

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

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

For the fiscal year ended December 31, 2022

Or

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

For the transition period from to

Commission file number: 001-32877



Mastercard Incorporated

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

13-4172551
(IRS Employer
Identification Number)

2000 Purchase Street
Purchase, NY
(Address of principal executive offices)

10577
(Zip Code)

(914) 249-2000

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange of which registered
Class A Common Stock, par value \$0.0001 per share	MA	New York Stock Exchange
2.1% Notes due 2027	MA27	New York Stock Exchange
1.0% Notes due 2029	MA29A	New York Stock Exchange
2.5% Notes due 2030	MA30	New York Stock Exchange

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

Class B common stock, par value \$0.0001 per share

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

Yes No

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 No

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 No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check One):

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13 (a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the registrant's Class A common stock, par value \$0.0001 per share, held by non-affiliates (using the New York Stock Exchange closing price as of June 30, 2022, the last business day of the registrant's most recently completed second fiscal quarter) was approximately \$270.1 billion. There is currently no established public trading market for the registrant's Class B common stock, par value \$0.0001 per share. As of February 8, 2023, there were 945,723,000 shares outstanding of the registrant's Class A common stock, par value \$0.0001 per share and 7,519,534 shares outstanding of the registrant's Class B common stock, par value \$0.0001 per share.

Portions of the registrant's definitive proxy statement for the 2023 Annual Meeting of Stockholders are incorporated by reference into Part III hereof.



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In this Report on Form 10-K ("Report"), references to the "Company," "Mastercard," "we," "us" or "our" refer to the business conducted by Mastercard Incorporated and its consolidated subsidiaries, including our operating subsidiary, Mastercard International Incorporated, and to the Mastercard brand.

Forward-Looking Statements

This Report contains forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts may be forward-looking statements. When used in this Report, the words "believe", "expect", "could", "may", "would", "will", "trend" and similar words are intended to identify forward-looking statements. Examples of forward-looking statements include, but are not limited to, statements that relate to the Company's future prospects, developments and business strategies.

Many factors and uncertainties relating to our operations and business environment, all of which are difficult to predict and many of which are outside of our control, influence whether any forward-looking statements can or will be achieved. Any one of those factors could cause our actual results to differ materially from those expressed or implied in writing in any forward-looking statements made by Mastercard or on its behalf, including, but not limited to, the following factors:

- regulation directly related to the payments industry (including regulatory, legislative and litigation activity with respect to interchange rates and surcharging)
- the impact of preferential or protective government actions
- regulation of privacy, data, security and the digital economy
- regulation that directly or indirectly applies to us based on our participation in the global payments industry (including anti-money laundering, counter financing of terrorism, economic sanctions and anti-corruption, account-based payments systems, and issuer and acquirer practice regulation)
- the impact of changes in tax laws, as well as regulations and interpretations of such laws or challenges to our tax positions
- potential or incurred liability and limitations on business related to any litigation or litigation settlements
- the impact of competition in the global payments industry (including disintermediation and pricing pressure)
- the challenges relating to rapid technological developments and changes
- the challenges relating to operating a real-time account-based payments system and to working with new customers and end users
- the impact of information security incidents, account data breaches or service disruptions
- issues related to our relationships with our stakeholders (including loss of substantial business from significant customers, competitor relationships with our customers, consolidation amongst our customers, merchants' continued focus on acceptance costs and unique risks from our work with governments)
- the impact of global economic, political, financial and societal events and conditions, including adverse currency fluctuations and foreign exchange controls as well as events and resulting actions related to the Russian invasion of Ukraine
- the impact of the global COVID-19 pandemic and measures taken in response
- reputational impact, including impact related to brand perception and lack of visibility of our brands in products and services
- the impact of environmental, social and governance matters and related stakeholder reaction
- the inability to attract and retain a highly qualified and diverse workforce, or maintain our corporate culture
- issues related to acquisition integration, strategic investments and entry into new businesses
- exposure to loss or illiquidity due to our role as guarantor and other contractual obligations
- issues related to our Class A common stock and corporate governance structure

Please see "Risk Factors" in Part I, Item 1A for a complete discussion of these risk factors. We caution you that the important factors referenced above may not contain all of the factors that are important to you. Our forward-looking statements speak only as of the date of this Report or as of the date they are made, and we undertake no obligation to update our forward-looking statements.

PART I

Item 1. Business

Item 1A. Risk factors

Item 1B. Unresolved staff comments

Item 2. Properties

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Information about our executive officers

Item 1. Business




Overview

Mastercard is a technology company in the global payments industry. We connect consumers, financial institutions, merchants, governments, digital partners, businesses and other organizations worldwide by enabling electronic payments instead of cash and checks and making those payment transactions safe, simple, smart and accessible. We make payments easier and more efficient by providing a wide range of payment solutions and services using our family of well-known and trusted brands, including Mastercard®, Maestro® and Cirrus®. We operate a multi-rail payments network that provides choice and flexibility for consumers, merchants and our customers. Through our unique and proprietary core global payments network, we switch (authorize, clear and settle) payment transactions. We have additional payment capabilities that include automated clearing house (“ACH”) transactions (both batch and real-time account-based payments). Using these capabilities, we offer integrated payment products and services and capture new payment flows. Our value-added services include, among others, cyber and intelligence solutions to allow all parties to transact easily and with confidence, as well as other services that provide proprietary insights, drawing on our principled use of secure consumer and merchant data. Our investments in new networks, such as open banking solutions and digital identity capabilities, support and strengthen our payments and services solutions. Our franchise model sets the standards and ground-rules for our core global payments network that balance value and risk across all stakeholders and allows for interoperability among them. Our payment solutions are designed to ensure safety and security for the global payments ecosystem.

For a full discussion of our business, please see page 9.

