

Institution: Bangor University, 10007857		
Unit of Assessment: UoA17 - Business and Management Studies		
Title of case study: Interchange fees and two-sided markets: influencing the EU regulation on payment card fees		
Period when the underpinning research was undertaken: August 2012 – December 2016		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Santiago Carbo-Valverde	Role(s) (e.g. job title): Professor of Economics and Finance, Bangor Business School	Period(s) employed by submitting HEI: August 2012 – December 2020
Period when the claimed impact occurred: August 2013 – July 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Research at Bangor University has supported a significant regulatory change in interchange and merchant fees of payment cards in the European Union (EU) between 2013 and 2016. Acceptance of card payment platforms by both cardholders and merchants was essential for increasing the use of electronic payments in the EU to integrate payment systems for EU countries. By demonstrating that lowering interchange and merchant discount fees would be beneficial to all parties and by providing evidence critical to EU decision-making concerned with regulatory changes, Carbo-Valverde's research led to reduced fees from June 2015. These changes benefitted all merchants that use electronic payments, and all cardholders and financial institutions across Europe, with annual savings between 2015 and 2017 of EUR1,200,000,000 (03-2020) for EU merchants and EUR587,000,000 (03-2020) for EU consumers. The findings are also directly benefitting other, non-EU jurisdictions.</p>		
2. Underpinning research		
<p>The EU payment card market totals 30% of the global market, second only to the USA. Despite this, before 2010, a significant proportion of merchants in the European Union was reluctant to accept card payments due to high interchange and merchant discount fees. 'Interchange fees' (a fee paid by the retailer's bank to the consumer's bank upon the use of credit, debit or prepaid cards) generally increase the price of goods as retailers incorporate these costs into the prices they charge consumers. Carbo-Valverde's research showed that even small reductions in these fees resulted in significant increases in merchant acceptance that were beneficial to all parties (merchants, consumers and financial institutions).</p> <p>In a unique empirical case study conducted between 2012 and 2015, led by Carbo-Valverde at Bangor University in collaboration with the University of Grenada, Spain, researchers explored the effects of lowering interchange and merchant fees in Europe. The research empirically tested the fundamental predictions of the two-sided market theoretical payment card models regarding the impact of interchange fee reductions on payment card adoption and use. Previous theoretical literature had failed to account of environmental changes (such as lower technology costs, increased consumer and merchant awareness, and increased scale and scope of economic benefits arising from increased payment volumes). Data on merchant acceptance, the number of cardholders, and transaction volumes were used for the first time. Employing the data in this way</p>		

revealed the effects of changes in interchange and merchant discount fees on merchant acceptance and usage of payment cards. Data were drawn from Spain, a card payment market that had not reached its maturity due to low merchant acceptance, where a lowering of the interchange fees could still result in demonstrable higher merchant acceptance.

Several working paper versions (for official use by banks only and not for publication) were presented at various high-level conferences and seminars between 2012 and 2015. These were circulated to both European Commission and European Central Bank officials, informing and influencing key stakeholders at the research stage who would later introduce a new Europe wide regulation affecting credit and debit card markets. Published in the *Review of Economics and Statistics* in 2016 [3.1], the research provides the only existing empirical evidence explaining the distribution of the benefits for merchants, consumers and other stakeholders on how regulatory changes affect the benefits for all market participants. Results showed even small changes to the interchange fees were beneficial in terms of merchant acceptance. For example, a decrease of 10% in the rate of decline in the average interchange fee resulted in an increase of up to 1.4% in the rate of merchant acceptance every quarter the reduction was in place. Also, an increase of 10% in merchant acceptance resulted in an increase of up to 1.7% in the rate of electronic payment volumes. The most significant insight of Carbo-Valverde's research was to demonstrate that merchants benefit from a fee reduction in terms of higher payment efficiency, higher sales, and lower merchant fees while consumers benefit from higher convenience and availability of card payment devices at stores, and financial institutions and banks benefit, particularly when acting as issuers, from higher volumes that more than compensated for the fall in fees.

Other related findings

In a related paper [3.2], Carbo-Valverde's research demonstrated that the merchant acceptance rate of card payments in China was negatively affected by high interchanges fees. Additionally, Carbo-Valverde's research [3.3] showed that the possibility of using cards at Automated Teller Machines (ATMs) to withdraw cash was significantly slowing down the pace of expanding payment cards at shops and retailers.

3. References to the research

3.1 **Carbó-Valverde, S.**, Chakravorti, B. and F. Rodríguez Fernández (2016) The Role of Interchange Fees in Two-sided Markets: An Empirical Investigation on Payment Cards, *The Review of Economics and Statistics*, **98**(2), 367-381. [DOI](#) (Peer-reviewed journal article) Submitted to REF2021 (REF identifier UoA17_47).

