EXPERT SUPPORT

ON THE NZ COMMERCE COMMISSION CONSULTATION PAPER "RETAIL PAYMENT SYSTEM – COSTS TO BUSINESSES AND CONSUMERS OF CARD PAYMENTS IN AOTEAROA NZ"

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1. ECONOMIES OF SCALE IN RETAIL PAYMENTS

Q. Implications of economies of scale in payment systems on the impact of interchange fee regulation, in the context of differences in payment scale efficiencies between New Zealand and countries in the OECD such as the EU and UK with which we are comparing NZ interchange fees. To the extent some adjustment should be made, whether there are any that could be used by the Commerce Commission.

A.

- The relation between payment cost, payment fees and volume of payment transactions is complex.

- Economics of scale in retail payments are important, they imply that as the volume of transactions increases, the unit (or average) cost of processing each transaction decreases.

- Size and scalability are especially important in electronic payment systems due to their high "capital intensities".

  Although some economies of scale exist in cash and paper-based payments, these are much greater for electronic payments because the (upfront) fixed expenses (infrastructure, building, computer, software, and other overhead expenses) are large relative to their variable costs (labour, telecommunication, and materials expenses).

  As a consequence, with high fixed costs and relatively low variable costs, unit cost should fall when payment volume increases.

- Estimates of scale economies in Europe based on bank and processor data are fairly large, in the order of 0.30 for electronic payment instruments. That is, a doubling of payment volume results in only a 30 per cent rise in total costs implying a 35 per cent decrease in average costs.

  The table below shows some estimated economies of scale for different payment instruments for 11 European countries:

	Payment Volume 2004, Mil	OC/TA	Average Payment SCE	Point of Sale SCE	Bill Payment SCE	ATM SCE	Branch SCE	Total Realized SCE
Germany	14,748	-40%	0.23	0.06	0.17	0.22	0.59	0.31
France	13,926	+1	0.30	0.08	0.22	0.31	0.36	0.47
U.K.	12,919	-52	0.35	0.11	0.24	0.36	0.27	0.54
Spain	4,335	-50	0.30	0.10	0.20	0.23	0.48	0.45
Netherlands	3,563	-33	0.17	0.09	0.09	0.24	0.65	0.24
Italy	3,094	-29	0.21	0.05	0.16	0.17	0.62	0.30
Belgium	1,594	-23	0.20	0.10	0.10	0.26	0.59	0.26
Sweden	1,488	-38	0.33	0.18	0.15	0.39	0.37	0.21
Finland	1,244	-59	0.35	0.19	0.16	0.40	0.34	0.20
Norway	1,117	-60	0.34	0.19	0.15	0.40	0.34	0.23
Denmark	1,081	-39	0.24	0.12	0.12	0.28	0.52	0.37
Average	5,374	-34%	0.27	0.11	0.16	0.30	0.47	0.40

Note: Average payment scale economies (column 4) is the sum of columns 5 and 6 and total realized SCE (column 9) is a weighted sum of columns 5-8, where the weights depend on usage; see Bolt and Humphrey (2007).

- Large economies of scale in retail payment systems may lead to (highly) concentrated markets with only few payment networks raising potential concerns about significant pricing power.

- On the one hand payment scale economies lower unit cost (potentially putting downward pressure on payment fees), but on the other hand these scale effects may increase market concentration and pricing power (potentially putting upward pressure on payment fees).

  The two-sidedness of the payment market may complicate matters even further.

- The relationship between costs and number of payments is complex. From a static point of view, it is tempting to conclude that the payment instrument with currently the lowest unit social cost – for example, a domestic debit card scheme – is most efficient. However, due to scale economies, the number of payments made using each payment method has a large impact on the costs. Depending on the distribution of fixed and variable costs, other payment instruments – such as international debit or credit cards – may be more (or less) cost-efficient than the domestic debit card scheme if they were used just as much.

  As a result, a "forward-looking" dynamic element enters the payment picture.

- Even with large economies of scale (and rapid technological advances), card payments have remained expensive for merchants in many countries. Apparently, in the payment industry greater cost efficiency does not necessarily go hand in hand with lower payment fees. This observation has triggered a lot of antitrust litigation and corresponding interchange fee regulation in e.g. Europe and the United States.

- The European Commission (EC) has applied a simple (static) two-sided model for card payments to regulate debit and credit card interchange fees.[2] This EC interchange fee regulation (IFR) is based on the so-called "merchant indifference test" (or "tourist test") which makes the retailer cost-indifferent between accepting or rejecting card payment in favor of some best alternative payment instrument (in the literature, often cash). Theoretically the tourist test interchange fee corresponds to a "second-best" solution, not a "first-best" (i.e. a socially optimal interchange fee).

- Economies of scale may affect the optimal interchange fee, but its relationship is not immediately clear due to the two-sidedness of the payment market. There is, however, not much economic literature about this specific relation between scale economies and interchange fees.

- Assuming that the acquiring market is perfectly competitive, using the simple EC two-sided model for card payments, one can show that the socially optimal interchange fee a^E depends on three components:
  - a merchant preference parameter b ("willingness-to-pay", or in an empirical context, the (avoided) cost of an average cash payment for an average retailer)
  - acquiring cost c_A
  - issuing margin m_I.

  That is: $a^E = b - c_A + m_I$. And for the tourist test interchange fee a^{TT} it holds: $a^{TT} = b - c_A$.

- Hence – in this simple model – at one extreme, if economies of scale would dampen acquiring cost and increase issuing margin, the first-best socially optimal interchange fee would indeed go up. At the other extreme, if economies of scale would only affect issuing cost (and/or issuing margin) but not acquiring cost, the second-best tourist test interchange fee would not change.

  It is an empirical question how these scale effects pan out in practice over time.

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[2] In this simple model it is assumed that the acquiring market is perfectly competitive but that issuers have market power, and that all merchants have the same willingness to pay for a card payment (i.e. they are "homogeneous") while consumers differ in their preferences toward using a card at the point of sale.

