HEARTLAND PAYMENT SYSTEMS INC
Form 10-K
March 14, 2006

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-K

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2005

OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _______________ to ________________

Commission File No. 000-51265

HEARTLAND PAYMENT SYSTEMS, INC.

(Exact name of registrant as specified in its charter)

Delaware	22-3755714
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

90 Nassau Street, Princeton, New Jersey 08542

(Address of principal executive offices) (Zip Code)

(609) 683-3831

(Registrant s telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $0.001 par value	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

(title of Class)

NONE

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes o No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes o No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes x No o

Indicate by check mark if disclosure of delinquent filer pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of accelerated filer and large accelerated filer in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer o Accelerated filer o Non-accelerated filer x

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes o No x

The aggregate market value of the voting common stock held by non-affiliates based on the last reported sale price on June 30, 2005: Not applicable because trading of the registrant s common stock on the New York Stock Exchange did not begin until August 11, 2005.

As of March 2, 2006, there were 35,678,421 shares of the registrant s Common Stock, $.001 par value, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Specifically identified portions of the registrant s proxy statement for the 2006 annual meeting of shareholders are incorporated by reference in Part III.

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FORWARD LOOKING STATEMENTS

Unless the context requires otherwise, references in this report to the Company, we, us, and our refer to Heartland Payment Systems, In and our subsidiary.

Some of the information in this Annual Report on Form 10-K may contain forward-looking statements that are based on our management s beliefs and assumptions and on information currently available to our management. Forward-looking statements include the information concerning our possible or assumed future results of operations, business strategies, financing plans, competitive position, industry environment, potential growth opportunities, the effects of future regulation and the effects of competition. Forward-looking statements include all statements that are not historical facts and can be identified by the use of forward-looking terminology such as the words believe, expect, anticipate, plan, estimate or similar expressions.

Forward-looking statements involve risks, uncertainties and assumptions. Actual results may differ materially from those expressed in the forward-looking statements. You should understand that many important factors, in addition to those discussed elsewhere in this report, could cause our results to differ materially from those expressed in the forward-looking statements. These factors include, without limitation, our competitive environment, the business cycles and credit risks of our merchants, chargeback liability, merchant attrition, problems with our bank sponsor, our reliance on other bank card payment processors, our inability to pass increased interchange fees along to our merchants, the unauthorized disclosure of merchant data, economic conditions, system failures and government regulation.

WHERE YOU CAN GET ADDITIONAL INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy our reports or other filings made with the SEC at the SEC s Public Reference Room, located at 450 Fifth Street, N.W., Washington, DC 20549. You can obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. You can also access these reports and other filings electronically on the SEC s web site, www.sec.gov.

In addition, certain of our SEC filings, including our annual report on Form 10-K, our quarterly reports on Form 10-Q and current reports on Form 8-K can be viewed and printed from the investor information section of our website at www.heartlandpaymentsystems.com, as soon as reasonably practicable after filing with the SEC. Certain materials relating to our corporate governance, including our senior financial officers code of ethics, are also available in the investor information section of our website.

The information on the web sites listed above, is not and should not be considered part of this Annual Report on Form 10-K and is not incorporated by reference in this document. These web sites are and are only intended to be inactive textual references.

PART I

ITEM 1. BUSINESS

Overview of Our Company

We provide bank card payment processing services to merchants in the United States. This involves facilitating the exchange of information and funds between merchants and cardholders financial institutions, providing end-to-end electronic payment processing services to merchants, including merchant set-up and training, transaction authorization and electronic draft capture, clearing and settlement, merchant accounting, merchant assistance and support and risk management. We also provide additional services to our merchants, such as payroll processing, gift and loyalty programs, and paper check authorization, and we sell and rent point-of-sale devices and supplies.

According to The Nilson Report, in 2004 we were the seventh largest card acquirer in the United States ranked by purchase volume, which consists of both credit and debit Visa and MasterCard transactions. This ranking represented 1.8% of the total bank card processing market. At December 31, 2005, we provided our payment processing services to approximately 110,500 active merchant locations, referred to as merchants in this document, throughout the United States. In 2005, 2004 and 2003, our processing volume was $33.7 billion, $25.0 billion and $17.9 billion, respectively.

Our revenue is recurring in nature, as we typically enter into three-year service contracts that, in order to qualify for the agreed-upon pricing, require the achievement of agreed processing volume minimums from our merchants. Most of our revenue is from gross processing fees, which are primarily a combination of a percentage of the dollar amount of each Visa and MasterCard transaction we process plus a flat fee per transaction. We pay interchange fees to card issuing banks and dues and assessments to Visa and MasterCard, and we retain the remainder. For example, the allocation of funds resulting from a $100 transaction is depicted below.

We sell and market our payment processing services through a nationwide direct sales force of approximately 1,010 sales professionals. Through this sales force we establish a local sales and servicing presence, which we believe provides for enhanced referral opportunities and helps mitigate merchant attrition. We compensate our sales force solely through commissions, based upon the performance of their merchant accounts. We believe that our sales force and our experience and knowledge in providing payment processing services to small- and medium-size merchants gives us the ability to effectively evaluate and manage the payment processing needs and risks that are unique to these merchants. In 2005, our sales force generated over 51,000 merchant applications and installed over 45,000 new merchants. In 2004, our sales force generated over 42,500 merchant applications and installed over 39,000 new merchants.

We focus our sales efforts on low-risk merchants and have developed systems and procedures designed to minimize our exposure to potential losses. In 2005 and 2004, we experienced losses of 0.36 basis points (0.0036%) and 0.38 basis points (0.0038%) of payment processing volume, respectively. We have developed significant expertise in industries that we believe present relatively low risks as the customers are generally present and the products or services are generally delivered at the time the transaction is processed. These industries include restaurants, brick and mortar retailers, lodging establishments, automotive repair shops, convenience and liquor stores and professional service providers. As of December 31, 2005, approximately 32.9% of our merchants were restaurants, approximately 21.1% were brick and mortar retailers, approximately 10.9% were convenience and liquor stores, approximately 8.2% were automotive sales and repair shops, approximately 6.7% were professional service providers and approximately 4.2% were lodging establishments.

We believe that the restaurant industry will continue to provide us with growth opportunities. According to a report by the National Restaurant Association, restaurant industry sales are expected to reach approximately $511 billion in 2006, which would represent the fifteenth consecutive year of real sales growth, as adjusted for inflation. This steady growth profile, combined with the industry s low seasonality, makes restaurant merchant processing volume very stable and predictable. In addition, the incidence of chargebacks is very low among restaurants, as the service is provided before the card is used. Our industry focus not only differentiates us from other payment processors, but also allows us to forge relationships with key trade associations that attract merchants to our business. Our industry focus also allows us to better understand a merchant s needs and tailor our services accordingly.

Since our inception, we have developed a number of proprietary Internet-based systems to increase our operating efficiencies and distribute our processing and merchant data to our three main constituencies: our sales force, our merchant base and our customer service staff. In 2001, we began providing authorization and data capture services to our merchants through our own front-end processing system, HPS Exchange. In 2005, we began providing clearing, settlement and merchant accounting services through our own internally developed back-end processing system, Passport. Passport enables us to customize these services to the needs of our Relationship Managers and merchants.

During the years ended December 31, 2005, 2004 and 2003, approximately 53%, 43% and 26%, respectively, of our transactions were processed through HPS Exchange, which has decreased our operating costs per transaction. At December 31, 2005, approximately 22,000 of our 110,500 total merchants were processing on Passport. We intend to continue converting our merchants to Passport during the first half of 2006. With the conversion to Passport in 2006, our internally developed systems will be providing substantially all aspects of a merchant s processing needs. Previously, we relied on third party vendors for some of these services including bank card authorization and data capture services, settlement and merchant accounting services.

Industry Overview

The payment processing industry provides merchants with credit, debit, gift and loyalty card and other payment processing services, along with related information services. The industry has grown rapidly in recent years as a result of wider merchant acceptance, increased same store sales, increased consumer use of bank cards and advances in payment processing and telecommunications technology. According to The Nilson Report, total expenditures for all card type transactions by U.S. consumers were $1.9 trillion in 2004, and are expected to grow to $2.8 trillion by 2008. From 1998 to 2005, the compound annual growth rate of card payments was 13%, but this rate is expected to slow modestly to 10% for 2004 to 2008. The proliferation of bank cards has made the acceptance of bank card payments a virtual necessity for many businesses, regardless of size, in order to remain competitive. This use of bank cards, enhanced technology initiatives, efficiencies derived from economies of scale and the availability of more sophisticated products and services to all market segments has led to a highly competitive and specialized industry.

Segmentation of Merchant Service Providers

The payment processing industry is dominated by a small number of large, fully-integrated payment processors that handle the processing needs of the nation s largest merchants. Large national merchants (i.e., those with multiple locations and high volumes of bank card transactions) typically demand and receive the full range of payment processing services at low per-transaction costs.

Payment processing services are generally sold to the small- and medium-sized merchant market segment through banks and Independent Sales Organizations that generally procure most of the payment processing services they offer from large payment processors. It is difficult, however, for banks and Independent Sales Organizations to customize payment processing services for the small- and medium-sized merchant on a cost-effective basis or to provide sophisticated value-added services. Accordingly, services to the small- and medium-sized merchant market segment historically have been characterized by basic payment processing without the availability of the more customized and sophisticated processing, information-based services or customer service that is offered to large merchants. The continued growth in bank card transactions is expected to cause small- and medium-sized merchants to increasingly value sophisticated payment processing and information services similar to those provided to large merchants.

The following table sets forth the typical range of services provided directly (in contrast to using outsourced providers) by fully integrated transaction processors, traditional Independent Sales Organizations and us.

We believe that the card-based payment processing industry will continue to benefit from the following trends:

Growth in Card Transactions

The proliferation in the uses and types of cards, the rapid growth of the Internet, significant technological advances in payment processing and financial incentives offered by issuers have contributed greatly to wider merchant acceptance and increased consumer use of such cards. The following chart illustrates the growth for card transactions for the periods indicated.

Source: The Nilson Report. Card purchase volume includes VISA / MasterCard (debit and credit), American Express, Discover and Diners Club.

Note: Percentages inside bar represent year-over-year growth.

According to The Nilson Report and the New York State Forum for Information Resource Management, sources of increased bank card payment volume include:

- increasing acceptance of electronic payments by merchants who previously did not do so, such as quick service restaurants, government agencies and businesses that provide goods and services to other businesses;
- increasing consumer acceptance of alternative forms of electronic payments, as demonstrated by the dramatic growth of debit cards, electronic benefit transfer, and prepaid and gift cards; and
- continued displacement of checks with the use of cards and other methods of payment, including electronic, at the point of sale, as shown below.

Source: The Nilson Report

Technology

At present, many large payment processors provide customer service and applications via legacy systems that are difficult and costly to alter or otherwise customize. In contrast to these systems, recent advances in scalable and networked computer systems, and relational database management systems, provide payment processors with the opportunity to deploy less costly technology that has improved flexibility and responsiveness. In addition, the use of fiber optic cables and advanced switching technology in telecommunications networks and competition among long-distance carriers, and the dramatic increase in merchant s use of the Internet to process their transactions, further enhance the ability of payment processors to provide faster and more reliable service at lower per-transaction costs than previously possible.

Advances in personal computers and point-of-sale terminal technology, including integrated cash registers and networked systems, have increasingly allowed access to a greater array of sophisticated services at the point of sale and have contributed to the demand for such services. These trends have created the opportunity for payment processors to leverage technology by developing business management and other software application products and services.

Consolidation

During the last decade, the payment processing industry has undergone significant consolidation. The costs to convert from paper to electronic processing, merchant requirements for improved customer service, and the demand for additional customer applications have made it difficult for community and regional banks to remain competitive in the merchant acquiring industry. Many of these providers are unwilling or unable to invest the capital required to meet these evolving demands, and have steadily exited the payment processing business or otherwise found partners to provide payment processing for their customers. Despite this consolidation, the industry remains fragmented with respect to the number of entities offering payment processing services, particularly to small- and medium-sized merchants.

Favorable Demographics

Younger consumers use of card-based and other electronic payment methods for purchases tends to be higher than usage by older consumers. According to Nellie Mae:

- the number of college students who have credit cards has grown from 67% in 1998 to 83% in 2001:
- the prevalence of credit cards among college students is also reflected in the increased average number of cards held, from 3 cards in 2000 to 4.3 cards in 2001; and
- there is increased card usage between the ages of 18 and 24, with 18-year-old students having the lowest card usage rate and debt levels and 24-year-old students typically having the highest.

As these consumers who have experience with card products, technology and the Internet enter the work force, we expect that purchases using card-based payment methods will comprise an increasing percentage of total consumer spending. This will represent the continuation of a trend that has been in place for the last decade.

We also expect to benefit from the increased spending of baby boomers. According to the Bureau of Labor Statistics 2003 Consumer Expenditure Survey, households headed by 45- to 54-year-olds spent each year on average $2,688 on food away from home, compared to $2,211 for all households. They also had the highest average pre-tax income in 2003 ($68,028) compared to all other age groups. Research from the National Restaurant Association shows that this group goes to casual dining restaurants more frequently than other groups. Since a significant percentage of our processing volume comes from restaurant merchants, we believe these trends will have a positive impact on our growth and future performance.

Our Competitive Strengths

We believe our competitive strengths include the following:

Large, Experienced, Efficient Direct Sales Force

While many of our competitors rely on Independent Sales Organizations that typically generate merchant accounts for multiple payment processing companies simultaneously, we market our services throughout the United States through our direct sales team of 1,010 Relationship Managers, Servicing Relationship Managers and sales managers who work exclusively for us. Our Relationship Managers have local merchant relationships and industry-specific knowledge that allow them to effectively compete for merchants. Our Relationship Managers are compensated solely on commissions, receiving signing bonuses and ongoing residual commissions for generating new merchant accounts. These commissions are based upon the gross margin we estimate that we will receive from their merchants, calculated by deducting interchange fees, dues and assessments and all of our costs incurred in underwriting, processing, servicing and managing the risk of the account from gross processing revenue. Our Relationship Managers have considerable latitude in pricing a new account, but we believe that the shared economics motivate them to sign attractively priced contracts with merchants generating significant processing volume. At the same time, our Relationship Managers share in any losses we incur on their merchant accounts, which we believe causes them to avoid riskier merchants. The residual commissions our Relationship Managers receive from their merchant accounts give them an incentive to maintain a continuing dialogue and servicing presence with their merchants. We believe that our compensation structure is atypical in our industry and contributes to building profitable, long-term relationships with our merchants. Our sales compensation structure and marketing activities focus on recruiting and supporting our direct sales force, and we believe that the significant growth we have achieved in our merchant portfolio and processing volume are directly attributable to these efforts.

Recurring and Predictable Revenue

We generate recurring revenue through our payment processing services. Our revenue is recurring in nature because we typically enter into three-year service contracts that require minimum volume commitments from our merchants to qualify for the agreed-upon pricing. Our recurring revenue grows as the number of transactions or dollar volume processed for a merchant increases or as our merchant count increases. In 2005, approximately 82% of our processing volume came from merchants we installed in 2004 and earlier.

Internal Growth

While many of our competitors in the payment processing industry have relied on acquisitions to expand their operations and improve their profitability, we have grown our business entirely through internal expansion by generating new merchant contracts submitted by our own direct sales force and, primarily before 2000, sales agents affiliated with us. Every merchant we currently process was originally underwritten by our staff, and we have substantial experience responding to their processing needs and the risks associated with them. We believe this both enhances our merchant retention and reduces our risks. We believe that internally generated merchant contracts are of a higher quality and are more predictable than, and the costs associated with such contracts are lower than the costs associated with, contracts acquired from third parties.

Strong Position and Substantial Experience in Our Target Markets

As of December 31, 2005, we were providing payment processing services to approximately 110,500 active small and medium-sized merchants located across the United States. We believe our understanding of the needs of small- and medium-sized merchants and the risks inherent in doing business with them, combined with our efficient direct sales force, provides us with a competitive advantage over larger service providers that access this market segment indirectly. We also believe that we have a competitive advantage over service providers of a similar or smaller size that may lack our extensive experience and resources and which do not benefit from the economies of scale that we have achieved.

Industry Expertise

We have focused our sales efforts on merchants who have certain key attributes and on industries in which we believe our direct sales model is most effective and the risks associated with processing are relatively low. These attributes include owners who are typically on location, interact with customers in person, value a local sales and servicing presence and often consult with trade associations and other civic groups to help make purchasing decisions. Although we have historically focused our sales and marketing efforts on the restaurant industry, our merchant base now also includes a broad range of brick and mortar retailers, lodging establishments, automotive repair shops, convenience and liquor stores and professional service providers. To further promote our products and services, we have entered into sponsoring arrangements with various trade associations, with an emphasis on state restaurant and hospitality groups. We believe that these sponsorships have enabled us to gain exposure and credibility within the restaurant industry and have provided us with opportunities to market our products to new merchants. In December 2005, the restaurant industry represented approximately 40% of our processing volume and over 54% of our transactions. We believe that the restaurant industry will continue to represent a significant portion of our processing volume as the industry continues to experience sales growth and we continue to generate new restaurant merchants. According to a report by the National Restaurant Association, restaurant industry sales are expected to reach approximately $511 billion in 2006, which would represent the fifteenth consecutive year of real sales growth, as adjusted for inflation. This steady growth profile, together with the industry s low seasonality, makes restaurant merchant processing volume relatively stable and predictable. Our focus on small- and medium-sized merchants and on certain industries has diversified our merchant portfolio and we believe has reduced the risks associated with revenue concentration. In 2005, no single merchant represented more than 0.3% of our total processing volume. We intend to build upon our success in the restaurant industry by applying similar strategies to new target markets through targeted marketing efforts that leverage our local sales force.

Merchant Focused Culture

We have built a culture and established practices that we believe improve the quality of services and products we provide to our merchants. This culture spans from our sales force, which maintains a local market presence to provide rapid, personalized customer service, through our technology organization, which has developed a customer management interface and information system that alerts our Relationship Managers to any problems a merchant has reported and provides them with detailed information on the merchants in their portfolio. Additionally, we believe that we are one of the few companies that discloses our pricing policies to merchants. Visa and MasterCard alter their interchange fees once or twice per year; we believe that we are one of the few companies that does not use such adjustments to increase our own margins. We believe that our culture and practices allow us to maintain strong merchant relationships and differentiate ourselves from our competitors in obtaining new merchants.

Scalable Operating Structure

Our scalable operating structure allows us to expand our operations without proportionally increasing our fixed and semi-fixed support costs. In addition, our technology platform, including both HPS Exchange and Passport, was designed with the flexibility to support significant growth and drive economies of scale with relatively low incremental costs. Most of our operating costs are related to the number of individuals we employ. We have in the past used, and expect in the future to use, technology to leverage our personnel, which should cause our personnel costs to increase at a slower rate than our processing volume.