Our Performance

The following are our key financial and operational highlights for 2022, including growth rates over the prior year:

GAAP		
Net revenue \$22.2B up 18%	Net income \$9.9B up 14%	Diluted EPS \$10.22 up 17%
Non-GAAP ¹ (currency-neutral)		
Adjusted net revenue \$22.2B up 23%	Adjusted net income \$10.3B up 32%	Adjusted diluted EPS \$10.65 up 34%
\$10.7B in capital returned to stockholders	\$8.8B Repurchased shares \$1.9B Dividends paid	\$11.2B cash flows from operations
 Gross dollar volume (growth on a local currency basis) \$8.2T up 12%	 Cross-border volume growth (on a local currency basis) up 45%	 Switched transactions 125.7B up 12%

¹ Non-GAAP results (including growth rates) exclude the impact of gains and losses on equity investments, Special Items and/or foreign currency. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations - Financial Results Overview” in Part II, Item 7 for the reconciliation to the most direct comparable GAAP financial measures.

The following chart provides gross dollar volume (“GDV”) and number of cards featuring our brands in 2022 for select programs and solutions:

Mastercard-branded Programs ^{1,2}	GDV			Cards	
	Year Ended December 31, 2022			As of December 31, 2022	
	(in billions)	Growth (Local)	% of Total GDV	(in millions)	% Increase from December 31, 2021
Consumer Credit	\$ 3,143	15 %	38 %	992	3 %
Consumer Debit and Prepaid	4,012	8 %	49 %	1,617	7 %
Commercial Credit and Debit	1,023	24 %	13 %	122	11 %

¹ Excludes Maestro and Cirrus cards and volume generated by those cards.

² Prepaid includes both consumer and commercial prepaid.

For a full discussion of our results of operations, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item II, Part 7.

Our Strategy

Our strategy centers on growing our core payments network, diversifying our customers and geographies and building new capabilities through a combination of organic and inorganic strategic initiatives. We are executing on this strategy through a focus on three key priorities:

- expand in payments for consumers, businesses and governments
- extend our services to enhance transactions and drive customer value
- embrace new network opportunities to enable open banking, digital identity and other adjacent network capabilities

Each of our priorities supports and builds upon each other and are fundamentally interdependent.

Our strategy



Our key priorities



Powering our success



Our Key Strategic Priorities

Expand in payments. We focus on expanding upon our core payments network to enable payment flows for consumers, businesses, governments and others, providing them with choice and flexibility to transact across multiple payment rails (including cards, real-time payments, account-to-account transactions, crypto and others) while ensuring that all payments are safe, secure and seamless. We do so by:

- **Driving growth in consumer payments** with a focus on accelerating digitization, growing acceptance and pursuing an expanded set of use cases, including through partnerships
- **Capturing new payment flows** by expanding our multi-rail capabilities and applications to penetrate key flows such as disbursements and remittances, commercial point of sale transactions, business-to-business (“B2B”) accounts payable flows and consumer bill payments
- **Leaning into new payment innovations** such as our piloting in 2022 of Mastercard Installments (our buy-now-pay-later solution) and developing solutions that support digital currencies and blockchain applications

Extend our services. Our services drive value for our customers and the broader payments ecosystem. These services include cyber and intelligence solutions, insights and analytics, consulting, marketing services, loyalty, processing and payment gateway solutions for e-commerce merchants. As we drive value, our services generate revenue while helping to accelerate our overall financial performance by supporting revenue growth in payments and new network opportunities. We extend our services by:

- **Enhancing the value of payments** by making payments safe, secure, intelligent and seamless
- **Expanding services to new segments and use cases** to address the needs of a larger set of customers, including financial institutions, merchants, governments, digital players and others, while expanding our geographic reach
- **Supporting and strengthening new network capabilities**, including expanding services associated with digital identities and deploying our expertise in open banking and open data, including with improved analytics

Embrace new network opportunities. We are building and managing new adjacent network capabilities to power commerce and payments, creating new opportunities to develop and embed services. We do so by:

- **Applying our open banking solutions** to help institutions and individuals exchange consumer-permissioned data securely and easily by enabling the reliable access, transmission and management of consumer data (including for opening new accounts, securing loans, increasing credit scores and enabling consumer choice in money movement and personal finance management)
- **Enabling digital identity solutions** to instill trust in the digital world and ensure that payments across consumers, companies, devices and virtual entities are efficient, safe and secure

Each of our priorities supports and builds upon each other and are fundamentally interdependent:

- **Payments** provide data and distribution to drive scale and differentiation in services and enable the development and adoption of new network capabilities
- **Services** improve the security, efficiency and intelligence of payments, improve portfolio performance, differentiate our offerings, strengthen our customer relationships and support our open banking and digital identity platforms
- **New network opportunities** strengthen our digital payments value proposition, including improved authentication with digital identity, and new opportunities to develop and embed services in our expanding product offerings

Powering Our Success

These priorities are supported by six key drivers:

People. Our success is driven by the skills, experience, integrity and mindset of our people. We attract and retain top talent from diverse backgrounds and industries. Our people and our winning culture is based on decency, respect and inclusion where people have opportunities to perform purpose-driven work that impacts communities, customers and co-workers on a global scale. The diversity and skill sets of our people underpin everything we do.

Brand. Our brands and brand identities serve as a differentiator for our business, representing our values and enabling us to accelerate growth in new areas.

Data. We use our data assets, infrastructure and platforms to create a range of products and services for our customers, while incorporating our data principles in how we design, implement and deliver those solutions. Our Privacy by Design and Data by Design processes have been developed to ensure we embed privacy, security and data controls in all of our products and services, keeping a clear focus on protecting customers' and individuals' data.