- It seems fair to say that the static application of the EC tourist test may exhibit some "perverse" effects. Note that with cash usage declining and the (relative) cost of cash going up, the indifference condition between cards and cash may effectively imply that the tourist test interchange fee is rising over time.[3] This may trigger a lot of merchant dissatisfaction.

- As a final point, despite significant economies of scale in providing electronic payment services, it may still be socially beneficial that consumers and merchants have access to several different methods of payment. That will stimulate competition and innovation in the payments market, but may also increase the "skewness" in payment prices if not carefully monitored and/or regulated.

Sources/Literature:

Beijnen, Christine, and Wilko Bolt (2009), "Size matters: Economies of scale in European payments processing," Journal of Banking and Finance 33(2), 203–210.

Bolt, Wilko, and David Humphrey (2007), "Payment network scale economies, SEPA, and cash replacement," Review of Network Economics, 6(4), 453–473.

Bolt, Wilko, Nicole Jonker, and Mirjam Plooij (2013), "Tourist test or tourist trap: Unintended consequences of debit card interchange fee regulation," DNB Working Paper, No. 405.

Danish Payments Council (2019), "Payments involve considerable economies of scale," *Analysis from the Danish Payments Council,* March.

Humphrey, David (2009), "Payment scale economies, competition, and pricing," ECB Working Paper, No. 1136.

Rochet, Jean-Charles, and Jean Tirole (2011), "Must-take cards: Merchant discounts and avoided costs," Journal of the European Economic Association, 9(3), 462–495.

Wang, Lulu (2023), "Regulating competing payment networks," Job Market Paper, Kellog School of Management, Northwestern University, September 28.

Wright, Julian (2012), "Why payment cards fees are biased against retailers," RAND Journal of Economics, 43(4), 761–780.

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[3] This result would also hold for any other "best alternative" payment instrument rather than cash.

2. EC INTERCHANGE FEE CAP AND CROSS-BORDER SALES

Q. Are you aware of any evidence of the impact of EU international interchange fee cap change on other jurisdictions, for example, issuers located outside of EU? Visa's submission indicates that in the EEA, the rate of authorisation declines increased after the interchange fee regulation was introduced and led to a significant reduction in cross-border sales.

A.

- This is an interesting but difficult question, since data on the number of card payments in the EU with cards that are issued from outside the EU are not readily available.

- I am not aware of merchant acceptance rates or authorization rates declining for payments with cards issued from outside the EU. It seems somewhat unlikely since the total number of card payments within the EU has actually been accelerating since 2015 (see dark blue line in graph below).

Use of the main payment services in the euro area

(number of transactions in billions, graph on the right-hand-side refers to half-yearly data)
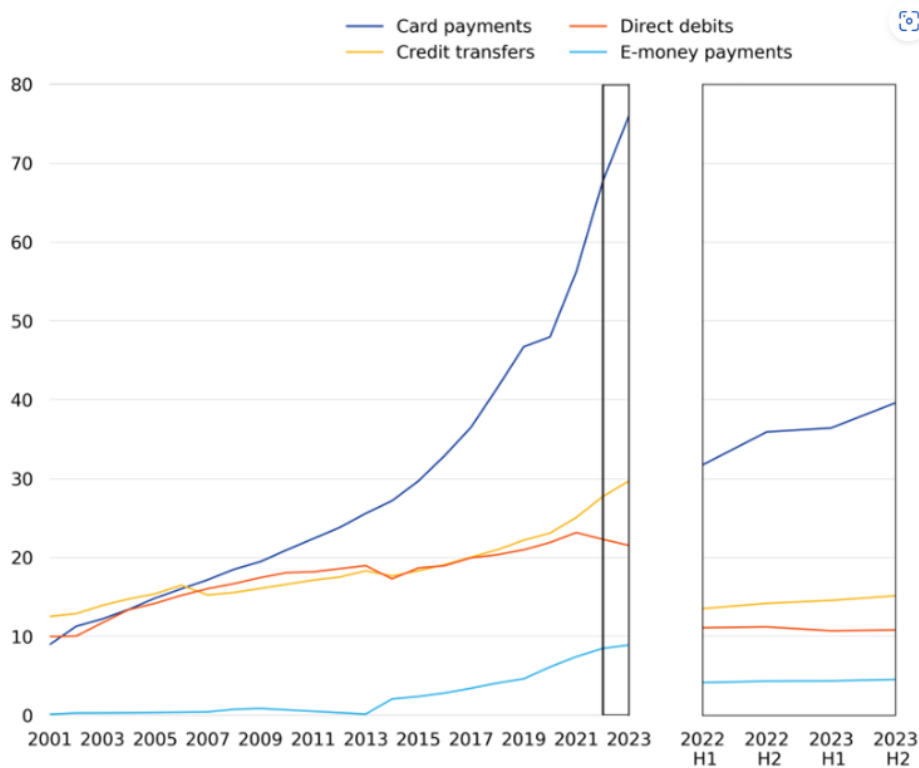
Source: ECB.

- This viewpoint is supported by noting that VISA and Mastercard do not charge higher interchange fees on non-EU debit or credit card payments. In particular, for "Card Present" (CP) point of sale transactions in the EU, VISA and Mastercard recently announced that they will extend caps on card fees agreed five years ago with the EC by another five years to 2029.

  In 2019, VISA and Mastercard agreed to a 0.2% fee cap on <u>non</u>-EU debit card payments carried out in shops in the EU and a 0.3% fee limit on <u>non</u>-EU credit card payments. In a statement the EC said that "inter-regional interchange fees for debit and credit card transactions under these schemes will remain capped for another 5 years until November 2029."

- "Brexit" presents however an interesting case in point. Following the UK's withdrawal from the EU at the end of 2020, the EU IFR ("interchange fee regulation") no longer applied to UK domestic and cross-border card transactions between the UK and the EU.

  Shortly after the EU withdrawal, Visa and Mastercard increased interchange fees for "Card Not Present" (CNP) UK-EU transactions – i.e. mostly online transactions – using consumer debit and credit cards from 0.2% and 0.3% to 1.15% and 1.5% respectively.