Advanced Technology

We employ information technology systems which use the Internet to improve management reporting, enrollment processes, customer service, sales management, productivity, merchant reporting and problem resolution. In 2001, we began providing authorization and data capture services to our merchants through our internally-developed front-end processing system, HPS Exchange. This system incorporates real time reporting tools through, and interactive point-of-sale database maintenance via, the Internet. These tools enable merchants, and our employees, to change the messages on credit card receipts and to view sale and return transactions entered into the point-of-sale device with a several second delay on any computer linked to the Internet. During the year ended December 31, 2004, approximately 43% of our transactions were processed through this system, and this percentage increased to 53% of our transactions in 2005.

In 2005, we began providing clearing, settlement and merchant accounting services through our own internally developed back-end processing system, Passport. Passport enables us to customize these services to the needs of our Relationship Managers and merchants. At December 31, 2005, approximately 22,000 of our 110,500 total merchants were processing on Passport. We intend to continue converting our merchants to Passport during the first half of 2006.

HPS Exchange, Passport and our other technology efforts have contributed to a reduction of our per-transaction processing costs and to a reduction of our costs of services as a percentage of our revenue. Many existing merchants will remain on Vital Processing Service s (Vital) systems and those of our other third-party processors for front-end services for the duration of their relationship with us. However, we intend to install the majority of our new merchants on HPS Exchange, and to convert substantially all of our merchants onto Passport for back-end services. Our Internet-based systems allow all of our merchant relationships to be documented and monitored in real time, which maximizes management information and customer service responsiveness. We believe that these systems help attract both new merchants and Relationship Managers and provide us with a competitive advantage over many of our competitors who rely on less flexible legacy systems.

Comprehensive Underwriting and Risk Management System

Through our experience and cumulative knowledge in assessing risks associated with providing payment processing services to small- and medium-size merchants, we have developed procedures and systems that provide risk management and fraud prevention solutions designed to minimize losses. Our underwriting processes help us to evaluate merchant applications and balance the risks of accepting a merchant against the benefit of the processing volume we anticipate the merchant will generate. We believe our systems and procedures enable us to identify potentially fraudulent activity and other questionable business practices quickly, thereby minimizing both our losses and those of our merchants. As evidence of our ability to manage these risks, we experienced losses of less than 0.40 basis points of processing volume for each of the years ended December 31, 2003, 2004 and 2005.

Proven Management Team

We have a strong senior management team, each with at least 18 years of financial services and payment processing experience. Our Chief Executive Officer, Robert O. Carr, was a founding member of the Electronic Transactions Association, the leading trade association of the bank card acquiring industry. Our management team has developed extensive contacts in the industry and with banks and value-added resellers. As of December 31, 2005, we had referral relationships with over 1,200 trade associations, banks and value-added resellers. We believe that the strength and experience of our management team has helped us to attract additional sales professionals and add additional merchants, thereby significantly contributing to our growth.

Our Strategy

Our current growth strategy is to increase our market share as a provider of bank card payment processing services to small- and medium-size merchants in the United States. We believe that the increasing use of bank cards, combined with our sales and marketing approaches, will continue to present us with significant growth opportunities. Key elements of our strategy include:

Expand Our Direct Sales Force

Unlike many of our competitors who rely on Independent Sales Organizations or salaried salespeople and telemarketers, we have built a direct, commission-only sales force. We have grown our sales force from 417 Relationship Managers and sales managers as of December 31, 2002 to 671 as of December 31, 2003, 832 Relationship Managers and sales managers as of December 31, 2004 and 1,010 Relationship Managers, Servicing Relationship Managers and sales managers as of December 31, 2005. We anticipate significantly increasing the size of our sales force in the next few years in order to increase our share of our target markets. We have implemented a geographic sales model that divides the United States into 14 primary regions overseen by Regional Directors, who are primarily responsible for hiring Relationship Managers and increasing the number of installed merchants in their territory. Our Regional Directors compensation is directly tied to the compensation of the Relationship Managers in their territory, providing a significant incentive for them to grow the number and productivity of Relationship Managers in their territory.

Further Penetrate Existing Target Markets and Enter Into New Markets

We believe that we have an opportunity to grow our business by further penetrating the small- and medium-sized merchant market through our direct sales force and alliances with local trade organizations, banks and value-added resellers. During 2004, according to The Nilson Report, we processed approximately 1.8% of the dollar volume of all Visa and MasterCard transactions in the United States, up from approximately 1.4% in 2003, 1.1% in 2002, 0.9% 2001 and 0.6% in 2000. In December 2005, the restaurant industry represented approximately 40% of our processing volume and over 54% of our transactions. Our merchant base also includes a wide range of merchants, including brick and mortar retailers, lodging establishments, automotive repair shops, convenience and liquor stores and professional service providers. We believe that our sales model, combined with our community-based strategy that involves our Relationship Managers building relationships with various trade groups and other associations in their territory, will enable our Relationship Managers to continuously add new merchants. We intend to further expand our sales efforts into new target markets with lower risk characteristics, including markets that have not traditionally accepted electronic payment methods. These markets include governments, schools and the business-to-business market.

Expand Our Services and Product Offerings

In recent years, we have focused on offering a broad set of payment-related products to our customers. In addition to payroll processing services (See Our Services and Products Payroll Services for a description of these services), our current product offerings include check verification and guarantee services that allow merchants to accept paper checks with guaranteed payment assurance, and gift and loyalty card product solutions. We also distribute products that will help our merchants reduce their costs and grow their businesses, such as age verification services that track driver s license data to verify an individual s age and identity. We may develop new products and services internally, enter into arrangements with third-party providers of these products or selectively acquire new technology and products. Many of these new service offerings are designed to work on the same point-of-sale devices that are currently in use, enabling merchants to purchase a greater volume of their services from us and eliminating their need to purchase additional hardware. We believe that these new products and services will enable us to leverage our existing infrastructure and create opportunities to cross-sell our products and services among our various merchant bases, as well as enhance merchant retention and increase processing revenue.

Leverage Our Technology

We intend to continue to leverage our technology to increase our operating efficiencies and provide real-time processing and account data to our merchants, Relationship Managers and customer service staff. Since our inception, we have been developing Internet-based systems to improve and streamline our information systems, including detailed customer-use reporting, management reporting, enrollment, customer service, sales management and risk management reporting tools. We have also made significant investments in our payment processing capabilities, which we believe will allow us to offer a differentiated payment processing product that is faster and less expensive than many competing products.

Enhance Merchant Retention

By providing our merchants with a consistently high level of service and support, we strive to build merchant retention. While increased bank card use helps maintain our stable and recurring revenue base, we recognize that our ability to maintain strong merchant relationships is key to our continued growth. We believe that our practice of fully disclosing our pricing policies to our merchants creates goodwill. For example, in 2003, we believe we were one of the few companies that passed along to small- and medium-sized customers a reduction in debit interchange fees that resulted from the settlement of the so-called Wal-Mart lawsuit against Visa and MasterCard. As discussed in Sales, we have built a group of Servicing Relationship Managers who are teamed with Relationship Managers and handle servicing responsibilities. We have developed a customer management interface that alerts our Relationship Managers and Servicing Relationship Managers to any problems a merchant has reported and provides them with detailed information on the merchants in their portfolio. In addition, we believe that the development of a more flexible back-end processing capability, such as Passport provides, will allow us to tailor our services to the needs of our sales force and merchants, which we believe will further enhance merchant retention. Passport will also allow us to enhance the information available to our merchants, and to offer new services to them. In addition, new merchants receive a series of telephone calls from our service center inquiring about the merchant s satisfaction with the services they received.

Pursue Strategic Acquisitions

Although we intend to continue to grow through the efforts of our direct sales force, we may also expand our merchant base or gain access to other target markets by acquiring complementary businesses, products or technologies, including other providers of payment processing. We may also consider portfolio acquisitions, especially from commercial banks, which, in an effort to focus on their core competencies, often sell or outsource their payment processing operations.

Our Services and Products

As noted above, we derive the majority of our revenues from fee income relating to Visa and MasterCard payment processing, which is primarily comprised of a percentage of the dollar amount of each transaction we process, as well as a flat fee per transaction. The percentage we charge varies and depends upon several factors, including the transaction amount and whether the transaction processed is a swipe transaction or a non-swipe transaction. On average, the gross revenue we generate from processing a Visa or MasterCard transaction equals approximately $2.43 for every $100 we process. We also receive fees from American Express, Discover, Diners Club and JCB for facilitating their transactions with our merchants.

We receive net revenues as compensation for providing bank card payment processing services to merchants, including merchant set-up and training, transaction authorization and electronic draft capture, clearing and settlement, merchant accounting, merchant support and chargeback resolution, as well as payroll services. Historically, we have arranged for certain of these services, particularly merchant accounting, clearing and settlement and a significant portion of our authorization and electronic draft capture services, to be performed by third-party processors (primarily Vital), while we performed the remaining services in-house. In 2005, we began providing clearing, settlement and merchant accounting services through Passport, our own internally developed back-end processing system. Passport enables us to customize these services to the needs of our Relationship Managers and merchants. At December 31, 2005, approximately 22,000 of our 110,500 total merchants were processing on Passport. We intend to continue converting our merchants to Passport during the first half of 2006.

In addition, we sell and rent point-of-sale devices and supplies and provide additional services to our merchants, such as gift and loyalty programs, paper check authorization and chargeback processing. These services and products are described in more detail below:

Merchant Set-up and Training

After we establish a contract with a merchant, we create the software configuration that is downloaded to the merchant s existing, newly purchased or rented point-of-sale terminal, cash register or computer. This configuration includes the merchant identification number, which allows the merchant to accept Visa and MasterCard as well as any other bank cards, such as American Express, Discover, JCB and Diners Club, provided for in the contract. The configuration might also accommodate check verification, gift and loyalty programs and allow the terminal or computer to communicate with a pin-pad or other device. Once the download has been completed by the Relationship Manager or Servicing Relationship Manager, we conduct a training session on use of the system. We also offer our merchants flexible low-cost financing options for point-of-sale terminals, including installment sale and monthly rental programs.

Authorization and Draft Capture

We provide electronic payment authorization and draft capture services for all major bank cards. Authorization generally involves approving a cardholder s purchase at the point of sale after verifying that the bank card is not lost or stolen and that the purchase amount is within the cardholder s credit or account limit. The electronic authorization process for a bank card transaction begins when the merchant swipes the card through its point-of-sale terminal and enters the dollar amount of the purchase. After capturing the data, the point-of-sale terminal transmits the authorization request through HPS Exchange or the third-party processor to the card-issuing bank for authorization. The transaction is approved or declined by the card-issuing bank and the response is transmitted back through HPS Exchange or the third-party processor to the merchant. At the end of each day, and, in certain cases, more frequently, the merchant will batch out a group of authorized transactions, transmitting them through us to Visa and MasterCard for payment.

We introduced HPS Exchange, our internally developed front-end processing system, in August 2001. In 2005, 2004 and 2003 we processed approximately 53%, 43% and 26%, respectively, of our transactions through HPS Exchange. The remainder of our front-end processing is outsourced to third-party processors, primarily Vital, but also including First Data Corporation, Chase Paymentech Solutions and Global Payments Inc. Although we will continue to install new merchants on Vital s and other third-party processors systems, we anticipate that the percentage of transactions that are outsourced to third-party processors will decline as we install a majority of new merchants on HPS Exchange.

Clearing and Settlement

Clearing and settlement processes represent the back-end of a transaction. Once a transaction has been batched out for payment, the payment processor transfers the merchant data to Visa or MasterCard. This is typically referred to as clearing . After a transaction has been cleared, the transaction is settled by Visa or MasterCard and the merchant is compensated for the value of the purchased goods or services. We currently outsource most of these clearing and settlement services to Vital. In 2005, we began providing clearing and settlement services through Passport, our own internally developed back-end processing system. Passport enables us to customize these services to the needs of our Relationship Managers and merchants. We developed the technology necessary to perform these services internally since a majority of the data provided to merchants by back-end providers already resides in our databases. At December 31, 2005, approximately 22,000 of our 110,500 total merchants were processing on Passport.

Merchant Accounting

We organize our merchants transaction data into various files for merchant accounting purposes. Merchant accounting services allow merchants to monitor sales performance, control expenses, disseminate information and track profitability through the production and distribution of detailed statements summarizing their bank card payment processing activity. We also provide exception item processing. We use this data to provide merchants with information, such as volume, discounts, fees, chargebacks, interchange qualification levels and funds held for reserves to help them track their account activity. Merchants may access this archived information through our customer service representatives or online through our Internet-based customer service system.

Merchant Support Services

We provide merchants with ongoing service and support for their processing needs. Customer service and support includes answering billing questions, responding to requests for supplies, resolving failed payment transactions, troubleshooting and repair of equipment, educating merchants on Visa and MasterCard compliance and assisting merchants with pricing changes and purchases of additional products and services. We maintain a toll-free help-line 24 hours a day, seven days a week, which is staffed by our customer service representatives and during 2005 answered an average of approximately 89,000 customer calls per month. The information access and retrieval capabilities of our Internet-based systems provide our customer service representatives prompt access to merchant account information and call history. This data allows them to quickly respond to inquiries relating to fees, charges and funding of accounts, as well as technical issues.

Chargeback Services

In the event of a billing dispute between a cardholder and a merchant, we assist the merchant in investigating and resolving the dispute as quickly and accurately as possible with card issuers or the bank card associations, which determine the outcome of the dispute. In most cases, before we process a debit to a merchant s account for the chargeback, we provide the merchant with the opportunity to demonstrate to the bank card association or the card issuer that the transaction was valid. If the merchant is unable to demonstrate that the transaction was valid and the dispute is resolved by the bank card association or the card issuer in favor of the cardholder, the transaction is charged back to the merchant. We typically charge our merchants a $25 fee for each chargeback they incur. However, in 2004 we initiated a new policy in which we do not charge our merchants a fee for their first three chargebacks in a year. We believe this policy has been well received by merchants who were unhappy with their occasional chargeback fees.

Payroll Services

Through our wholly-owned subsidiary, Heartland Payroll Company, we operate a full-service nationwide payroll processing service. Our payroll services include check printing, direct deposit, related federal, state and local tax deposits and providing accounting documentation. In addition, we offer a Payday card, which provides employees who do not have bank accounts with the opportunity to have their payroll deposited to a Visa debit card account. In order to improve operating efficiencies and ease-of-use for our customers and to decrease our own processing costs, we have implemented electronic and paperless payroll processing that allows an employer to submit its periodic payroll information to us via the Internet or through a personal computer-based, direct-connect option. If a customer chooses either of these online options, all reports and interactions between the employer and us can be managed electronically, eliminating the need for cumbersome paperwork. Over 43% of our payroll clients currently submit their information electronically. However, if a merchant chooses not to submit their payroll data online, they may submit such information via phone or facsimile. As of December 31, 2005, we provided payroll processing services to 2,664 customers.

Sales

The following graphic sets forth the number of Relationship Managers, Servicing Relationship Managers and sales managers we employed by state as of December 31, 2005.

We sell and market our products and services to merchants through our sales force. As of December 31, 2005, we employed 1,010 Relationship Managers, Servicing Relationship Managers and sales managers in 50 states plus the District of Columbia. We have implemented a geographic sales model that divides the United States into 14 regions overseen by Regional Directors, who are primarily responsible for hiring Relationship Managers and increasing the number of installed merchants in their territory. Regional Directors may manage their territories through Division Managers and Territory Managers. Division Managers do not sell our products and services. Instead, their sole responsibility is to hire, train and manage Relationship Managers in their territory. In contrast, Territory Managers are Relationship Managers who are also responsible for hiring and training a small number of Relationship Managers in their territory. Our Relationship Managers employ a community-based strategy that involves cold calling, obtaining referrals from existing merchants and building relationships with various trade groups, banks and value-added resellers to create sales opportunities.

Our compensation structure is designed to motivate our Relationship Managers to establish profitable long-term relationships with low-risk merchants and create a predictable and recurring revenue stream. Compensation for Relationship Managers is entirely commission-based and sales are measured in terms of the gross margin we estimate we will receive from their merchant accounts, calculated by deducting interchange fees, dues and assessments and all of our costs incurred in underwriting, processing and servicing an account from gross processing revenues. Relationship Managers are permitted to price accounts as they deem appropriate, subject to minimum and maximum gross margin guidelines. The expected volume and pricing are entered into an online margin calculator, which calculates the estimated annual gross margin on the account.

We pay our Relationship Managers, Territory Managers, Division Managers , and Regional Directors a percentage of the gross margin we derive from the payments we process for the merchant accounts they generate and service. When a new merchant account is signed at an acceptable estimated gross margin level, the Relationship Manager will be paid a signing bonus equal to 50% of the first 12 months estimated gross margin. The Relationship Manager will also receive up to 20% of the gross margin generated from the merchant each month, for as long as the merchant remains our customer, with 5% being paid for the Relationship Manager s continued servicing of the account (if there is no Servicing Relationship Manager assigned to the merchant account), and 15% being paid for residual commissions. In addition, the Division Manager will receive an amount equal to 25% of the amount paid to the Relationship Manager and Servicing Relationship Manager, and the Regional Director will receive an amount equal to 25% of the amount paid to the Division Manager. For example, if a merchant account has $1,000 of estimated annual gross margin, the Relationship Manager is paid $500, the Division Manager is paid $125 and the Regional Director is paid $31.25 as a signing bonus. If the same merchant account generates $83.33 in monthly margin, the Relationship Manager (if there is no Servicing Relationship Manager on the account) would be paid $16.67, the Division Manager would be paid $4.17 and the Regional Director would be paid $1.04. In certain cases, no signing bonus will be paid, but the total residual commission is 35% of the ongoing monthly gross margin generated by such merchant. When a Relationship Manager has established merchant relationships that generate the equivalent of $10,000 of monthly gross margin, he or she will be deemed to have a vested equity interest (known as portfolio equity), and will be guaranteed the owned portion (all but the 5% servicing portion) of the ongoing monthly gross margin generated by such merchants for as long as the merchant processes with us. See Management s Discussion And Analysis of Financial Condition And Results of Operations Critical Accounting Policies Accrued Buyout Liability for more information regarding portfolio equity. At the end of the first 12 months of processing for a new merchant, we compare the actual gross margin generated from that merchant with the estimated gross margin used to calculate the signing bonus. If the merchant was more profitable than expected, we increase the signing bonus amount paid to the Relationship Manager. However, if the merchant was less profitable than anticipated, the Relationship Manager must return a pro-rata portion of his or her signing bonus to us. See Management s Discussion And Analysis of Financial Condition And Results of Operations Critical Accounting Policies Capitalized Customer Acquisition Costs for more information regarding signing bonuses. In addition, up to 26% of any significant loss on a merchant account will be reimbursed to us by any Relationship Manager and their sales manager(s) receiving a commission with respect to such account.