Technology. Our technology provides resiliency, scalability and flexibility in how we serve customers. It enables broader reach to scale digital payment services to multiple channels, including mobile devices. Our technology standards, services and governance model help us to serve as the connection that allows financial institutions, financial technology companies (fintechs) and others to interoperate and enable consumers, businesses, governments and merchants to engage through digital channels.

Franchise. We manage an ecosystem of stakeholders who participate in our network. Our franchise creates and sustains a comprehensive series of value exchanges across our ecosystem. We provide a balanced ecosystem where all participants benefit from the availability, innovation and safety and security of our network and platforms. Our franchise enables the scale of our payments network and helps ensure our multiple payment capabilities operate under a single governance structure, which can be extended to new opportunities.

Doing Well by Doing Good. Sustainable impact is fundamental to our business strategy, and we leverage our employees, technology, resources, partnerships and expertise to address social, economic and environmental challenges. Our environmental, social and governance ("ESG") priorities are expressed through three pillars - People, Prosperity, Planet - and all of the work we do is grounded in strong governance principles. For more information, please reference our most recently published Corporate Sustainability Report and Proxy Statement (each located on our website).

Our Business

Our Multi-Rail Network and Payment Capabilities

We enable a wide variety of payment capabilities (including integrated products and value-added services and solutions) over our multi-rail network among account holders, merchants, financial institutions, businesses, governments and others, offering our customers one partner for their payment needs.

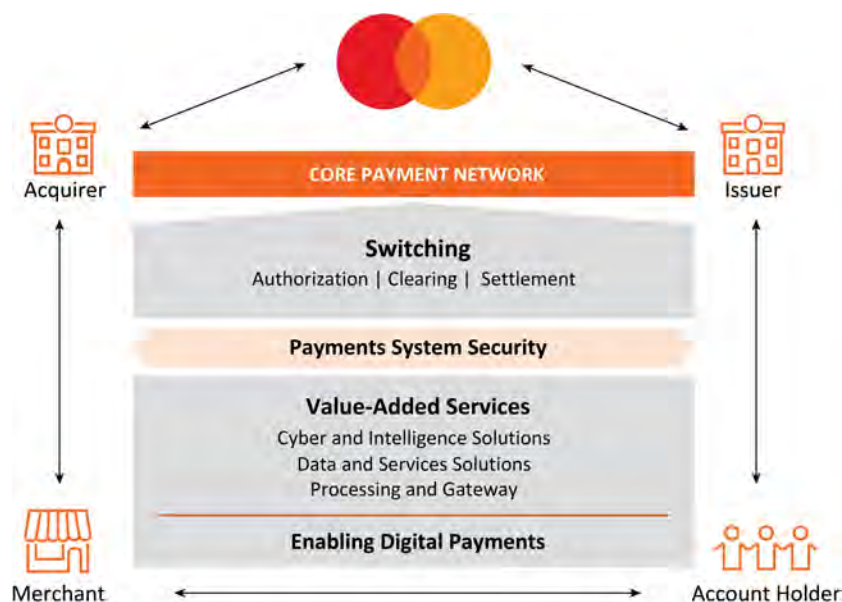
Payment Network

Our core payment network links issuers and acquirers around the globe to facilitate the switching of transactions, permitting account holders to use a Mastercard product at tens of millions of acceptance locations worldwide. This network facilitates an efficient, safe and secure means for receiving payments, a convenient, quick and secure payment method for consumers to access their funds and a channel for businesses to receive insight through information that is derived from our network. We enable transactions for our customers through our core payment network in more than 150 currencies and in more than 210 countries and territories.

Payment Network Transactions. Our core payment network supports what is often referred to as a “four-party” payments network and includes the following participants: account holder (a person or entity who holds a card or uses another device enabled for payment), issuer (the account holder’s financial institution), merchant and acquirer (the merchant’s financial institution).

We do not issue cards, extend credit, determine or receive revenue from interest rates or other fees charged to account holders by issuers, or establish the rates charged by acquirers in connection with merchants’ acceptance of our products. In most cases, account holder relationships belong to, and are managed by, our customers.

The following graphic depicts a typical transaction on our core payment network and our role in that transaction, which includes payment security, value-added services and the enablement of digital payments:



In a typical transaction, an account holder purchases goods or services from a merchant using one of our payment products. After the transaction is authorized by the issuer, the issuer pays the acquirer an amount equal to the value of the transaction, minus the interchange fee (described below) and other applicable fees, and then posts the transaction to the account holder’s account. The acquirer pays the amount of the purchase, net of a discount (referred to as the “merchant discount” rate), to the merchant.

- **Interchange Fees.** Interchange fees reflect the value merchants receive from accepting our products and play a key role in balancing the costs and benefits that consumers and merchants derive. Generally, interchange fees are collected from acquirers and paid to issuers to reimburse the issuers for a portion of the costs incurred. These costs are incurred by issuers in providing services that benefit all participants in the system, including acquirers and merchants, whose participation in the network enables increased sales to their existing and new customers, efficiencies in the delivery of existing and new products, guaranteed payments and improved customer experience. We (or, alternatively, financial institutions) establish “default interchange fees” that apply when there are no other established settlement terms in place between an issuer and an acquirer. We administer the collection and remittance of interchange fees through the settlement process.

- **Additional Four-Party System Fees.** The merchant discount rate is established by the acquirer to cover its costs of both participating in the four-party system and providing services to merchants. The rate takes into consideration the amount of the interchange fee which the acquirer generally pays to the issuer. Additionally, acquirers may charge merchants processing and related fees in addition to the merchant discount rate. Issuers may also charge account holders fees for the transaction, including, for example, fees for extending revolving credit.

