
Payment Card Reform Framework (PCRF): A Policy Evaluation Study

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Executive Summary

In recent years, Bank Negara Malaysia (BNM), the Malaysian central bank, has taken various initiatives to accelerate the migration to electronic payments (e-payments) in Malaysia. It sees e-payments as “one of the strategic tools for achieving greater economic efficiency, productivity and growth” (Bank Negara Malaysia, 2011). It has set ambitious targets to increase the number of e-payment transactions per capita in Malaysia from 44 transactions in 2010 to 200 transactions in 2020 and reduce the use of cheques by more than half, from 207 million to 100 million a year over the same period. BNM introduced the Payment Card Reform Framework (PCRF) on 15th January 2015 as one of its initiatives to encourage migration to e-payments. The dual objectives of PCRF were to 1) “prevent indiscriminate increases in interchange fees and provide for an objective and transparent framework for setting of interchange fees for domestic payment card transactions” and 2) “address other distortions in the payment card market in order to create an enabling environment for wider deployment of point-of-sale (POS) terminals and to promote the greater usage and acceptance of cost effective payment cards” (Bank Negara Malaysia, 2014b).

An important aspect of the PCRF is the setting of ceilings on interchange fees for various types of payment cards—a step that in itself creates conflicts and inconsistency within the economics of the electronic payment system and is likely to have a limited impact and chance of success in achieving the objectives. In fact, the progress to date has been mixed, especially in comparison to the ambitious objectives set by the bank. There has been progress made in the placement of terminals and use of debit cards—the primary focus of the PCRF. Credit card usage has been largely static. As we will discuss later, most of the progress has come from steps that are consistent with the economic parameters of the electronic payment system. This paper argues following a market-based framework will help the central bank in achieving its policy objectives.

This paper reviews some of the assumptions underlying the Payment Card Reform Framework (PCRF) programme, assesses its progress to date and suggests steps that might be taken to improve the chances of achieving the Bank’s objectives. The first section of the paper reviews some of the context and economics of the payment system within which the Bank operates. It forms a basis for some of the assumptions and impacts of specific actions. The next section briefly reviews the objectives and steps taken and their relationship to the basic economics. The third section summarizes the progress to date. Finally, the last section discusses additional steps that could be considered as well as steps that should be avoided. Further detail is provided in the Appendix.



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Some of the steps which BNM might consider to more effectively attain its objectives include:



Recognition and consideration of the value delivered to each participant in the system for the costs they incur accounting for the benefits of e-commerce;



Avoidance of further one-sided reductions in revenue to either the debit or credit products without counter measures to balance the impact;



Provision of tax incentives for use of a debit, credit or other e-payment vehicle;



Inclusion of all relevant costs in the computation of recommended interchange fees and letting the market players decide;



Consideration of an average rate guideline (if any regulation) for credit and debit cards a la Australia vs a cap to allow for increased product differentiation;



An education programme targeted at small and medium size merchants to illustrate the value of acceptance; and



Direct reimbursement of merchant discounts to new accepting merchants for a limited period of time.

I. SYSTEM CONTEXT AND ECONOMICS

The three and four party payment systems consist of account holders, merchants and their banks or scheme. Revenue for the electronic payment system or scheme is collected from only two participants — the merchant or the account holder. Each should pay for the services rendered to it by the scheme or system. In the case of the merchant, it pays a merchant discount or service fee — primarily to compensate for the guaranteed transaction, a prompt payment and for processing and advertising amounts (for example, decals and terminals). This pricing can be compared to a factoring service. Account holders pay their bank account fees and interest where applicable on unsecured loans.

In the four-party system, when the merchant's bank (acquirer) is different from the account holder's bank (issuer), an amount of the revenue collected from the merchant via the merchant discount is transferred from the acquirer to the issuer because the cost of providing some of the service to the merchant is borne by the issuer. The opposite flow exists for a cash advance. This amount is called the interchange fee. It is a subset of the merchant discount, not a determiner of it. In most parts of the world, the transfer amount representing the cost of the guarantee, funding and processing is estimated using industry averages, cost has been determined to be an objective and transparent way to establish the fee.

In Malaysia, an Industry Survey in 2012 found that the cost of guaranteeing, funding and limited processing was over 2% for credit cards — substantially above the prevailing rate. Work done by the Bank indicated that the cost of selected items for debit was about 21 basis points — substantially less than other comparable studies completed in other countries. While components of the costs included can be debated, it is certainly the case that the costs of the service provided are less for debit than credit. Therefore, in Malaysia as in most parts of the world, separation of debit and credit Merchant discount and interchange pricing at appropriate levels is a positive and economically consistent step.

It is also worth noting that in the computation of default interchange fees, rewards and program loyalty costs are not included. In fact, given that rewards are generally at least 1%, there is no room in the calculated result for them. The fees are only sufficient to cover the cost of the guarantee, funding and some processing. Generally, revenues from annual fees along with other issuer revenues fund rewards and other account costs. Interchange existed before rewards and has generally been reduced over time — not increased as a result of rewards. Upward or downward changes in interchange are generally within the cost envelope and reflect incentives for product use, additional costs and value, competition and underlying account characteristics.

There is a macroeconomic cost to cash (printing money, circulation, collection, losses etc.) as well as a cost to the merchant to accept it; and studies indicate that effective transformation to an electronic payment system can add as much as 1% to GDP — consistent with the Bank's estimate (Bank Negara Malaysia, 2011).

A few summary background comments about the four-party scheme are helpful to put the following discussion into context:

- The merchant discount or service fee is collected from merchants to compensate for the services rendered by the system. It is the same whether or not the acquirer and issuer are the same or different — i.e. whether or not there is an interchange fee;
- Merchant discounts predate interchange fees;
- The interchange fee creates no new revenue for the system, but simply is an internal transfer of revenue from the point of collection (acquirer) to the point of cost incidence (issuer);
- Reward costs are not part of the interchange calculation. Rewards are funded by all issuer revenues and in particular, annual fees;
- Revenue for the system is only collected from the end users — account holders or merchants. If the revenue is reduced arbitrarily from one, it must be made up from the other or costs must be reduced;
- Cost has been determined to be transparent and objective way to establish interchange fees;
- Consumers use debit and credit for different reasons — and the size and profitability of the transactions are different taking into account the risk profiles — consumers make the purchase decisions and the choice of payment card type (debit, credit); and
- In arguing for lower MDR charges, retailers often claim that the savings from MDR reductions will be passed on to consumers. However, this is not the case in practice. It is reported that some retailers are imposing surcharges of 2% on the actual price of a product even though they are charged a MDR of 1.5% or 0.5% for card payments (FMT, 2018). Retailers need to understand the value of payment cards towards higher ticket lifts, guaranteed, timely payments and see MDR as part of the costs of operating a business.

2. THE BANK'S GENERAL GOALS AND STEPS TAKEN

BNM wishes to promote debit cards as a cost-effective payment card to displace cash and checks. There is high penetration of debit cards in Malaysia. Less than 29% of the adult population in Malaysia has credit cards while more than 83% of the adult population has a debit card on hand (Borneo Post Online, 2017). However, debit card transaction per capita in Malaysia were only 3.5 in 2016 (Borneo Post Online, 2017). Advanced countries such as Australia, UK, Sweden and Norway all have debit card transaction per capita of over 100, with Norway having 298 debit card transaction per capita in 2012 (Bank Negara Malaysia, 2014a).

In addition to setting the ceilings of interchange fee rates, PCRf also includes other measures. For example, PCRf requires acquirers to charge merchants specified and separate MDR for each type of payment card (domestic debit, international debit and credit card) transactions. This measure addresses the fact that the difference in costs of providing a debit card service transaction versus a credit card. Along with the measure to unbundle MDR is a measure to facilitate the identification of debit cards and international prepaid cards by mandating that all debit cards and international prepaid cards in circulation must be visually and electronically identifiable through the word "Debit" and "Prepaid" prominently displayed on the face of the cards, respectively by 1st January 2018.

Other measures of PCRf include:

- removing restrictions on co-badging of debit cards;
- making acquirers responsible for ensuring that merchants do not impose any surcharge on transactions made using debit cards or prepaid cards;
- empowering merchants to steer cardholders to use cost-effective payment cards and to have the first priority in routing decisions;
- prohibition for an operator of a payment system to restrict or prevent the access of an account maintained by a customer or a line of credit extended by other payment card networks;
- requiring issuers of debit cards, prepaid cards and credit cards to offer customers the option of obtaining basic cards, with minimal or no cardholder incentives or rewards, and at zero nominal fee charged to customers;
- requiring issuers, acquirers and operators of payment card networks to report to BNM on costs and fees associated with payment cards periodically;
- 0.1% of credit interchange will go towards establishing a Market Development Fund (MDF) to fund POS terminal deployment; and
- The credit interchange ceiling of 100 bps will be adjusted in the event industry fails to meet its KPI of POS terminal deployment.