Since late 2004, we have built a group of Servicing Relationship Managers who are teamed with one or more Relationship Managers to handle the new merchant installation requirements, as well as other servicing responsibilities, for those Relationship Managers. The majority of the Servicing Relationship Manager s compensation represents a redirection of the 5% servicing portion associated with the merchants he or she is servicing, though we do pay a modest advance while the Servicing Relationship Manager is building his or her merchant base. We believe that the creation of the Servicing Relationship Manager role allows the selling Relationship Managers to leverage his or her sales efforts, while allowing us to offer merchants two local relationship contacts and a Servicing Relationship Manager who is more attuned to the merchants service needs. At December 31, 2005, the number of Servicing Relationship Managers was 149, and approximately 46% of our merchants were assigned to a Servicing Relationship Manager.

In addition to our commission-based compensation structure, we use various sales contests to reward strong sales performance. The awards granted in connection with these contests include stock options and company-paid trips. Options are awarded to Regional Directors, Division Managers, Territory Managers and Relationship Managers that achieve significant, targeted growth in the realized gross margin in their territory. During the years ended December 31, 2005 and 2004, our board of directors authorized and issued options to purchase an aggregate of 455,381 and 2,000,089 shares of our common stock, respectively, to some of our Regional Directors, Division Managers, Territory Managers and Relationship Managers as part of these contests. Options granted in connection with these contests in 2005 represented 34.4% of the total options awarded in 2005 and options granted in connection with these contests in 2004 represented 63.1% of the options awarded in 2004.

Marketing

We focus our marketing efforts on industries in which we believe our direct sales model is most effective and on merchants with certain key attributes. These attributes include owners that are typically on location, interact with customers, value a local sales presence, and who often consult with trade associations and other civic groups to make purchasing decisions. We also determine which additional markets to enter into based on the following criteria:

- average potential customer revenue;
- number of locations to be serviced;
- underwriting risk; and
- required technological upgrades.

Since 1999, we have primarily focused on the hospitality industry and, in particular, independent restaurants. The number of independent restaurants to which we provide our products and services has increased from 6,360 as of December 31, 1999 to 36,400 as of December 31, 2005 and, in December 2005 the restaurant industry represented approximately 40% of our processing volume and over 54% of our transactions. In addition to restaurants, our merchant base includes brick and mortar retailers, lodging establishments, automotive repair shops, convenience and liquor stores, and professional service providers.

We have historically had success in marketing our products and services through relationships with key trade associations, agent banks and value-added resellers.

Trade Associations

As of December 31, 2005, we had entered into endorsement agreements with more than 100 trade associations, the majority of which are in the hospitality industry. Of these endorsements, 30 are state restaurant associations. These associations include the Arizona, California, Florida, Minnesota, Oklahoma, Washington and Wisconsin restaurant associations, which together represent in excess of 45,000 merchants. Our agreements with trade associations typically require us to pay a small upfront fee to the association and to sponsor certain association events or advertise in their publications. In exchange for their endorsement of our products and services, upon the installation of a new merchant that is a member of their association we pay trade associations a portion of the signing bonus or residual payments that otherwise would be paid to the Relationship Manager responsible for such merchant. In some cases, we have sold association memberships to prospective merchants and our Relationship Managers have received commissions for such sales.

Agent Banks

Many community banks find it difficult to provide their merchant servicing personnel with the training and support they need to serve their customer base and to properly assess transaction risk. As a result, some of these banks enter into arrangements with payment processors to service their merchant portfolios. We currently provide these services to over 250 community banks in the United States. In exchange for their endorsement of our products and services, upon the installation of a new merchant referred by the bank we typically pay the bank a portion of the signing bonus or residual payment that otherwise would be paid to the Relationship Manager responsible for such merchant.

Value-Added Resellers and Third-Party Software Providers

In order to further market our products and services, we enter into arrangements with value-added resellers and third-party software developers. Value-added resellers typically sell complementary products and services, such as hardware and software applications and point-of-sale hardware, software and communication network services to merchants in markets similar to ours. Our agreements with value-added resellers provide that, in exchange for their endorsement of our products and services and upon the installation of a new merchant referred by them we will pay the value-added reseller a portion of the signing bonus and residual payment that otherwise would be paid to the Relationship Manager responsible for such merchant. As we continue to expand our product offerings, we intend to introduce capabilities that will allow our systems to be compatible with those of our value-added resellers and other third-party software developers and will enable them to embed our payment modules within their systems. As of December 31, 2005, we had entered into arrangements with over 850 value-added resellers, including agreements with many third-party developers in the hospitality industry. From time to time, we have also entered into direct alliances with original equipment manufacturers and vendors.

Relationships with Sponsors and Processors

In order to provide payment processing services for Visa and MasterCard transactions, we must be sponsored by a financial institution that is a principal member of the Visa and MasterCard associations. The sponsor bank must register us with Visa as an Independent Sales Organization and with MasterCard as a Member Service Provider. We also contract with third-party processors to provide critical payment processing services.

Sponsor Bank

We currently have an agreement with KeyBank, National Association, referred to as KeyBank in this document, to sponsor us for membership in the Visa and MasterCard associations. Under this agreement, KeyBank settles bank card transactions for our merchants, and also funds the portion of our daily interchange expenses that we do not fund. Either KeyBank or we can terminate the agreement if the other party materially breaches the agreement, including non-payment of fees due for processing our monthly settlement of transactions. The agreement may also be terminated if the other party enters bankruptcy or files for bankruptcy, if either party is required to discontinue performing its services under the agreement based upon a final order of a state or federal court or regulatory body or if there is a change in the majority ownership of the other party. KeyBank may terminate the agreement with us if we breach the by-laws and regulations of Visa or MasterCard, if either our registration or KeyBank s membership with Visa or MasterCard terminates, if any federal or state regulatory authority requests that the agreement be terminated or that KeyBank terminate its services or if applicable laws or regulations change to prevent KeyBank from performing its services under the agreement. Upon termination of the agreement for any reason, we will have 180 days to convert to another sponsor bank. Although we expect that we would be able to secure a new sponsor bank, the cost of entering into a new sponsorship agreement may be different than under our current agreement with KeyBank. We entered into the agreement with KeyBank on April 1, 1999 and it expires in March 2009.

Third-Party Processors

We have agreements with several third-party processors to provide to us on a non-exclusive basis payment processing and transmittal, transaction authorization and data capture services, and access to various reporting tools. These third-party processors include Vital Processing Services, First Data Corporation, Chase Paymentech Solutions and Global Payments, Inc. Our agreements with third-party processors require us to submit a minimum monthly number of transactions or volume for processing. If we submit a number of transactions or volume that is lower than the minimum, we are required to pay them the fees that they would have received if we had submitted the required minimum number or volume of transactions. The majority of our agreements with third-party processors may be terminated by the third-party processors if we materially breach certain sections of the agreements, including our failure to pay fees due, and we do not cure the breach within 30 days, if our registration with Visa or MasterCard terminates, or if we enter bankruptcy or file for bankruptcy. Our agreement with Vital expires on March 31, 2006. We are currently engaged in negotiations for a new contract with Vital and expect to sign a new contract prior to March 31, 2006. We do not expect the economic terms of a new contract to be less favorable to us than our current contract, and certain terms may represent an improvement.

Our Merchant Base

We have a diverse merchant base. As of December 31, 2005, we provided payment processing services to approximately 110,500 active merchant locations across the United States, an increase of 24.3% from the approximately 88,900 merchant locations as of December 31, 2004. We target primarily small- and medium-sized merchants, which we define as generating annual Visa and MasterCard processing volume between $50,000 and $5,000,000. While restaurants represent a significant portion of our merchant base, we also provide payment processing services to a wide variety of merchants, primarily those merchants whose typical customer is present when using a bank card to pay for products or services.

No single merchant accounted for more than 0.3% of our total processing volume in 2005, and during 2005, our top 25 merchants represented only 2.9% of our processing volume and 2.6% of our gross processing revenue. In December 2005, merchants in California represented 14.6%, in New York represented 6.9% and in Texas and Florida represented 4.5% of our total processing volume. Our geographic concentration tends to reflect the states with the highest economic activity, including California, New York, Florida and Texas, as well as certain states where we have historically maintained a stronger sales force, including North Carolina and Minnesota. This merchant and geographic diversification makes us less sensitive to changing economic conditions in any particular industry or region. We believe that the loss of any single merchant would not have a material adverse effect on our financial condition or results of operations.

Generally, our agreements with merchants are for three years and automatically renew for additional one-year periods unless otherwise terminated. Our sponsor bank is also a party to these agreements. The merchants are obligated to pay for all chargebacks, fines, assessments, and fees associated with their account, and in some cases, annual fees. Our sponsor bank may terminate a merchant agreement for any reason on 30 days notice, and the merchant may terminate the agreement at any time without notice, subject to the payment of any applicable early termination fees. Typically, the agreement may also be terminated immediately upon a breach by the merchant of any of its terms. The agreement may not be assigned by the merchant without the prior written consent of the sponsor bank and us.

Risk Management

We believe that we have significant experience in assessing the risks associated with providing payment processing services to small- and medium-sized merchants. These risks include the limited operating history of many of the small- and medium-sized merchants we serve and the risk that these merchants could be subject to a higher rate of insolvency, which could adversely affect us financially. We apply varying levels of scrutiny in our application evaluation and underwriting of prospective merchant accounts, ranging from basic due diligence for merchants with a low risk profile to a more thorough and detailed review for higher risk merchants.

Merchant attrition is expected in the payment processing industry in the ordinary course of business. During 2005 and 2004 we experienced an average annual attrition of 10% to 12% of our total processing volume. Much of our attrition is related to business closures.

As a result of our exposure to potential liability for merchant fraud, chargebacks, reject and other losses created by our merchant services business, we view our risk management and fraud avoidance practices as integral to our operations and overall success. We believe that the risks associated with our merchant base are generally not significant as our merchants consist primarily of companies conducting card-present transactions and whose chargeback levels are generally not significant as a percentage of their sales volume. As a result of their low risk profile, we can employ underwriting and set-up procedures that are less extensive than if these merchants had higher risk profiles and can typically ensure that these merchants will be approved and set up on our systems within 24 hours of our receiving their application.

However, for our merchants conducting card-not-present transactions, which we view as having a higher risk profile, we employ an extended underwriting and due diligence period and special account monitoring procedures. The underwriting process for these merchants applications may take 3 to 5 days while we evaluate the applicants financials, previous processing history and credit reports.

As of December 31, 2005, we had a staff of 69 employees dedicated to our risk management operations, which encompasses underwriting new accounts, monitoring and investigating merchant account activity for suspicious transactions or trends and avoiding or recovering losses. Effective risk management helps us minimize merchant losses for the mutual benefit of our merchants and ourselves. Our risk management procedures also help protect us from fraud perpetrated by our merchants. We believe our knowledge and experience in dealing with attempted fraud has resulted in our development and implementation of effective risk management and fraud prevention systems and procedures. In 2005, 2004 and 2003, we experienced losses of less than 0.40 basis points of our processing volume.

We employ the following systems and procedures to minimize our exposure to merchant and transaction fraud:

Underwriting

Our Relationship Managers send new applications to our underwriting department for review and screening. Our underwriting department s review of these applications serves as the basis for our decision whether to accept or reject a merchant account. The review also provides the criteria for establishing cash deposit or letter of credit requirements, processing limits, average transaction amounts and pricing, which assist us in monitoring merchant transactions for those accounts that exceed those pre-determined thresholds. The criteria set by our underwriting department also assist our risk management staff in advising merchants with respect to identifying and avoiding fraudulent transactions. Depending upon their experience level, our underwriting staff has the authority to render judgment on new applications or to take additional actions such as adjusting processing limits, analyzing average charge per transaction information or defining cash deposit/letter of credit requirements for new and existing merchants. Our underwriting department reports to our credit committee, consisting of our Chief Financial Officer, Chief Services Officer, Director of Policy and Audit and Director of Loss Prevention. Approval of a merchant by the credit committee is required for all higher risk merchant accounts, and our Chief Financial Officer reviews all accounts with processing volume that exceed certain thresholds. Our sponsor bank also reviews and approves our merchant underwriting policies and procedures to ensure compliance with Visa and MasterCard operating rules and regulations.

Merchant Monitoring

We employ several levels of merchant account monitoring to help us identify suspicious transactions and trends. Daily merchant activity is obtained from two Internet-based systems, HPS Exchange (where the information is downloaded from HPS Exchange to our monitoring systems) and Vital (where the information is downloaded from our third-party processors onto Vital s risk system and then accessed by us on the Internet), and is sorted into a number of customized reports by our systems. Our risk management team reviews any unusual activity highlighted by these reports, such as larger than normal transactions or credits, and monitors other parameters that are helpful in identifying suspicious activity. We have a daily window of 10:00 a.m. to 6:00 p.m. Eastern time to decide if any transactions should be held for further review, which provides us time to interview a merchant or issuing bank to determine the validity of suspicious transactions. We have also developed a fraud management system for HPS Exchange that is fully integrated with our internal customer relationship management software and has detailed review capabilities to further streamline our monitoring of those transactions. We also place merchants who require special monitoring on alert status and assign special account identifiers to our Internet merchants to designate these accounts for special monitoring.

Investigation and Loss Prevention

If a merchant exceeds any parameters established by our underwriting and/or risk management staff or violates regulations established by the applicable bank card association or the terms of our merchant agreement, one of our investigators will identify the incident and take appropriate action to reduce our exposure to loss and the exposure of our merchant. This action may include requesting additional transaction information, instructing a third party to retrieve, withhold or divert funds, verifying delivery of merchandise or even deactivating the merchant account.

Collateral

We require some of our merchants to establish cash deposits or letters of credit that we use to offset against liabilities we may incur. We hold such cash deposits or letters of credit for as long as we are exposed to a loss resulting from a merchant s payment processing activity. As of December 31, 2005, these cash deposits and letters of credit totaled approximately $7.5 million. In addition, we maintain a 5-day delayed deposit policy on transactions processed by most of our Internet merchants and newly established merchants who have not previously processed bankcards to allow for additional risk monitoring.

Technology

We have developed a number of Internet-based systems that are designed to improve the effectiveness of our sales force, customer service and the management of our business. In 2005, 2004 and 2003 we spent $1.5 million, $1.4 million and $0.8 million, respectively, on capitalized software development costs. Each of the following systems is available through www.e-hps.com and is being constantly updated, with new releases of software scheduled every six weeks:

Portfolio Manager

Portfolio Manager is designed to allow each of our Relationship Managers to manage many aspects of his or her business, including portfolio monitoring and management, compensation review, training and professional development and the ability to communicate with others within our company. Portfolio Manager consists of a set of merchant relationship management tools. These tools include detailed merchant data, such as historical processing volume, updates on merchant contracts that will soon expire, losses, merchants who may have attrited and data that can be used by our Relationship Managers to assist merchants in understanding interchange fee structures and the risks associated with certain types of transactions. Portfolio Manager also includes an estimated gross margin calculator and a merchant profitability analysis that allows Relationship Managers to optimize gross margin generated from a new merchant account. In addition, Portfolio Manager provides our Relationship Managers with the ability to view their residual commission stream from their merchant portfolio, track their productivity and compare their sales statistics with those of other Relationship Managers.

Merchant Center

Merchant Center is designed to improve our merchants efficiency, cash management and dispute resolution by providing them with real-time access to their transaction data, including clearinghouse records, deposits and transactions. Merchant Center can replace paper merchant statements and provide automated customer self-service. Over 21% of our merchants, as of December 31, 2005, had signed up for this product. Merchant Center also provides similar information tools to our strategic relationships, such as trade associations, banks and value-added resellers.

Merchant Manager

Information regarding all of our interactions with our merchants and all of their documents and transaction records are immediately available to our customer service department and management through Merchant Manager. Each new account is entered into this database during the initial application and underwriting process, and all documents regarding a merchant are scanned into the database. Subsequently, all of a merchant s transactions and statements, and records of all calls to our customer service representatives as well as their resolution, are maintained in the database. Merchant Manager is also the tool by which we make any pricing adjustments and manage any equipment-related transactions. Integrating many of our customer management tools into one database provides all of our employees with the same information regarding a merchant, which enables us to provide consistent, rapid problem resolution and optimal customer service. We believe that reliance on the system has allowed considerable productivity gains in recent years.

HPS Exchange

Our front-end system, HPS Exchange, provides us greater control of the electronic transaction process, allows us to offer our merchants (through our Relationship Managers) a differentiated product offering, and offers economies of scale that we expect will increase our long-term profitability. As of December 31, 2005, approximately 59% of our merchants used HPS Exchange, and nearly 67% of all merchant accounts established in 2005 were placed on the system. When a merchant uses HPS Exchange on certain hardware platforms, the resulting authorization speed can be six seconds or less, which we believe is faster than industry norms for comparable terminals. This increased speed not only benefits the merchant but also reduces the telecommunications costs we incur in connection with a transaction.

HPS Exchange enables us to provide more customized solutions to small- and medium-size merchants, target larger merchants that demand customized front-end solutions and take advantage of new terminal hardware platforms as they become available. HPS Exchange is customized for each merchant and will allow us, through further development, to provide our merchants with differentiated value-added features, including the following:

Merchant/Cardholder Selected Debit or Credit. Merchants have the ability to convert a Visa Check or Master Money card to a pin-based debit transaction, which is typically less expensive for the merchant.

Electronic Receipt Capture. Electronic Receipt Capture enables certain merchant terminals to capture a cardholder s receipt and signature electronically and to display and print the receipt on demand. In particular, this feature adds value to merchants with high-ticket items, since they are more susceptible to losses from customer disputes.

Real-Time Transaction Monitoring. Using their personal computers, merchants can observe open batches of payment transactions at any of their locations, allowing early detection of problem transactions, such as abnormally large tickets or credits, and changes in business volume.

Cash Back on Debit. Merchants have the ability to offer a cash-back option to their customers for pin-based debit transactions.

Cardholder Name Capture. Cardholder Name Capture captures the cardholder s name in a settlement transaction database. The cardholder s name is then available for reporting back to the merchant when necessary for draft retrieval requests, chargeback notifications and to provide additional information regarding transactions that do not qualify for the lowest rates offered by Visa and MasterCard.

Logo on Receipt. The Logo on Receipt feature imports merchant logos onto a merchant s receipt.