  This has triggered antitrust scrutiny by the UK Payment Systems Regulator (PSR).

Sources/Literature:

ECB, "Payments statistics: second half of 2023 (Press release)," July 25 2024, link: [Payments statistics: second half of 2023 (europa.eu)](#)

PSR, "Market review into cross-border interchange fees," Last updated: December 2023, link: [Market review into cross-border interchange fees | Payment Systems Regulator (psr.org.uk)](#)

Reuters, "Visa, Mastercard to extend non-EU card fee caps to 2029, EU says," July 5 2024, link: [Visa, Mastercard to extend non-EU card fee caps to 2029, EU says | Reuters](#)

3. EU IFR AND IMPACT ON FRAUD AND FRAUD PROTECTION

Q. Are you aware of any evidence of changes in the prevalence or magnitude of fraud, and investments in fraud protection in the EU since the interchange fee caps were implemented?

A.

- As far as I know there is not much empirical evidence that shows a direct link between the EC interchange fee regulation (IFR) of 2015 to changes in the incidence or magnitude of fraud and/or fraud protection since then.

- However, the 2015 EC IFR – and its impact on the broader payments ecosystem in the EU – may have indirectly contributed to changes in fraud patterns. This relationship is complex, and any shifts in fraud patterns and/or fraud protection developments are typically influenced by multiple factors, including regulatory, technological, and market dynamics.

- Overall, the data collected on payment fraud in the EU reflect a fairly low level of fraud incidence. Based on a recent ECB (2023) report, card fraud in 2021 as a share of the total value of payments using cards issued in the EU was at its lowest level (0.028%) since the Eurosystem started to collect such information from card payment schemes in 2008. The graph below shows some information on card fraud from 2016 onward.
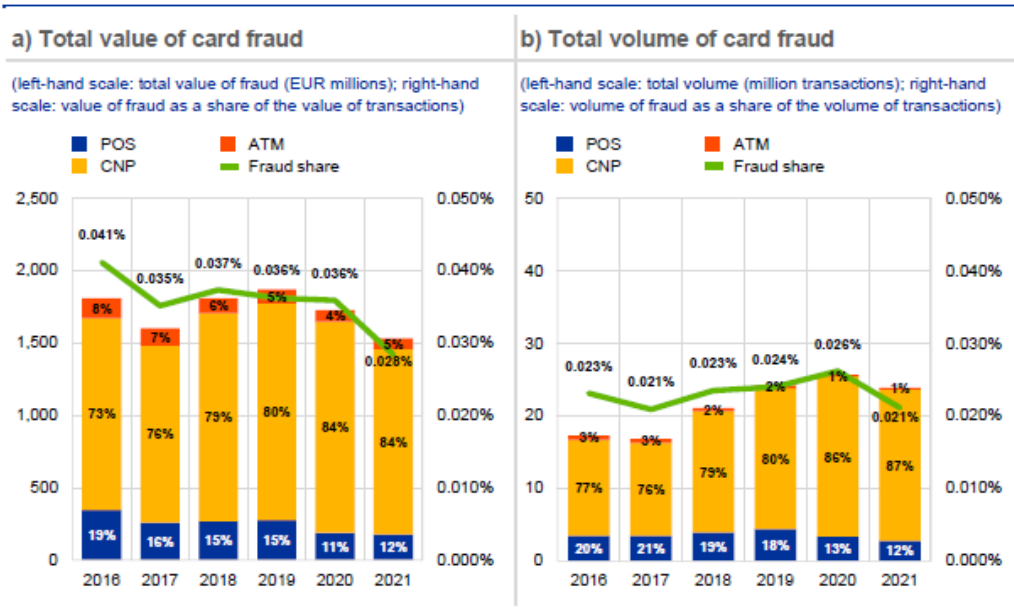

Source: ECB 2023.

- A somewhat similar finding was observed in the U.S. after the Durbin Amendment interchange fee regulation ("Regulation II") was implemented in 2011 for (domestic) debit cards. Specifically, after Durbin, average domestic debit interchange fee revenue per transaction fell from approximately 44 cents to around 24 cents. Although the fraud incidence somewhat increased, the average loss per fraudulent debit card transaction went down over time (see graph).

Average loss per fraudulent transaction over time, by transaction category
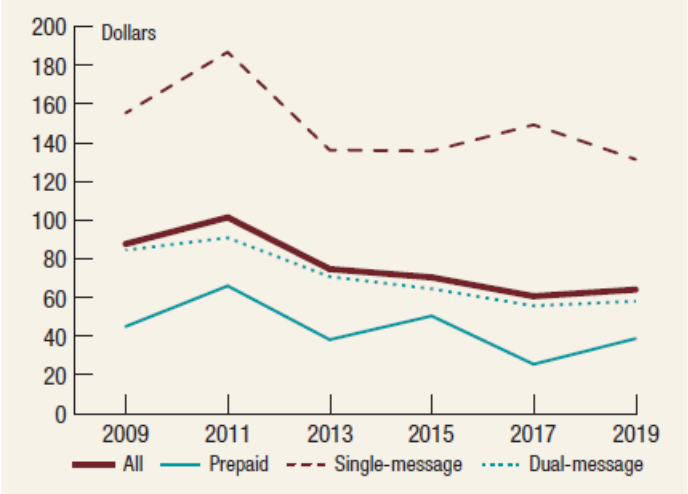
Source: FRB (2021).

- Fraud patterns have changed over time. After the implementation of the EC IFR and following the global adoption of EMV chip technology for point-of-sale transactions, fraud in card-present physical transactions (e.g., counterfeit card fraud) was considerably reduced. As a result, fraudsters shifted their attention to card-not-present fraud, which occurs mainly in e-commerce – a business that is rapidly expanding – and other remote transactions where EMV technology is not applicable.

- One of the main aims of the EC IFR was to increase competition and foster innovation in the EU payments market by reducing barriers to entry. This competition has led to more innovation, including innovation in e.g. fraud detection technology, so as to sustain market share and not to lose out to rivals.