Switched Transactions

- **Authorization, Clearing and Settlement.** Through our core payment network, we enable the routing of a transaction to the issuer for its approval, facilitate the exchange of financial transaction information between issuers and acquirers after a successfully conducted transaction, and settle the transaction by facilitating the exchange of funds between parties via settlement banks chosen by us and our customers.
- **Cross-Border and Domestic.** Our core payment network switches transactions throughout the world when the merchant country and country of issuance are different (“cross-border transactions”), providing account holders with the ability to use, and merchants to accept, our products and services across country borders. We also provide switched transaction services to customers where the merchant country and the country of issuance are the same (“domestic transactions”). We switch over 60% of all transactions for Mastercard and Maestro-branded cards, including nearly all cross-border transactions.

We guarantee the settlement of many of the transactions from issuers to acquirers to ensure the integrity of our core payment network. We refer to the amount of this guarantee as our settlement exposure. We do not, however, guarantee payments to merchants by their acquirers or the availability of unspent prepaid account holder account balances.

Payment Network Architecture. Our core payment network features a globally integrated structure that provides scale for our issuers, enabling them to expand into regional and global markets. It is based largely on a distributed (peer-to-peer) architecture that enables the network to adapt to the needs of each transaction. The network accomplishes this by performing intelligent routing and applying multiple value-added services (such as fraud scoring, tokenization services, etc.) to appropriate transactions in real time. This architecture enables us to connect all parties regardless of where or how the transaction is occurring. It has 24-hour a day availability and world-class response time.

Additional Payment Capabilities

ACH Batch and Real-Time Account-Based Payments Infrastructure. We offer ACH batch and real-time account-based payments capabilities, enabling payments for ACH transactions between bank accounts in real-time. These capabilities provide consumers and businesses the ability to make instant (faster) payments while providing enhanced data and messaging capabilities. We build, implement, enhance and operate real-time clearing and settlement infrastructure, payment platforms and direct debit systems for jurisdictions globally. As of December 31, 2022, we either operated or were implementing real-time payments infrastructure in 12 of the top 50 markets as measured by GDP. We also use our real-time payments capabilities to enable new payment flows, such as consumer bill payments using our real-time bill pay solutions.

Account-to-Account. We enable consumers, businesses, governments and merchants to send and receive money directly from account-to-account. We apply these capabilities to help these stakeholders with various disbursements and remittances.

We discuss below under “Our Payment Products and Applications” the ways in which we apply our real-time account-based and account-to-account payment capabilities to capture new payment flows.

Security and Franchise

Payments System Security. We have a multi-layered approach to protect the global payments ecosystem. As part of this approach, we have a robust program to protect our network from cyber and information security threats. Our network and platforms incorporate multiple layers of protection, providing greater resiliency and best-in-class security protection. Our programs are assessed by third parties and incorporate benchmarking and other data from peer companies and consultants. We engage in many efforts to mitigate information security challenges, including maintaining an information security program, an enterprise resilience program and insurance coverage, as well as regularly testing our systems to address potential vulnerabilities. Through the combined efforts of our Security Operations Centers, Fusion Centers and the Mastercard Intelligence Center, we work with experts across the organization (as well as through other sources such as public-private partnerships) to monitor and respond quickly to a range of cyber and physical threats.

As another feature of our multi-layered approach to protect the global payments ecosystem, we work with issuers, acquirers, merchants, governments and payments industry associations to develop and put in place technical standards (such as EMV standards for chips and smart payment cards) for safe and secure transactions and we provide solutions and products that are designed to ensure safety and security for the global payments ecosystem. Our approach includes supporting small businesses by

sharing best practices and providing access to free utilities and services, benefiting both them and the entire payments ecosystem. We discuss specific cyber and intelligence solutions that we offer to our customers in “Our Value-Added Services”.

Our Franchise. We manage an ecosystem of stakeholders that participate in our network and payments platforms. Our franchise creates and sustains a comprehensive series of value exchanges across our ecosystem. We ensure a balanced ecosystem where all participants benefit from the availability, innovation, safety and security of our network. We achieve this through the following key activities:

- **Participant Onboarding.** We ensure the ability of new customers to use our network and define the roles and responsibilities for their operations once on the network
- **Safety and Security.** We establish the core principles, including ensuring consumer protections and integrity, so participants feel confident to transact on the network
- **Operating Standards.** We define the operational, technical and financial policies to which network participants are required to adhere
- **Responsible Stewardship.** We establish performance standards to support ecosystem growth and optimization and establish proactive monitoring to ensure participant performance
- **Issue Resolution.** We operate a framework to enable the resolution of disputes between our network participants

Our Payment Products and Applications

We provide a wide variety of integrated products and services that support payment products that customers can offer to consumers and merchants. These offerings facilitate transactions across our multi-rail payments network and platforms among account holders, merchants, financial institutions, digital partners, businesses, governments and other organizations in markets globally.



Consumer Payment Products

Consumer Credit. We offer a number of products that enable issuers to provide consumers with credit, allowing them to defer payment. These programs are designed to meet the needs of our customers around the world and address standard, premium and affluent consumer segments.

Consumer Debit. We support a range of payment products and solutions that allow our customers to provide consumers with convenient access to funds in deposit and other accounts. Our debit and deposit access programs can be used to make purchases and to obtain cash in bank branches, at ATMs and, in some cases, at the point of sale. Our branded debit programs consist of Mastercard (including standard, premium and affluent offerings), Maestro (the only PIN-based solution that operates globally) and Cirrus (our primary global cash access solution).

Prepaid. Prepaid accounts are a type of electronic payment that enables consumers to pay in advance whether or not they previously had a bank account or a credit history. These accounts can be tailored to meet specific program, customer or consumer needs, such as paying bills, sending person-to-person payments or withdrawing cash from an ATM. Our focus ranges from digital accounts (such as fintech and gig economy platforms) to business programs such as employee payroll, health savings accounts and solutions for small business owners. Our prepaid programs also offer opportunities in the private and public sectors to drive financial inclusion of previously unbanked individuals through social security payments, unemployment benefits and salary cards.