3. HOW DO THE QUANTITATIVE CHANGES RELATE TO THE SYSTEM ECONOMICS?

As indicated above, steps taken which are consistent with the overall economics of electronic payments system are more likely to result in success and attainment of the Bank's objectives. With that in mind, we would evaluate the primary steps as follows:

- Reducing interchange fees with no relationship to the underlying costs of providing the service to the merchant is not likely to succeed. It results in additional cost to the account holders in the form of increased fees or reduced services and financial inclusion;
- Separation of debit and credit is consistent with the underlying economics and an establishment of debit interchange to or near its underlying costs is constructive;
- The minor change in credit interchange, which was already below its appropriate level, will have little impact and further reduction would create a substantial imbalance and encourage the use of credit vs debit;
- Steps which would accelerate one-sided reductions as a result of not attaining volume or POS placement objectives are unlikely to be successful and are counterproductive in that issuers are not the primary vehicle for POS placement;
- Routing decisions create a conflict between the merchant and the card user. It is not clear that they will assist with the attainment of the objectives;
- The quantitative goals were set too high and based on geographies with substantially different cultures, populations, geographical characteristics and economic situations. These need to be re-examined;
- Providing economic reductions to government parties is inconsistent with the economic savings they get from acceptance and puts unneeded pressure on small businesses, new acceptors and consumers to make up the revenue shortfall or the required cost reduction; and
- Targets relate mostly to debit and cannot be attained without active participation of government.

WHAT ARE THE RESULTS TO DATE?

The Appendix summarizes some of the quantitative measures and comparisons of initial results against the stated goals. It is referred to in the following pages.

Overall, the implementation of PCRf has resulted in wider potential acceptance of card payments by merchants (as evidenced by a larger number of POS terminals) and the apparent acceptance of card payments for lower value transactions. However, by the end of 2017, the actual number of POS terminals and the total number of debit card transaction in the year have both fallen significantly behind the ambitious targets set in PCRf. Other measures of PCRf, such as requiring acquirers to charge merchants specified and separate MDR for each type of payment card and facilitating the identification of debit cards and international prepaid cards have been carried out according to schedule and their aims have been achieved. We look at these key results in more detail below.

Setting of interchange fee ceilings is one of the key measures of PCRf. Figures 1 and 2 show the interchange fees of debit card transactions and credit card transactions, respectively, across merchant categories for a payment network in Malaysia. As can be seen from Figure 1, the interchange fee rates of debit card transactions have declined significantly across all merchant categories. Figure 2 shows that for credit card transactions, credit card effective interchange fee rates have declined for all but 6 merchant categories post PCRf.

Prior to the reforms, operators of payment card networks established higher interchange fee rates for premium credit cards. An unintended result of this was to create incentives for issuers of credit cards to lower the income requirement for premium cards so they could receive higher interchange fees. This practice can be and has been addressed in other jurisdictions as a brand issue. Higher interchange fees for premium products is consistent with the increased value these products bring to both merchants and consumers especially in a digital economy. The imposition of ceilings does not allow for sufficient product differentiation and thus the rates are now the same (Figure 3). This lack of differentiation also ignores the fact that investments made in payment innovation and new products vary in terms of enhanced security features and new payment forms. Allowing market forces and economics to dictate credit card interchange rates would also steer merchants' preference towards the more cost-efficient debit card, and thus promote BNM's policy objective of increasing debit card usage.

From the standpoint of merchants, it is the merchant discount rate (MDR) which impacts them directly. Figure 4 below shows that average MDRs have declined for both debit and credit card transactions post reform. PCRf succeeded in unbundling MDRs for credit card and debit card transactions, as evidenced by the gap of about 0.4% in MDR by 2016. We note that the declines in average MDRs are much smaller than the decline in interchange fee rates (comparing to Figures 1 and 2), especially for international debit cards, which suggests that the pass throughs from interchange fee rates reduction to MDRs have not taken place. This is consistent with other geographies where reductions are not reflected in either merchant discounts or in product price. As a result, the consumer is likely to be paying more post regulation than before.

Panel I of Table 1 shows the PCRf's targets for the number of cumulative POS terminals deployed in Malaysia and the total volume of debit card transactions in Malaysia between 2015 and 2020. The targets for cumulative POS terminals set by BNM for 2015 to 2020 are aggressive. The target of 800,000 POS terminals by 2020 translates to 25 terminals per 1000 inhabitants, which is in line with the figure in electronically advanced payment countries such as Australia, UK, Sweden and Norway, which have about 22 to 33 POS terminals per 1000 inhabitants (Bank Negara Malaysia, 2011). However, these quantitative targets may have been set too high as they are benchmarked against geographies with substantially different cultures, populations, geographical characteristics and economic situations.

Panel I of Table 2 shows the actual outcomes of POS terminals between 2015 to 2017. Not surprisingly, the number of POS terminals in Malaysia has fallen behind the targets set in PCRf in the first 3 years after its introduction. The number of POS terminals increased from 233,248 in 2014 to 278,266 in 2015, which was quite an achievement, as it was a 19.3% growth (compared to 2.7% to 3.1% growth per annum in 2013 and 2014), but the 2015 figure was still 0.6% below the target for that year. By the end of 2017, the number of POS terminals was only 406,229, which was 5.5% below the PCRf target for the year of 430,000.

The targets for debit card transaction volume, as can be seen from Figure 6, are relatively modest through 2015 (with a target growth rate of 30%), considering that debit card transaction volume had been growing at 37 to 39% per annum in 2013 and 2014. Nonetheless, the targets for 2016 to 2020 are quite aggressive, with target growth rates of 47 to 80% per annum. The target of 1 billion debit card transactions by 2020 translates to 30 transactions per capita (Bank Negara Malaysia, 2011). The actual outcome of 90.1 million transactions in 2015 exceeded the PCRf target of 89 million for that year. Nonetheless, the actual outcome of 107.5 million transactions for 2016 was only 78% of the PCRf target of 137 million transactions for that year. What is more worrying is that the actual number of debit card transactions in 2017 of 162.1 million is only 66% of the PCRf target of 246 million for that year. Moreover, while debit card transaction volume has continued to increase post PCRf (Figure 7), the attribution is rather contested. Specifically, the growth rates of debit card transaction volume continued to decelerate in 2015 and 2016, following the general declining trend since 2010 (Figure 8), before registering a significant increase of 51% in 2017 (though it was significantly lower than the 2017 target growth rate of debit card transaction volume of 80% in the PCRf).

While the PCRf has not set targets for debit card transaction values, it is interesting to note that they have continued to grow post PCRf (Figure 9). Nonetheless, the PCRf does not seem to have had a positive impact on total debit card transaction value, as the growth rates of transaction value have been largely flat since 2011, with a dip in 2016 (Figure 10).

Average debit card transaction value (total value divided by number of transactions) has declined in 2016 and 2017 (Figure 11), suggesting that debit cards are beginning to replace cash as a payment option for lower-value transactions thus supporting the policy objective of a cashless economy.

Certain business models may become untenable and costs are shifted to consumers who can ill afford them because of the distortions created by the interchange fee regulations. For example, in the United States, after the Federal Reserve Board imposed debit card interchange fee standards for regulated banks it was observed that 50 percent of regulated issuers ended their reward programmes in 2011; at the same time, average monthly fees of noninterest checking accounts increased by 25% while the minimum balance for free-checking services increased by 23% (Wang, 2012). In the case of Spain, Irazo et al. (2012) report that the government-enforced agreement to lower interchange fee rates for a five-year period has led to an increase of annual card fees by 50% and reduced card rewards. They also highlighted that there is no evidence that the reduction in interchange fees have benefited consumers in the form lower prices for goods and services. In the case of Australia, Chan et al. (2012) report that interchange fee cap introduced in Australia since 2003 have resulted in card issuers reducing reward offerings, while Stillman et al. (2008) document a 40% increase in annual fees on a “standard” rewards credit card.

CONCLUSION AND RECOMMENDATIONS

We note that PCRf has helped Malaysia to increase the number of POS terminals in Malaysia substantially compared to the pre-reform period. However, if the current trajectory of slow growth does not pick up, it is unlikely to achieve its ambitious targets in terms of both the number of POS terminals and the volume of debit card transactions, as Malaysia has fallen significantly behind these targets by 2017. This should be viewed as a consequence of interfering with the economic rationale of the system. We discuss the various arguments and evidences associated with whether BNM should regulate the interchange fee rates in Malaysia and conclude that such regulations are counterproductive since interchange fee regulations have unintended consequences while open market policies work better to achieve optimal results especially in rapidly evolving markets such as electronic payments. When government imposes ceilings on interchange fees below the appropriate cost of the service and without offsetting benefits, card issuers must recoup the lost revenues by either increasing other revenues from account holders or by decreasing costs. As Malaysia invests to transform into a digital and innovation economy, some of these investments to make payments more secure and ubiquitous need to be factored into the cost equation.

Furthermore, because it is virtually impossible to pass through all the reduction in interchange fees to end customers, consumers end up paying more than what they were paying before the regulation. These impacts affect both debit and credit accounts as well as other bank services. In addition, interchange fee regulations may reduce innovations in the payment markets as issuers have less resources for investment.