On-line Download Maintenance. On-line Download Maintenance is an Internet interface to a merchant s point-of-sale terminal download system that allows a merchant to change the parameters that control how its point-of-sale terminal functions as opposed to having to call the service center to request such changes. This enables a merchant to more easily change its receipt message each day and assists a merchant in preventing employee fraud by setting parameters that restrict the actions that can be taken by various employees.

While we will continue to utilize third-party front-end systems, we plan to continue incorporating additional functionality into HPS Exchange and to install an increasing percentage of new merchants onto HPS Exchange.

&nbsfont>The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money, such as inflation.

¨ The initial estimated value of the Notes will be less than the price to the public. The initial estimated value that is set forth on the cover page of this document, and that will be set forth in the final pricing supplement for the Notes, will be less than the public offering price you pay for the Notes, does not represent a minimum price at which we, RBCCM or any of our other affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the levels of the underlying indices, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount, and our estimated profit and the costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than the price to public, as any such sale price would not be expected to include the underwriting discount and our estimated profit and the costs relating to our hedging of the Notes. In addition, any price at which you may sell the Notes is likely to reflect customary bid-ask spreads for similar trades. In addition to bid-ask spreads, the value of the Notes determined for any secondary market price is expected to be based on a secondary market rate rather than the internal borrowing rate used to price the Notes and determine the initial estimated value. As a result, the secondary price will be less than if the internal borrowing rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.

¨ Our initial estimated value of the Notes is an estimate only, calculated as of the time the terms of the Notes are set. The initial estimated value of the Notes is based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See

"Structuring the Notes" below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do.

The value of the Notes at any time after the trade date will vary based on many factors, including changes in market conditions, and cannot be predicted with accuracy. As a result, the actual value you would receive if you sold the Notes in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Notes and the amounts that may be paid on the Notes.

¨ Your return on the Notes will not reflect dividends on the equity securities composing the underlying indices. The return on the Notes will not reflect the return you would realize if you actually owned the equity securities composing the underlying indices and received the dividends paid on those equity securities. The final levels of each of the underlying indices and the determination of the amount to be paid at maturity or whether the contingent coupon is payable will not take into consideration the value of those dividends.

¨ If the levels of the underlying indices change, the market value of the Notes may not change in the same manner. Owning the Notes is not the same as owning the securities composing the underlying indices. Accordingly, changes in the levels of the underlying indices may not result in a comparable change of the market value of the Notes. If the levels of the underlying indices on any trading day increase above their respective initial levels or coupon barriers, the value of the Notes may not increase in a comparable manner, if at all. It is possible for the levels of the underlying indices to increase while the value of the Notes declines.

¨ The determination of the payment at maturity on the Notes does not take into account all developments in the levels of the underlying indices. Changes in the levels of the underlying indices prior to the final valuation date will not be reflected in the calculation of the amount payable, if any, at maturity. The calculation agent will calculate the payment at maturity by comparing only the closing level of the least performing underlying index on the final valuation date relative to its initial level. No other levels will be taken into account. As a result, you may lose some or all of your principal amount even if the level of the least performing underlying index has risen at certain times during the term of the Notes before falling to a level below its trigger level on the final valuation date.

¨ The Notes are not designed to be short-term trading instruments. The price at which you will be able to sell the Notes to us or our affiliates prior to maturity, if at all, may be at a substantial discount from the principal amount of the Notes, even in cases where the closing levels of the underlying indices have appreciated since the trade date. In addition, you will not receive the benefit of any contingent repayment of principal associated with the trigger levels if you sell the Notes before the maturity date. The potential returns described in this document assume that the Notes, which are not designed to be short-term trading instruments, are held to maturity.

¨ You must rely on your own evaluation of the merits of an investment linked to the underlying indices. In the ordinary course of their business, our affiliates, or UBS or its affiliates, may have expressed views on expected movements in each of the underlying indices or the securities included in the underlying indices, and may do so in the future. These views or reports may be communicated to our respective clients and clients of our respective affiliates. However, these views are subject to change from time to time. Moreover, other professionals who transact business in markets relating to any underlying index, may at any time have significantly different views from those of ours, and those of UBS and its affiliates. For these reasons, you are encouraged to derive information concerning the underlying indices from multiple sources, and you should not rely solely on views expressed by us, UBS, or our respective affiliates.

¨ Your return on the Notes is not linked to a basket consisting of the underlying indices. Rather, it will be contingent upon the performance of each individual underlying index. Unlike an instrument with a return linked to a basket of indices or other underlying assets, in which risk is mitigated and diversified among all of the components of the basket, you will be exposed equally to the risks related to each of the underlying indices. Poor performance by any one of the underlying indices over the term of the Notes may negatively affect your return and will not be offset or mitigated by a positive performance by the other underlying indices. To receive any contingent coupon payment or contingent repayment of principal at maturity from us, all underlying indices must close above their initial levels, coupon barriers and trigger levels, respectively, on each trading day during a Quarterly Observation Period and on the final valuation date. In addition, if not called at our election prior to maturity, you may incur a loss proportionate to the negative return of the least performing underlying index. Accordingly, your investment is subject to the market risk of each underlying index, which results in a higher risk of your not receiving contingent coupon payments and incurring a loss at maturity.

¨ Because the Notes are linked to the individual performance of more than one underlying index, it is more likely that one of the underlying indices will decrease in value below its coupon barrier and its trigger level, increasing the probability that you will not receive the contingent coupons and that you will lose some or all of your initial investment. The risk that you will not receive the contingent coupons and that you will lose some or all of your initial investment in the Notes is greater if you invest in the Notes as opposed to securities that are linked to the performance of fewer underlying indices if their terms are otherwise substantially similar. With a greater total number of underlying indices, it is more likely that one of the underlying indices will be below its coupon barrier or trigger level, and therefore it is more likely that you will not receive the contingent coupons and that at maturity you will receive an amount in cash which is worth less than your principal amount. In addition, the performances of a pair of underlying indices may be positively or negatively correlated, or may not be correlated at all. If a pair of underlying indices is not correlated to each other or is negatively correlated, there is a greater potential for one of those underlying indices to close below its coupon barrier or trigger level on any day during a Quarterly Observation Period or on the final valuation date, respectively, and therefore the risk of missing a contingent coupon payment and that a loss of principal will occur is even greater. Further, with three underlying indices, it is more likely that the performance of one pair of underlying indices will not be correlated or will be negatively correlated.

It is impossible to predict what the correlations between the underlying indices will be over the term of the Notes. The underlying indices represent different equity markets and these different equity markets may not perform similarly over the term of the Notes. Although the correlation of the underlying indices' performance may change over the term of the Notes, the contingent coupon rate is determined, in part, based on the underlying indices' performance calculated using our internal models at the time when the terms of the Notes are determined. As stated earlier, a higher contingent coupon rate is generally associated with lower correlation of the underlying indices, which reflects a greater potential for missed contingent coupons and for a loss on your investment at maturity. See “Correlation of the Underlying Indices” below.

Risks Relating to Liquidity and Secondary Market Issues

¨ Secondary trading in the Notes may be limited. The Notes will not be listed on a securities exchange. There may be little or no secondary market for the Notes. Even if there is a secondary market, it may not provide enough liquidity to allow you to trade or sell the Notes easily.

RBCCM intends to act as a market maker for the Notes, but is not required to do so. Because we do not expect that other market makers will participate significantly in the secondary market for the Notes, the price at which you may be able to trade the Notes is likely to depend on the price, if any, at which RBCCM is willing to buy the Notes. If at any time RBCCM does not act as a market maker, it is likely that there would be little or no secondary market for the Notes. We expect that transaction costs in any secondary market would be high. As a result, the difference between the bid and asked prices for the Notes in any secondary market could be substantial. If you sell the Notes before maturity, you may have to do so at a substantial discount from the issue price, and as a result, you may suffer substantial losses.

¨ The terms of the Notes at issuance and their market value prior to maturity will be influenced by many unpredictable factors. Many economic and market factors will influence the terms of the Notes at issuance and their value prior to maturity. These factors are similar in some ways to those that could affect the value of a combination of instruments that might be used to replicate the payments on the Notes, including a combination of a bond with one or more options or other derivative instruments. For the market value of the notes, we expect that, generally, the levels of the underlying indices on any day will affect the value of the Notes more than any other single factor. However, you should not expect the value of the Notes in the secondary market to vary in proportion to changes in the levels of the underlying indices. The value of the Notes will be affected by a number of other factors that may either offset or magnify each other, including:

- the level of the underlying indices;
- whether the levels of the underlying indices are below their respective coupon barriers or the trigger levels;
- the expected volatility of the underlying indices;
- the expected correlation of the underlying indices;
- the time to maturity of the Notes;
- the dividend rate on the securities composing the underlying indices;
- interest and yield rates in the market generally, as well as in the markets of the equity securities composing the underlying indices;
- economic, financial, political, regulatory or judicial events that affect the underlying indices or the equity securities composing the underlying indices or stock markets generally, and which may affect the levels of the underlying indices;
- the exchange rate and the volatility of the exchange rate between the U.S. dollar and euro, which is the currency in which the equity securities included in the SX5E are traded; and
- our creditworthiness, including actual or anticipated downgrades in our credit ratings.

Some or all of these factors will influence the terms of the Notes at issuance as well as the price you will receive if you choose to sell the Notes prior to maturity. The impact of any of the factors set forth above may enhance or offset some or all of any change resulting from another factor or factors. You may have to sell the Notes at a substantial discount from the principal amount if the levels of the underlying indices are at, below or not sufficiently above, their respective initial levels, coupon barriers or trigger levels.

Risks Relating to the Underlying Indices

¨ Changes that affect an underlying index will affect the market value of the Notes and the payments on the Notes. The policies of the applicable index sponsor concerning the calculation of each underlying index, additions, deletions or substitutions of the components of that underlying index and the manner in which changes affecting those components, such as stock dividends, reorganizations or mergers, may be reflected in the underlying index and, therefore, could affect the amounts payable on the Notes, and the market value of the Notes prior to maturity. The amounts payable on the Notes and their market value could also be affected if the index sponsor changes these policies, for example, by changing the manner in which it calculates the applicable underlying index, or if the index sponsor discontinues or suspends calculation or publication of that underlying index, in which case it may become difficult to determine the market value of the Notes.

¨ We have no affiliation with any index sponsor and will not be responsible for any actions taken by an index sponsor. No index sponsor is an affiliate of ours or will be involved in the offering of the Notes in any way. Consequently, we have no control of the actions of any index sponsor, including any actions of the type that might impact the value of the Notes. No index sponsor has any obligation of any sort with respect to the Notes. Thus, no index sponsor has any obligation to take your interests into consideration for any reason, including in taking any actions that might affect the value of the Notes. None of our proceeds from the issuance of the Notes will be delivered to any index sponsor.

¨ The historical performance of the underlying indices should not be taken as an indication of their future performance. The levels of the underlying indices will determine the amount to be paid on the Notes. The historical performance of each underlying index does not give an indication of its future performance. As a result, it is impossible to predict whether the level of the underlying indices will rise or fall during the term of the Notes. The level of each underlying index will be influenced by complex and interrelated political, economic, financial and other factors. The level of each underlying index may decrease such that you may not receive any return on your investment or any contingent coupon payments. There can be no assurance that the level of each underlying index will not decrease so that at maturity you will not lose some or all of your investment.

¨ An investment in the Notes is subject to risks associated with non-U.S. securities markets. The securities included in the SX5E have been issued by non-U.S. companies. An investment in securities linked to the value of non-U.S. equity securities involves particular risks. Non-U.S. securities markets may be more volatile than U.S. securities markets, and market developments may affect non-U.S. securities markets differently from the U.S. securities markets. Direct or indirect government intervention to stabilize these non-U.S. securities markets, as well as cross shareholdings among non-U.S. companies, may affect trading prices and volumes in those markets. Also, there is generally less publicly available information in the U.S. about non-U.S. companies than about those U.S. companies that are subject to the reporting requirements of the SEC, and non-U.S. companies are subject to accounting, disclosure, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.

Prices of securities in non-U.S. countries are subject to political, economic, financial and social factors that may be unique to the particular countries. These factors, which could negatively affect the non-U.S. securities markets, include the possibility of recent or future changes in the economic and fiscal policies of non-U.S. governments, the possible imposition of, or changes in, currency exchange laws or other non-U.S. laws or restrictions applicable to non-U.S. companies or investments in non-U.S. equity securities, the possibility of fluctuations in the rate of exchange between currencies, the possibility of outbreaks of hostility and political instability and the possibility of natural disaster or adverse public health developments in the relevant region. Moreover, the economies of certain foreign countries may differ favorably or unfavorably from the U.S. economy in important respects, such as growth of gross national product, rate of inflation, trade surpluses or deficits, capital reinvestment, resources and self-sufficiency.

¨ As a holder of the Notes, you will not have direct exposure to fluctuations in the U.S. dollar/euro exchange rate related to the SX5E. The value of the Notes will not be adjusted for exchange rate fluctuations between the U.S. dollar and the euro, even though any currency fluctuations could affect the performance of the SX5E. Therefore, if the euro appreciates or depreciates relative to the U.S. dollar over the term of the Notes, you will not receive any additional payment or incur any reduction in any payment on the Notes.

¨ An investment in the Notes linked to the RTY is subject to risks associated in investing in stocks with a small market capitalization. The RTY consists of stocks issued by companies with relatively small market capitalizations. These companies often have greater stock price volatility, lower trading volume and less liquidity than large-capitalization companies. As a result, the level of this underlying index may be more volatile than that of a market measure that does not track solely small-capitalization stocks. Stock prices of small-capitalization companies are also often more vulnerable than those of large-capitalization companies to adverse business and economic developments, and the stocks of small-capitalization companies may be thinly traded, and be less attractive to many investors if they do not pay dividends. In addition, small capitalization companies are often less well-established and less stable financially than large-capitalization companies and may depend on a small number of key personnel, making them more vulnerable to loss of those individuals. Small capitalization companies tend to have lower revenues, less diverse product lines, smaller shares of their target markets, fewer financial resources and fewer competitive strengths than large-capitalization companies. These companies may also be more susceptible to adverse developments related to their products or services.

Risks Relating to Hedging Activities and Conflicts of Interest

¨ We, UBS or our respective affiliates may have adverse economic interests to the holders of the Notes. RBCCM, UBS and our respective affiliates trade the securities represented by the underlying indices, and other financial instruments related to the underlying indices, on a regular basis, for their accounts and for other accounts under our or their management. UBS, RBCCM and these affiliates may also issue or underwrite or assist unaffiliated entities in the issuance or underwriting of other securities or financial instruments that relate to the underlying indices. To the extent that we, UBS or any of our respective affiliates serves as issuer, agent or underwriter for such securities or financial instruments, our or their interests with respect to such products may be adverse to those of the holders of the Notes. Any of these trading activities could potentially affect the performance of the underlying indices and, accordingly, could affect the value of the Notes, and the amounts, if any, payable on the Notes.

We, UBS or our respective affiliates may currently or from time to time engage in business with the issuers of the securities represented by the underlying indices, including extending loans to, or making equity investments in, or providing advisory services to them, including merger and acquisition advisory services. In the course of this business, we, UBS or our respective affiliates may acquire non-public information about these companies, and we will not disclose any such information to you. None of us, UBS or our respective affiliates

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makes any representation or warranty to any purchaser of a Note with respect to any matters whatsoever relating to our business with the issuer of any security included in the underlying indices or future price movements of any such security.
Additionally, we, UBS or our respective affiliates may serve as issuer, agent or underwriter for additional issuances of securities with returns linked or related to changes in the level of one or more of the underlying indices. By introducing competing products into the marketplace in this manner, we could adversely affect the value of the Notes.
We may hedge our obligations under the Notes through certain affiliates, who would expect to make a profit on such hedge. We or our affiliates may adjust these hedges by, among other things, purchasing or selling those assets at any time, including around the time of the final valuation date, which could have an impact on the return of the Notes. Because hedging our obligations entails risk and may be influenced by market forces beyond our or our affiliates' control, such hedging may result in a profit that is more or less than expected, or it may result in a loss.
We, UBS or our respective affiliates may currently or from time to time engage in trading activities related to the euro, which is the currency in which the securities represented by the SX5E are denominated. These trading activities could potentially affect the exchange rates with respect to the euro and could affect the level of the SX5E.
In the course of our currency trading activities, we, UBS or our respective affiliates may acquire material nonpublic information with respect to currency exchange rates, and we will not disclose any such information to you. In addition, we, UBS or our respective affiliates may produce and/or publish research reports, or otherwise express views, with respect to expected movements in currency exchange rates. We, UBS and our respective do not make any representation or warranty to any purchaser of the Notes with respect to any matters whatsoever relating to future currency exchange rate movements, and any prospective purchaser of the Notes should undertake an independent investigation of the applicable currencies as, in its judgment, is appropriate to make an informed decision with respect to an investment in the Notes.

- The calculation agent will have significant discretion with respect to the Notes, which may be exercised in a manner that is adverse to your interests. Our wholly-owned subsidiary, RBCCM, will act as the calculation agent. The calculation agent will determine, among other things, the closing levels of the underlying indices on each trading day; the final level for each underlying index; the underlying return for each underlying index; and the amounts, if any, that we will pay to you on the Notes. The calculation agent will also be responsible for determining whether a market disruption event has occurred. The calculation agent may exercise its discretion in a manner which reduces your return on the Notes. Since these determinations by the calculation agent may affect the payments on the Notes, the calculation agent may have a conflict of interest if it needs to make a determination of this kind.
- Market disruptions may adversely affect your return. The calculation agent may, in its sole discretion, determine that the markets have been affected in a manner that prevents it from properly determining the closing level of one or any of the underlying indices on the final valuation date or calculating the underlying return for each underlying index and the amount, if any, that we are required to pay you. These events may include disruptions or suspensions of trading in the markets as a whole. If the calculation agent, in its sole discretion, determines that any of these events prevents us or any of our affiliates from properly hedging our obligations under the Notes, it is possible that the maturity date will be postponed, and your return will be adversely affected. See "General Terms of the Notes — Market Disruption Events."
- Non-U.S. investors may be subject to certain additional risks. This document contains a general description of certain U.S. tax considerations relating to the Notes. In the event you are a non-U.S. investor, you should consult your tax advisors as to the consequences, under the tax laws of the country where you are resident for tax purposes, of acquiring, holding and disposing of the Notes and receiving the payments that might be due under the Notes.

For a discussion of the Canadian federal income tax consequences of investing in the Notes, please see the section entitled "Tax Consequences — Canadian Taxation" in the accompanying prospectus. If you are not a Non-resident Holder (as defined in the section titled "Tax Consequences—Canadian Taxation" in the accompanying prospectus) or if you acquire the Notes in the secondary market, you should consult your tax advisors as to the consequences of acquiring, holding and disposing of the Notes and receiving the payments that may be due under the Notes.