3.2 Qi, M., **Carbó Valverde, S.** and F. Rodriguez Fernández (2016) The diffusion pattern of non-cash payments: evidence from China, *International Journal of Technology Management*, **70**(1), 44-57. [DOI](#) (Peer-reviewed journal article).

3.3 **Carbo-Valverde, S.** and F. Rodriguez-Fernandez (2014) ATM withdrawals, debit card transactions at the point of sale and the demand for currency, *SERIEs*, **5**(4), 399-417. [DOI](#) (Peer-reviewed journal article).

4. Details of the impact

Influence upon EU institutions, regulation and policy

Since 2012, the EU aimed for a more integrated payment systems area on the continent. In this context, expanding the electronic card payments systems was a key part of the strategy since higher efficiency and lower costs for all parties could be achieved. The European Commission, the European Parliament, and the European Central Bank (ECB) instigated a public debate about how to make a substantial increase in merchant acceptance possible. Carbo-Valverde presented his research as working paper versions (subsequently published in 2016, [3.1]) at various high-level conferences and seminars, for example to the ECB in 2014 [5.1]. The audience included ECB officials, European Commission officials, antitrust authority officials and bank representatives of various EU countries, all of whom were relevant parties and policy makers in the later design of the new EU regulation on interchange fees. Following the seminars, the ECB and European Commission used the research to support the design of new regulatory actions and to explain the

gains from those new regulations. At the early research stage, as the only existing empirical evidence explaining the distribution of the benefits of regulatory changes for all market participants, Carbo-Valverde's working papers were pivotal in influencing the new regulation and have been cited in relevant policy actions. Consequently, a new regulation to lower interchange and merchant fees was formulated and approved, becoming applicable in the EU between 8 June 2015 and 9 June 2016.

Various testimonials attest how, as the first empirical research to address the issue of interchange fees, Carbo-Valverde's work significantly influenced the EC's decision to implement the Interchange Fees Regulation and his contributions were central in guiding EC policy development and application. Referring to the influence of Carbo-Valverde's work, the Acting Director-General of Competition of the European Commission states how it *'has been part of the supportive academic empirical background that the European Commission used for the change in the way interchange and merchant fees were regulated in the European Union... The Impact Assessment study of the European Commission for the Directive on Interchange Fees quotes Mr Carbo-Valverde's research that provided evidence for these policy actions'* [5.2].

The ECB recommendation (followed by the EC and the European Parliament) to lower interchange and merchant discount fees instigated the introduction of regulation by all EU countries to lower those fees and set them close to zero from 2016 onwards. The Head of the Market Infrastructure Support Division at the ECB (Directorate General Market Infrastructure and Payments), emphasised the influence of the research on *'retail payments policy-related work of the ECB'*. Their testimony demonstrates the use of the research by a former member of the ECB Governing Board 'in several public statements' suggesting, overall that *'Carbo-Valverde's research provided research background for that change in regulation (...) that affected all banks operating in the EU, all merchants that use electronic payments in the EU, and EU cardholders'*. The Head of the Market Infrastructure Support further adds *'The research was also used as motivation in the impact assessment study of the European Commission and the European Parliament for the Directive on Interchange fees and merchant discount fees'* [5.1].

In 2016, the European Commissioner for Competition also used the research to motivate a response to the European Parliament on the convenience to reduce interchange fees in Portugal [5.3]. The European Commissioner's response states: *'various studies have also shown that interchange fee reductions led to higher card acceptance and usage'* and directly links to a footnote that mentions Carbo-Valverde's research.

A Senior Economist of the Central Bank of the Netherlands stated that the research *'has also produced a significant impact for academic discussion and among central banks and regulatory bodies'*. He adds: *'... these results (those of Carbo-Valverde) were cited by different and European authorities and were considered and explicitly mentioned in the impact case study of the European Commission and European Central Bank as a basis for the directive on Interchange Fee Regulation and merchant discount fees. The directive implied a fundamental change for all market participants in the card payment network in the EU countries. It affected 100% of banks operating in the European Union, 100% of merchants that use electronic payments in the EU and 100% of EU cardholders'* [5.4].

Significance of economic effects

Earlier versions of the research (for official use only and not for distribution) were already considered as an indication of potentially significant economic effects and informed the findings of the impact assessment study of the EC and the European Parliament for the Directive on Interchange Fees [5.5]. The subsequent benefits of implementation of the 2015 EU Interchange Fees Regulation for consumers and merchants are widespread. Notably, by reducing the costs of card payments retailers pay less for such transactions, allowing consumers to use cards more widely, paving the way for innovative payment technologies to be rolled out [5.6]. The EC study on the application of the Interchange Fee Regulation (IFR) (impact study of 2020) corroborates the large benefits of the regulation change: *'the increase in the usage of commercial cards has also been confirmed by merchants (a) majority (86%) that responded to the survey declared*

that the relative share of transactions performed with commercial cards has increased since entry into force of the IFR. More precisely, 54% of merchants reported an increase in commercial card transactions between 0 and 10%, 18% declared an increase above 10%' [5.7]. The impact study concludes that after the implementation of the new EU interchange fee regulation there is significant evidence of card payments gradually replacing cash payments. Focusing on end-users (consumers and merchants), this increase has resulted in estimated annual benefits (between 2015 and 2017) of EUR1,200,000,000 (03-2020) for merchants and EUR587,000,000 (03-2020) for consumers [5.7].