While large retailers generally gain directly from reductions of interchange fee rates (and hence lower MDRs), small and medium size merchants generally do not since their pricing is generally not based on a pass-through model. To the extent that consumers find their accounts more expensive to use, they may switch back to higher cost payment methods such as cash and cheques (Morris et al, 2017). Reduction of interchange fee rates can also adversely impact small and medium enterprises (SMEs) through reduction of credit availability to SME's as lower interchange reduces issuers' ability to take credit risk (Mastercard Australia, 2016). These are all examples of the way in which independent steps are inconsistent with the basic economics of the system and result in unintended consequences and conflict. The results to date suggest that BNM should reconsider its approach to interchange regulation and take steps to bring it into line with the underlying economics of the system by leaving the economics to market forces.

In order to more effectively reach the Bank's objectives, we recommend that the Bank and the Government reorient their approach to become less interventionist, appreciate the market dynamics and to concentrate on steps that are effective and consistent with the economics of the payment system. These would include:

1. Recognition and consideration of the value delivered to each participant in the system for the costs they incur accounting for the benefits of e-commerce;
2. Avoidance of further one-sided reductions in revenue to either the debit or credit products without counter measures to balance the impact;

3. Provision of tax incentives for use of a debit, credit or other e-payment vehicle;
4. Inclusion of all relevant costs in the computation of recommended interchange fees and letting the market players decide;
5. Consideration of an average rate guideline (if any regulation) for credit and debit cards a la Australia vs a cap to allow for increased product differentiation;
6. An education programme targeted at small and medium size merchants to illustrate the value of card payment acceptance; and
7. Direct reimbursement of merchant discounts to new accepting merchants for a limited period of time;

The Government should introduce policies that more directly encourage the use of e-payments furthering the BNM policy objectives to achieve a cashless economy. An example might be to provide tax incentives for e-payments, modelled on the Tax Incentives for Electronically Traceable Payments (TIETP) policy in South Korea. South Korea introduced TIETP in 1999, to provide tax incentives for individual consumers to use payment cards for transactions (Sung et al., 2017). Under this policy, expenditure paid using payment cards are eligible for tax deductions against taxable labour income up to certain thresholds.

Combined with merchant incentives, this type of adjustment gives clear incentives for both consumers and merchants to choose card payments over cash and has been credited in turning South Korea into the country with the highest ratio of card payments over GDP since 2005 (Sung et al., 2017). The motivation for South Korea to introduce TIETP was to reduce the shadow economy through encouraging electronically traceable payments and to enable tax authorities to follow the audit trails of the retail sectors. Credit card transactions skyrocketed from 4.9% of GDP in 1999 to 34.3% of GDP in 2002 following the implementation of TIETP in South Korea (Sung et al., 2017). While tax incentives come with fiscal costs, TIETP has been credited for increasing personal income tax revenue in South Korea by 4.2% with an estimated net gain of USD1.3 billion (Sung et al., 2017).

Another policy option would be to directly reimburse merchants for the merchant discount rates. India has recently implemented a policy to reimburse merchants the merchant discount rate on digital payments via debit cards for low value transactions of up to Rs2000 (about RM120), starting from 1st January 2018 (Times of India, 2017).

Finally, if BNM's goal is to promote debit, then it should leave credit interchange unregulated with no caps, since merchants make routing decisions based on cost effectiveness and the customers not deriving sufficient value will automatically switch to the debit cards.

APPENDIX

DISCUSSION OF IMPACTS AND RESULTS

Setting of interchange fee ceilings is one of the key measures of the PCRF. Figures 1 and 2 show the interchange fees of debit card transactions and credit card transactions, respectively, across merchant categories for a payment network in Malaysia. As can be seen from Figure 1, the interchange fee rates of debit card transactions have declined significantly as expected across all merchant categories to below 0.2% after reform, compared to interchange fee rates of above 1% for most merchant categories before reform.

Figure 1: Interchange Fee Rates for Debit Card Transaction Across Merchant Categories for a Payment Network in Malaysia

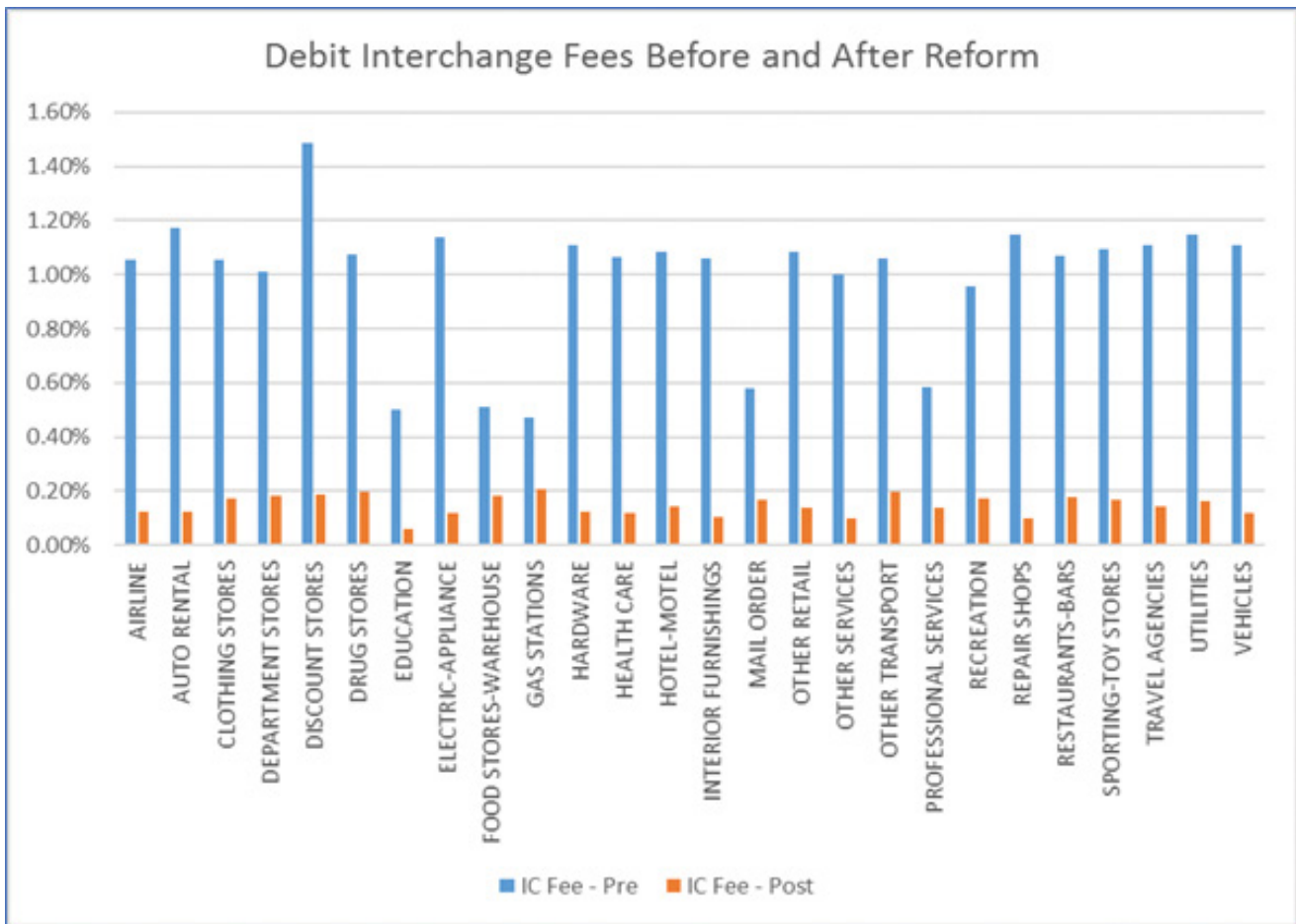
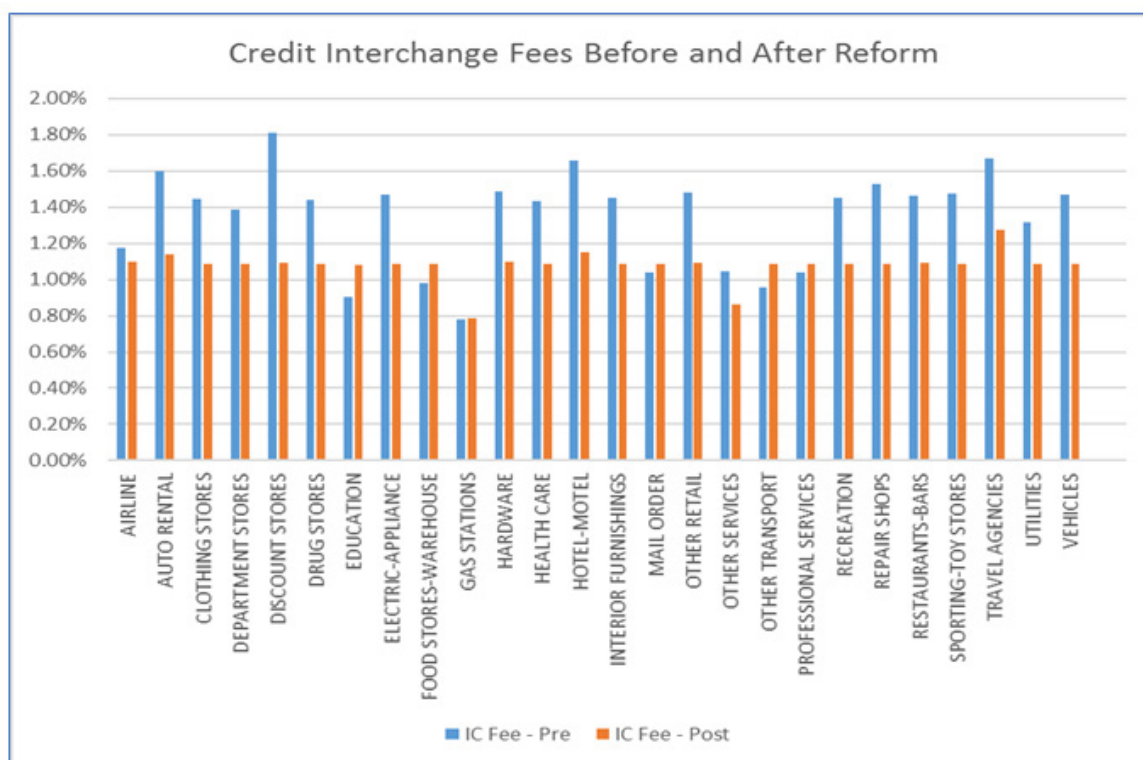