- Significant aspects of the income tax treatment of an investment in the Notes may be uncertain. The tax treatment of an investment in the Notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or the Canada Revenue Agency regarding the tax treatment of an investment in the Notes, and the Internal Revenue Service, the Canada Revenue Agency or a court may not agree with the tax treatment described in this document.

The Internal Revenue Service has issued a notice indicating that it and the Treasury Department are actively considering whether, among other issues, a holder should be required to accrue ordinary income on a current basis irrespective of any contingent coupons. The outcome of this process is uncertain and could apply on a retroactive basis.

Please read carefully the sections entitled “Supplemental Discussion of U.S. Federal Income Tax Consequences” in this document, the section “Tax Consequences” in the accompanying prospectus and the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement. You should consult your tax advisor about your own tax situation.

Use of Proceeds and Hedging

The net proceeds we receive from the sale of the Notes will be used for general corporate purposes and, in part, by us or by one or more of our affiliates in connection with hedging our obligations under the Notes. The original issue price of the Notes includes the underwriting commission (as shown on the cover page of this document) paid with respect to the Notes and the estimated cost of hedging our obligations under the Notes.

In anticipation of the sale of the Notes, we expect to enter into hedging transactions with one or more of our affiliates, involving the underlying indices or the securities composing the underlying indices, and/or related listed and/or over-the-counter derivative instruments prior to or on the trade date. From time to time, including around the time of the maturity date, we and our respective affiliates may enter into additional hedging transactions or unwind those that we or they have entered into. In this regard, we and our respective affiliates may:

- acquire or dispose of investments relating to the underlying indices;
- acquire or dispose of long or short positions in listed or over-the-counter derivative instruments related to the underlying indices; or
- any combination of the above two.

We and our affiliates may acquire a long or short position in securities similar to the Notes from time to time and may, in our or their sole discretion, hold or resell those similar securities.

We and our affiliates may close out our or their hedges at any time during the term of the Notes. That step may, for example, involve sales or purchases of over-the-counter derivative instruments linked to the underlying indices.

Hypothetical Examples

Hypothetical Terms Only – See Cover Page for More Information.

The examples below illustrate the hypothetical payments on a coupon payment date, upon an issuer call or at maturity under different hypothetical scenarios for a $10.00 Note on an offering of the Notes, with the assumptions set forth below.* We cannot predict the closing level of any underlying index on any trading day during the term of the Notes, including on any trading day during any Quarterly Observation Period or on the Final Valuation Date. You should not take these examples as an indication or assurance of the expected performance of the Notes. Numbers in the examples below have been rounded for ease of analysis.

Principal Amount:	$10.00
Term:	Approximately 2.5 years (unless earlier called)
Hypothetical Initial Level:	1,000 for each underlying index
Hypothetical Contingent Coupon Rate:	10.75% per annum (or 2.6875% per quarter) (the low end of the Contingent Coupon range of 10.75% to 11.55% per annum, to be determined on the pricing date)
Quarterly Observation Periods/Quarterly Observation End Dates:	Quarterly
Hypothetical Trigger Level:	650 for each underlying index, which is 65% of its hypothetical initial level
Hypothetical Coupon Barrier:	650 for each underlying index, which is 65% of its hypothetical initial level

* Terms used for purposes of these hypothetical examples may not represent the actual contingent coupon rate, initial levels, coupon barriers or trigger levels. The actual contingent coupon rate will be determined on the trade date and provided in the pricing supplement. The hypothetical initial levels above have been chosen for illustrative purposes only and do not represent a likely actual initial level for any underlying index. The actual initial level and resulting trigger level and coupon barrier of each underlying index will be based on its closing level on the trade date.

The examples below are hypothetical. These examples are intended to illustrate (a) the effect of an issuer call, (b) how the payment of a Contingent Coupon with respect to any Quarterly Observation Period will depend on whether the closing level of any underlying index is less than its Coupon Barrier on any trading day during that Quarterly Observation Period, (c) how the value of the payment at maturity on the Notes will depend on whether the Final Index Level of any underlying index is less than its Trigger Level and (d) how the total return on the Notes may be less than the total return on a direct investment in any or all Indices in certain scenarios. The "total return" as used in this pricing supplement is the number, expressed as a percentage, that results from comparing the total payments per $10.00 in principal amount of the Notes over their term to the $10.00 initial issue price.

Example 1 — We Elect to Call the Notes on the First Quarterly Observation End Date

Quarterly Observation Period	Lowest Closing Level During Applicable Quarterly Observation Period	Payment (per Note)	
First Quarterly Observation Period	SPX Index: 1,100.00 SX5E Index: 1,200.00 RTY Index: 1,300.000	We elect to call the Notes. Closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we pay contingent coupon of $0.26875 on Call Settlement Date.	
Total Payments (per $10.00 Note):		Payment on Call Settlement Date:	$10.26875 ($10.00 + $0.26875)
		Total:	$10.26875
		Total Return:	2.6875%

On the first Quarterly Observation End Date, we elect to call the Notes. Because the closing level of each underlying index is above its applicable coupon barrier on each trading day during the first Quarterly Observation Period, we will pay you on the Call Settlement Date $10.26875 per $10.00 principal amount of the Notes, which is equal to your principal amount plus the contingent coupon due on the coupon payment date that is also the Call Settlement Date. No further amounts will be owed to you under the Notes.

Example 2 — Notes Are NOT Called and the Final Level of Each Underlying Index Is Above Its Trigger Level

Quarterly Observation Period	Lowest Closing Level During Applicable Quarterly Observation Period	Final Level	Payment (per Note)
First Quarterly Observation Period	SPX Index: 1,150.00 SX5E Index: 1,100.00 RTY Index: 850.000	N/A	Notes NOT called at our election. Closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we pay contingent coupon of $0.26875 on the first coupon payment date.
Second Quarterly Observation Period	SPX Index: 1,200.00 SX5E Index: 1,150.00 RTY Index: 800.000	N/A	Notes NOT called at our election. Closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we pay contingent coupon of $0.26875 on the second coupon payment date.
Third Quarterly Observation Period	SPX Index: 1,150.00 SX5E Index: 1,100.00 RTY Index: 600.000	N/A	Notes NOT called at our election. Closing level of the RTY Index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay contingent coupon on third coupon payment date.
Fourth to Ninth Quarterly Observation Periods	Various (at least one underlying index below coupon barrier)	N/A	Notes NOT called at our election. Closing level of at least one underlying index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay contingent coupon on any of the fourth to ninth coupon payment dates.
Tenth Quarterly	SPX Index: 1,000.00	SPX Index:	Notes NOT callable. Final level of each underlying index above its trigger level and

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Observation Period (the final Quarterly Observation Period)	SX5E Index: 1,050.00 RTY Index: 800.000	1,150.00 SX5E Index: 1,100.00 RTY Index: 850.000	closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we repay principal plus we pay contingent coupon of $0.26875 on the maturity date.

Total Payments (per $10.00 Note):	Payment at Maturity:	$10.26875 ($10.00 + $0.26875)
	Prior Contingent Coupons:	$0.5375 ($0.26875 × 2)
	Total:	$10.80625
	Total Return:	8.0625%

In this example, we do not elect to call the Notes and the Notes remain outstanding until maturity. Because the final level of each underlying index is greater than or equal to its trigger level and the closing level of each underlying index is greater than or equal to its coupon barrier on each trading day during the final Quarterly Observation Period, we will pay you on the maturity date $10.26875 per $10.00 in principal amount of the Notes, which is equal to your principal amount plus the contingent coupon due on the coupon payment date that is also the maturity date.

In addition, because the closing level of each underlying index was greater than or equal to its coupon barrier on each trading day during the first and second Quarterly Observation Periods, we will pay the contingent coupon of $0.26875 on the first and second coupon payment dates. However, because the closing level of at least one underlying index was less than its coupon barrier on at least one day during each of the third through ninth Quarterly Observation Periods, we will not pay any contingent coupon on the coupon payment dates following the applicable Quarterly Observation Periods. Accordingly, we will have paid a total of $10.80625 per $10.00 in principal amount of the Notes for a 8.0625% total return over the approximately 2.5 year term of the Notes.

Example 3 — Notes Are NOT Called and the Final Level of Each Underlying Index Is Above Its Trigger Level

Quarterly Observation Period	Lowest Closing Level During Applicable Quarterly Observation Period	Final Level	Payment (per Note)
First Quarterly Observation Period	SPX Index: 950.00 SX5E Index: 800.00 RTY Index: 1,200.000	N/A	Notes NOT called at our election. Closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we pay contingent coupon of $0.26875 on the first coupon payment date.
Second Quarterly Observation Period	SPX Index: 900.00 SX5E Index: 750.00 RTY Index: 1,150.000	N/A	Notes NOT called at our election. Closing level of each underlying index above its coupon barrier on each trading day during Quarterly Observation Period; we pay contingent coupon of $0.26875 on the second coupon payment date.
Third Quarterly Observation Period	SPX Index: 1,150.00 SX5E Index: 900.00 RTY Index: 600.000	N/A	Notes NOT called at our election. Closing level of the RTY Index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay contingent coupon on the third coupon payment date.
Fourth to Ninth Quarterly Observation Periods	Various (at least one underlying index below coupon barrier)	N/A	Notes NOT called at our election. Closing level of at least one underlying index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay contingent coupon on any of the fourth to ninth coupon payment dates.
Tenth Quarterly Observation Period (the final Quarterly Observation Period)	SPX Index: 1,050.00 SX5E Index: 800.00 RTY Index: 500.000	SPX Index: 1,100.00 SX5E Index:	Notes NOT callable. Final level of each underlying index above its trigger level but closing level of the RTY Index below its coupon barrier on at least one day during Quarterly Observation Period; we repay principal but do

	900.00 RTY Index: 800.000	not pay contingent coupon.	
Total Payments (per $10.00 Note):	Payment at Maturity:	$10.00	
	Prior Contingent Coupons:	$0.5375 ($0.26875 × 2)	
	Total:	$10.5375	
	Total Return:	5.375%	

In this example, we do not elect to call the Notes and the Notes remain outstanding until maturity. Because the final level of each underlying index is greater than or equal to its trigger level but the closing level of at least one underlying index is less than its coupon barrier on at least one day during the final Quarterly Observation Period, we will pay you on the maturity date $10.00 per $10.00 in principal amount of the Notes, which is equal to your principal amount, but we will not pay any Contingent Coupon on the maturity date.

In addition, because the closing level of each underlying index was greater than or equal to its coupon barrier on each trading day during the first and second Quarterly Observation Periods, we will pay the Contingent Coupon of $0.26875 on the first and second coupon payment dates. However, because the closing level of at least one underlying index was less than its coupon barrier on at least one day during each of the third through ninth Quarterly Observation Periods, we will not pay any Contingent Coupon on the coupon payment dates following the applicable Quarterly Observation Periods. Accordingly, we will have paid a total of $10.5375 per $10.00 in principal amount of the Notes for a 5.375% total return over the approximately 2.5 year term of the Notes.

Example 4 — Notes Are NOT Called and the Final Level of Any Underlying Index Is Below Its Trigger Level

Quarterly Observation Period	Lowest Closing Level During Applicable Quarterly Observation Period	Final Level	Payment (per Note)
First Quarterly Observation Period	SPX Index: 550.00 SX5E Index: 600.00 RTY Index: 500.000	N/A	Notes NOT called at our election. Closing level of each underlying index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay Contingent Coupon on the first coupon payment date.
Second Quarterly Observation Period	SPX Index: 750.00 SX5E Index: 600.00 RTY Index: 800.000	N/A	Notes NOT called at our election. Closing level of the SX5E Index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay Contingent Coupon on the second coupon payment date.
Third Quarterly Observation Period	SPX Index: 950.00 SX5E Index: 600.00 RTY Index: 850.000	N/A	Notes NOT called at our election. Closing level of the SX5E Index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay Contingent Coupon on the third coupon payment date.
Fourth to Ninth Quarterly Observation Periods	Various (at least one underlying index below coupon barrier)	N/A	Notes NOT called at our election. Closing level of at least one underlying index below its coupon barrier on at least one day during Quarterly Observation Period; we DO NOT pay Contingent Coupon on any of the fourth to ninth coupon payment dates.
Tenth Quarterly Observation Period (the final Quarterly Observation Period)	SPX Index: 450.00 SX5E Index: 750.00 RTY Index: 700.000	SPX Index: 450.00 SX5E Index: 800.00 RTY Index: 750.000	Notes NOT callable. Closing level of the SPX Index below its trigger level; we DO NOT pay Contingent Coupon on the maturity date, and we will repay less than the principal amount resulting in a loss proportionate to the decline of the Least Performing Index.

Total Payments (per $10.00 Note):	Payment at Maturity:	$4.50
	Prior Contingent Coupons:	$0.00
	Total:	$4.50
	Total Return:	-55.00%

In this example, we do not elect to call the Notes and the Notes remain outstanding until maturity. Because the final level of at least one underlying index is less than its trigger level on the Final Valuation Date, at maturity, we will pay you a total of $4.50 per $10.00 in principal amount of the Notes, for a -55.00% total return on the Notes, calculated as follows:

$10.00 × (1 + underlying return of the least performing underlying index)

In this example, the SPX is the least performing underlying index, with an underlying return of -55%.

$10.00 × (1 + -55.00%) = $4.50

In addition, because the closing level of at least one underlying index is less than its coupon barrier on at least one day during each Quarterly Observation Period, we will not pay any Contingent Coupons over the term of the Notes. Accordingly, we will have paid a total of $4.50 per $10.00 in principal amount of the notes, for a -55.00% total return over the approximately 2.5 year term of the Notes.

The Notes differ from ordinary debt securities in that, among other features, we are not necessarily obligated to repay the full amount of your initial investment. If we do not elect to call the Notes, you may lose some or all of your initial investment. Specifically, if the Notes are not called and the final level of the least performing underlying index is less than its trigger level on the final valuation date, you will lose 1% (or a fraction thereof) of your principal amount for each 1% (or a fraction thereof) that its underlying return is less than zero. You will be exposed to the market risk of each underlying index on each trading day of the Quarterly Observation Periods and on the final valuation date and any decline in the level of one underlying index may negatively affect your return and will not be offset or mitigated by a lesser decline or any potential increase in the level of the other underlying indices.

Any payment on the Notes, including payments in respect of an automatic call, contingent coupon or any repayment of principal provided at maturity, is dependent on our ability to satisfy our obligations when they come due. If we are unable to meet our obligations, you may not receive any amounts due to you under the Notes.

What Are the Tax Consequences of the Notes?

U.S. Federal Income Tax Consequences

The following is a general description of the material U.S. tax considerations relating to the Notes. It does not purport to be a complete analysis of all tax considerations relating to the Notes. Prospective purchasers of the Notes should consult their tax advisors as to the consequences under the tax laws of the country of which they are a resident for tax purposes and the tax laws of Canada and the U.S. of acquiring, holding and disposing of the Notes and receiving payments under the Notes. This summary is based upon the law as in effect on the date of this document and is subject to any change in law that may take effect after such date.

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement. It applies only to those holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. It does not address the tax consequences applicable to any holders subject to special rules including accrual method taxpayers subject to special tax accounting rules under Section 451(b) of the Internal Revenue Code. This discussion applies only to U.S. holders and non-U.S. holders that will purchase the Notes upon original issuance and will hold the Notes as capital assets for U.S. federal income tax purposes. In addition, the discussion below assumes that an investor in the Notes will be subject to a significant risk that it will lose a significant amount of its investment in the Notes.

You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the Notes in your particular circumstances, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

NO STATUTORY, JUDICIAL OR ADMINISTRATIVE AUTHORITY DIRECTLY DISCUSSES HOW THE NOTES SHOULD BE TREATED FOR U.S. FEDERAL INCOME TAX PURPOSES. AS A RESULT, THE U.S. FEDERAL INCOME TAX CONSEQUENCES OF AN INVESTMENT IN THE NOTES ARE UNCERTAIN. BECAUSE OF THE UNCERTAINTY, YOU SHOULD CONSULT YOUR TAX ADVISOR IN DETERMINING THE U.S. FEDERAL INCOME TAX AND OTHER TAX CONSEQUENCES OF YOUR INVESTMENT IN THE NOTES, INCLUDING THE APPLICATION OF STATE, LOCAL OR OTHER TAX LAWS AND THE POSSIBLE EFFECTS OF CHANGES IN FEDERAL OR OTHER TAX LAWS.

We will not attempt to ascertain whether the issuer of any of the component stocks included in any underlying index would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Internal Revenue Code or a “U.S. real property holding corporation” within the meaning of Section 897 of the Internal Revenue Code. If the issuer of one or more of such stocks were so treated, certain adverse U.S. federal income tax consequences could possibly apply. You should refer to any available information filed with the SEC and other authorities by the issuers of the component stock included in any underlying index and consult your tax advisor regarding the possible consequences to you in this regard, if any.

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat a Note with terms described in this document as a callable pre-paid cash-settled contingent income-bearing derivative contract linked to the underlying indices for U.S. federal income tax purposes, and the terms of the Notes require a holder and us (in the absence of a change in law or an administrative or judicial ruling to the contrary) to treat the Notes for all tax purposes in accordance with such characterization. If the Notes are so treated, a U.S. holder should generally recognize capital gain or loss upon the sale or maturity of the Notes in an amount equal to the difference between the amount a holder receives at such time and the holder’s tax basis in the Notes. Capital gain recognized by an individual U.S. holder is generally taxed at preferential rates where the property is held for more than one year and is generally taxed at ordinary income rates where the property is held for one year or less. The deductibility of capital losses is subject to limitations. In addition, we intend to treat the contingent coupons as U.S. source income for U.S. federal income tax purposes. The following discussion assumes that the treatment described in this paragraph is proper and will be respected.

Although the U.S. federal income tax treatment of the contingent coupons is uncertain, we intend to take the position, and the following discussion assumes, that such contingent coupons (including any coupon paid on or with respect to the call or maturity date) constitute taxable ordinary income to a U.S. holder at the time received or accrued in accordance with the holder’s regular method of accounting. If the Notes are treated as described above, a U.S. holder should generally recognize capital gain or loss upon the call, sale or maturity of the Notes in an amount equal to the difference between the amount a holder receives at such time (other than amounts properly attributable to any contingent coupon, which would be taxed, as described above, as ordinary income) and the holder’s tax basis in the Notes. In general, a U.S. holder’s tax basis in the Notes will be equal to the price the holder paid for the Notes. Capital gain recognized by an individual U.S. holder is generally taxed at preferential rates where the property is held for more than one year and is generally taxed at ordinary income rates where the property is held for one year or less. The ordinary income treatment of the contingent quarterly coupons, in conjunction with the capital loss treatment of any loss recognized upon the sale, exchange or maturity of the Notes, could result in adverse tax consequences to a holder because the deductibility of capital losses is subject to limitations.