  However, some financial experts argue that the increased variety of third parties in the payment market has potentially raised overall fraud vulnerabilities because many of these new players may not have the same robust security infrastructure and fraud protection measures in place as established payment providers.

- The EC IFR reduced the interchange fees that banks (and card issuers) earn on card transactions. These fees were a significant revenue source for banks, and the caps led to a decline in revenue. Banks may naturally compensate for these losses in revenue by increasing fees on the consumer side (e.g. fixed cardholder fees, fixed fees for maintaining checking account).

  The reduction in revenues from capped interchange fees could have negatively affected investments in fraud prevention technologies and security measures. However, there is little concrete empirical evidence to suggest a direct drop in fraud investments due to reduced interchange fees.

- Payment theory has actually shown that in a model of two-sided markets a payment platform may decide to lower the interchange fee so as to encourage acquiring banks' investments in "quality" (e.g. fraud detection measures) under the assumption that the acquirers' contribution to investments is high and that the consumers benefit more from these investments than the merchants (Verdier, 2012).

- In response to the increase in CNP fraud, banks and payment providers have invested more heavily in fraud detection technologies (e.g., AI-based systems) and in security regulations like Strong Customer Authentication (SCA) under the EC-PSD2, which mandates two-factor authentication for online transactions.

- In all, there is not much evidence that links the EC IFR directly to changes in payment fraud levels and/or changes in investments in fraud protection measures. Banks and payment providers still have strong incentives to combat fraud for competitive and reputational reasons. Moreover, they often bear the (full) costs of fraud-related chargebacks and reimbursements.

Sources/Literature:

ECB (2023), "Report on card fraud in 2020 and 2021," Report.

Federal Reserve Board (2021), "2019 Interchange fee revenue, covered issuer costs, and covered issuer and merchant fraud losses related to debit card transactions," Report, May.

Verdier, Marianne (2012), "Interchange fees and incentives to invest in quality of a payment card system," International Journal of Industrial Organization, 28, 539–554.

4. COMPETITION, INNOVATION AND INTERCHANGE FEES

Q. Are you aware of any studies that examine whether payment innovations, such as open banking, are providing competitive constraints to high interchange fees?

A.

- There are some studies that try to link innovation (such as open banking) and competition to changes in interchange fee levels but as far as I know, not that many. Most of these studies on innovations in payments are consultancy reports.

- The EC Payment Services Directive 2 (PSD2), first adopted in 2015, presents an interesting case in point. Its main aim was to increase competition and foster innovation by allowing third party providers (TPPs) to enter the payment market.[4]

  To ensure a level playing field between existing and new providers of card, internet, and mobile payments in an "open banking" environment, these TPPs are able to access customer payment and account information through so-called API technology.

- PSD2 has introduced two new payment services for which authorization from the regulator is required. These new services are account information services (AISP), enabling financial institutions to retrieve bank account data from consumers, and payment initiation services (PISP), enabling financial institutions to initiate payments on behalf of consumer.

  Both new services present the opportunity for innovative new business models and hence trigger the market entry of a diverse range of businesses outside the traditional banking sector. Likewise, incumbents such as payment institutions and banks are also developing propositions based on these new payment services, thereby expanding their service offering.

- However, two-sided payment theory has shown that the effects of competition in payment markets may be ambiguous and that competition between payment networks can even yield inefficient pricing structures.

- A key aspect of two-sided competition is the ability of end-users to "singlehome" or "multihome". As a general finding, *competing* card networks try to attract end-users who tend to singlehome, since attracting them determines which network has the greater

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[4] Recently, the EC has put forward proposals to bring payments and the wider financial sector further into the "digital age". These proposals will amend and modernize PSD2 which will become PSD3, and introduce a new regulation which will be called Payment Services Regulation (PSR).

volume of business.

In particular, payment competition may result in low or negative consumer fees if payment cards networks (or card issuers) compete too vigorously on the consumer side, tilting the pricing structure fully against merchants, raising interchange fees and thereby reducing total welfare.

Effectively, payment card networks compete by raising merchant fees to fund consumer card rewards. As a result, a "low-fee" public payment option could therefore struggle to gain sufficient consumer adoption, limiting welfare gains (Wang, 2023).

- Using two-sided market theory a few articles have been published that analyzed the relation between innovation and interchange fees. A key question concerns who captures the rents from innovation in payment services.

  Pure cost-based approaches to payment pricing may limit incentives to innovate and – at the end of the day – payment providers may not introduce new products but just upgrade existing "payment rails".

- In this context, using a two-sided model of the payment industry, Bourreau and Verdier (2019) argue that interchange fees may still be necessary for providing the right incentives to innovate.

  Similarly, Evans (2011) claims that moving from a "merchant-pays" to a "consumer-pays" business model is likely to reduce the overall level of innovation in the industry, divert innovation away from the role of payments in transactions and towards improvements for which consumers can be charged non-transaction related fees, and discourage the entry of new payment systems.

  In the United States, there is some evidence that the Durbin 2011 amendment has diminished covered banks' ability to recover investments in payment innovations that would benefit both merchants and consumers. As a result, some potentially valuable new technologies likely have not been developed and implemented as quickly as they otherwise might have been (Morris et al, 2022).

- Open banking allows TPPs to access customer account information and initiate payments directly from bank accounts, thereby bypassing traditional card networks. This innovation offers potential for lower-cost alternatives to card payments. This way open banking could apply competitive pressure on interchange fees.

- In particular, account-to-account (A2A) payments have the potential to compete with card payments, driven by advances in digital technology, open banking, and regulatory support. A2A payments generally bypass the card networks, thereby avoiding interchange fees which could act as a competitive constraint on card networks.

  A2A payments have already proven their value for consumer-to-consumer (C2C) payments, but consumer-to-business (C2B) payments remain a challenge for A2A, especially at the point-of sale.[5]

- Merchants may favor these A2A payments because the transactions are low-cost, irrevocable, and potentially more secure than other payment methods. Use of A2A may therefore significantly reduce fraud and charge-backs, as well as dampen interchange fees.