Influence in other jurisdictions

Finally, the impact of Carbo-Valverde's research has more recently expanded to non-EU countries. Several non-European government agencies have cited Carbo's Valverde research in the context of their changes in interchange fee regulations. These include the USA Federal Reserve (introduction of a new regulation called the US Debit Card Interchange Regulation in the context of the Durbin Amendment, 2017) [5.8], the Bank of Canada (2019) [5.9] and the Institute for Democracy and Economic Affairs of Malaysia (2018) [5.10]. All these countries have lowered or set a limit on interchange fees since 2017. These institutions cite Carbo-Valverde's research as the empirical background to demonstrate the benefits of lowering interchange fees.

5. Sources to corroborate the impact

5.1 Testimonial from Head of Division - Market Infrastructure Support Division, in the Directorate General Market Infrastructure and Payments, European Central Bank (reporter on the impact) confirming the research provided the background for interchange and merchant fee regulation change within the EU and was used as motivation in the impact assessment study for the EU Directive on Interchange fees and merchant discount fees.

5.2 Testimonial from Acting Director-General Antitrust DG Competition, European Commission (participant in the impact) confirming the research has been used as supportive academic empirical background that the EC used for the change in the regulation of interchange and merchant fees in the European Union.

5.3 Response of the European Commissioner for Competition to a letter of the Portuguese member of the European Parliament Carlos Coelho on the Regulation of Interchange Fees. References the research and corroborates the use of Carbo-Valverde's work in informing EU Interchange fee regulation change.

http://www.europarl.europa.eu/doceo/document/P-8-2016-000077-ASW_EN.pdf

5.4 Testimonial from Senior Economist, Economic Research Division, the Central Bank of the Netherlands (reporter on the impact) confirming the research was cited and explicitly mentioned as a basis for the EU Directive on Interchange Fee Regulation and Merchant Discount Fees leading to fundamental change for all market participants in the card payment network in the EU countries.

5.5 European Commission / European Parliament (2013) Summary of the Impact Assessment (Accompanying the document: Proposal for a directive of the European Parliament and of the Council on payment services in the internal market and amending Directives 2002/65/EC, 2013/36/UE and 2009/110/EC and repealing Directive 2007/64/EC and Proposal for a Regulation of the European Parliament and of the Council on interchange fees for card-based payment transactions). Informed by early versions of Carbo-Valverde's research (for official use only and not for distribution), this 2013 EC proposal for a directive outlines and makes the case for EU action.

https://www.parliament.bg/pub/ECD/132608SWD_2013_289_EN_DOCUMENTDETRAVAIL_f.pdf

5.6 European Commission (2016) Antitrust: Regulation on Interchange Fees (Press Release). Corroborates the key benefits of Interchange Fee Regulation.

https://ec.europa.eu/commission/presscorner/detail/en/memo_16_2162

5.7 European Commission (2020) Study on the application of the Interchange Fee Regulation (Final Report). Corroborates the estimated economic benefits of the application of the Interchange Fee Regulation for consumers and merchants.

<https://ec.europa.eu/competition/publications/reports/kd0120161enn.pdf>

5.8 Federal Reserve Board of the United States of America, Divisions of Research & Statistics and Monetary Affairs (2017) **The Impact of Price Controls in Two-sided Markets: Evidence from US Debit Card Interchange Fee Regulation**. Cites and references Carbo-Valverde's research as providing empirical evidence of the effects of interchange fees in payment card markets.

<https://www.federalreserve.gov/econres/feds/files/2017074pap.pdf>

5.9 Bank of Canada, Currency Department (2019) **Explaining the Interplay Between Merchant Acceptance and Consumer Adoption in Two-Sided Markets for Payment Methods**. Cites and references Carbo-Valverde's research in estimating consumer adoption and merchant acceptance in the context of changes in interchange fee regulations.

<https://www.bankofcanada.ca/wp-content/uploads/2019/08/swp2019-32.pdf>

5.10 Institute for Democracy and Economic Affairs (Malaysia) (2018) **Payment Card Reform Framework (PCRF): A Policy Evaluation Study**. References Carbo-Valverde's research in the context of Interchange Fee reform in Malaysia.

<http://www.ideas.org.my/wp-content/uploads/2018/06/PI48-Payment-Card-Reform-Framework.pdf>