The Changing Landscape for Retail Payments in Canada and the Implications for the Demand for Cash

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- The share of cash in overall retail payments has decreased continuously over the past 20 years.
- Recent Bank of Canada research on consumers' choice of payment instruments indicates that cash is frequently used for transactions with low values because of its speed, ease of use and wide acceptance, while debit and credit cards are more commonly used for transactions with higher values because of perceived attributes such as safety and record keeping.
- While innovations in retail payments currently being introduced into the Canadian marketplace could lead to a further reduction in the use of cash over the longer term, the implications for the use of cash of some of the structural and regulatory developments under way are less clear.
- The Bank of Canada will continue to monitor various developments in retail payments and study their implications for the demand for cash over the longer term.

The past 20 years have seen significant changes to the way Canadians pay for their purchases at the point of sale (POS). In particular, there has been a major shift away from paper-based payment instruments, such as cash and cheques, toward electronic means of payment, such as debit cards and credit cards. Major technological, structural and regulatory developments that are currently under way may significantly affect future methods of payment in this country, and elsewhere.

To better understand the potential implications of these developments for retail payments, the Bank of Canada commissioned the 2009 Methods-of-Payment (MOP) survey, which asked respondents to keep a detailed diary of personal purchases of goods and services over a three-day period. The Bank, as the sole provider of bank notes, needs to carefully assess the implications for the future demand for cash of prospective changes in the use of various retail payment instruments.

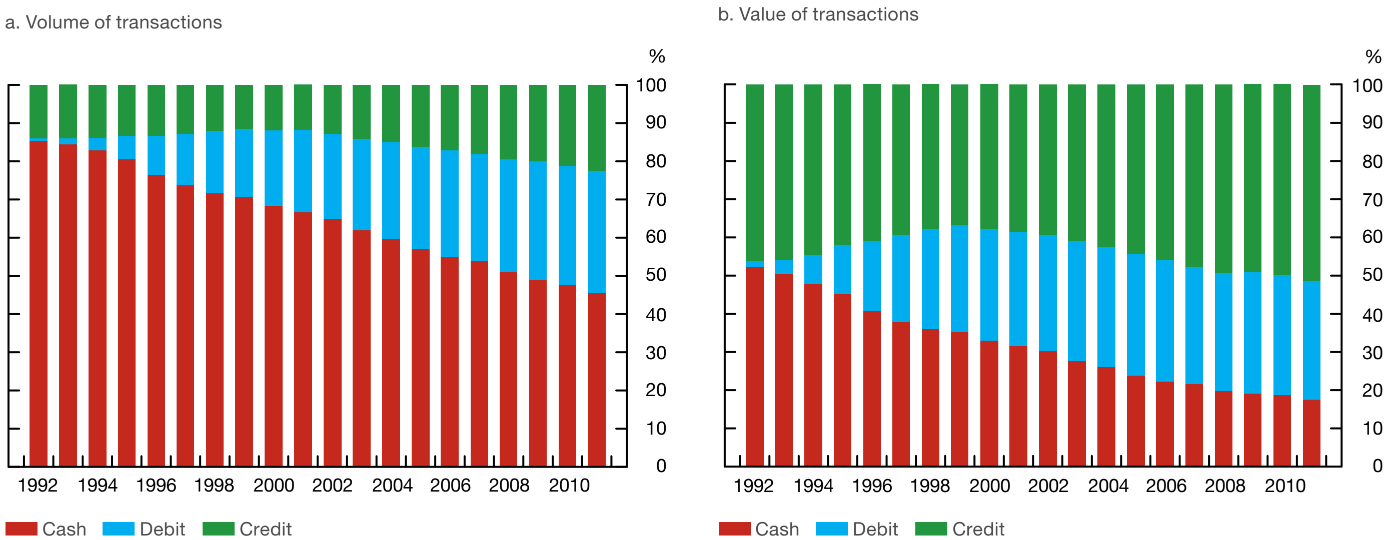
This article begins by reviewing trends in the use of retail payment instruments in Canada and by presenting insights from the Bank's research using the 2009 MOP survey. It then discusses the most important innovations in retail payments in recent years and provides a brief review of structural and regulatory developments in retail payments. Finally, the article provides some concluding remarks.