How We Benefit Consumers

We enable our customers to benefit consumers by:

- making electronic payments more convenient, secure and efficient
- delivering better, seamless consumer experiences
- providing consumers choice, empowering them to make and receive payments in the ways that best meet their daily needs
- protecting consumers and all other participants in a transaction, as well as consumer data
- providing loyalty rewards and benefits



New Payment Flows

We offer platforms that apply our multi-rail payment capabilities to capture new payment flows, enabling us to serve the needs of a significant addressable market.

Disbursements and Remittances. We offer applications that enable consumers, businesses, governments and merchants to send and receive money domestically and across borders with greater speed and ease.

- Using Mastercard Send™, we partner with digital messaging and payment platforms to enable consumers in approximately 50 markets to send money directly within applications to other consumers in more than 100 markets. We partner with central banks, fintechs and financial institutions to help governments and nonprofits more efficiently enable, as applicable, distribution of social and economic assistance and business-to-consumer (“B2C”) disbursements across more than 40 use cases (such as wallet funding, cash payouts, gig worker payouts and insurance claims).
- Mastercard Cross-Border Services enables a wide range of payment flows and use cases to customers (including trade payments, remittances and disbursements). These flows are enabled via a distribution network with a single point of access that allows financial institutions, fintechs and digital partners to send and receive money globally through multiple channels, including bank accounts, mobile wallets, cards and cash payouts with payout reach in more than 140 receive markets.

Key 2022 Developments

- In 2022, our Disbursements and Remittances capabilities achieved a payout reach of nearly 10 billion endpoints globally across multiple channels.

Commercial Point of Sale. We offer commercial credit, debit and prepaid payment products and solutions that meet the payment needs of large corporations, midsize companies, small businesses and government entities. Our solutions streamline procurement and payment processes, manage information and expenses (such as travel and entertainment) and reduce administrative costs. Our point of sale offerings include:

- Small business cards (credit, debit and prepaid) tailored to small and medium businesses.
- Commercial travel and entertainment, procurement and fleet cards, consisting mostly of credit cards and associated platforms for corporations to manage travel and expense, procurement and fleet expenses. Our Mastercard Smart Data™ platform provides expense management and reporting capabilities.

B2B Accounts Payable. We offer solutions that enable businesses or governments to make payments to businesses with whom they have a trusted relationship for goods and services. Our solutions include Virtual Card Number (VCN), which is generated dynamically off a physical card and leverages the credit limit of the funding account and may include the use of Mastercard InControl™, our virtual card platform that allows buyers to pay suppliers using a one-time use card number that can be set with transaction level controls, providing unmatched configurability and flexibility.

Additionally, we offer a platform to optimize supplier payment enablement campaigns for financial institutions, as well as our treasury intelligence platform that provides corporations with recommendations to improve working capital performance and accelerate spend on cards.

Consumer Bill Payments. We offer bill pay solutions to enable consumers and small businesses to pay their billers in a seamless and secure way. Our bill pay solutions include the enablement of enhanced biller setup and expanded bill presentment that make it easier for consumers and small businesses to present, view, manage and pay their bills through their online or mobile banking apps. These solutions facilitate payment choice using multiple payment rails (including real-time account-based payments) and deliver immediate payment confirmation, providing an experience that benefits consumers, financial institutions and billers.



Payments Innovation

Our innovation capabilities and our technology provide resiliency, scalability and flexibility in how we serve customers and in turn help them benefit consumers. They enable broader reach to scale digital payment services across multiple channels, including mobile devices. Our technology standards, services and governance model help us to serve as the connection that allows financial institutions, fintechs and technology companies to interoperate and enable consumers, businesses, governments and merchants to engage through digital channels.

Key 2022 Developments

- During 2022, we entered into pilot programs for our previously announced Mastercard Installments, an open loop solution to deliver buy-now-pay-later installments capabilities at scale. The solution connects lenders with merchants across our acceptance network to provide buy-now-pay-later options for consumers.

- **Delivering better digital experiences everywhere.** We are using our technologies and security protocols to develop solutions to make digital shopping and selling experiences, such as on smartphones and other connected devices, simpler, faster and safer for both consumers and merchants. We also offer products that make it easier for merchants to accept payments and expand their customer base.
 - Our contactless payment solutions help deliver a simple and intuitive way to pay, as well as health and safety benefits when consumers are looking for low-touch options
 - Our Mastercard Digital First™ program enables customers to offer their cardholders a fully digital payment experience with an optional physical card, meeting cardholder expectations of immediacy, safety and convenience during card application, authentication and instant card access, securing purchases (whether contactless, in-store, in-app or via the web) and managing alerts, controls and benefits
 - Our Click to Pay checkout experience is designed to provide consumers the same convenience and security in a digital environment that they have when paying in a store, make it easier for merchants to implement secure digital payments and provide issuers with improved fraud detection and prevention capability. This experience is based on the EMV Secure Remote Commerce industry standard that enables a faster, more secure checkout experience across web and mobile sites, mobile apps and connected devices
- **Securing more transactions.** We are leveraging tokenization, biometrics and machine learning technologies in our push to secure every transaction. These efforts include driving EMV-level security and benefits through all our payment channels.
- **Creating solutions to support blockchain-based digital currencies.** Through a principled approach (including applying prudent risk management practices and maintaining continuous monitoring of our partners that are active in the digital asset market), Mastercard is focused on supporting digital currencies by:
 - Providing identity, cyber and consulting services for market participants (including our identity and biometric solutions, cybersecurity solutions, crypto analytics, transaction monitoring and anti-money laundering detection capabilities) as well as engaging with central banks as they design and develop central bank digital currencies
 - Helping consumers safely and easily purchase cryptocurrencies and non-fungible tokens (“NFTs”) as well as enabling consumers to spend their converted crypto holdings on Mastercard card offerings and cash out their crypto wallets using Mastercard Send
- **Simplifying access to, and integration of, our digital assets.** Our Mastercard Developer platform makes it easy for customers and partners to leverage our many digital assets and services. By providing a single access point with tools and capabilities to find what we believe are some of the best-in-class APIs across a broad range of Mastercard services, we enable easy integration of our services into new and existing solutions.
- **Identifying and experimenting with future technologies, start-ups and trends.** Through Mastercard Foundry, we continue to provide customers and partners access to thought leadership, innovation methodologies, new technologies and relevant early-stage fintech players.