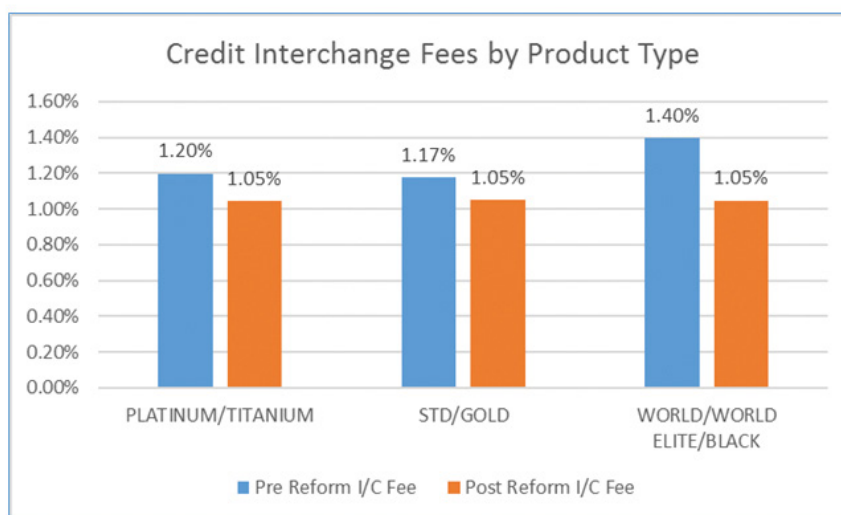
Figure 2 shows that for credit card transactions, credit card effective interchange fee rates have declined for all but 6 merchant categories post reform.

Figure 2: Interchange Fee Rates for Credit Card Transaction Across Merchant Categories for a Payment Network in Malaysia



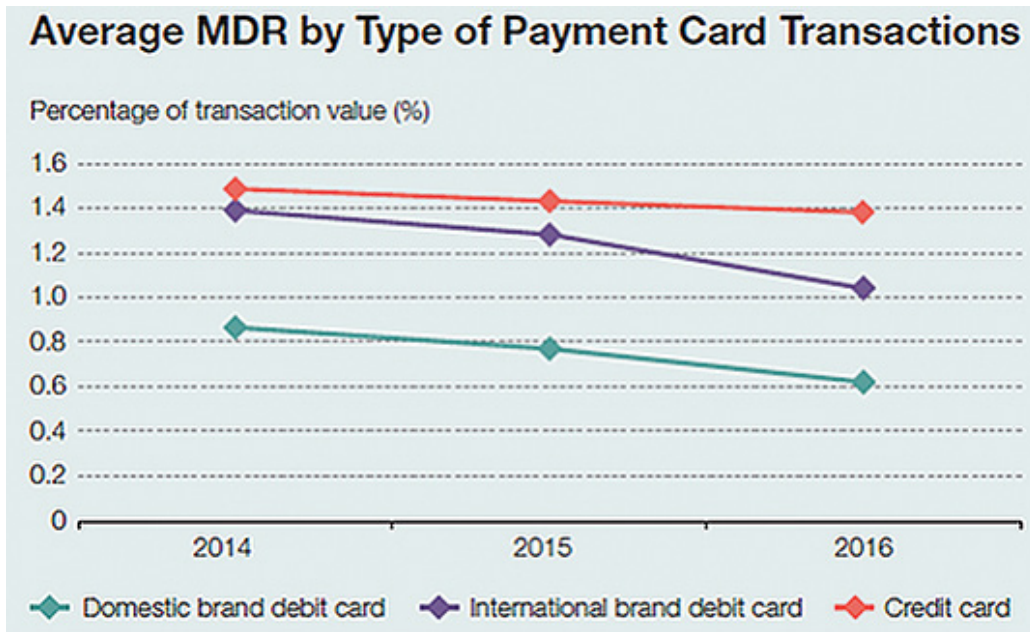
Prior to the reform, operators of payment card network established higher interchange fee rates for premium credit cards. An unintended result of this was to create incentives for issuers of credit cards to lower the income requirement for premium cards so they could receive higher interchange fees. This practice can be and has been addressed in other jurisdictions as a brand issue. Higher interchange fees for premium products is consistent with the increased value these products bring to both merchants and consumers. The imposition of ceilings does not allow for sufficient product differentiation and thus the rates are now the same (Figure 3).

Figure 3: Interchange Fee Rates for Credit Card Transaction Across Card Types in a Payment Network in Malaysia



From the standpoint of merchants, what affect them directly is the merchant discount rate (MDR). Figure 4 below shows that average MDRs have declined for both debit and credit card transaction post reform. The decline of average MDR is especially significant for international debit card transaction, which fell from 1.4% in 2014 to slightly over 1% in 2016. On the other hand, the average MDR of credit card transactions only fell slightly from around 1.5% in 2014 to slightly below 1.4% in 2016 reflecting the slight decrease in the rate. PCRF succeeded in unbundling MDRs for credit card and debit card transactions, as evidenced by the gap of about 0.4% in MDR by 2016., We note that the declines in average MDRs are much smaller than the decline in interchange fee rates (comparing to Figures 1 and 2), especially for international debit cards, which suggests that the pass throughs from interchange fee rates reductions to MDRs have not taken place. This is consistent with other geographies where reductions are not reflected in either merchant discounts or in product price. As a result, the consumer is likely to be paying more post regulation than before.

Figure 4: Average MDR by Type of Payment Card Transactions



Source: Figure 6.9 of Bank Negara Malaysia (2017a).

The primary industry indicators are targets for the number of cumulative POS terminals deployed in Malaysia and the total volume of debit card transactions for each year between 2015 and 2020. They are summarized in Table 1 below:

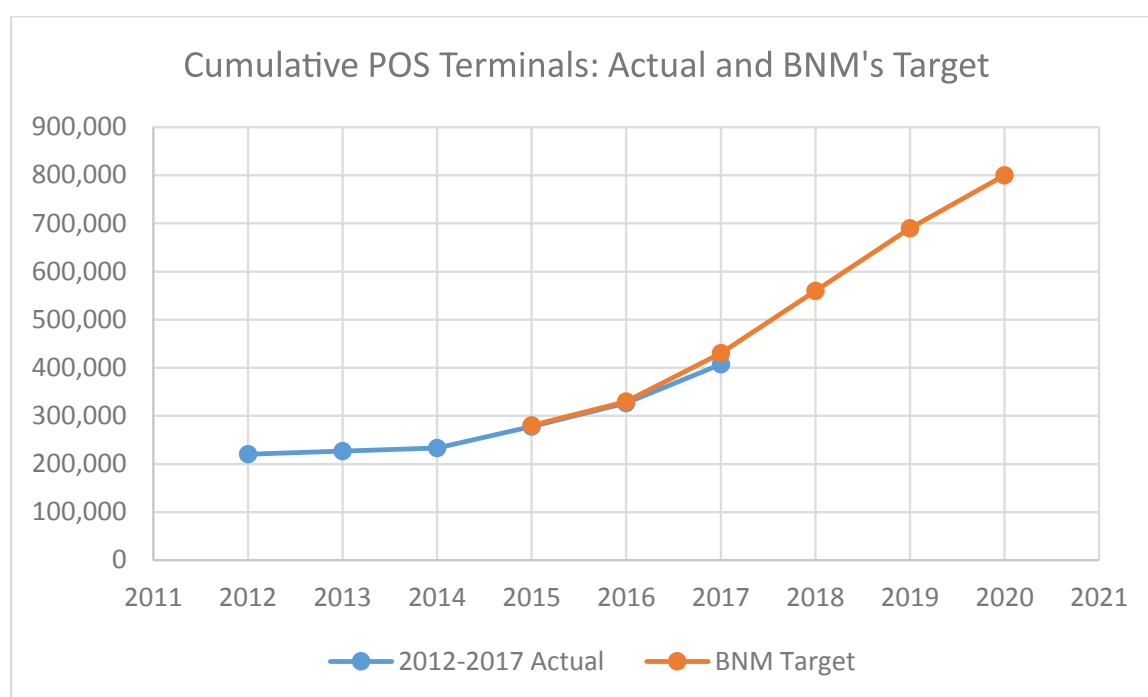
Table 1: Industry Indicators Set Up in PCRf