Alternative Treatments. Alternative tax treatments of the Notes are also possible and the Internal Revenue Service might assert that a treatment other than that described above is more appropriate. For example, it would also be possible to treat the Notes, and the Internal Revenue Service might assert that the Notes should be treated, as a single debt instrument.

Because the Notes have a term that exceeds one year, such a debt instrument would be subject to the special tax rules governing contingent payment debt instruments. If the Notes are so treated, a holder would generally be required to accrue interest income over the term of the Notes based upon the yield at which we would issue a non-contingent fixed-rate debt instrument with other terms and conditions similar to the Notes. In addition, any gain a holder might recognize upon the call, sale or maturity of the Notes would be ordinary income and any loss recognized by a holder at such time would generally be ordinary loss to the extent of interest that same holder included in income in the current or previous taxable years in respect of the Notes, and thereafter, would be capital loss.

Because of the absence of authority regarding the appropriate tax characterization of the Notes, it is also possible that the Internal Revenue Service could seek to characterize the Notes in a manner that results in other tax consequences that are different from those described above. For example, the Internal Revenue Service could possibly assert that any gain or loss that a holder may recognize upon the call, sale or maturity of the Notes should be treated as ordinary gain or loss.

The Internal Revenue Service has released a notice that may affect the taxation of holders of the Notes. According to the notice, the Internal Revenue Service and the U.S. Treasury Department are actively considering whether the holder of an instrument similar to the Notes should be required to accrue ordinary income on a current basis irrespective of any contingent quarterly coupons. It is not possible to determine what guidance they will ultimately issue, if any. It is possible, however, that under such guidance, holders of the Notes will ultimately be required to accrue income currently irrespective of any contingent coupons and this could be applied on a retroactive basis.

The Internal Revenue Service and the U.S. Treasury Department are also considering other relevant issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital and whether the special “constructive ownership rules” of Section 1260 of the Internal Revenue Code, which very generally can operate to recharacterize certain long-term capital gains as ordinary income and impose an interest charge, might be applied to such instruments. Holders are urged to consult their tax advisors concerning the significance, and the potential impact, of the above considerations. We intend to treat the Notes for U.S. federal income tax purposes in accordance with the treatment described in this document unless and until such time as the U.S. Treasury Department and Internal Revenue Service determine that some other treatment is more appropriate.

Backup Withholding and Information Reporting. Payments made with respect to the Notes and proceeds from the sale of the Notes may be subject to a backup withholding tax unless, in general, the holder complies with certain procedures or is an exempt recipient. Any amounts so withheld generally will be refunded by the Internal Revenue Service or allowed as a credit against the holder's U.S. federal income tax liability, provided the holder makes a timely filing of an appropriate tax return or refund claim to the Internal Revenue Service.

Reports will be made to the Internal Revenue Service and to holders that are not exempted from the reporting requirements.

Individual holders that own “specified foreign financial assets” may be required to include certain information with respect to such assets with their U.S. federal income tax return. You are urged to consult your own tax advisor regarding such requirements with respect to the Notes.

Non-U.S. Holders. The following discussion applies to non-U.S. holders of the Notes. A non-U.S. holder is a beneficial owner of a Note that, for U.S. federal income tax purposes, is a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

While the U.S. federal income tax treatment of the Notes (including proper characterization of the contingent quarterly coupons for U.S. federal income tax purposes) is uncertain, U.S. federal income tax at a 30% rate (or at a lower rate under an applicable income tax treaty) will be withheld in respect of the contingent quarterly coupons paid to a non-U.S. holder unless such payments are effectively connected with the conduct by the non-U.S. holder of a trade or business in the U.S. (in which case, to avoid withholding, the non-U.S. holder will be required to provide a Form W-8ECI). We will not pay any additional amounts in respect of such withholding. To claim benefits under an income tax treaty, a non-U.S. holder must obtain a taxpayer identification number and certify as to its eligibility under the appropriate treaty’s limitations on benefits article, if applicable (which certification may generally be made on a Form W-8BEN or Form W-8BEN-E, or a substitute or successor form). In addition, special rules may apply to claims for treaty benefits made by corporate non-U.S. holders. A non-U.S. holder that is eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the Internal Revenue Service. The availability of a lower rate of withholding or an exemption from withholding under an applicable income tax treaty will depend on the proper characterization of the contingent quarterly coupons under U.S. federal income tax laws and whether such treaty rate or exemption applies to such contingent coupon payments. No assurance can be provided on the proper characterization of the contingent quarterly coupons for U.S. federal income tax purposes and, accordingly, no assurance can be provided on the availability of benefits under any income tax treaty. Non-U.S. holders must consult their tax advisors in this regard.

Except as discussed below, a non-U.S. holder will generally not be subject to U.S. federal income or withholding tax on any gain (not including for the avoidance of doubt any amounts properly attributable to any contingent quarterly coupon which would be subject to the rules discussed in the previous paragraph) upon the call, sale or maturity of the Notes, provided that (i) the holder complies with any applicable certification requirements (which certification may generally be made on a Form W-8BEN or Form W-8BEN-E, or a substitute or successor form), (ii) the payment is not effectively connected with the conduct by the holder of a U.S. trade or business, and (iii) if the holder is a non-resident alien individual, such holder is not present in the U.S. for 183 days or more during the taxable year of the call, sale or maturity of the Notes. In the case of (ii) above, the holder generally would be subject to U.S. federal income tax with respect to any income or gain in the same manner as if the holder were a U.S. holder and, in the case of a holder that is a corporation, the holder may also be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable U.S. income tax treaty) of a portion of its earnings and profits for the taxable year that are effectively connected with its conduct of a trade or business in the U.S., subject to certain adjustments. Payments made to a non-U.S. holder may be subject to information reporting and to backup withholding unless the holder complies with applicable certification and identification requirements as to its foreign status.

As discussed above, alternative characterizations of the Notes for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to the Notes to become subject to withholding tax in addition to the withholding tax described above, we will withhold tax at the applicable statutory rate. The Internal Revenue Service has also indicated that it is considering whether income in respect of instruments such as the Notes should be subject to withholding tax. Prospective investors should consult their own tax advisors in this regard.

Under Section 871(m) of the Code, a “dividend equivalent” payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder.

Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments ("ELIs") that are "specified ELIs" may be treated as dividend equivalents if such specified ELIs reference an interest in an "underlying security," which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the Internal Revenue Service has issued guidance that states that the U.S. Treasury Department and the Internal Revenue Service intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2021. Based on our determination that the Notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes. However, it is possible that the Notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the underlying indices or the Notes (for example, upon an underlying index rebalancing), and following such occurrence the Notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the underlying indices or the Notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

Foreign Account Tax Compliance Act. The Foreign Account Tax Compliance Act ("FATCA") imposes a 30% U.S. withholding tax on certain U.S. source payments of interest (and original issue discount), dividends, or other fixed or determinable annual or periodical gain, profits, and income, and on the gross proceeds from a disposition of property of a type which can produce U.S. source interest or dividends ("Withholdable Payments"), if paid to a foreign financial institution (including amounts paid to a foreign financial institution on behalf of a holder), unless such institution enters into an agreement with the U.S. Treasury Department to collect and provide to the U.S. Treasury Department certain information regarding U.S. financial account holders, including certain account holders that are foreign entities with U.S. owners, with such institution, or otherwise complies with the legislation. In addition, the Notes may constitute a "financial account" for these purposes and, thus, be subject to information reporting requirements pursuant to FATCA. FATCA also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes.

The U.S. Treasury Department and the Internal Revenue Service have announced that withholding on payments of gross proceeds from a sale or redemption of the Notes will only apply to payments made after December 31, 2018. If we determine withholding is appropriate with respect to the Notes, we will withhold tax at the applicable statutory rate, and we will not pay any additional amounts in respect of such withholding. Therefore, if such withholding applies, any payments on the Notes will be significantly less than what you would have otherwise received. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the Notes.

Canadian Federal Income Tax Consequences

For a discussion of the material Canadian federal income tax consequences relating to an investment in the Notes, please see the section entitled "Tax Consequences – Canadian Taxation" in the accompanying prospectus, which you should carefully review prior to investing in the Notes.

Information About the Underlying Indices

We have derived all information contained in this document regarding each of the underlying indices, including, without limitation, its make up, method of calculation, and changes in its components, from publicly available sources. The information reflects the policies of, and is subject to change by, the applicable index sponsor. Each index sponsor, which owns the copyright and all other rights to the applicable underlying index, has no obligation to continue to publish, and may discontinue publication of, that underlying index. The consequences of an index sponsor discontinuing publication of the applicable underlying index are discussed below under the heading "General Terms of the Notes — Discontinuation of an Underlying Index; Alteration of Method of Calculation." None of us, UBS or RBCCM accepts any responsibility for the calculation, maintenance or publication of any underlying index or any successor index.

The S&P 500® Index

The SPX is intended to provide an indication of the pattern of common stock price movement in the large capitalization segment of the U.S. equity market. The calculation of the level of the SPX is based on the relative value of the aggregate market value of the common stocks of 500 companies as of a particular time compared to the aggregate average market value of the common stocks of 500 similar companies during the base period of the years 1941 through 1943.

The index sponsor calculates the SPX by reference to the prices of the constituent stocks of the SPX without taking account of the value of dividends paid on those stocks. As a result, the return on the Notes will not reflect the return you would realize if you actually owned the SPX constituent stocks and received the dividends paid on those stocks.

Computation of the SPX

While the index sponsor currently employs the following methodology to calculate the SPX, no assurance can be given that the index sponsor will not modify or change this methodology in a manner that may affect the Payment at Maturity.

Historically, the market value of any component stock of the SPX was calculated as the product of the market price per share and the number of then outstanding shares of such component stock. In March 2005, the index sponsor began shifting the SPX halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the SPX to full float adjustment on September 16, 2005. The index sponsor's criteria for selecting stocks for the SPX did not change with the shift to float adjustment. However, the adjustment affects each company's weight in the SPX.

Under float adjustment, the share counts used in calculating the SPX reflect only those shares that are available to investors, not all of a company's outstanding shares. Float adjustment excludes shares that are closely held by control groups, other publicly traded companies or government agencies.

In September 2012, all shareholdings representing more than 5% of a stock's outstanding shares, other than holdings by "block owners," were removed from the float for purposes of calculating the SPX. Generally, these "control holders" will include officers and directors, private equity, venture capital and special equity firms, other publicly traded companies that hold shares for control, strategic partners, holders of restricted shares, ESOPs, employee and family trusts, foundations associated with the company, holders of unlisted share classes of stock, government entities at all levels (other than government retirement/pension funds) and any individual person who controls a 5% or greater stake in a company as reported in regulatory filings. However, holdings by block owners, such as depositary banks, pension funds, mutual funds and ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

Treasury stock, stock options, restricted shares, equity participation units, warrants, preferred stock, convertible stock, and rights are not part of the float. Shares held in a trust to allow investors in countries outside the country of domicile, such as depositary shares and Canadian exchangeable shares are normally part of the float unless those shares form a control block.

For each stock, an investable weight factor ("IWF") is calculated by dividing the available float shares by the total shares outstanding. Available float shares are defined as the total shares outstanding less shares held by control holders. This calculation is subject to a 5% minimum threshold for control blocks. For example, if a company's officers and directors hold 3% of the company's shares, and no other control group holds 5% of the company's shares, the index sponsor would assign that company an IWF of 1.00, as no control group meets the 5% threshold. However, if a company's officers and directors hold 3% of the company's shares and another control group holds 20% of the company's shares, the index sponsor would assign an IWF of 0.77, reflecting the fact that 23% of the company's outstanding shares are considered to be held for control. As of July 31, 2017, companies with multiple share class lines are no longer eligible for inclusion in the SPX. Constituents of the SPX prior to July 31, 2017 with multiple share class lines will be grandfathered in and continue to be included in the SPX. If a constituent company of the SPX reorganizes into a multiple share class line structure, that company will remain in the SPX at the discretion of the S&P Index Committee in order to minimize turnover

The SPX is calculated using a base-weighted aggregate methodology. The level of the SPX reflects the total market value of all 500 component stocks relative to the base period of the years 1941 through 1943. An indexed number is used to represent the results of this calculation in order to make the level easier to work with and track over time. The actual total market value of the component stocks during the base period of the years 1941 through 1943 has been set to an indexed level of 10. This is often indicated by the notation 1941- 43 = 10. In practice, the daily calculation of the SPX is computed by dividing the total market value of the component stocks by the "index divisor." By itself, the index divisor is an arbitrary number. However, in the context of the calculation of the SPX, it serves as a link to the original base period level of the SPX. The index divisor keeps the SPX comparable over time and is the manipulation point for all adjustments to the SPX, which is index maintenance.

Index Maintenance

Index maintenance includes monitoring and completing the adjustments for company additions and deletions, share changes, stock splits, stock dividends, and stock price adjustments due to company restructuring or spinoffs. Some corporate actions, such as stock splits and stock dividends, require changes in the common shares outstanding and the stock prices of the companies in the SPX, and do not require index divisor adjustments.

To prevent the level of the SPX from changing due to corporate actions, corporate actions which affect the total market value of the SPX require an index divisor adjustment. By adjusting the index divisor for the change in market value, the level of the SPX remains constant and does not reflect the corporate actions of individual companies in the SPX. Index divisor adjustments are made after the close of trading and after the calculation of the index closing level.

Changes in a company's shares outstanding and IWF due to its acquisition of another public company are made as soon as reasonably possible. At S&P's discretion, de minimis merger and acquisition share changes are accumulated and implemented with the quarterly share rebalancing.

All other changes of less than 5% are accumulated and made quarterly on the third Friday of March, June, September, and December.

Changes in a company's total shares outstanding of 5% or more due to public offerings are made as soon as reasonably possible. Other changes of 5% or more (for example, due to tender offers, Dutch auctions, voluntary exchange offers, company stock repurchases, private placements, acquisitions of private companies or non-index companies that do not trade on a major exchange, redemptions, exercise of options, warrants, conversion of preferred stock, notes, debt, equity participations, at-the-market stock offerings or other recapitalizations) are made weekly, and are generally announced on Fridays for implementation after the close of trading the following Friday (one week later). If a 5% or more share change causes a company's IWF to change by five percentage points or more, the IWF is updated at the same time as the share change. IWF changes resulting from partial tender offers are considered on a case-by-case basis.

License Agreement

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The Notes are not sponsored, endorsed, sold or promoted by S&P Dow Jones Indices LLC, Dow Jones, S&P or any of their respective affiliates (collectively, "S&P Dow Jones Indices"). S&P Dow Jones Indices make no representation or warranty, express or implied, to the holders of the Notes or any member of the public regarding the advisability of investing in securities generally or in the Notes particularly or the ability of the SPX to track general market performance. S&P Dow Jones Indices' only relationship to us with respect to the SPX is the licensing of the SPX and certain trademarks, service marks and/or trade names of S&P Dow Jones Indices and/or its third party licensors. The SPX is determined, composed and calculated by S&P Dow Jones Indices without regard to us or the Notes. S&P Dow Jones Indices have no obligation to take our needs or the needs of holders of the Notes into consideration in determining, composing or calculating the SPX. S&P Dow Jones Indices are not responsible for and have not participated in the determination of the prices, and amount of the Notes or the timing of the issuance or sale of the Notes or in the determination or calculation of the equation by which the Notes are to be converted into cash. S&P Dow Jones Indices have no obligation or liability in connection with the administration, marketing or trading of the Notes. There is no assurance that investment products based on the SPX will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC and its subsidiaries are not investment advisors. Inclusion of a security or futures contract within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security or futures contract, nor is it considered to be investment advice. Notwithstanding the foregoing, CME Group Inc. and its affiliates may independently issue and/or sponsor financial products unrelated to the Notes currently being issued by us, but which may be similar to and competitive with the Notes. In addition, CME Group Inc. and its affiliates may trade financial products which are linked to the performance of the SPX. It is possible that this trading activity will affect the value of the Notes.

S&P DOW JONES INDICES DO NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE SPX OR ANY DATA RELATED THERETO OR ANY COMMUNICATION, INCLUDING BUT NOT LIMITED TO, ORAL OR WRITTEN COMMUNICATION (INCLUDING ELECTRONIC COMMUNICATIONS) WITH RESPECT THERETO. S&P DOW JONES INDICES SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS, OR DELAYS THEREIN. S&P DOW JONES INDICES MAKE NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE OR AS TO

RESULTS TO BE OBTAINED BY US, HOLDERS OF THE NOTES, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE SPX OR WITH RESPECT TO ANY DATA RELATED THERETO. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL S&P DOW JONES INDICES BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE. THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS BETWEEN S&P DOW JONES INDICES AND US, OTHER THAN THE LICENSORS OF S&P DOW JONES INDICES.

<u>Historical Information</u>

The graph below illustrates the performance of the SPX from December 17, 2008 to December 17, 2018, assuming an initial level of 2,545.94, which was its closing level on December 17, 2018. The red line represents a hypothetical coupon barrier and trigger level of 1,654.86, which is equal to 65% of the closing level on December 17, 2018, rounded to two decimal places. The actual initial level, coupon barrier and trigger level of the SPX will be determined on the trade date.

HISTORIC PERFORMANCE IS NOT AN INDICATION OF FUTURE PERFORMANCE

Source: Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets.

The EURO STOXX 50® Index

The SX5E was created by STOXX Limited, a subsidiary of Deutsche Börse AG. Publication of the SX5E began in February 1998, based on an initial SX5E level of 1,000 at December 31, 1991.

Composition and Maintenance

The SX5E is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX® Supersector indices, which represent the Eurozone portion of the STOXX Europe 600® Supersector indices.

The composition of the SX5E is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the SX5E are made to ensure that the SX5E includes the 50 market sector leaders from within the SX5E.

The free float factors for each component stock used to calculate the SX5E, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review.

The SX5E is also reviewed on an ongoing monthly basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the SX5E composition are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

Calculation of the SX5E

The SX5E is calculated with the “Laspeyres formula,” which measures the aggregate price changes in the component stocks against a fixed base quantity weight. The formula for calculating the SX5E value can be expressed as follows:

$$\text{Index} = \frac{\text{Free float market capitalization of the index}}{\text{Divisor}} \times 1{,}000$$

The “free float market capitalization of the SX5E” is equal to the sum of the products of the price, the number of shares, the free float factor and the weighting cap factor for each component stock as of the time the SX5E is being calculated.