Our Value-Added Services

Our services encompass a wide-ranging portfolio of value-added and differentiating capabilities that:

- instill trust in the ecosystem to allow parties to transact and operate with confidence
- provide actionable insights to our customers to assist in their decision making
- enable our customers to strengthen their engagement with their own end users
- enable connectivity and access for a fragmented and diverse set of parties



Cyber and Intelligence Solutions

As part of the security we bring to the payments ecosystem, we offer integrated products and services to prevent, detect and respond to fraud and cyber-attacks and to ensure the safety of transactions made using Mastercard and non-Mastercard products. We do this using a multi-layered safety and security strategy:

- The **“Prevent”** layer is designed to protect against attacks on infrastructure, devices and data. We have continued to grow global usage of EMV chip and contactless security technology, helping to reduce fraud. Our solutions include Mastercard SafetyNet™, which protects financial institutions by helping to stop real-time attacks that are visible in the network, but not easily detected by financial institutions.
- The **“Identify”** layer allows us to help banks and merchants verify the authenticity of consumers during the payment process using various biometric technologies, including fingerprint, face and iris scanning, and behavioral user data assessment technology to verify online purchases on mobile devices, as well as a card with biometric technology built in.
- The **“Detect”** layer spots fraudulent behavior and cyber-attacks and takes action to stop these activities once detected. Our offerings in this space include alerts when accounts are exposed to data breaches or security incidents, fraud scoring technology that scans billions of dollars of money flows each day while increasing approvals and reducing false declines, and network-level monitoring on a global scale to help detect the occurrence of widespread fraud attacks when the customer (or their processor) may be unable to detect or defend against them.
- The **“Experience”** layer improves the security experience for our stakeholders in areas from the speed of transactions (enhancing approvals for online and card-on-file payments) to the ability to differentiate legitimate consumers from fraudulent ones. Our offerings in this space include solutions for consumer alerts and controls and a suite of digital token services. We also offer an e-commerce fraud and dispute management network that enables merchants to stop delivery when a fraudulent or disputed transaction is identified, and issuers to refund the cardholder to avoid the chargeback process.
- The **“Network”** layer extends the services we provide to transactions in the payments ecosystem and across all of our rails, including decision intelligence and tokenization capabilities, to help secure our customers and transactions on a real-time basis.

Moreover, we use our artificial intelligence (“AI”) and data analytics, along with our cyber risk assessment capabilities, to help financial institutions, merchants, corporations and governments secure their digital assets across each of these five layers.

We have also worked with our customers to provide products to consumers globally with increased confidence through the benefit of “zero liability”, where the consumer bears no responsibility for counterfeit or lost card losses in the event of fraud.

Key 2022 Developments

- In 2022, we significantly extended the reach of our Consumer Clarity services, enhancing the value of payments by providing cardholders with merchant details and digital receipts to reduce disputes, lower chargeback costs and improve the consumer experience.



Data and Services Solutions



Insights and Analytics. Our capabilities incorporate payments expertise and analytical and executional skills to create end-to-end solutions which are increasingly delivered via platforms embedded in our customers' day-to-day operations. We offer business intelligence to monitor key performance indicators ("KPIs") and benchmark performance through self-service digital platforms, tools, and reports for financial institutions, merchants and others. We enable clients to better understand consumer behavior and improve segmentation and targeting by using our anonymized and aggregated data assets, third-party data and AI technologies. We also help our customers accurately measure the impact of their decisions and improve them by leveraging data analytics to conduct disciplined business experiments for in-market tests to drive more profitable decision making.

Key 2022 Developments

- In 2022, we completed our acquisition of Dynamic Yield™, which uses enhanced AI to deliver customized product recommendations, offers and content to consumers. When combined with our loyalty and other offerings, this platform provides the opportunity to offer a unified consumer engagement and loyalty hub to our customers.



Consulting and Innovation. We provide advisory services that help clients make better decisions and improve performance. By observing patterns of payments behavior based on billions of transactions switched globally, we are able to leverage anonymized and aggregated information to provide advice based on data. We also utilize our expertise, digital technology, innovation tools, methodologies and processes to collaborate with, and increasingly drive innovation at, financial institutions, merchants and governments. Through our global innovation and development arm, Mastercard Foundry, we offer customized innovation programs and concept design. We continue to innovate and expand our offerings to help businesses evolve and expand their growth enterprise-wide. For example, we have developed consulting and innovation offerings dedicated to open banking, open data, crypto and digital currencies and ESG matters.



Marketing Services. We deliver marketing services, digital implementation and program management with performance-based solutions at every stage of the consumer lifecycle to assist our customers in implementing actions based on insights and driving adoption and usage. These services include developing messaging, targeting key groups, launching campaigns and training staff, all of which help our customers drive engagement and portfolio profitability.



Issuer and Merchant Loyalty. We have built a scalable rewards platform that enables issuers to provide consumers with a variety of benefits and services, such as personalized offers and rewards, access to a global airline lounge network, concierge services, insurance services, emergency card replacement, emergency cash advances and a 24-hour account holder service center. For merchants, we provide campaigns with targeted offers and rewards, management services for publishing offers, and accelerated points programs for co-brand and rewards program members. We also provide a loyalty platform that enables stronger relationships with retailers, restaurants, airlines and consumer packaged goods companies by creating experiences that drive loyalty and impactful consumer engagement.