  These benefits accrue because every transaction is authenticated by a consumer's online banking credentials and uses real-time ("instant") rails. Merchants can then choose to pass the savings onto consumers or improve margins by retaining them. However, while A2A payments are growing, many small businesses may not yet have integrated the systems to accept them widely.

- Regarding consumer adoption, A2A payments still face some hurdles in competing directly with card payments. Many consumers are accustomed to using credit and debit cards, especially for rewards points and fraud protection. Moreover, card networks are universally accepted worldwide, while A2A payments are still developing in terms of international compatibility.

- For payment innovations – such as open banking – to be successful, both consumers and merchants need to be simultaneously convinced by its value added. In a two-sided market arrangement, "innovative success" relates to *i)* changing end-user behaviour and offering net benefits, *ii)* providing incentives for adoption and usage, *iii)* offering sufficient profit opportunities for payment providers, while *iv)* providing necessary security.[6]

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[5] For instance, in the Netherlands, the very popular in-person "payback" request via the mobile phone – called "Tikkie"– triggers a so-called "iDEAL" A2A instant bank transfer payment. These "Tikkies" are still largely used for C2C payments but may also be used at the point-of-sale for C2B payments using QR technology. In Sweden, "Swish" is a comparable mobile A2A payment system that triggers online (instant) credit transfers between bank accounts.
[6] Chakravorti (2016) discusses eight necessary conditions for payment innovations to be successful.

Sources/Literature:

Bourreau, Marc, and Marianne Verdier (2019), "Interchange fees and innovation in payment systems," Review of Industrial Organization, 54, 129–158.

Chakravorti, Sujit (2016), "New payment technologies: Back to basics," Report, Chakra Advisors.

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Morris, Julian, Todd Zywicki, Geoffrey Manne (2022), "The effects of price controls on payment-card interchange fees: A review and update," ICLE White Paper, March 4.

Wang, Lulu (2023), "Regulating competing payment networks," Job Market Paper, Kellog School of Management, Northwestern University, September 28.

Wright, Julian (2012), "Why payment cards fees are biased against retailers," RAND Journal of Economics, 43(4), 761–780.

5. NZI SUBMISSION TO THE COMMERCE COMMISSION ON THE CONSULTATION PAPER

In my view, essentially, in their submission to the Commerce Commission (NZCC) the New Zealand Initiative (NZI) makes two deeper points:
i) **why should surcharging by merchants be restricted?**
ii) **why should credit card interchange fees be equal to debit card interchange fees?**

To explain and clarify these main points, some of the arguments from a 2017 submission by Dr. E. Crampton are "re-used" in various places in the text.

ASSESSMENT

- The NZI submission (2024) makes fair points regarding a difficult payment issue. The relationship between payment cost, payment fees and surcharges, and welfare effects is complex.

  The idea of adding surcharges is simple but its economic consequences are not trivial. Fortunately, research in industrial organization has recently made progress on this issue.

i)   *On the (in)efficiency of surcharges*:

- Many regulators around the globe have in recent times lifted the "no-surcharge rule" imposed by card platforms, allowing merchants to price discriminate according to the payment method.

  These reforms were implemented in an attempt to constrain the fee-setting power of card platforms, as merchants could now pass high merchant fees through to consumers.

- In this context, the NZI submission invokes the Gans and King's (2003) neutrality result stating that the level of the interchange fee will be irrelevant for the decisions of cardholders and merchants when merchants can set a surcharge for consumers who pay by card.

  However, for this neutrality result to hold, full "payment separation" is required where either *all* merchants accept cards and surcharge or *no* merchant accepts cards but only cash for payment.

Empirically, this strict form of payment separation is not really observed.

- Surcharging seems to be used by some merchants as a form of "add-on" pricing (adding additional fees that appear only at the cash register), or by some merchants when interchange or merchant fees are increased beyond some threshold level. In practice, many merchants do not surcharge at all and choose to absorb (high) payment fees.

  The Gans and King (2003) analysis cannot explain nor predict this observed heterogeneity in merchant pricing behaviour.

- In their overview on the economics of payment cards, Rysman and Wright (2014) refer to the complexity of surcharging as well. In this context, they identify several issues and questions:

  - How many and which types of firms surcharge and, when they do so, how do their charges reflect costs or other factors?
  - How do their retail (cash) prices change with surcharging?
  - What is the impact of surcharging on consumer payment choice?
  - How do card networks react in their fee setting to the ability of merchants to surcharge?

  These questions are also relevant for the NZI submission but not discussed in any detail. Fortunately, recent analyses by e.g. Bourguignon, Gomes and Tirole (2019) and Gomes and Tirole (2018) on "shrouded" transaction costs and "add-on pricing" provide some new (theoretical) insights and policy recommendations.

- Empirically, in many jurisdictions where it is allowed, card surcharging is infrequent or limited in magnitude in most industries, and where it happens surcharges are often "overshooting" the merchant fees – see e.g. Bolt et al. (2010), Stavins and Shy (2015), Caddy et al. (2020).

  Rather than imposing surcharges, many merchants typically opt to implicitly subsidize consumer card usage by absorbing the fees imposed by the card platform. Moreover, there is little evidence that card fees went down in reaction to the possibility of card surcharging, or that the cash price went down by merchants that do surcharge.

- Concerns about "missed sales" (and/or offering "quality of service") induce merchants to perceive that they "must take" the card, particularly when mark-ups are high. Consequently, in the <u>absence</u> of surcharging, merchants will accept cards with inefficiently high merchant

fees – "they are weak" – and payment systems will indeed want to exploit this weakness and levy such high fees.

Surprisingly, in two-sided markets, competition between card networks may only aggravate the skewness of payment fees, tilting the pricing structure even more against merchants (see e.g. Wang, 2023).

- In many advanced economies, regulatory authorities have capped interchange fees that card systems charge to acquiring banks which are then passed onto merchants. Specifically, in 2015 the European Commission (EC) adopted as its benchmark for the regulation of interchange fees in four-party card networks the "tourist test" (or "merchant indifference test"), according to which the merchant fee should not exceed the merchant's convenience benefit (or "avoided cost") of a card payment (Rochet and Tirole, 2011).