The SX5E is also subject to a divisor, which is adjusted to maintain the continuity of the SX5E values across changes due to corporate actions, such as the deletion and addition of stocks, the substitution of stocks, stock dividends, and stock splits.

License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the SX5E) in connection with certain securities, including the Notes offered hereby.

The license agreement between us and STOXX requires that the following language be stated in this document:

STOXX has no relationship to us, other than the licensing of the SX5E and the related trademarks for use in connection with the Notes. STOXX does not:

- sponsor, endorse, sell, or promote the Notes;
- recommend that any person invest in the Notes offered hereby or any other securities;
- have any responsibility or liability for or make any decisions about the timing, amount, or pricing of the Notes;
- have any responsibility or liability for the administration, management, or marketing of the Notes; or
- consider the needs of the Notes or the holders of the Notes in determining, composing, or calculating the SX5E, or have any obligation to do so.

STOXX will not have any liability in connection with the Notes. Specifically:

- STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning:
- the results to be obtained by the Notes, the holders of the Notes or any other person in connection with the use of the SX5E and the data included in the SX5E;
- the accuracy or completeness of the SX5E and its data;
- the merchantability and the fitness for a particular purpose or use of the SX5E and its data;
- STOXX will have no liability for any errors, omissions, or interruptions in the SX5E or its data; and
- Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

The licensing agreement between us and STOXX is solely for their benefit and our benefit, and not for the benefit of the holders of the Notes or any other third parties.

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Historical Information

The graph below illustrates the performance of the SX5E from December 17, 2008 to December 17, 2018, assuming an initial level of 3,063.65, which was its closing level on December 17, 2018. The red line represents a hypothetical coupon barrier and trigger level of 1,991.37, which is equal to 65% of the closing level on December 17, 2018, rounded to two decimal places. The actual initial level, coupon barrier and trigger level of the SX5E will be determined on the trade date.

HISTORIC PERFORMANCE IS NOT AN INDICATION OF FUTURE PERFORMANCE

Source: Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets.

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The Russell 2000® Index

The RTY was developed by Russell Investments (“Russell”) before FTSE International Limited (“FTSE”) and Russell combined in 2015 to create FTSE Russell, which is wholly owned by London Stock Exchange Group. Russell began dissemination of the RTY (Bloomberg L.P. index symbol “RTY”) on January 1, 1984. The RTY was set to 135 as of the close of business on December 31, 1986. FTSE Russell (the “index sponsor”) calculates and publishes the RTY. The RTY is designed to track the performance of the small capitalization segment of the U.S. equity market. As a subset of the Russell 3000® Index, the RTY consists of the smallest 2,000 companies included in the Russell 3000® Index. The Russell 3000® Index measures the performance of the largest 3,000 U.S. companies, representing approximately 98% of the investable U.S. equity market. The RTY is determined, comprised, and calculated by the index sponsor without regard to the Notes.

Selection of Stocks Underlying the RTY

All companies eligible for inclusion in the RTY must be classified as a U.S. company under the index sponsor’s country-assignment methodology. If a company is incorporated, has a stated headquarters location, and trades in the same country (American Depositary Receipts and American Depositary Shares are not eligible), then the company is assigned to its country of incorporation. If any of the three factors are not the same, the index sponsor defines three Home Country Indicators (“HCIs”): country of incorporation, country of headquarters, and country of the most liquid exchange (as defined by a two-year average daily dollar trading volume) (“ADDTV”) from all exchanges within a country. Using the HCIs, the index sponsor compares the primary location of the company’s assets with the three HCIs. If the primary location of its assets matches any of the HCIs, then the company is assigned to the primary location of its assets. If there is insufficient information to determine the country in which the company’s assets are primarily located, the index sponsor will use the primary country from which the company’s revenues are primarily derived for the comparison with the three HCIs in a similar manner. The index sponsor uses the average of two years of assets or revenues data to reduce potential turnover. If conclusive country details cannot be derived from assets or revenues data, the index sponsor will assign the company to the country of its headquarters, which is defined as the address of the company’s principal executive offices, unless that country is a Benefit Driven Incorporation “BDI” country, in which case the company will be assigned to the country of its most liquid stock exchange. BDI countries include: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bonaire, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Curacao, Faroe Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Liberia, Marshall Islands, Panama, Saba, Sint Eustatius, Sint Maarten, and Turks and Caicos Islands. For any companies incorporated or headquartered in a U.S. territory, including countries such as Puerto Rico, Guam, and U.S. Virgin Islands, a U.S. HCI is assigned.

All securities eligible for inclusion in the RTY must trade on a major U.S. exchange. Stocks must have a closing price at or above $1.00 on their primary exchange on the last trading day in May to be eligible for inclusion during annual reconstitution. However, in order to reduce unnecessary turnover, if an existing member’s closing price is less than $1.00 on the last day of May, it will be considered eligible if the average of the daily closing prices (from its primary exchange) during the month of May is equal to or greater than $1.00. Initial public offerings are added each quarter and must have a closing price at or above $1.00 on the last day of their eligibility period in order to qualify for index inclusion. If an existing stock does not trade on the “rank day” (typically the last trading day in May, but a confirmed timetable is announced each Spring) but does have a closing price at or above $1.00 on another eligible U.S. exchange, that stock will be eligible for inclusion.

An important criterion used to determine the list of securities eligible for the RTY is total market capitalization, which is defined as the market price as of the last trading day in May for those securities being considered at annual reconstitution times the total number of shares outstanding. Where applicable, common stock, non-restricted exchangeable shares and partnership units/membership interests are used to determine market capitalization. Any other form of shares such as preferred stock, convertible preferred stock, redeemable shares, participating preferred stock, warrants and rights, installment receipts or trust receipts, are excluded from the calculation. If multiple share classes of common stock exist, they are combined. In cases where the common stock share classes act independently of each other (e.g., tracking stocks), each class is considered for inclusion separately. If multiple share classes exist, the pricing vehicle will be designated as the share class with the highest two-year trading volume as of the rank day in May.

Companies with a total market capitalization of less than $30 million are not eligible for the RTY. Similarly, companies with only 5% or less of their shares available in the marketplace are not eligible for the RTY. Royalty trusts, limited liability companies, closed-end investment companies (companies that are required to report Acquired Fund Fees and Expenses, as defined by the SEC, including business development companies), blank check companies, special-purpose acquisition companies, and limited partnerships are also not eligible for inclusion in the Russell U.S. Indices. Exchange traded funds and mutual funds are also excluded. Bulletin board, pink-sheets, and over-the-counter ("OTC") traded securities are not eligible for inclusion.

Annual reconstitution is a process by which the RTY is completely rebuilt. On the rank last trading day of May, all eligible securities are ranked by their total market capitalization. The largest 4,000 become the Russell 3000E Index, and the other of the index sponsor's indexes are determined from that set of securities. Reconstitution of the RTY occurs on the last Friday in June or, when the last Friday in June is the 29th or 30th, reconstitution occurs on the prior Friday. In addition, the index sponsor adds initial public offerings to the RTY on a quarterly basis based on total market capitalization guidelines ranking within the market-adjusted capitalization breaks established during the most recent reconstitution.

After membership is determined, a security's shares are adjusted to include only those shares available to the public. This is often referred to as "free float." The purpose of the adjustment is to exclude from market calculations the capitalization that is not available for purchase and is not part of the investable opportunity set.

License Agreement

FTSE Russell and Royal Bank of Canada have entered into a non-exclusive license agreement providing for the license to Royal Bank of Canada, and certain of its affiliates, in exchange for a fee, of the right to use indices owned and published by FTSE Russell in connection with some securities, including the Notes.

FTSE Russell does not guarantee the accuracy and/or the completeness of the RTY or any data included in the RTY and has no liability for any errors, omissions, or interruptions in the RTY. FTSE Russell makes no warranty, express or implied, as to results to be obtained by the calculation agent, holders of the Notes, or any other person or entity from the use of the RTY or any data included in the RTY in connection with the rights licensed under the license agreement described in this document or for any other use. FTSE Russell makes no express or implied warranties, and hereby expressly disclaims all warranties of merchantability or fitness for a particular purpose with respect to the RTY or any data included in the RTY. Without limiting any of the above information, in no event will FTSE Russell have any liability for any special, punitive, indirect or consequential damages, including lost profits, even if notified of the possibility of these damages.

The Notes are not sponsored, endorsed, sold or promoted by FTSE Russell. FTSE Russell makes no representation or warranty, express or implied, to the owners of the Notes or any member of the public regarding the advisability of investing in securities generally or in the Notes particularly or the ability of the RTY to track general stock market performance or a segment of the same. FTSE Russell’s publication of the RTY in no way suggests or implies an opinion by FTSE Russell as to the advisability of investment in any or all of the stocks upon which the RTY is based. FTSE Russell's only relationship to Royal Bank of Canada is the licensing of certain trademarks and trade names of FTSE Russell and of the RTY, which is determined, composed and calculated by FTSE Russell without regard to Royal Bank of Canada or the Notes. FTSE Russell is not responsible for and has not reviewed the Notes nor any associated literature or publications and FTSE Russell makes no representation or warranty express or implied as to their accuracy or completeness, or otherwise. FTSE Russell reserves the right, at any time and without notice, to alter, amend, terminate or in any way change the RTY. FTSE Russell has no obligation or liability in connection with the administration, marketing or trading of the Notes.

“Russell 2000®” and “Russell 3000®” are registered trademarks of FTSE Russell in the U.S. and other countries.

Historical Information

The graph below illustrates the performance of the RTY from December 17, 2008 to December 17, 2018, assuming an initial level of 1,378.144, which was its closing level on December 17, 2018. The red line represents a hypothetical coupon barrier and trigger level of 895.794, which is equal to 65% of the closing level on December 17, 2018, rounded to three decimal places. The actual initial level, coupon barrier and trigger level of the RTY will be determined on the trade date.

HISTORIC PERFORMANCE IS NOT AN INDICATION OF FUTURE PERFORMANCE

Source: Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets.

Correlation of the Underlying Indices

The graph below illustrates the daily performance of the underlying indices from December 17, 2008 through December 17, 2018. For comparison purposes, each underlying index has been normalized to have a closing level of 100.00 on December 17, 2008 by dividing the closing level of that index on each day by the closing level of that Index on December 17, 2008 and multiplying by 100.00. We obtained the closing levels used to determine the normalized closing levels set forth below from Bloomberg, without independent verification.

Past performance of the underlying indices is not indicative of their future performance.

The correlation of a pair of indices represents a statistical measurement of the degree to which the returns of those indices were similar to each other over a given period in terms of timing and direction (i.e., positive or negative). The closer the relationship of the daily returns of a pair of underlying indices over a given period, the more positively correlated those indices are. The graph above illustrates the historical performance of each of the underlying indices relative to one another over the time period shown and provides an indication of how close the relative performance of one underlying index has historically been to another. The lower (or more negative) the correlation between two underlying indices, the less likely it is that those indices will move in the same direction and, therefore, the greater the potential for one of those indices to close below its coupon barrier or trigger level on any day during a Quarterly Observation Period or the final valuation date, respectively. This is because the less positively correlated a pair of indices are, the greater the likelihood that at least one of those indices will decrease in value. This results in a greater potential for a contingent coupon not to be paid during the term of the Notes and for a loss of principal at maturity. However, even if two underlying indices have a higher positive correlation, one or both of those indices might close below its coupon barrier or trigger level on any day during a Quarterly Observation Period or the final valuation date, as both of those indices may decrease in value together.

The lower the correlation between two underlying indices, the greater the potential for one of those indices to close below its coupon barrier or its trigger level on any trading day during a Quarterly Observation Period or the final valuation date, respectively. Further, with three underlying indices, it is more likely that the performance of one pair of underlying indices will not be correlated or will be negatively correlated, and therefore this risk is even greater than with securities linked to the individual performance of fewer underlying indices. Therefore, the greater the number of underlying indices, the greater the potential for missed contingent coupons and for a loss of principal at maturity. We determine the contingent coupons for the Notes based, in part, on the correlation among the underlying indices, calculated using internal models at the time the terms of the Notes are set. As discussed above, increased risk resulting from lower correlation or from a greater number of underlying indices will be reflected in a higher contingent coupon than would be payable on securities linked to fewer underlying indices or that have a higher degree of correlation.

General Terms of the Notes

The following description of the terms of the Notes supplements the description of the general terms of the debt securities set forth under the headings "Description of the Notes We May Offer" in the accompanying prospectus supplement and "Description of Debt Securities" in the accompanying prospectus. Capitalized terms used but not defined in this free writing prospectus have the meanings assigned in the accompanying prospectus supplement, prospectus. The term "Note" refers to $10 in principal amount of the Notes.

General

The Notes are senior unsecured debt obligations of Royal Bank of Canada that are linked to the underlying indices. The Notes will be issued under an indenture dated October 23, 2003, as it may be amended or supplemented from time to time, between us and The Bank of New York Mellon (as successor to JPMorgan Chase Bank, N.A.), as trustee.

The Notes are unsecured debt obligations and are not savings accounts or deposits of a bank. The Notes are not insured or guaranteed by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation, or any other governmental agency of Canada or the United States.

The Notes are our unsecured and unsubordinated obligations and will rank pari passu with all of our other unsecured and unsubordinated obligations.

The Notes will be issued in denominations of $10 and integral multiples thereof. The principal amount of each Note is $10. The Notes will be represented by one or more permanent global securities registered in the name of The Depository Trust Company, or DTC, or its nominee, as described under "Description of Debt Securities — Ownership and Book-Entry Issuance" and "—Considerations Relating to DTC" in the prospectus.

All references to the "debt securities" in the accompanying prospectus and all references to the "notes" in the accompanying prospectus supplement shall be read as and shall apply to the "Notes" for the purpose of this free writing prospectus. Unless the context otherwise requires, references to the "debt securities," "notes" and the "Notes" in the prospectus, prospectus supplement and this document can be read interchangeably and are synonymous.

If any required payment on the Notes is due on a day that is not a business day, the payment will be paid on the next business day, and no interest will accrue in respect of that postponement.

A "closing level" will be the official closing level of the applicable underlying index on the applicable trading day, as determined by the calculation agent.

A "trading day" is a day, as determined by the calculation agent, on which trading is generally conducted on (i) the relevant exchanges (as defined below) for the applicable underlying index or the successor index and (ii) the exchanges on which futures or options contracts related to that underlying index or the successor index are traded, other than a day on which trading on such relevant exchange or exchange on which such futures or options contracts are traded is scheduled to close prior to its regular weekday closing time.

If the final valuation date is not a trading day or if there is a market disruption event on that day, the final valuation date will be postponed to the immediately succeeding trading day during which no market disruption event shall have occurred or be continuing. In no event, however, will the final valuation date be postponed more than ten business days following the date originally scheduled. If the tenth business day following the date originally scheduled to be the final valuation date is not a trading day, or if there is a market disruption event on that date, the calculation agent will determine the closing level for the applicable underlying index in accordance with the formula for and method of calculating that underlying index last in effect prior to commencement of the market disruption event (or prior to the non-trading day), using the closing price (or, if trading in the relevant securities has been materially suspended or materially limited, the calculation agent's good faith estimate of the closing price that would have prevailed but for such suspension or limitation or non-trading day) on that tenth scheduled business day of each security most recently constituting that underlying index.

For the avoidance of doubt, if an underlying index is subject to a non-trading day or market disruption event only the closing level of that underlying index shall be postponed; the closing level of any underlying index that is not so affected shall be determined on the scheduled final valuation date.

If, due to a market disruption event or otherwise, the final valuation date is postponed, the maturity date will be postponed by the same number of business days. However, if the final valuation date is postponed so that it falls less than three business days prior to the scheduled maturity date, the maturity date will be the third business day

following the final valuation date, as so postponed.
A “business day” is any day other than a day on which banking institutions in The City of New York are authorized or required by law, regulation or executive order to close or a day on which transactions in dollars are not conducted.
Subject to the foregoing and to applicable law (including, without limitation, U.S. federal laws), we or our affiliates may, at any time and from time to time, purchase outstanding Notes by tender, in the open market or by private agreement.
Calculation Agent
RBC Capital Markets, LLC will act as the calculation agent. The calculation agent will determine, among other things, the level of each underlying index on the trade date and on each trading day, including the final valuation date, and the payments to be made, if any, on the Notes. In addition, the calculation agent will determine whether there has been a market disruption event or a discontinuation of any underlying index and whether there has been a material change in the method of calculating an underlying index. All determinations made by the calculation agent will be at the sole discretion of the calculation agent and will, in the absence of manifest error, be conclusive for all purposes and binding on you and on us. We may appoint a different calculation agent from time to time after the date of this document without your consent and without notifying you.
All calculations with respect to the level of each underlying index will be rounded to the nearest one hundred-thousandth, with five one-millionths rounded upward (e.g., .876545 would be rounded to .87655); all dollar amounts related to determination of the payment per $10 in

principal amount of the Notes, if any, will be rounded to the nearest one ten-thousandth, with five one hundred-thousandths rounded upward (e.g., .87645 would be rounded up to .8765); and all dollar amounts paid, if any, on the aggregate principal amount of Notes per holder will be rounded to the nearest cent, with one-half cent rounded upward.

Market Disruption Events

Certain events may prevent the calculation agent from determining the closing level of each underlying index, and consequently, the amount, if any, that we will pay to you on the Notes. These events may include disruptions or suspensions of trading on the markets as a whole. We refer to each of these events individually as a "market disruption event."

With respect to any underlying index and any relevant successor index, a "market disruption event," means:

- a suspension, absence or material limitation of trading of equity securities then constituting 20% or more of the level of the underlying index (or the relevant successor index) on the relevant exchanges (as defined below) for such securities for more than two hours of trading during, or during the one hour period preceding the close of, the principal trading session on such relevant exchange; or
- a breakdown or failure in the price and trade reporting systems of any relevant exchange as a result of which the reported trading prices for equity securities then constituting 20% or more of the level of the underlying index (or the relevant successor index) during the one hour preceding the close of the principal trading session on such relevant exchange are materially inaccurate; or
- a suspension, absence or material limitation of trading on the primary exchange or market for trading in futures or options contracts related to the underlying index (or the relevant successor index) for more than two hours of trading during, or during the one hour period preceding the close of, the principal trading session on such exchange or market; or
- a decision to permanently discontinue trading in the relevant futures or options contracts;

in each case as determined by the calculation agent in its sole discretion; and

- a determination by the calculation agent in its sole discretion that the event described above materially interfered with our ability or the ability of any of our affiliates to adjust or unwind all or a material portion of any hedge with respect to the Notes.