Processing and Gateway

We extend our processing capabilities in the payments value chain in various regions and across the globe with an expanded suite of offerings, including:

- Issuer solutions designed to provide customers with a complete processing solution to help them create differentiated products and services and allow quick deployment of payments portfolios across banking channels
- Payment gateways that offer a single interface to provide e-commerce merchants with the ability to process secure online and in-app payments and offer value-added solutions, including outsourced electronic payments, fraud prevention and alternative payment options
- Mobile gateways that facilitate transaction routing and processing for mobile-initiated transactions

Our New Network Capabilities



Open Banking

We offer an open banking platform that enables data providers and third parties, on a permissioned basis, to reliably access, securely transmit and confidently manage consumer data to improve the customer experience. Our platform enables consumers to have choice of financial services, providing them the ability to access, control and benefit from the use of their data, as well as an improved payment experience. Our platform is also used to serve the needs of the lending market, including through streamlining loan application processes and improving credit decisioning, thereby driving further financial inclusion. The network connections that underpin this platform leverage our data principles (including data usage guardrails, consumer protection and consent management), as well as API technology.

Key 2022 Developments

- In 2022, we partnered with a leading financial institution on an ACH payment solution (currently in the pilot phase) that uses our open banking capabilities to enable seamless and secure consumer bill payments.
- In 2022, we launched a suite of smart payment decisioning tools that add value to our enhanced ACH solution, helping our partners determine the optimal timing and payment rail for a successful payment transaction.



Digital Identity

We enable digital identity solutions, which provide seamless digital experiences and strengthen and secure digital payments across individuals, devices and accounts. Our digital identity capabilities focus on the identity of people, devices and transactions. They embody privacy by design principles and are consent-centric. Our solutions include device intelligence and behavioral biometrics (to determine whether the user is genuine or a fraudulent device), document proofing, IP intelligence, biometrics, transaction fraud data (from which we derive insights that can be used to significantly improve the global approval rate of transactions), location, identity attributes and payment authorization.

Our People

As of December 31, 2022, we employed approximately 29,900 persons globally. Our employee base is predominantly full-time and approximately 66% were employed outside of the United States in more than 80 countries around the world. We also had approximately 4,900 contractors which we used to supplement our employee base in order to meet specific needs. Our voluntary workforce turnover (rolling 12-month attrition) was approximately 11% as of December 31, 2022. The total cost of our workforce for the year ended December 31, 2022 was \$5.3 billion, which primarily consists of compensation, benefits and other personnel- and contractor-related costs.

Management reviews our people strategy and culture, as well as related risks, with our Human Resources and Compensation Committee on a quarterly basis, and annually with our Board of Directors. Additionally, our Board and Board committees are tasked with overseeing other human capital management matters on a regular basis, such as ensuring processes are in place for maintaining an ethical corporate culture, overseeing key diversity initiatives, policies and practices, and monitoring governance trends in areas such as human rights. Our ability to attract, retain and engage top talent and build a culture centered around decency, with an overall focus on diversity, equity and inclusion (“DEI”), is critical to our business strategy.

Specifically, to enable our business strategy effectively, our aim is to:

- attract talent with the key skills needed
- develop and retain an agile workforce that can compete in a fast-paced, digitally native and innovative environment
- build on our DEI efforts to support our employees’ growth

Attract talent.

- We continuously recruit talent by leveraging the strength of our brand and utilizing a variety of sources, channels, and initiatives in order to support our growth across sectors, markets and emerging industries
- Our acquisition activity has also provided a strong source of talent with differentiated skills

Develop and retain talent. We develop and retain our employees, ensuring we stay competitive and respond to both changing market dynamics and our employees’ needs while supporting a culture of innovation grounded in decency. Our efforts include:

- An annual cycle that aligns with our “Mastercard Way” and focuses on objective setting, performance assessment, talent evaluation, skill development, opportunities and career progression
- Succession planning for key roles, including talent and leadership programs across various levels. These programs embed our culture principles, include diverse populations, aim to develop talent and managerial skills through personalized coaching and group executive development and leverage mentorship programs and other learning opportunities
- A competitive compensation approach (subject to periodic reviews) under which eligible employees across multiple job levels can receive long-term incentive equity awards
- Contributions to employees’ financial well-being as they plan for retirement. All employees globally are entitled to receive a matching Mastercard contribution of \$1.67 for every \$1 contributed to a 401(k) or other retirement plan on the first 6% of base pay
- Continued expansion and prioritization of well-being offerings for employees, including access to mental, physical and financial health resources, additional paid time off due to COVID-related illness and dependent care, and expanded benefits for family planning
- An evolved approach to flexible working, including the launch of a four-week “work from anywhere” policy, meeting-free days and team-based decision-making for how and where our employees work
- Support of employee charitable donations with matching Mastercard gifts of up to \$15,000 per employee annually, as well as providing full-time employees five paid days per year for eligible volunteer work
- Experience surveys that we periodically run to assess our overall employee engagement areas (with occasional focus on more targeted topics) and prioritize how we address emerging opportunity areas
- A culture of high ethical business practices and compliance standards, grounded in honesty, decency, trust and personal accountability. It is driven by “tone at the top,” reinforced with regular training, fostered in a speak-up environment, and measured by our periodic employee surveys and other metrics that enable our Board to maintain a pulse on areas of strength and opportunities for improvement

The Mastercard Way
<p>The Mastercard Way is the statement of our culture: how we work and why we work that way. It consists of three principles that address where we are going as an organization, how we work together and how we deliver for our customers and each other.</p> <ul style="list-style-type: none"> • Create value • Grow together • Move fast