- The tourist test induces the cardholder to internalize the merchant's welfare when choosing the payment method, thereby neutralizing any external effects.

  Because merchants' surcharging behaviour ultimately depends on the "net" fees they pay on card payments, interchange fee and surcharging regulations should not be designed separately, as is the case in many jurisdictions (Bourguignon et al, 2019).

- Recent _theoretical_ research has shown that:
  - Surcharging always generates too few card transactions, both from the point of view of the payment platform (which therefore prefers a no-surcharge rule) and from the point of view of the social planner. This is because merchants would always "overshoot" in the surcharge, and therefore surcharge consumers more than what efficiency dictates.

  This theoretical finding accords well with empirical evidence about "excessive surcharges" where the surcharge is sometimes set more than five times higher than the actual card fee (e.g. Bolt et al., 2010).

  - Card networks may optimally adjust their fee structure in response to allowing merchants to use surcharges. In effect, the card network is able to select merchant and cardholders fees that would generate no (or limited) card surcharges as a result, while still maximizing card usage.

  This theoretical implication is fairly consistent with empirical evidence showing that payment regulations allowing card surcharging do not generate much actual surcharging

itself.

- As a policy implication, these results effectively mean that allowing surcharging becomes redundant if the merchant fee is regulated at its "tourist level" so that the merchant is (ex post) indifferent as to the means of payment chosen by the consumer at the point-of-sale.

- Moreover, allowing card surcharging increases social welfare if and only if the merchant fee under "uniform pricing" is much higher than the tourist test level.

  This observation is in line with the EC PSD2 (2015) payment directive that allows surcharging for cards whose fee structure is currently *not* subject to regulation (i.e. for three-part schemes), and to ban it for the others (i.e. for four-party schemes).

- It can be shown that if surcharging is to be allowed, the optimal surcharge regulation consists of a cap that is equal to the merchant fee minus the merchant's convenience benefit of card payment.

  As a consequence, when surcharges are allowed, regulation should shift its focus to merchants' behaviour (to prevent excessive surcharges), rather than focusing on card networks' behaviour.

- Overseeing these research outcomes and policy implications, the 0.70% cap on surcharges as stated in the NZCC Consultation paper (2024) could very well be "close to optimal", but should be judged as well according to the cost difference between merchant fees and merchant convenience benefits (or avoided cost) – see next bullet.

- There are some obvious <u>caveats</u>:
  1. Can we measure in any detail various payment cost and convenience benefits of both consumers and merchants?

  In my view the NZI submission is right to bring up the issue of a comprehensive cost-benefit assessment. As I have also stated in my (2023) expert report (on page 44) calculating the total resource costs of the retail payment system – and the corresponding unit social cost of different payment instruments – is a useful way to gauge payment efficiency. These cost calculations may then also underpin effective policies with respect to payment pricing (e.g. deriving "tourist levels" for merchant fees) and potentially card surcharges (e.g. deriving the "optimal cap").

2. Many of the recent new insights on payment cost and surcharging rely on an "imperfect information" framework.

It can be argued that industries like air travel, holiday travel, restaurants, taxis and gas stations (where e.g. credit card surcharges are more observed than in other industries) exhibit "one-time" or infrequent shopping. This appears to fit reasonably well the assumption that consumers have imperfect information regarding merchants' cash and card policies.

ii)   *On debit versus credit card interchange fees*

- Regarding regulation of debit and credit card interchange fees, the EC has implemented a cap of 20bps on debit and 30bps on credit cards. As the cost structure of debit versus credit card is different, this would allow different caps.

  Recent cost studies carried out by the Bank of Canada (see Kosse et al., 2017) to assess the cost of Canadian retail payment system confirm these cost differences between debit and credit cards. This would then also induce different caps on interchange fees (based on the corresponding tourist test levels).

- It can further be argued that, theoretically, the cap on the interchange fee of credit cards should take into account the credit functionality (and potentially other additional services that affect consumer benefits attached to using credit cards). For "conservative" regulators who care about total user surplus, there is a good case to make for including (weighted) retailers' net avoided costs from not having to provide credit themselves (Rochet and Wright, 2010).

  Consequently, the appropriate credit card interchange fee cap would then be set as a weighted average of the merchants' net avoided cost from not having to accept cash and the merchants' net avoided cost from not having to provide credit, with the weights being the proportion of each type of transaction (ordinary purchases versus purchases where credit is required).

  Again, this would require a careful cost-benefit assessment (see also paragraph 6).

- As well, there is less "merchant resistance" when credit cards are more valuable to consumers relative to cash and debit. Because credit cards allow consumers to defer payments (and potentially smooth consumption), cash payments are more inconvenient

than card payments when the card is a credit rather than a debit card. As a result of lower merchant resistance, the platform charges a merchant fee higher for credit than for debit cards. This is seen often in practice.

Consequently, this result carries over to optimal interchange fee regulation based on different debit and credit "tourist" levels (Bourguignon et al. 2019).

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6. DEBIT VERSUS CREDIT CARD INTERCHANGE FEES

Q. In practice, what factors could influence a different interchange fee arising between debit and credit, and in which direction could/should this difference be?

A.

- As explained in the previous paragraph, appropriate regulation regarding credit card interchange fees – based on avoided cost – should take into account credit functionality, and potentially other additional services that affect consumer benefits attached to using credit cards.

  In principle, the retailer costs of providing these additional services affect (regulated) credit card interchange fees and may result in a difference between debit card versus credit interchange fees.

- However, more factors than only costs come into play. Besides costs for additional services, also payment volume, retail cost structure (volume versus value-related costs), acquiring costs and margin, and market structure play a role.

  Effectively, the difference between (regulated) debit and credit card interchange fees depends on an <u>empirical</u> assessment of all these factors. Beforehand it is difficult to say in which direction this difference will go.

- Note that under the "avoided cost" principle (i.e. tourist test methodology) the retailer is (ex post) <u>indifferent</u> as to the means of payment chosen by the consumer at the point-of-sale. This indifference level holds for an "average" retailer who accepts a payment of "average" transaction amount.