Trends in the Use of Retail Payment Instruments

In the early 1990s, cash accounted for more than 80 per cent of the volume and about 50 per cent of the value of POS transactions (**Chart 1**).[1] In 2011, however, these shares dropped to below 50 per cent in volume and less than 20 per cent in value. In contrast, the share of electronic-based payments (debit and credit cards) has grown. In particular, following the national introduction of the Interac debit card system in 1994, the debit card share of POS purchases (in terms of volume) surged upward until the early 2000s. The share of credit card payments has risen since the early 2000s, in part, owing to the increasing number of rewards programs connected to credit card use.

In 2011, the shares of cash in point-of-sale transactions dropped to below 50 per cent in volume and less than 20 per cent in value

Chart 1: Shares of point-of-sale transactions, by payment method



Note: Volume denotes the number of transactions, while value is the total dollar amount of the transactions. The statistics are computed from network data.
Sources: Bank for International Settlements Red Book and Bank of Canada
Last observation: 2011

Despite the decreasing share of cash at the POS, it remains the most commonly used and accepted form of retail payment in Canada, especially for the large number of low-value purchases. In 2011, the total value of cash transactions was estimated at just over $100 billion, with an average transaction value of $18. In contrast, debit and credit cards are used mainly for less-frequent, higher-value transactions. In 2011, the value of POS transactions for debit cards reached $180 billion, with an average transaction value of $44, while the total value for credit card transactions was more than $300 billion, with an average transaction value of just over $100.

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Another factor that has marginally reduced the use of cash in recent years is the increasing use of the Internet by Canadian households to purchase goods and services. In 2010, 89 per cent of Canadians used credit cards to pay for online purchases (Statistics Canada 2011b).

Canadians also use cash for purposes other than as a means of payment. For example, individuals hold bank notes as a store of value and for precautionary purposes. Indeed, the value of bank notes in circulation has risen at an annual rate of about 5 per cent since 2000, virtually the same

1 Since explicit time-series data on both the volume and the value of cash-based retail transactions are not available, indirect estimation methods must be employed, using data on withdrawals from automatic teller machines. For a more detailed discussion, see Taylor (2006).

as the growth in aggregate personal expenditures. Moreover, the ratio of the stock of large-denomination bank notes to overall consumer spending has risen since the 2007–09 global financial crisis. It would appear that the use of cash for non-payment purposes has grown markedly since 2000, even though the share of cash-based retail transactions has continued to decline.[2]

How Canadians Pay: The 2009 Methods-of-Payment Survey

To anticipate future trends and developments in retail payments, it is important to understand how Canadians use different payment methods for retail purchases. The Bank of Canada conducted the 2009 Methods-of-Payment (MOP) survey using a representative sample of Canadians ranging in age from 18 to 75. There were two parts to the survey: a survey questionnaire and a shopping diary, in which respondents recorded every retail transaction they performed over three consecutive days. The questionnaire collected detailed information on demographics (income, age and education), bank (debit) and credit account features (per-transaction fees, monthly and annual fees, reward plans, and credit limits), and consumer perceptions regarding the attributes of payment instruments (ease of use, record keeping, budgeting control and security). The diaries collected detailed information on transactions, such as value, type of good, store size, payment methods perceived as accepted and the two main reasons for choosing the payment method used.[3]

According to the MOP survey, almost all of those surveyed had a debit card and 80 per cent of them owned at least one credit card. The shares of POS transactions in terms of both value and volume from the shopping diaries echo the findings shown in **Chart 1**: cash is the dominant payment choice for transaction volumes, while credit cards dominate in terms of value. Participants also used cheques and stored-value cards, although these accounted for less than 4 per cent of everyday purchases. Hence, the discussion that follows focuses on cash, debit cards and credit cards.

Previous literature has highlighted a strong relationship between payment choice, transaction value and demographics (see Bounie and François (2006) for France, and Klee (2008) for the United States). However, the detailed information gathered by the MOP survey allowed researchers to go beyond demographics and transaction values to get a better understanding of payment choices.