Industry Indicators	2015	2016	2017	2018	2019	2020
1) Cumulative POS terminals comprising:	280,000	330,000	430,000	560,000	690,000	800,000
a. Contact terminals	252,000	264,000	301,000	392,000	483,000	560,000
b. Contactless terminals	28,000	66,000	129,000	168,000	207,000	240,000
2) Debit card transactions (million)	89	137	246	433	681	1,000

Source: Bank Negara Malaysia (2014b)

The targets for cumulative POS terminals set by BNM for 2015 to 2020 are quite aggressive. Specifically, as can be seen from Figure 5, while the actual numbers of Cumulative POS Terminals had been flat between 2012-2014, with only 2.7% to 3.1% growth per annum, BNM's targeted the figure to grow to 280,000 in 2015, which is 20% growth relative to the 2014 figure of 233,248. In subsequent years, the target growth rates for Cumulative POS Terminals are between 15.9% to 30.3% per annum. The target of 800,000 POS terminals by 2020 translates to 25 terminals per 1,000 inhabitants, which is in line with the figure in electronically advanced payment countries such as Australia, UK, Sweden and Norway, which have about 22 to 33 POS terminals per 1000 inhabitants (Bank Negara Malaysia, 2011). However, these quantitative targets may have been set too high as they are benchmarked against geographies with substantially different cultures, populations, geographical characteristics and economic situations.

Figure 5: Cumulative POS Terminals: Actual Figures for 2012-2017 vs BNM's Targets in PCRf



Source: Data for 2013-2017 actual figures are from Bank Negara Malaysia (2018), data for 2012 actual figure is from Bank Negara Malaysia (2017a), data for BNM's targets are from Bank Negara Malaysia (2014b)

Panel 1 of Table 2 shows the actual outcomes of POS terminals between 2015 to 2017. The number of POS terminals in Malaysia has fallen behind the targets set in PCRf in the first 3 years after its introduction. The targets for the number of POS terminals are 280,000 for 2015, 330,000 for 2016 and 430,000 for 2017, but the actual outcomes for these years are only 278,266 for 2015, 326,507 for 2016 and 406,229 for 2017. However, considering that the numbers of POS terminals had only been growing at 2.7% to 3.1% per annum in 2013 and 2014, the increase of POS terminals from 233,248 in 2014 to 278,266 in 2015 was quite an achievement, as it was a 19.3% growth, even though the 2015 figure was still 0.6% below the target for that year. Similarly, for 2016, the actual number of 326,507 terminals is only 1% below the target for that year. Nonetheless, the number of POS terminals by the end of 2017 was only 406,229, which was 5.5% below the PCRf target for the year of 430,000.

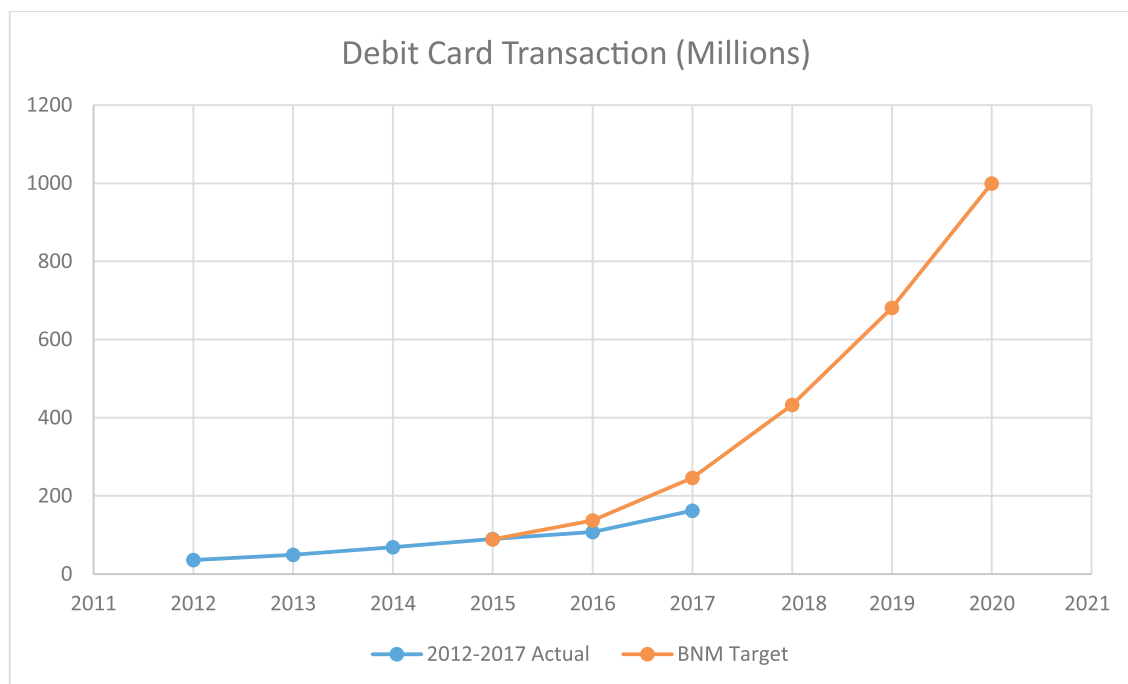
Table 2: Targets and Actual Outcomes of Industrial Indicators

	2015	2016	2017
1) Cumulative POS Terminals			
Targets in PCRf	280,000	330,000	430,000
Actual Outcome	278,266	326,507	406,229
2) Debit card transactions (million)			
Targets in PCRf	89.0	137.0	246.0
Actual Outcome	90.1	107.5	162.1

Source: Data for actual outcomes are from Bank Negara Malaysia (2017c), data for PCRf targets are from Bank Negara Malaysia (2014b).

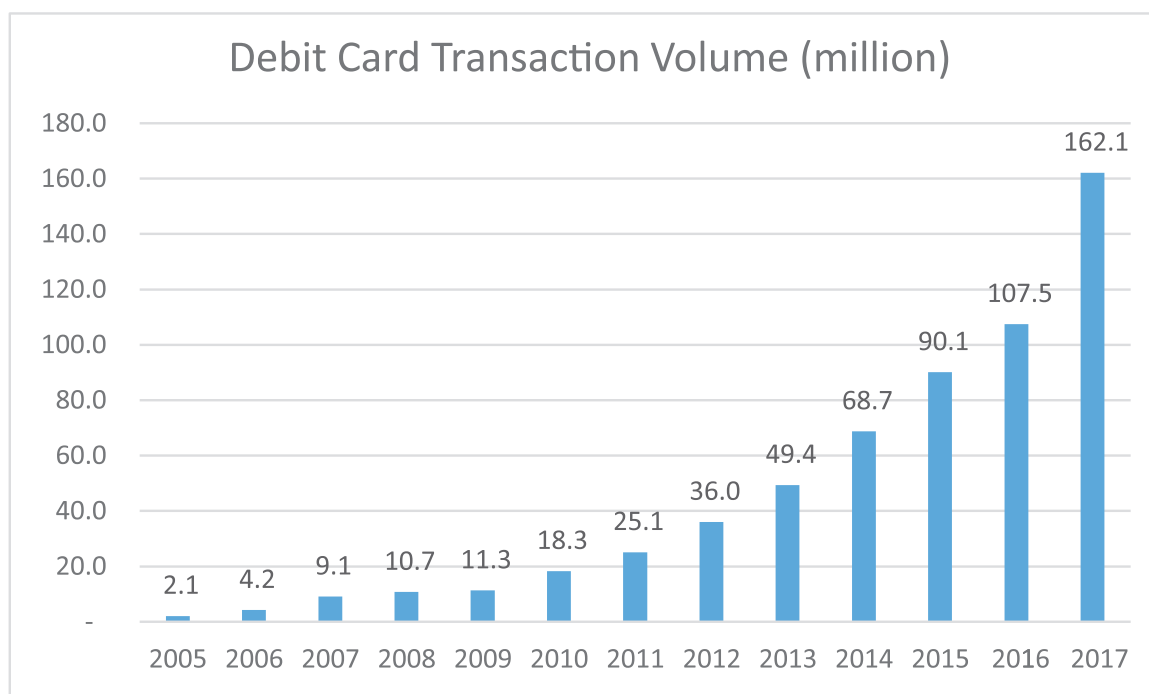
The targets on debit card transaction volume, as can be seen from Figure 6 below are relatively modest through 2015 (with a target growth rate of 30%), considering that debit card transaction volume had been growing at 37% to 39% per annum in 2013 and 2014. Nonetheless, the targets for 2016 to 2020 are quite aggressive, with target growth rates of 47% to 80% per annum. The target of 1 billion debit card transactions by 2020 translates to 30 transactions per capita (Bank Negara Malaysia, 2011). The actual outcome of 90.1 million transactions in 2015 exceeded the PCRf target of 89 million for that year. Nonetheless, the actual outcome of 107.5 million transactions for 2016 was only 78% of the PCRf target of 137 million transactions for that year. What is more worrying is that the actual number of debit card transactions in 2017 of 162.1 million is only 66% of the PCRf target of 246 million for that year. Moreover, while debit card transaction volume has continued to increase post PCRf (Figure 7), it is not clear whether the increase in volume can be attributed to PCRf. Specifically, the growth rates of debit card transaction volume continued to decelerate in 2015 and 2016, following the general declining trend since 2010 (Figure 8), before registering a significant increase of 51% in 2017 (though it was significantly lower than the 2017 target growth rate of debit card transaction volume of 80% in PCRf).

