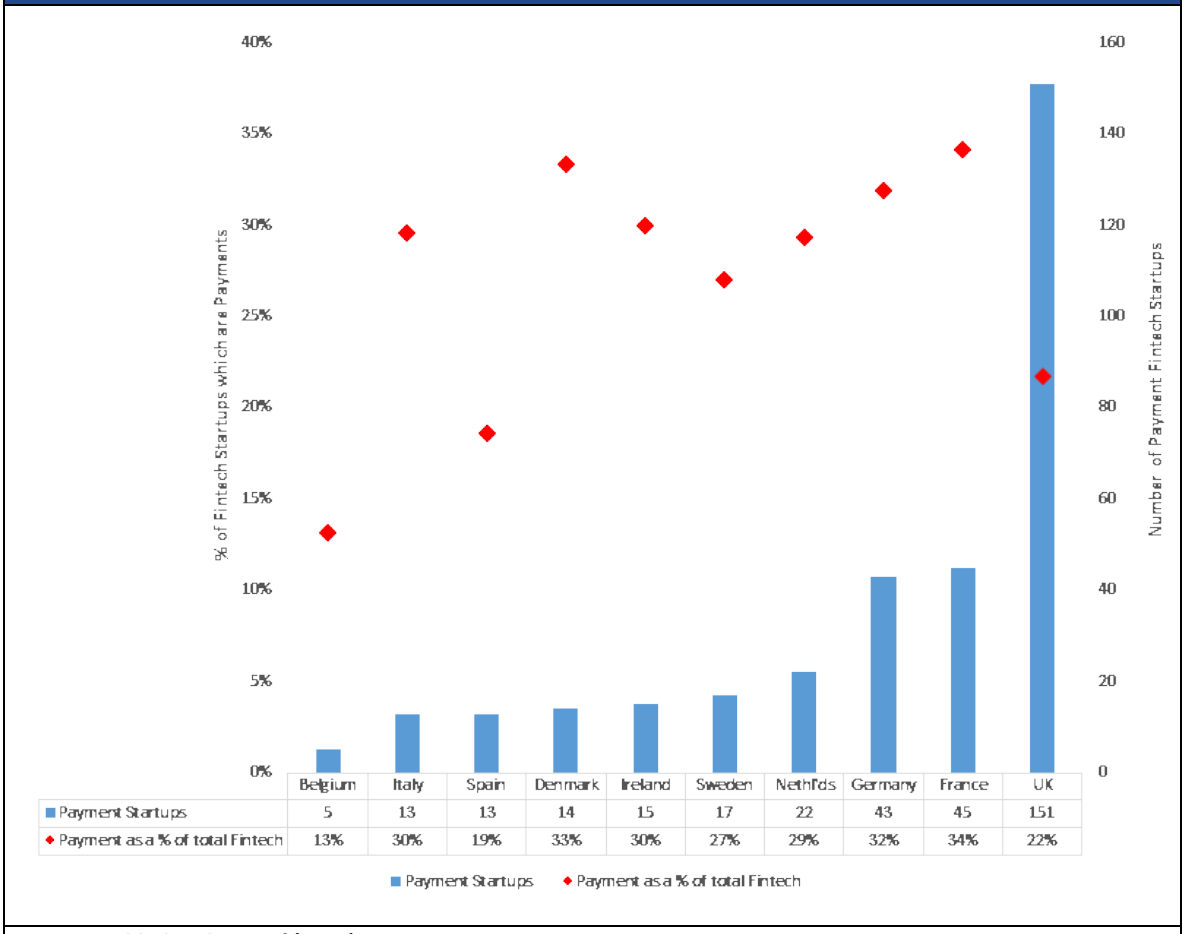
Figure 6.7: Number of Global Payment FinTech Start-ups, 2005-2015



Source: Haddad and Hornuf (2018)

The most significant country globally for FinTech and payment start-ups is the US. Of the total 7,353 recorded FinTech start-ups globally from 2005-2015, 53% were US based. Among payment firms, the proportion is slightly lower at 46%. Within Europe, the UK dominated in terms of the number of both FinTech and payments firms. Cumulatively, the next most important nine EU countries accounted for fewer FinTech firms than the UK did alone, though 23% more payment firms. The number of payment start-ups, and the percentage of payment start-ups as a percentage of all FinTech firms is shown in the next figure. The relatively stronger performance of EU (ex UK) firms in terms of payments firms compared to other FinTech firms may in part be due that many Northern European counties, particularly in Scandinavia, have historically high usage of modern forms of payment, which may have proved a spur to innovation.