Arango, Huynh and Sabetti (2011) and Arango, Hogg and Lee (2012) both use the 2009 MOP survey data to estimate a model that accounts for the effects of the demographic characteristics of consumers, payment attributes, transaction features and perceptions of merchant acceptance on the probability of using cash versus debit cards and credit cards at the POS. The observed differences highlight the costs and benefits associated with different payment instruments that vary by type of consumer and transaction.

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2 Cash may also be used for transactions in the underground economy, such as the unauthorized sale of alcohol and tobacco, or unreported construction activity. However, Statistics Canada estimates that the underground economy has been growing at a slower pace than the total economy since 1992, suggesting that this factor may not explain why the value of bank notes in circulation has risen at about the same rate as total personal consumption over the past decade (Terefe, Barber-Dueck and Lamontagne 2011).

3 The survey was conducted by a market research firm using stratified random sampling from access panels (i.e., databases of people who have signed up to participate in surveys on a regular basis). There were 6,868 respondents to the questionnaire, while 3,405 three-day diaries were collected on more than 16,000 transactions. Sample weights were constructed to match the demographic profile of Statistics Canada's Canadian Internet Use Survey. For a more detailed description and the main results of the 2009 MOP survey, see Arango and Welte (2012).

This research shows that demographic variables such as income and age are key factors in the choice of payment instrument. Demographics are also correlated with consumers' perceptions of alternative payment methods regarding costs, risks and record keeping.[4] **Table 1** shows that low-income individuals use cash most frequently, with 65 per cent of their transactions in the diaries paid with cash. They perceive that cash is easy to use, is useful for controlling spending and has lower costs relative to payment cards. High-income earners, however, use cash least frequently, with only 47 per cent of their transactions paid with cash. These high-income earners do not perceive cash as a good way to control spending or as having lower costs. In addition, they are more likely to own a credit card and to have one with rewards.

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Table 1: Perceptions ratings of cash relative to debit cards and credit cards

	Proportion of cash transactions*	Payment attributes**					
		Ease of use	Record keeping	Costs	Risk of theft or fraud	Minimize financial loss	Acceptance
Age							
18–34	48.9	1.18	1.00	1.00	0.86	1.05	1.12
35–54	53.9	0.97	0.99	1.06	0.97	0.99	0.99
55–75	59.0	0.84	1.02	0.92	1.21	0.96	0.87
Income (in thousands of dollars)							
Less than 30	65.2	1.33	1.16	1.11	0.88	0.87	0.95
30–60	56.5	0.76	1.04	1.09	1.13	0.98	0.90
60–100	52.8	0.95	0.98	1.02	0.96	1.01	1.00
More than 100	47.4	1.11	0.89	0.84	0.98	1.08	1.13
Gender							
Female	54.1	0.84	1.00	1.07	0.94	0.95	0.99
Male	54.3	1.18	1.00	0.93	1.07	1.05	1.01
Residence location							
Urban	53.9	0.96	0.99	1.00	1.01	1.00	1.03
Rural	55.2	1.13	1.04	1.00	0.98	0.99	0.91
Responsible for household finances							
No	53.6	1.11	1.03	0.96	1.07	1.02	1.05
Yes	54.6	0.93	0.98	1.02	0.95	0.99	0.97

Notes: This table reports the proportion of cash usage and perceptions of cash relative to payment cards (debit and credit cards) for various demographic profiles. A rating of 1.00 indicates that the average consumer's perception of an attribute is neutral with respect to cash versus payment cards. A rating greater than 1.00 implies a relatively positive perception of cash, while a rating less than 1.00 indicates a relatively negative perception of cash. The sources for the calculations are the 2009 three-day shopping diaries (*) and the survey questionnaire (**).

Source: Bank of Canada 2009 Methods-of-Payment survey

Another important factor for payment choice is the relationship between transaction value and various payment card features. Research at the Bank confirms that cash is used mostly for lower-value transactions (less than $25) (Arango, Huynh and Sabetti 2011; Arango, Hogg and Lee 2012). However, Arango, Huynh and Sabetti (2011) find that, for transactions with medium values ($25 to $50), consumers tend to trade the speed and ease of paying with cash for the other attributes offered by debit cards. Debit cards

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4 The question about record keeping is phrased as follows: ". . . how useful are (or would be) the following methods of payment in terms of helping you to keep a record of your spending?"

are more likely to be used instead of cash and credit cards in order to avoid theft and fraud, since they require verification with a personal identification number (PIN).[5] Also, debit card use is highest for about half of the consumers in the survey who have bank accounts with no monthly fees and a large or unlimited number of free debit transactions.