  Often – but not necessarily – the best alternative mode of payment is considered to be cash.

- The breakdown between fixed and variable costs is useful for comparing the variable costs of payment methods at different transaction sizes. These variable (or " incremental") costs reflect the <u>additional</u> costs of making one <u>additional</u> payment of a certain value, while assuming that all fixed costs have already been paid for.

  Calculating the tourist test indifference levels involves a (optimal) marginal trade-off. Fixed costs are not relevant for its determination.

- An illustration based on "real life" payment data may help here. Consider the following two tables that are derived from the Bank of Canada (BoC) 2017 study on the costs of point-of-sale payments in Canada (Kosse et al., 2017).

Table 1: Number and value of POS payments made in Canada in 2014

	cash	debit cards	credit cards
Total no. of POS transactions (in millions)	8104	4900	2978
Total value of POS transactions (in Can$ millions)	145951	211000	259672
Average transaction amount (in Can$)	18.01	43.06	87.19

Table 2: Breakdown of total retailer variable costs (in Can$ millions, 2014)

	cash	debit cards	credit cards
Transaction-linked variable costs	875	650	515
Value-linked variable costs:			
resource cost	561	61	52
fees	404	595	5431

Table 1 shows the "average" transaction amounts for cash (18 Can$), debit (43 Can$) and credit cards (87 Can$) when these instruments are used at the point of sale.

Table 2 shows the breakdown of the <u>variable</u> retailer costs of accepting these three payment instruments at the point of sale. Notice the high amount of fees that Canadian retailers pay for accepting credit cards relative to debit cards. Fixed costs are not shown here.

- The BoC (2017) payment cost study finds that, on average, debit card transactions carry the lowest resource cost per transaction (0.57 Can$) while credit cards have the highest per-transaction cost (1.92 Can$). Other cost studies also demonstrate this result.

The finding that credit card costs are higher than those of debit cards is consistent with the fact that the provision of credit cards involves activities that are not required for debit cards, such as credit risk analyses, management of reward programs and chargebacks and provision of credit card statements.

- To calculate appropriate interchange fee levels based on the tourist test methodology the breakdown of variable costs of different payment methods is important. In practice, the total variable costs of a payment has a volume-related component ("transaction-linked") and a value-related component ("value-linked").

Transaction-linked variable costs fluctuate with the number of payments (i.e. payment volume), whereas value-linked variable costs change with the transaction size (i.e. payment value).

- From table 2 it becomes clear that most of the variable costs of payment card usage are generated by payment volume and not so much by payment value (when we abstract from the paid fees). For cash, the variable cost structure is fairly opposite where payment value triggers a big chunk of variable costs as well.

  These observed differences in average transaction amount and variable cost structure with respect to payment instrument usage allow us to calculate indifference points that underlie the tourist test methodology.

- Based on Canadian cost data, we can derive the retailer variable costs of accepting cash, $c(y)$, for a payment of transaction amount y:

  $$c(y) = a + b*y = 875/8104 + (561/145951)*y = 0.11 + 0.007\,y,$$

  where $a = 0.11$ is the volume-component (the "intercept"), and $b = 0.007$ the value-component (the "slope").

  Given these data, we can calculate the cash cost of an average debit card payment of 43 Can$ for an average retailer, which is equal to $c(43) = 0.39$ Can$. Similarly, for an average credit card payment of 87 Can$ the cash cost is $c(87) = 0.68$ Can$ (see figure 1 below, panel a and b).

- In the same way we can derive the debit and credit card cost functions, $dc(y)$ and $cc(y)$. Recall that we are looking for an indifference point. That is: what debit and credit card merchant fees make the cost of cash equal to the cost of using a debit or credit card (evaluated at the corresponding average transaction amounts)?

  So, leaving out the paid fees, we derive from table 1 and 2:[7]

  $$dc(y) = 650/4900 + (61/211000)*y = 0.133 + 0.0003\,y, \text{ and}$$

  $$cc(y) = 515/2978 + (52/259672)*y = 0.173 + 0.0002\,y.$$

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[7] For simplicity, it is assumed here that the paid fees on debit and credit cards are fully value-based (as a % of transaction value); this is not a critical assumption in itself because these fees are left out of the calculations.

Note that: $dc(43)= 0.14$ Can\$ and $cc(87)= 0.19$ Can\$.

This means that by accepting a 43 Can\$ debit card payment the retailer incurs a cost of 0.14 Can\$, excluding the debit card merchant fee it has to pay. At the same token, by accepting a 87 Can\$ credit card payment the retailer incurs a cost of 0.19 Can\$ excluding the credit card merchant fee.

- From these calculations, the corresponding debit and credit card tourist test levels (relative to cash) can tentatively be derived:

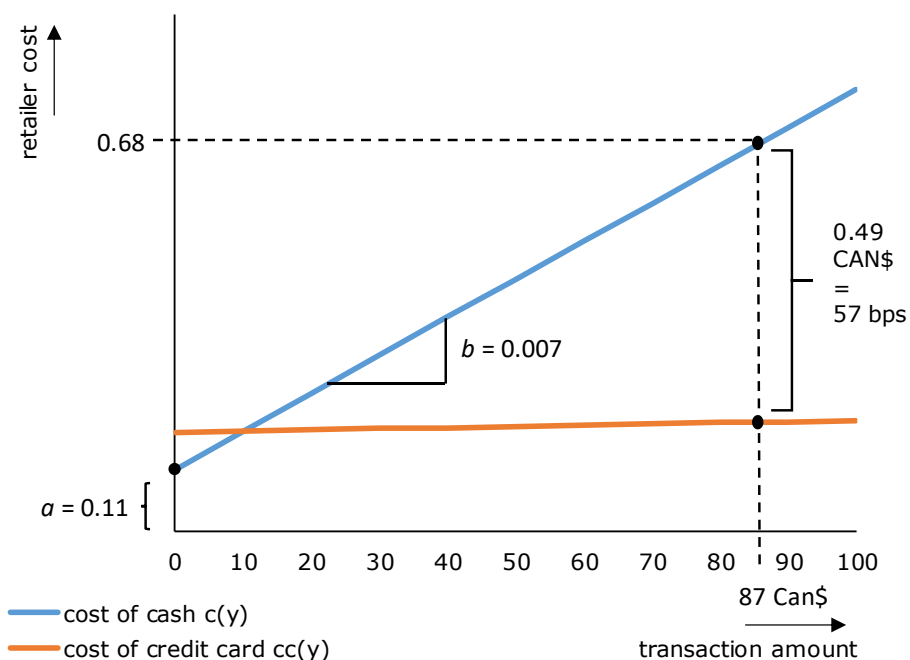 - for debit cards: $m^{dc} = c(43) - dc(43) = 0.25$ Can\$, which is 0.25/43*100 = 57 bps, and