Figure 6.8: Number of Payment FinTech Start-ups, top-10 EU countries, 2005-2015



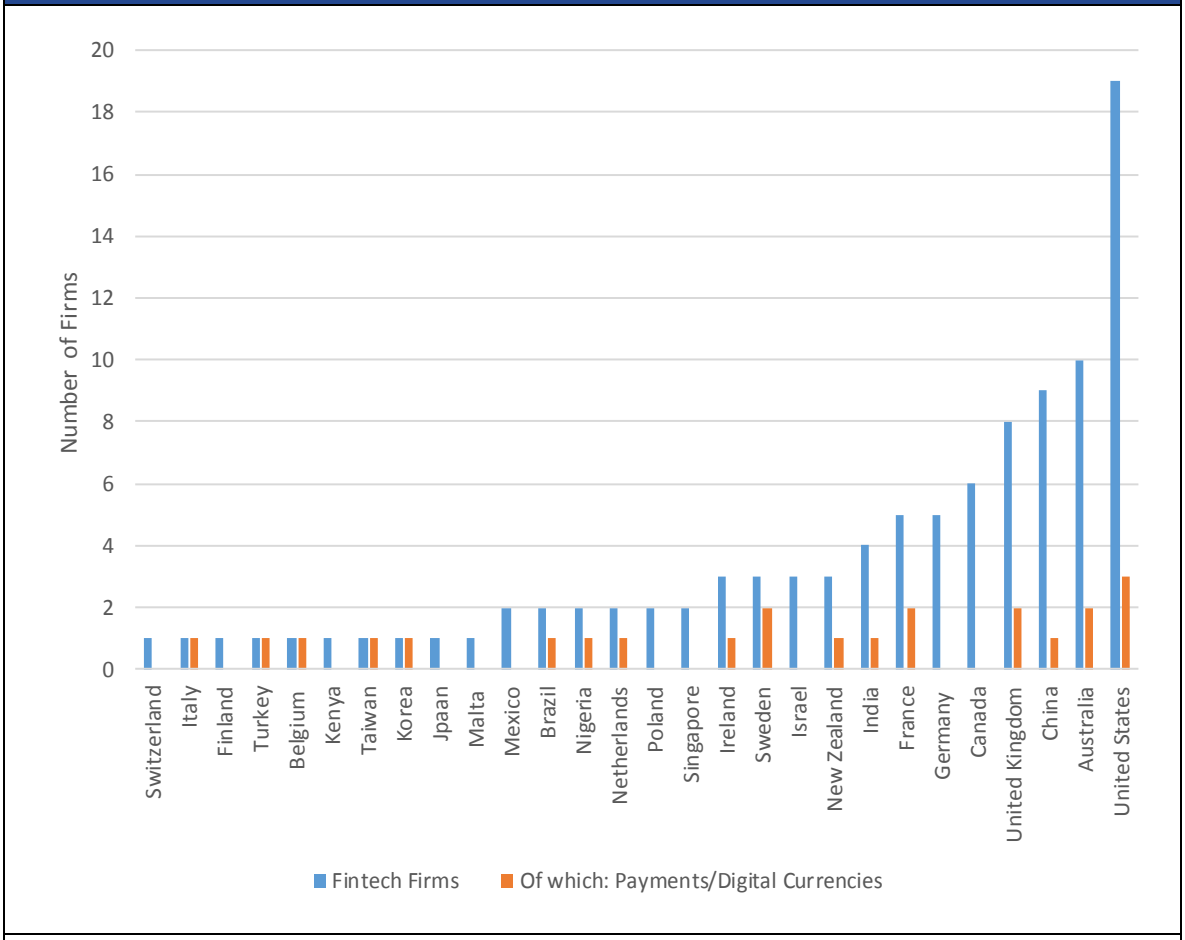
	Belgium	Italy	Spain	Denmark	Ireland	Sweden	Neth'ds	Germany	France	UK
Payment Startups	5	13	13	14	15	17	22	43	45	151
Payment as a % of total Fintech	13%	30%	19%	33%	30%	27%	29%	32%	34%	22%

Source: Haddad and Hornuf (2018)

In terms of the number of payments FinTech start-ups from 2005-2015, Ireland is ranked sixth in Europe. Ireland is estimated to represent 0.7% of all FinTech start-ups in this period globally, and 0.9% of all payment FinTechs. The corresponding figures for Ireland's share of EU start-ups is 3.7% and 4.4% respectively. As such, Ireland has a similar profile to other (non-UK) countries in having a higher concentration of payment firms than the UK, US or globally.