For purposes of determining whether a market disruption event with respect to any underlying index (or the relevant successor index) exists at any time, if trading in a security included in the underlying index (or the relevant successor index) is materially suspended or materially limited at that time, then the relevant percentage contribution of that security to the level of the underlying index (or the relevant successor index) will be based on a comparison of:

- the portion of the level of the underlying index (or the relevant successor index) attributable to that security relative to
- the overall level of the underlying index (or the relevant successor index),

in each case immediately before that suspension or limitation.

For purposes of determining whether a market disruption event with respect to any underlying index (or the relevant successor index) has occurred:

§ a limitation on the hours or number of days of trading will not constitute a market disruption event if it results from an announced change in the regular business hours of the relevant exchange, or the primary exchange or market for trading in futures or options contracts related to the underlying index (or the relevant successor index);

§ limitations pursuant to the rules of any relevant exchange similar to NYSE Rule 80B (or any applicable rule or regulation enacted or promulgated by any other self-regulatory organization or any government agency of scope similar to NYSE Rule 80B as determined by the calculation agent) on trading during significant market fluctuations will constitute a suspension, absence or material limitation of trading;

§ a suspension of trading in futures or options contracts on the underlying index (or the relevant successor index) by the primary exchange or market trading in such contracts by reason of

- a price change exceeding limits set by such exchange or market,
- an imbalance of orders relating to such contracts, or
- a disparity in bid and ask quotes relating to such contracts

will, in each such case, constitute a suspension, absence or material limitation of trading in futures or options contracts related to the underlying index (or the relevant successor index); and

- a “suspension, absence or material limitation of trading” on any relevant exchange or on the primary exchange or market on which futures or options contracts related to the underlying index (or the relevant successor index) are traded will not include any time when such exchange or market is itself closed for trading under ordinary circumstances.

“Relevant exchange” means, with respect to any underlying index or any relevant successor index, the primary exchange or market of trading for any security (or any combination thereof) then included in that underlying index or such successor index, as applicable.

Discontinuation of an Underlying Index; Alteration of Method of Calculation

If the index sponsor of an underlying index discontinues publication of that underlying index and the index sponsor or another entity publishes a successor or substitute index that the calculation agent determines, in its sole discretion, to be comparable to the discontinued underlying index (such index being referred to herein as a “successor index”), then the closing levels of that underlying index will be determined by reference to the level of such successor index at the close of trading on the relevant exchange for the successor index on such day.

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Upon any selection by the calculation agent of a successor index, the calculation agent will cause written notice to be promptly furnished to the trustee, to us and to the holders of the Notes.

If an index sponsor discontinues publication of an underlying index prior to, and that discontinuation is continuing on or prior to the final valuation date, and the calculation agent determines, in its sole discretion, that no successor index is available at that time or the calculation agent has previously selected a successor index and publication of that successor index is discontinued prior to, and that discontinuation is continuing on, the applicable trading day, then the calculation agent will determine the closing level of that underlying index for that date. The closing level will be computed by the calculation agent in accordance with the formula for and method of calculating that underlying index or successor index, as applicable, last in effect prior to the discontinuation, using the closing price (or, if trading in the relevant securities has been materially suspended or materially limited, the calculation agent's good faith estimate of the closing price that would have prevailed but for the suspension or limitation) at the close of the principal trading session on that date of each security most recently included in the underlying index or successor index, as applicable. Notwithstanding these alternative arrangements, discontinuation of the publication of the underlying index or successor index, as applicable, may adversely affect the value of the Notes.

If at any time the method of calculating an underlying index or a successor index, or the level thereof, is changed in a material respect, or if an underlying index or a successor index is in any other way modified so that the underlying index or successor index does not, in the opinion of the calculation agent, fairly represent the level of the underlying index or successor index had those changes or modifications not been made, then the calculation agent will, at the close of business in New York City on the date on any date on which the closing level of the underlying index is to be determined, make any calculations and adjustments as, in the good faith judgment of the calculation agent, may be necessary in order to arrive at a level of a stock index comparable to the underlying index or successor index, as the case may be, as if those changes or modifications had not been made, and calculate the closing level with reference to the underlying index or such successor index, as adjusted. Accordingly, if the method of calculating an underlying index or a successor index is modified so that the level of the underlying index or such successor index is a fraction of what it would have been if there had been no such modification (e.g., due to a split in the underlying index), then the calculation agent will adjust its calculation of the underlying index or such successor index in order to arrive at a level of the underlying index or such successor index as if there had been no such modification (e.g., as if such split had not occurred).

Payment of Additional Amounts

We will pay any amounts to be paid by us on the Notes without deduction or withholding for, or on account of, any and all present or future income, stamp and other taxes, levies, imposts, duties, charges, fees, deductions or withholdings (taxes) now or hereafter imposed, levied, collected, withheld or assessed by or on behalf of Canada or any Canadian political subdivision or authority that has the power to tax, unless the deduction or withholding is required by law or by the interpretation or administration thereof by the relevant governmental authority. At any time a Canadian taxing jurisdiction requires us to deduct or withhold for or on account of taxes from any payment made under or in respect of the Notes, we will pay such additional amounts ("Additional Amounts") as may be necessary so that the net amounts received by each holder (including Additional Amounts), after such deduction or withholding, shall not be less than the amount the holder would have received had no such deduction or withholding been required. However, no Additional Amounts will be payable with respect to a payment made to a holder of a Note or of a right to receive payments in respect thereto (a "Payment Recipient"), which we refer to as an "Excluded Holder," in respect of a beneficial owner or Payment Recipient:

(i) with whom we do not deal at arm's length (within the meaning of the Income Tax Act (Canada)) at the time of making such payment;

(ii) who is subject to such taxes by reason of the holder being connected presently or formerly with Canada or any province or territory thereof otherwise than by reason of the holder's activity in connection with purchasing the Notes, the holding of Notes or the receipt of payments thereunder;

(iii) who is, or who does not deal at arm's length with a person who is, a "specified shareholder" (within the meaning of subsection 18(5) of the Income Tax Act (Canada)) of Royal Bank of Canada (generally a person will be a "specified shareholder" for this purpose if that person, either alone or together with persons with whom the person does not deal at arm's length, owns 25% or more of (a) our voting shares, or (b) the fair market value of all of our issued and outstanding shares);

(iv) who presents such Note for payment (where presentation is required, such as if a Note is issued in definitive form) more than 30 days after the relevant date; for this purpose, the "relevant date" in relation to any payments on any Note means:

(a) the due date for payment thereof (whether at maturity or upon an earlier acceleration), or

(b) if the full amount of the monies payable on such date has not been received by the trustee on or prior to such due date, the date on which the full amount of such monies has been received and notice to that effect is given to holders of the Notes in accordance with the indenture;

(v) who could lawfully avoid (but has not so avoided) such withholding or deduction by complying, or procuring that any third party comply with, any statutory requirements necessary to establish qualification for an exemption from withholding or by making, or procuring that any third party make, a declaration of non-residence or other similar claim for exemption to any relevant tax authority; or

(vi) who is subject to deduction or withholding on account of any tax, assessment, or other governmental charge that is imposed or withheld by reason of the application of Section 1471 through 1474 of the United States Internal Revenue Code of 1986, as amended (the "Code") (or any successor provisions), any regulation, pronouncement, or agreement thereunder, official interpretations thereof, or any law implementing an intergovernmental approach thereto, whether currently in effect or as published and amended from time to time.

For the purposes of clause (iii) above, if a Note is presented for payment more than 30 days after the relevant date, we shall only be required to pay such Additional Amounts as shall have accrued as of such 30th day, and no further Additional Amounts shall accrue or become payable after such date.

For the avoidance of doubt, we will not have any obligation to pay any holders Additional Amounts on any tax which is payable otherwise than by deduction or withholding from payments made under or in respect of the Notes.

We will also make such withholding or deduction and remit the full amount deducted or withheld to the relevant authority in accordance with applicable law. We will furnish to the trustee, within 30 days after the date the payment of any taxes is due pursuant to applicable law, certified copies of tax receipts evidencing that such payment has been made or other evidence of such payment satisfactory to the trustee. We will indemnify and hold harmless each holder of Notes (other than an Excluded Holder) and upon written request reimburse each such holder for the amount of (x) any taxes so levied or imposed and paid by such holder as a result of payments made under or with respect to the Notes, and (y) any taxes levied or imposed and paid by such holder with respect to any reimbursement under (x) above, but excluding any such taxes on such holder’s net income or capital.

For additional information, see the section entitled “Canadian Taxation” in the accompanying prospectus.

Events of Default

Under the heading “Description of Debt Securities — Events of Default” in the accompanying prospectus is a description of events of default relating to debt securities including the Notes.

Payment upon an Event of Default

If an event of default with respect to the Notes shall have occurred and be continuing, the amount declared due and payable per $10 in principal amount of the Notes upon any acceleration of the Notes will be determined by the calculation agent and will be an amount in cash equal to the amount payable at maturity per $10 in principal amount of the Notes as described above, calculated as if the date of acceleration were the final valuation date. The calculation agent will also determine if the final contingent coupon is payable, calculated on a 30/360 day basis.

If the maturity of the Notes is accelerated because of an event of default as described above, we will, or will cause the calculation agent to, provide written notice to the trustee at its New York office, on which notice the trustee may conclusively rely, and to DTC of the cash amount due with respect to the Notes as promptly as possible and in no event later than two business days after the date of acceleration.

Defeasance

The provisions described in the accompanying prospectus under the heading “Description of Debt Securities —Defeasance” are not applicable to the Notes.

Registrar, Transfer Agent and Paying Agent

Payment of amounts due at maturity on the Notes will be payable and the transfer of the Notes will be registrable at the principal corporate trust office of The Bank of New York Mellon in The City of New York.

The Bank of New York Mellon or one of its affiliates will act as registrar and transfer agent for the Notes. The Bank of New York Mellon will also act as paying agent and may designate additional paying agents.

Registration of transfers of the Notes will be effected without charge by or on behalf of The Bank of New York Mellon, but upon payment (with the giving of such indemnity as The Bank of New York Mellon may require) in respect of any tax or other governmental charges that may be imposed in relation to it.

Governing Law

The Notes will be governed by and interpreted in accordance with the laws of the State of New York.

Supplemental Plan of Distribution (Conflicts of Interest)

We have agreed to indemnify UBS and RBCCM against liabilities under the Securities Act of 1933, as amended, or to contribute payments that UBS and RBCCM may be required to make relating to these liabilities as described in the prospectus supplement and the prospectus. We will agree that UBS may sell all or a part of the Notes that it will purchase from us to investors at the price to public or to its affiliates at the price indicated on the cover of the pricing supplement, the document that will be filed under Rule 424(b)(2) containing the final pricing terms of the Notes. UBS may allow a concession not in excess of the underwriting discount set forth on the cover of the pricing supplement to its affiliates for distribution of the Notes. Subject to regulatory constraints and market conditions, RBCCM intends to offer to purchase the Notes in the secondary market, but it is not required to do so.

We or our affiliates may enter into swap agreements or related hedge transactions with one of our other affiliates or unaffiliated counterparties in connection with the sale of the Notes and RBCCM and/or an affiliate may earn additional income as a result of payments pursuant to the swap or related hedge transactions. See "Use of Proceeds and Hedging" above.

We expect to deliver the Notes on a date that is greater than two business days following the trade date. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes more than two business days prior to the original issue date will be required to specify alternative settlement arrangements to prevent a failed settlement.

The value of the Notes shown on your account statement may be based on RBCCM's estimate of the value of the Notes if RBCCM or another of our affiliates were to make a market in the Notes (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Notes in light of then prevailing market conditions, our creditworthiness and transaction costs. If so specified in the pricing supplement related to the Notes, for a period of approximately six months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM's estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may be a higher amount, potentially reflecting the addition of the underwriting discount and our estimated costs and profits from hedging the Notes. Any such excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value. This period may be reduced at RBCCM's discretion based on a variety of factors, including but not limited to, the amount of the Notes that we repurchase and our negotiated arrangements from time to time with UBS.

For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution—Conflicts of Interest" in the prospectus dated September 7, 2018.

No action has been or will be taken by us, RBCCM, UBS or any other dealer that would permit a public offering of the Notes or possession or distribution of this document or the accompanying prospectus supplement and prospectus, other than in the United States, where action for that purpose is required. No offers, sales or deliveries of the Notes, or distribution of this document, or the accompanying prospectus supplement, prospectus or any other offering material relating to the Notes, may be made in or from any jurisdiction except in circumstances which will result in compliance with any applicable laws and regulations and will not impose any obligations on us, UBS or any dealer.

Each of RBCCM and UBS has represented and agreed, and each dealer through which we may offer the Notes has represented and agreed, that it (i) will comply with all applicable laws and regulations in force in each non-U.S. jurisdiction in which it purchases, offers, sells or delivers the Notes or possesses or distributes this document and the accompanying prospectus supplement and prospectus and (ii) will obtain any consent, approval or permission required by it for the purchase, offer or sale by it of the Notes under the laws and regulations in force in each non-U.S. jurisdiction to which it is subject or in which it makes purchases, offers or sales of the Notes. We shall not have responsibility for any broker-dealer's compliance with the applicable laws and regulations or obtaining any required consent, approval or permission.

No Prospectus (as defined in Directive 2003/71/EC (as amended, the "Prospectus Directive")) will be prepared in connection with the Notes. Accordingly, the Notes may not be offered to the public in any member state of the European Economic Area (the "EEA"), and any purchaser of the Notes who subsequently sells any of the Notes in any

EEA member state must do so only in accordance with the requirements of the Prospectus Directive, as implemented in that member state.

The Notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the EEA. For these purposes, the expression "offer" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe the Notes, and a "retail investor" means a person who is one (or more) of: (a) a retail client, as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, "MiFID II"); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Prospectus Directive. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the "PRIIPs Regulation") for offering or selling the Notes or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the Notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.

Structuring the Notes

The Notes are our debt securities, the return on which is linked to the performance of the underlying indices. As is the case for all of our debt securities, including our structured notes, the economic terms of the Notes reflect our actual or perceived creditworthiness at the time of pricing. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these Notes at a rate that is more favorable to us than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. Using this relatively lower implied borrowing rate rather than the secondary market rate is a factor that is likely to result in a higher initial estimated value of the Notes at the time their terms are set than if the secondary market rate was used. Unlike the estimated value included on the cover of this document or in the final pricing supplement relating to the Notes, any value of the Notes determined for purposes of a secondary market transaction may be based on a different borrowing rate, which may result in a lower value for the Notes than if our initial internal borrowing rate were used.

In order to satisfy our payment obligations under the Notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the issue date with RBCCM or one of our other subsidiaries. The terms of these hedging arrangements take into account a number of factors, including our creditworthiness, interest rate movements, the volatility of the underlying indices, and the tenor of the Notes. The economic terms of the Notes and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduces the economic terms of the Notes to you. The initial offering price of the Notes also reflects the underwriting commission and our estimated hedging costs. These factors result in the initial estimated value for the Notes on the trade date being less than their public offering price. See “Key Risks—The Initial Estimated Value of the Notes Will Be Less than the Price to the Public” above.

Employee Retirement Income Security Act

This section is only relevant to you if you are an insurance company or the fiduciary of a pension plan or an employee benefit plan (including a governmental plan, an IRA or a Keogh Plan) proposing to invest in the Notes.

The Employee Retirement Income Security Act of 1974, as amended (“ERISA”), imposes certain requirements on “employee benefit plans” (as defined in Section 3(3) of ERISA) subject to ERISA, including entities such as collective investment funds and separate accounts whose underlying assets include the assets of such plans (collectively, “ERISA Plans”) and on those persons who are fiduciaries with respect to ERISA Plans. Each fiduciary of an ERISA Plan should consider the fiduciary standards of ERISA in the context of the ERISA Plan’s particular circumstances before authorizing an investment in the covered bonds. Accordingly, among other factors, the fiduciary should consider whether the investment would satisfy the prudence and diversification requirements of ERISA and would be consistent with the documents and instruments governing the ERISA Plan.

In addition, Section 406 of ERISA and Section 4975 of the Internal Revenue Code prohibit certain transactions involving the assets of an ERISA Plan, as well as those plans that are not subject to ERISA but which are subject to Section 4975 of the Internal Revenue Code, such as individual retirement accounts, including entities whose underlying assets include the assets of such plans (together with ERISA Plans, “Plans”) and certain persons (referred to as “parties in interest” or “disqualified persons”) having certain relationships to such Plans, unless a statutory or administrative exemption is applicable to the transaction. Governmental plans may be subject to similar prohibitions. Therefore, a plan fiduciary considering purchasing Notes should consider whether the purchase or holding of such instruments might constitute a “prohibited transaction.”

Royal Bank of Canada and certain of its affiliates each may be considered a “party in interest” or a “disqualified person” with respect to many employee benefit plans by reason of, for example, Royal Bank (or its affiliate) providing services to such plans. Prohibited transactions within the meaning of ERISA or the Internal Revenue Code may arise, for example, if Notes are acquired by or with the assets of a Plan, and with respect to which Royal Bank or any of its affiliates is a “party in interest” or a “disqualified person,” unless those Notes are acquired under an exemption for transactions effected on behalf of that Plan by a “qualified professional asset manager” or an “in-house asset manager,” for transactions involving insurance company general accounts, for transactions involving insurance company pooled separate accounts, for transactions involving bank collective investment funds, or under another available exemption.

Section 408(b)(17) provides an additional exemption for the purchase and sale of Notes and related lending transactions where neither the issuer of the Notes nor any of its affiliates have or exercise any discretionary authority or control or render any investment advice with respect to the assets of any Plan involved in the transaction and the Plan pays no more than “adequate consideration” in connection with the transaction. The person making the decision on behalf of a Plan or a governmental plan shall be deemed, on behalf of itself and any such plan, by purchasing and holding the Notes, or exercising any rights related thereto, to represent that (a) such purchase, holding and exercise of the Notes will not result in a non-exempt prohibited transaction under ERISA or the Internal Revenue Code (or, with respect to a governmental plan, under any similar applicable law or regulation) and (b) neither Royal Bank nor any of its affiliates is a “fiduciary” (within the meaning of Section 3(21) of ERISA) with respect to the purchaser or holder in connection with such person’s acquisition, disposition or holding of the Notes, or any exercise related thereto or as a result of any exercise by Royal Bank or any of its affiliates of any rights in connection with the Notes, and no advice provided by Royal Bank or any of its affiliates has formed a primary basis for any investment decision by or on behalf of such purchaser or holder in connection with the Notes and the transactions contemplated with respect to the Notes.
If you are an insurance company or the fiduciary of a pension plan or an employee benefit plan, and propose to invest in the Notes, you should consult your legal counsel.

Terms Incorporated in Master Note

The terms appearing above under the captions “Indicative Terms of the Notes” and “General Terms of the Notes” are incorporated into the master note issued to DTC, the registered holder of the Notes.

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