Figure 6: Debit Card Transactions (million): Actual Figures for 2012-2017 vs BNM’s Target



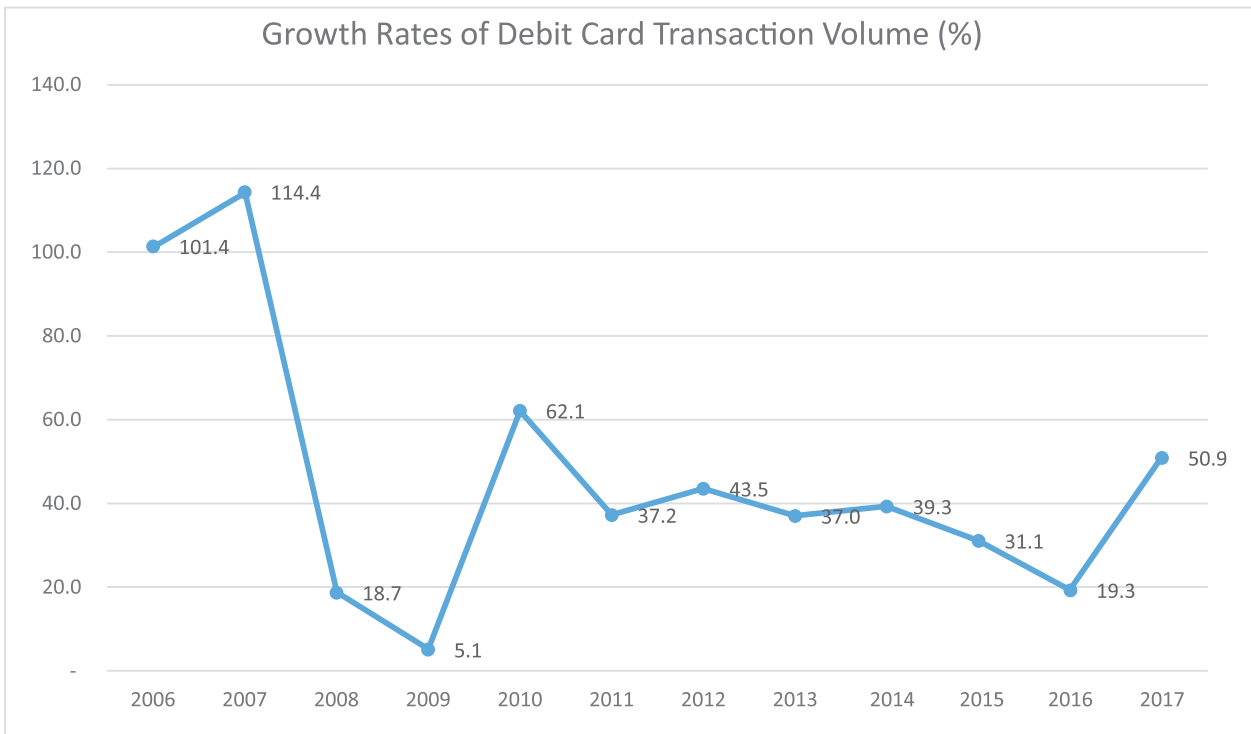
Source: Data for 2012-2017 actual figures are from Bank Negara Malaysia (2017a), data for BNM’s targets are from Bank Negara Malaysia (2014b).

Figure 7: Debit Card Transaction Volume



Data Source: Bank Negara Malaysia (2018)

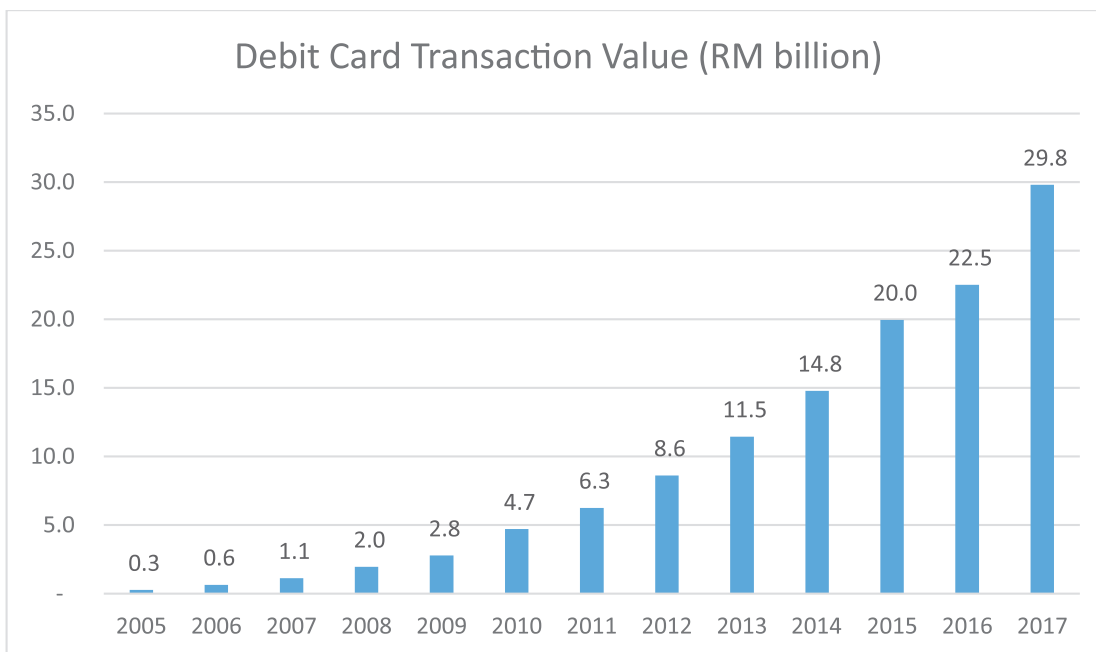
Figure 8: Growth Rates of Debit Card Transaction Volume



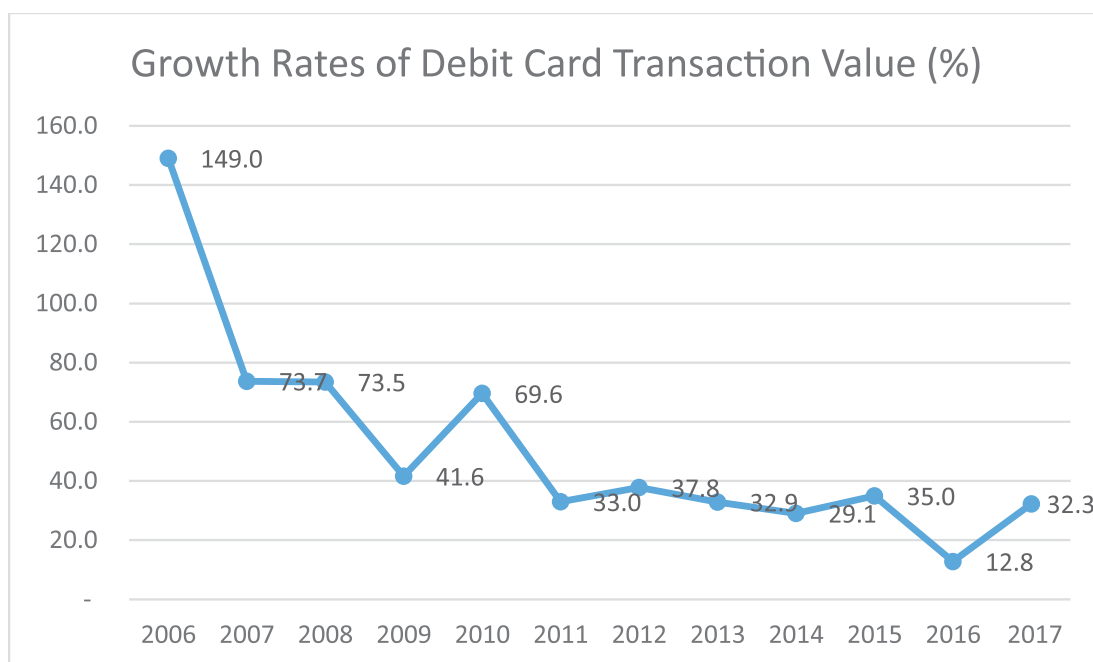
Data Source: Author's calculation based on data on volume

While PCRf has not set targets for debit card transaction values, it is interesting to note that they have continued to grow post PCRf (Figure 9). Nonetheless, PCRf does not seem to have positive impact on total debit card transaction value, as the growth rates of transaction value have been largely flat since 2011, with a dip in 2016 (Figure 10).