More recent evidence would suggest that the level of dominance shown above by the US in both FinTechs generally and payments in particular is not as high as it was in the 2005-2015 period. An examination of the decomposition of the top 100 FinTechs of 2017 shows that 19% were US based, far below the 51% rate historically. In particular, Australia and China were rated as the second and third most important countries respectively. Ireland ranked 12th globally in terms of FinTechs, though with a relatively small share of all firms.

Figure 6.9: Decomposition of Top 100 FinTech firms by country and sector, 2017



Source: Indecon analysis of data from KPMG (2017)

6.8 Summary of Findings

- In recent years, enterprises involved in electronic payments which are a sub-sector of the FinTech industry have developed in Ireland. These firms are typically export oriented, with the aim to service European and international markets. New evidence obtained for this study has demonstrated the economic scale of the payments sector in Ireland. This excludes traditional domestically focused payment firms, such as the main retail banks, Credit Unions or An Post. The employment in the payment sector in Ireland is estimated to have reached 5,800 in 2017. This includes both indigenous and foreign-owned firms. The sector has also shown growth in recent periods.
- The level of annual sales of the payment sector in 2017 was €2.7bn. This indicates the payment sector is a significant sub-sector and is growing at a relatively fast rate.
- The international focus of the sector is reflected in the levels of exports which in 2017 were estimated to be €2.3bn.
- In addition to the direct employment of 5,848 employees in 2017 in the sector, a further 3,734 jobs can be associated by the activity of the industry in terms of

indirect impacts, and a further 5,948 jobs in terms of induced impacts. This gives an overall employment impact of 15,566 in 2017. Indecon would, however, note that there is a very high opportunity cost for skilled labour in the Irish economy and all economic activity impacts on other sectors. One interesting feature of the payment sector is the regional location of many firms.

7 Conclusions

A number of issues arise from the empirical evidence on the developments of the payments in Ireland and the comparison with other countries presented in this report. Some key conclusions from the analysis are as outlined below:

1. **Ireland has made very significant progress in moving from a cash-dependent economy towards electronic payments.**

The scale of progress made in a number of areas may be greater than was previously assumed. While the highest usage of electronic payments can be seen in the Scandinavian countries, Ireland now has a higher number of e-payment transactions per capita compared to the EU average and Ireland's card usage is 35% higher than the EU average. The transformation of the payments sector in Ireland can be seen by examining the evidence on cheques written which shows numbers halving in less than six years.

2. **The rapid advancement in electronic payments has benefits for the Irish economy including improvements in efficiency and convenience, but there are also some concerns about security and the continuity of payment systems in Ireland, which suggests the need for contingency planning to provide for the risk of an outage in electronic payments.**

This is particularly the case given the absence of an indigenous payment system. This suggests that while measures to encourage greater use of electronic payments should continue, a one hundred per cent cashless society is unlikely to be an appropriate objective, especially as cash can act as a safety net if electronic payment systems fail.

3. **There have been important changes in electronic payments impacting on the enterprise sector. These include the fact that almost half of Irish credit card expenditure is now made online and while Irish enterprise compares well to other European countries, further progress is needed to embrace the use of e-payments.**

This highlights the need to ensure that Irish enterprises can facilitate online transactions. An issue in considering how prepared are enterprises in Ireland to respond to the developments in electronic payments is related to the fact that only around one in five SMEs have online payment functionality.

4. **The evidence in the report indicates that there is a risk that some segments of Ireland's society could be excluded by an acceleration of a move to electronic payments.**

In this regard the availability and take-up of payments accounts with basic features over the past two years is of note and is a welcome development.

5. **The report has demonstrated the significance of the payments industry in Ireland and for the first time has provided quantitative estimates of the scale of the sector.**

This indicates direct employment of approximately 5,848 individuals and a wider knock-on impact on the economy. One notable feature of the payment sector is the regional location of many firms.

Conclusion

It is hoped that evidence in this report will facilitate policy development to promote the use of electronic payments in Ireland in a way which takes account of the benefits and risks and of the complexities of the issues involved.