Credit cards dominate other payment instruments for transactions with higher values (above $50), and most of the substitution is from debit cards rather than cash. Arango, Huynh and Sabetti (2011) find a positive relationship between credit card use and rewards. Since most rewards are proportional to the payment value, consumers have the monetary incentive to use credit cards for higher-value transactions. In addition, credit cards allow users to delay payment, which, consumers reported, becomes more attractive at higher transaction values.

To better understand why cash is the dominant payment choice for low-value transactions, it is useful to examine consumer perceptions about the acceptance of payment cards. Arango, Huynh and Sabetti (2011) and Arango, Hogg and Lee (2012) explore to what extent perceived lack of acceptance of debit and credit cards explains consumers' preference for cash for low-value transactions. In the diaries, survey participants were asked to report which payment methods they thought would not be accepted, based on the transaction value. In some cases, consumers perceive that cards are more readily accepted when the transaction value is higher and the merchant is large.[6] However, even at stores where debit and credit cards are perceived as accepted, cash still accounts for half of the transactions below $25. This result is confirmed by Wakamori and Welte (2012), who simulate the scenario of universal acceptance of all methods of payment, and find that the decrease in the use of cash in this scenario is relatively small.

Major Innovations in Retail Payments

Recent and future innovations in retail POS and online payments have the potential to reshape the payments landscape.[7] Many of the key innovations in retail payments introduced in Canada are intended for lower-value transactions and therefore focus on the speed and convenience of transactions. In comparison with cash, these payment instruments have the added advantage of the capability to keep a record of transactions.

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One major development is the rollout in Canada of "chip" debit and credit cards, which are replacing cards with magnetic stripes. This rollout has been under way since 2008 and is scheduled to be completed by the end of 2015.[8] Chip cards contain an embedded microchip that gives the card the ability to store and process data. This technology is primarily intended to enhance the security of the card and associated payment transactions, so that the use of these cards might increase.

Payment card products with a contactless feature using near field communication (NFC) technology, which allows consumers to wave the card in front of a secure payment terminal instead of inserting or swiping it, are designed

5 This result is based on data collected in 2009, when credit cards with a magnetic stripe and requiring a signature were the norm. It may no longer hold now that credit cards embedded with a microchip and requiring a PIN are common in Canada.

6 This finding is consistent with Arango and Taylor (2008), who find that cash is the least expensive payment method for merchants, especially for those who have high volumes of low-value transactions.

7 The Committee on Payment and Settlement Systems provides an overview of innovative retail payment activities in a number of countries (CPSS 2012).

8 The use of chip payment cards is common in many countries.

to mimic some of the characteristics of cash, such as shorter transaction times and enhanced convenience. While contactless credit cards have been available in Canada for several years, their acceptance across a wide range of merchants has been fairly slow. Indeed, the shares of contactless credit card payments in the overall volume and value of consumer purchases in 2011 were only 2.4 per cent and 2.7 per cent, respectively.[9] In addition, Interac debit cards with a contactless payment feature ("Flash") have been available since the autumn of 2011. Given the recent introduction of this payment product, no data on its use are publicly available yet.[10]

A number of developments could promote the successful adoption of contactless NFC payments. First, the replacement of conventional debit and credit cards by those with a contactless feature is well under way. Second, more retailers are starting to accept such payments as card processors roll out rental terminals enabled with contactless technology.[11] Finally, card issuers may start competing in this market by offering incentives to promote contactless payments. Using data from the 2009 MOP survey, Fung, Huynh and Sabetti (2012) show that the adoption and use of contactless cards could result in a drop of about 10 per cent to 14 per cent in the use of cash (depending on the volume or value of transactions).