Figure 9: Debit Card Transaction Values

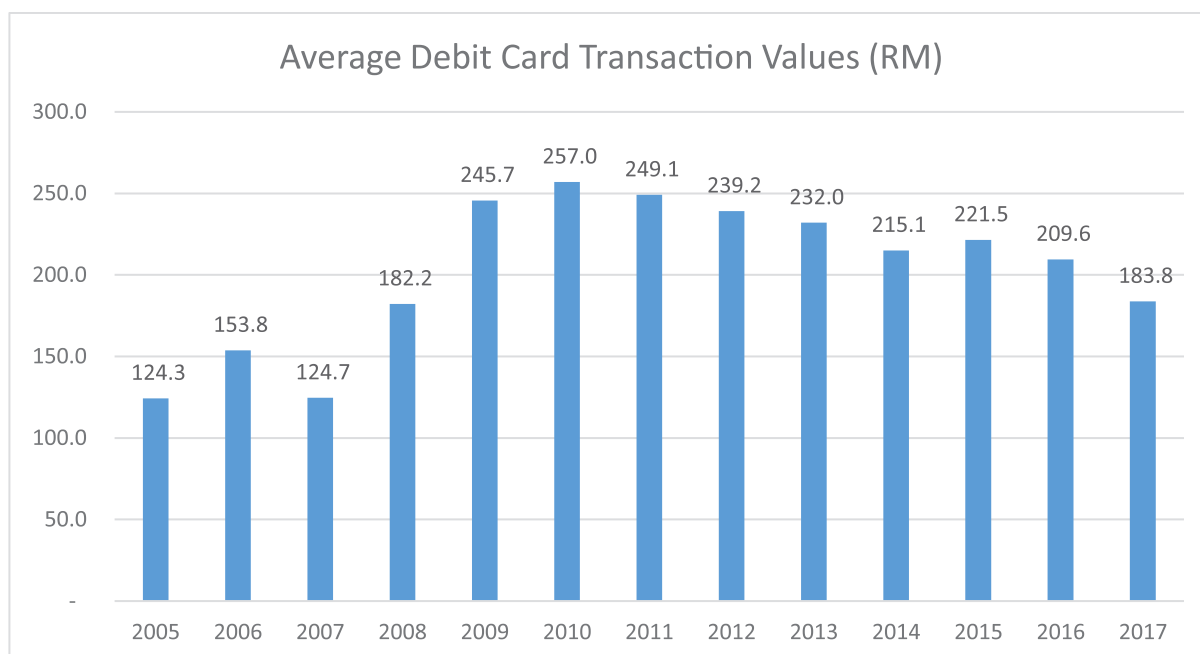


Data Source: Bank Negara Malaysia (2018)

Figure 10: Growth Rates of Debit Card Transaction Value

Data Source: Author's calculation based on data on value

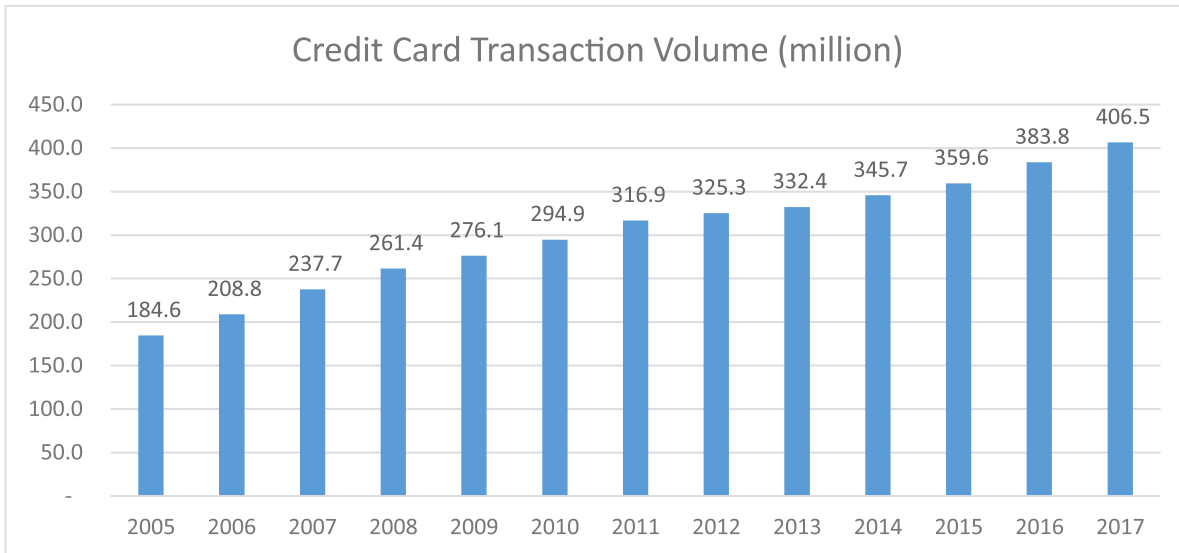
Average debit card transaction value (total value divided by number of transactions) has declined in 2016 and 2017 (Figure 11), suggesting that debit cards are beginning to replace cash as a payment option for lower-value transactions.

Figure 11: Average Debit Card Transaction Values

Data Source: Author's calculation based on transaction volume and value.

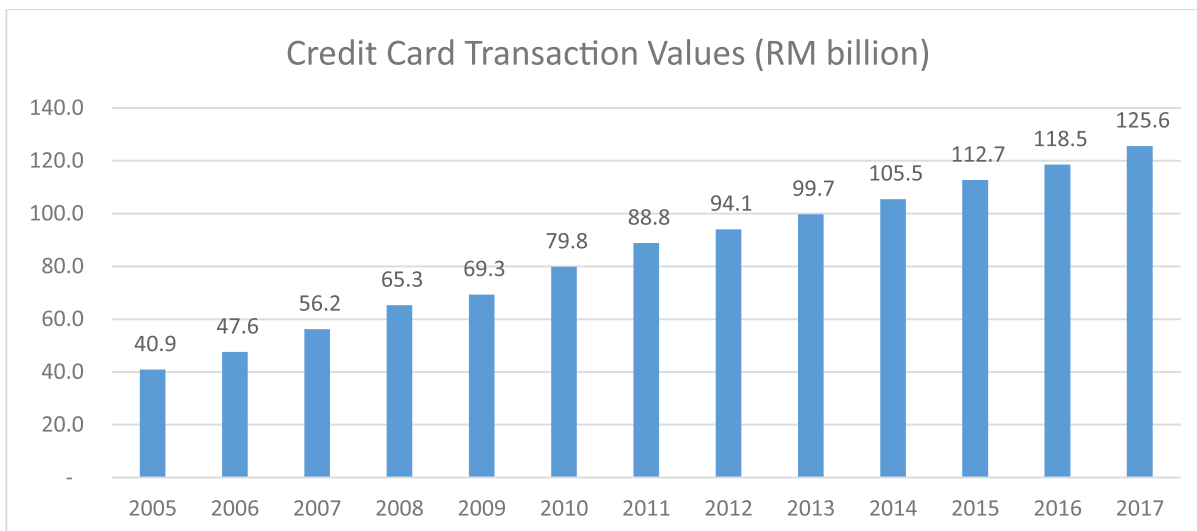
Similarly, while PCRFB has not set targets for credit card transactions, credit card transaction volume and values have both continued to grow post PCRFB (Figures 12 and 13). For credit card transaction volume, its growth rates have picked up post PCRFB (Figure 14), while for credit card transaction value, the growth rates remain largely flat (Figure 15).