  - for credit cards: $m^{cc} = c(87) - cc(87) = 0.49$ Can\$, which is 0.49/87*100 = 57 bps.

Figure 1: Tourist test merchant fees for debit and credit cards
a) debit card

cost of cash c(y)
cost of debit card dc(y)

b) credit card

cost of cash c(y)
cost of credit card cc(y)
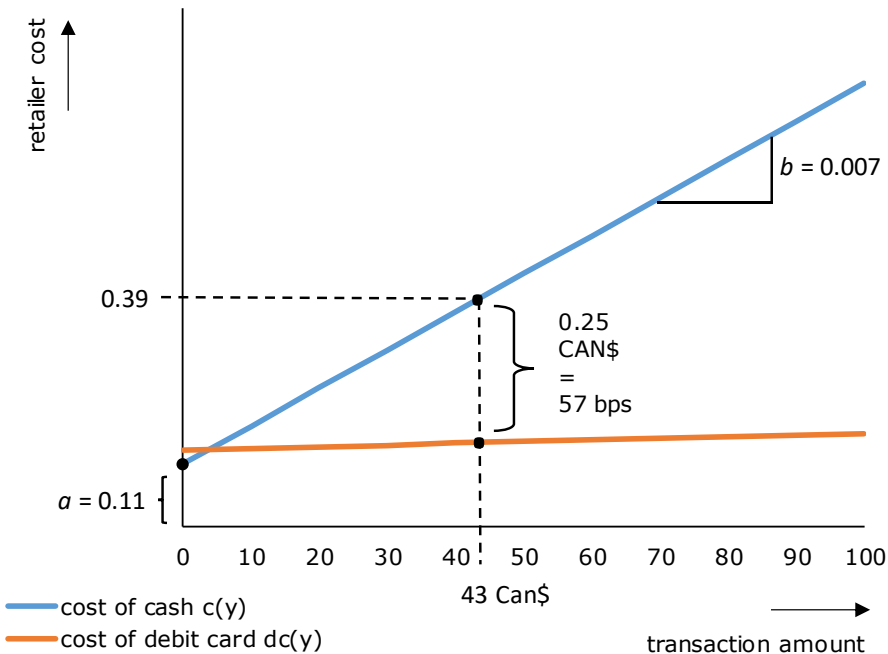
- These calculations based on Canadian payment data indicate that for a debit card merchant fee of 0.25 Can\$ the variable costs of accepting an "average" payment of 43 Can\$ are equal for cash and debit card. Put differently, an "average" retailer is <u>indifferent</u> between accepting a 43 Can\$ "average" payment with cash or debit card when the merchant fee on a debit card amounts to 0.25 Can\$. This defines the tourist test debit card merchant fee.

  Similarly, an "average" retailer is indifferent between accepting a 87 Can\$ "average" payment with cash or credit card when the merchant fee on a credit card is 0.49 Can\$. Again, this defines the tourist test credit card merchant fee.

  Figure 1 shows a graphical interpretation of these numbers.

- Interestingly, note that – as a percentage of the (average) transaction amount – both tourist test merchant fees are (approximately) equal: $m^{dc} = m^{cc} = 57$ basis points (bps).

- Keep in mind that merchant fees are generally <u>not</u> regulated, but interchange fees (that largely drive merchant fees) are. The question now arises whether in the Canadian case the corresponding tourist test interchange fee levels are equal (in bps) as well.

Generally, this will also depend on debit and credit card acquiring costs and margins, and the competitiveness of the card market.

As I do not have more information about these "drivers", I will make some further simple assumptions – which need to be empirically assessed or tested – to illustrate this issue.

- Just like the EC IFR (2015), let us first assume that acquiring margins are zero (i.e. perfect competition among acquirers). Second, also assume that acquiring costs do not depend on the type of card nor on the transaction amount, say $c_A^{dc} = c_A^{cc} = 0.10$ Can$ "flat" per card transaction.

  Given these two assumptions, it now follows for the tourist test interchange fees a^{dc} and a^{cc}:

  $m^{dc} = c_A^{dc} + a^{dc}$, so that: $a^{dc} = 0.25 - 0.10 = 0.15$, which is 0.15/43*100 = 35 bps, and

  $m^{cc} = c_A^{cc} + a^{cc}$, so that: $a^{cc} = 0.49 - 0.10 = 0.39$, which is 0.39/87*100 = 45 bps.

  Hence, the two interchange fee caps based on the tourist test methodology differ – the credit card interchange fee is 10 bps higher than the debit card interchange fee. In this numerical example, c_A^{cc} "needs" to rise to approx. 0.20 Can$ to equalize the tourist test levels (at 35 bps).

  Obviously, our simple assumptions about debit and credit card acquiring costs and the market structure of the acquiring business require a careful empirical assessment.

- To conclude:
  In my opinion, the question whether (regulated) debit card interchange fees should be lower or equal to (regulated) credit card interchange fees is largely an empirical one. The costs of additional services that credit cards provide and which are valued by consumers, should surely be taken into account in any "avoided cost" methodology. But other factors such as (current) payment volumes, retail cost structure, acquiring costs and margin, and market structure will also play a role – and there may be other factors as well.

  The availability of good and granular payment (cost) data will certainly help to identify the main factors that drive this interchange fee difference (and to what extent).

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