Multi-purpose prepaid cards that are reloadable, offered by Visa and MasterCard, have been available in Canada for several years and are typically accepted wherever these credit cards are accepted. Consumers do not require a bank account to access this payment product, which can be used abroad, online and to withdraw cash from automatic teller machines, as well as at the POS. Owing to the high fees charged to cardholders, use of these cards is not widespread, accounting for approximately 1 per cent of the overall value of consumer purchases in 2011, according to the *Canadian Financial Monitor*.[12]

Two online innovations have been introduced as part of the Interac system. Interac Online is an approach for making online debit payments, while Interac e-Transfer allows for the transfer of funds through online banking.

Canada has also seen the entry of new business models for Internet-based payments, such as PayPal and Zoompass, which are non-bank systems offering prepaid accounts and person-to-person transfer services using a mobile phone or any device with access to the Internet.[13] Some of these systems also allow consumers to make payments to either a merchant or another person using the mobile device's wireless Short Message Service (SMS), voice or Internet capabilities.

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9 These shares are calculated using data from the *Canadian Financial Monitor*, which is an omnibus survey conducted by Ipsos Reid that samples approximately 12,000 households each year, providing comprehensive information about their finances and their use of cash and alternative methods of payment.

10 The introduction of contactless debit cards was facilitated by the development in 2009 by the Canadian Payments Association of a policy framework and new rule for POS debit payment cards that do not require a PIN.

11 According to MasterCard, PayPass transactions now account for almost 10 per cent of its total credit card transactions in Canada (Sevilla 2012).

12 In October 2012, the federal government announced that it was extending the existing consumer-protection framework to prepaid payment products, in particular, those issued by federally regulated financial institutions (Department of Finance Canada 2012b).

13 Zoompass is operated by EnStream LP, which is a joint venture of the three major mobile carriers in Canada—Bell, Rogers and TELUS. However, it was recently announced that Paymobile, a provider of program-management services for prepaid and virtual card programs, is acquiring the Zoompass payment service. Users can send funds from their Zoompass account to another Zoompass account for free, or through a linked credit card for a fee.

Mobile phones can also be used for POS purchases using NFC technology, in which an NFC chip, either built into the device or attached with a sticker, would communicate with the payment terminal. Relatively few products are currently available, although, in September 2011, the Bank of Montreal introduced a sticker product that can be attached to a mobile phone. In May 2012, the Canadian Imperial Bank of Commerce and Rogers Communications announced a partnership for a mobile payment solution that is expected to be available before the end of 2012. Internationally, work is under way on a number of different projects to develop mobile wallet capabilities, whereby various payment and other functions (such as retailer-specific rewards programs) would be included on a mobile phone.

These Internet-based and mobile payments have the potential for considerable growth. As the number of Canadians using the Internet and making online purchases increases, there will be a need for more payment options, which, in turn, should promote further growth in e-commerce.[14] In addition, the increasing popularity of mobile phones, particularly smartphones,[15] indicates that Canada is ready for mobile payments.[16]

While cash continues to be the most frequently used payment instrument for POS and person-to-person payments in developed countries, including Canada, the growth of Internet-based and mobile payments may have a significant impact on the use of cash if consumers shift from POS transactions to online purchases and send funds through their mobile phones or the Internet. To better understand this development and its impact, more research is required.

Structural and Regulatory Developments

In recent years, many merchant groups in Canada have expressed strong concerns about sharp increases in the fees charged to merchants for accepting credit cards, as well as the lack of transparency concerning the magnitude of these fees (Retail Council of Canada 2009; 2012). It has been suggested that merchants have inadequate bargaining power in dealing with the payment processors that facilitate credit card transactions (Standing Senate Committee on Banking, Trade and Commerce 2009).

Such concerns were addressed during the discussion and final rejection by the Competition Bureau, in February 2010, of Interac's application to become a for-profit organization in order to compete more effectively with Visa and MasterCard following their planned entry into the debit card payment market in Canada (Competition Bureau 2010a).

Furthermore, in response to concerns about the degree of competition in the debit and credit card industry and the issues raised by merchants, the federal government implemented a Code of Conduct for the Credit and Debit Card Industry in Canada (Code of Conduct), which went into effect on 16 August 2010 (Department of Finance Canada 2010). Among its provisions, the Code of Conduct allows merchants to provide discounts for specific payment methods and payment products offered by different card networks.