Figure 12: Credit Card Transaction Volume

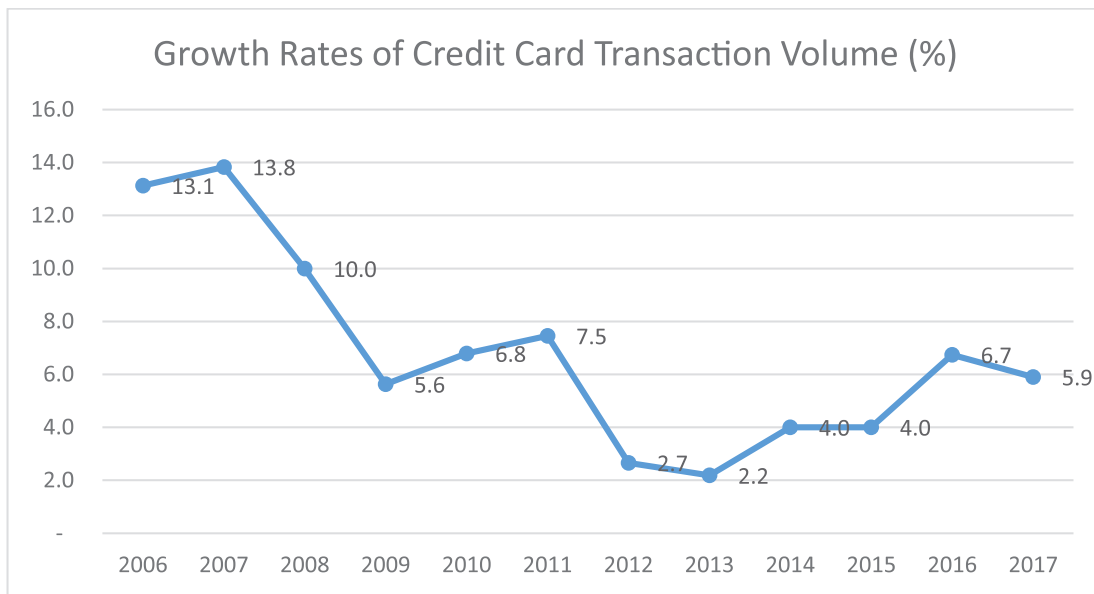


Data Source: Bank Negara Malaysia (2018)

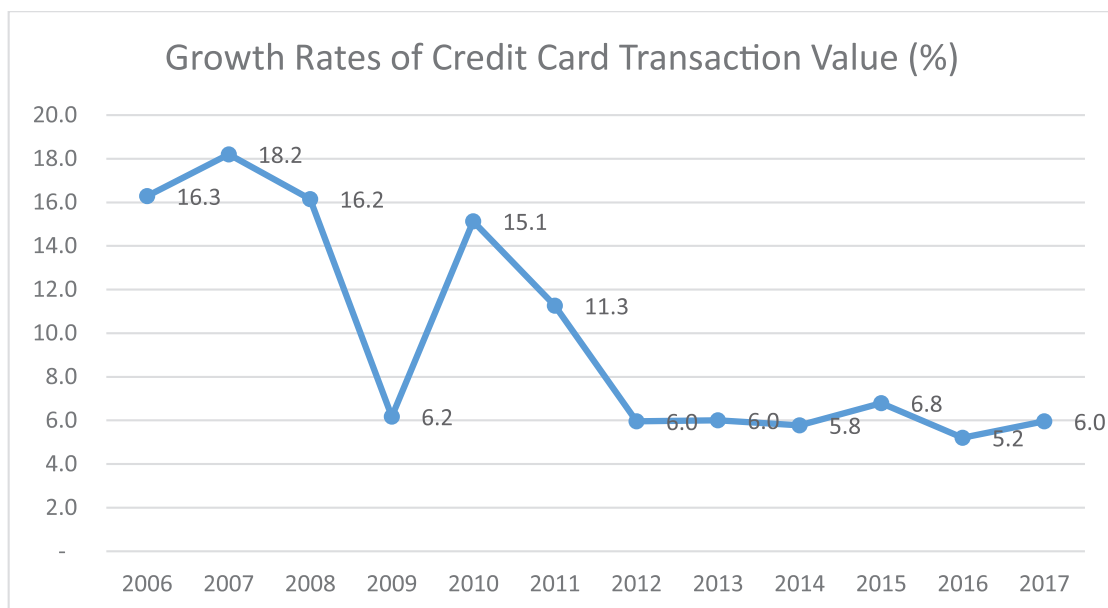
Figure 13: Credit Card Transaction Values



Data Source: Bank Negara Malaysia (2018)

Figure 14: Growth Rates of Credit Card Transaction Volume

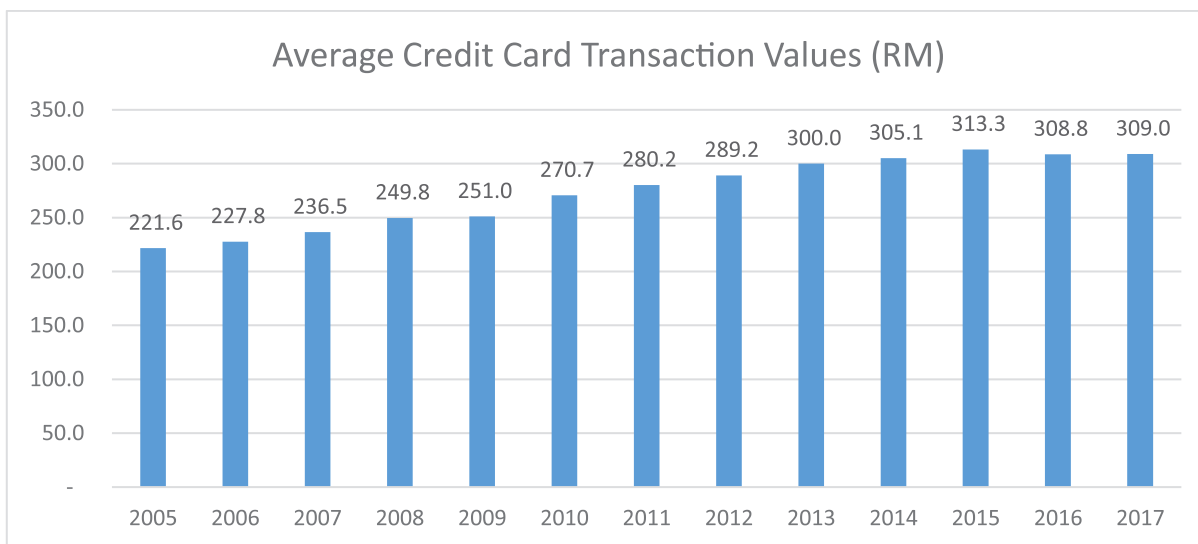
Data Source: Author's calculation based on data on volume

Figure 15: Growth Rates of Credit Card Transaction Value

Data Source: Author's calculation based on data on value

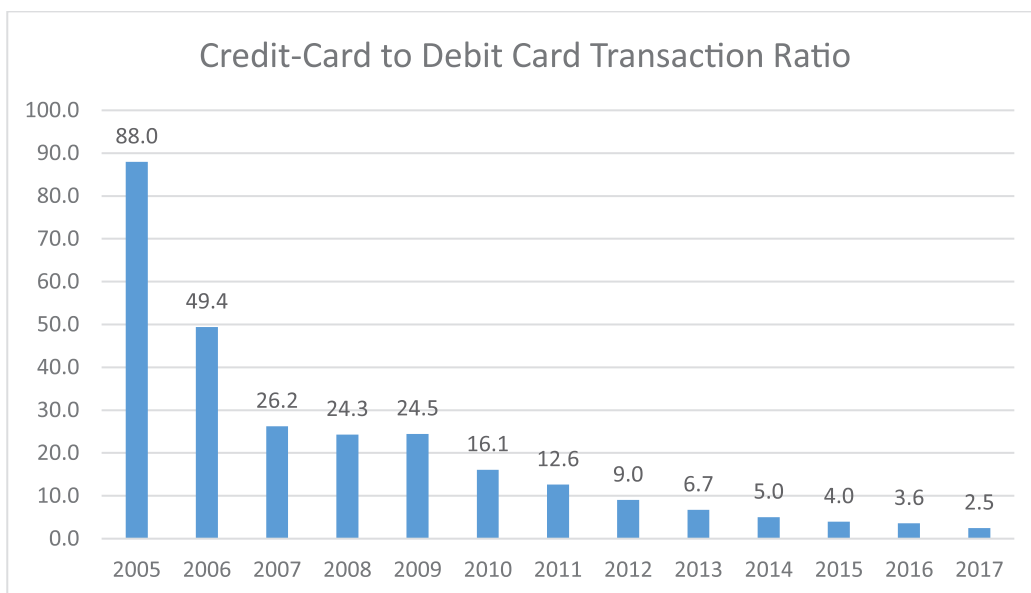
Average credit card transaction values have also declined slightly in 2016, reversing a general upward trend, before increasing slightly in 2017, suggesting that credit cards have also been used to replace cash and checks in lower value transactions post PCRf (Figure 16). Along with the larger number of POS terminals, this suggests that there is now wider acceptance of card payments by merchants and cards are now accepted for lower value transactions. It is also interesting to note that the ratio of credit card transactions to debit card transactions has continued to decline post reform, implying a larger fraction of payments are carried out using the more cost-efficient debit card transactions (Figure 17). The effect of allowing market forces to determine credit card interchange rates would also steer merchants' preference towards the more cost-efficient debit card, and thus promote BNM's policy objective of increasing debit card usage.

Figure 16: Average Credit Card Transaction Values



Data Source: Author's calculation based on transaction volume and value.

Figure 17: Credit Card to Debit Card Transaction Ratio



Data Source: Author's calculation based on credit card and debit card transaction volume

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