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14 According to the 2010 Canadian Internet Use Survey, 80 per cent of Canadians aged 16 years and above used the Internet for personal use and 51 per cent of them shopped online. These numbers have increased considerably since 2005.

15 According to Statistics Canada, 78 per cent of Canadian households indicated that they had a cellular phone in 2010 (Statistics Canada 2011a). A recent market study estimates that, in December 2011, 45 per cent of mobile phone users in Canada used a smartphone (eMarketer 2012).

16 In the recent MasterCard Mobile Payments Readiness Index, which collects and compares the adoption rate of mobile payments across 34 countries worldwide, Canada ranked second with a score of 42, behind only Singapore with a score of 45.6. The average score was 33.2 out of a maximum of 100. See <http://mobilereadiness.mastercard.com/the-index/noflash.php>.

The Code of Conduct also stipulates that: (i) debit and credit functions must be featured on separate cards; (ii) competing debit card applications must not be offered on the same card; and (iii) merchants are not obliged to accept both the debit cards and the credit cards from a particular payment card company. These provisions have maintained the dominant position of Interac in the domestic debit card market at the POS, while allowing other payment card companies to provide debit card payments for purchases online, by mail, over the phone or internationally.

In December 2010, the Commissioner of Competition issued a complaint against both Visa Canada and MasterCard International regarding their merchant restraint rules (Competition Bureau 2010b). These rules forbid merchants that accept the credit cards of either of these companies to undertake any of the following actions: discriminating against the use of high-cost credit cards in favour of lower-cost methods of payment, applying a surcharge on purchases by customers paying with a particular type of credit card or refusing to accept particular cards within a credit card brand. The Commissioner of Competition has asked the Competition Tribunal to prohibit both of these credit card companies from imposing these restraints or any similar measures. Such prohibitions, if granted, could significantly reduce the incentive for consumers to use these cards. Hearings by the Competition Tribunal on this request took place in mid-2012.

In June 2010, the government appointed the Task Force for the Payments System Review to provide recommendations to the federal Minister of Finance on how to guide the evolution of the payments system in Canada. In its final report, released by the Department of Finance on 23 March 2012, the Task Force suggested that Canada is falling behind in the modernization of its payments system. One of the most important recommendations of the Task Force was the suggestion that the federal government should partner with the private sector to create a mobile-commerce environment for consumers (Task Force for the Payments System Review 2012). In response, in September 2012, the federal government proposed amendments to the Code of Conduct to ensure that its principles are upheld for mobile payments initiated by consumers at the POS (Department of Finance Canada 2012a). Also, in May 2012, the banking industry and credit union system in Canada announced a set of voluntary guidelines for participants in the mobile-payments marketplace to ensure safety, security and ease of use at the POS for both merchants and consumers. These guidelines are designed to work with the existing contactless payment technology already in place and could facilitate innovations in mobile payments.

Some of these regulatory developments, such as allowing merchants to add a surcharge on the use of certain high-cost credit cards or even refuse to accept them, might reduce the use of credit cards. Meanwhile, collaboration among key players and regulatory changes to help facilitate innovations in mobile payments might promote the use of mobile phones for retail payments and possibly reduce the use of cash. The overall impact of these structural and regulatory developments on the mix of electronic and paper-based retail transactions over the longer term remains to be seen.

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Conclusion

This article has provided evidence that cash is still used extensively by consumers to pay for their purchases, particularly for low-value transactions. However, recent and future developments in payment technologies could have a variety of effects on the use of cash and other retail payment instruments. It will be important for the Bank, as the sole supplier of bank notes, to monitor these developments and study their possible effects on the payment decisions of both consumers and merchants.

Research could also address the issue of the diffusion of payment innovations, which is an inherently complex problem. Merchants will accept payment innovations only if they believe that consumers demand them; likewise, consumers will demand payment innovations only if they are accepted by merchants. This feedback effect will require further study of the decisions of both consumers and merchants (Rysman 2009; Crowe, Rysman and Stavins 2010).

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