Diversity, equity and inclusion underpin everything we do:

- We monitor our recruitment, development, succession and retention practices with a focus on gender, race (in the U.S.) and generational mix of our employee population
- We have developed regional and functional action plans to identify priorities and actions that will help us make more progress for DEI, including appropriate balance and inclusion in gender and racial representation
- We remain committed to our “In Solidarity” initiative through alignment of our DEI plans globally to address local needs and opportunities, for example through the introduction of new training programs such as our neurodiversity hiring initiative and new partnerships with historically Black colleges and universities (HBCUs) in the U.S.
- We remain dedicated to practices designed to ensure there is equal pay for equal work. We have established a framework for examining pay practices annually, supported by third-party analysis and benchmarked to the external market. We assess compensation decisions for potential pay disparities by gender (including base, bonus and long-term incentives), among other categories, and appropriately respond to any disparities that are found

Workforce Demographics
<ul style="list-style-type: none"> • 39% of our global workforce are women • 42% of our U.S. workforce are people of color ¹ • Female employees earned \$1.00 for every \$1.00 men earned during 2022 • In the U.S., employees of color earned \$1.00 for every \$1.00 white employees earned during 2022 ¹ • The median pay for female employees is 94.0% compared to male employees ²

- Our employee incentive compensation plan features an ESG modifier that includes quantitative goals for a number of ESG items, including gender pay parity. In 2022, we expanded this modifier to all employees, underscoring our commitment to ESG

We expect to provide more detailed information in 2023 regarding our employees, including additional workforce demographics, in our annual Corporate Sustainability Report and Proxy Statement, both of which will be located on our website.

- ¹ People of Color are defined as Black or African American, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian/other Pacific Islander and two or more races. Ethnicity data does not include undeclared.
- ² Data as of September 30, 2022. The gender pay gap is predominantly due to the fact that we have more men in senior roles, not because men are paid more.

Brand



Our family of well-known brands includes Mastercard, Maestro and Cirrus. We manage and promote our brands and brand identities through advertising, promotions and sponsorships, as well as digital, mobile and social media initiatives, in order to increase people's preference for our brands and usage of our products. We sponsor a variety of sporting, entertainment and charity-related marketing properties to align with consumer segments important to us and our customers. Our advertising plays an important role in building brand visibility, preference and overall usage among account holders globally. Our "Priceless[®]" advertising campaign, which celebrated its 25th anniversary in 2022 and has run in more than 50 languages and in more than 120 countries worldwide, promotes Mastercard usage benefits and acceptance, markets Mastercard payment products and solutions and provides Mastercard with a consistent, recognizable message that supports our brand around the globe.

Data

We use our data assets, infrastructure and platforms to create a range of products and services for our customers, including the majority of our value-added services, which help reduce fraud, increase security, provide actionable insights to our customers to assist in their decision making and enable our customers to increase their engagement with consumers. We do all this while incorporating our data principles in how we design, implement and deliver those solutions. Our Privacy by Design and Data by Design processes have been developed to ensure we embed privacy, security and data controls in all of our products and services, keeping a clear focus on protecting customers' and individuals' data. We do this in a number of ways:

- **Practicing data minimization.** We collect and retain only the data that is needed for a given product or service, and limit the amount and type of personal information shared with third parties
- **Being transparent and providing control.** We explain how we use personal information and give individuals' access and control over how their data is used and shared
- **Working with trusted partners.** We select partners and service providers who share our principled-approach to protecting data
- **Addressing data bias.** We ensure our use of advanced analytics, including AI and Machine Learning, utilizes diverse data sets to create fair and inclusive solutions that reflect individual, group and societal interests
- **Advancing positive social impact.** We utilize our data sets to create innovative solutions to societal challenges, promoting inclusive financial, social, climate, health and education growth

Technology

We leverage our technology to help enable payments, services and new networks, enhance our operational strength and enable our employees to deliver effectively for our customers. Our strategy to "lead through technology" includes the following key areas:

Offering our products to customers around the world:

- Standardizing and simplifying how we connect with customers to provide them with the tools to manage and expand their Mastercard relationship
- Deploying our cloud-native technology infrastructure to adapt to evolving market conditions and further enhance speed, resiliency and scalability

Enabling our full range of products and services:

- Enhancing payment rails and expanding them across payments and services, including providing seamless customer adoption across new services and enhancing connectivity to new networks
- Further evolving our data infrastructure to unlock incremental value and ensure ongoing compliance with evolving data regulations

Empowering our employees:

- Improving the speed in which we deliver for our customers through a combination of tools and customer-centric practices
- Attracting, developing and retaining top technology talent, as well as strengthening our employees' technology acumen

Revenue Sources

Mastercard is a payments network service provider that generates revenue from a wide range of payment solutions we provide to our customers. We classify our net revenues, which includes the impact of rebates and incentives, from contracts with customers into two categories: (i) payment network and (ii) value-added services and solutions.

Within our payment network, revenue is primarily generated from charging fees to our customers based on GDV (which includes both domestic and cross-border volume) on the cards that carry our brands and for providing switching and other network-related services.

Within our value-added services and solutions, we generate revenue primarily related to the following:

- Cyber and intelligence solutions
- Data and services solutions
- ACH batch and real-time account-based domestic and cross-border payments and solutions
- Processing and gateway
- Open banking solutions
- Digital identity solutions

See "Management's Discussion and Analysis of Financial Condition and Results of Operations - Revenue" in Part II, Item 7 and Note 3, Revenue for more detail about our revenue.

Intellectual Property

We own a number of valuable trademarks that are essential to our business, including Mastercard, Maestro and Cirrus, through one or more affiliates. We also own numerous other trademarks covering various brands, programs and services offered by us to support our payment programs. Trademark and service mark registrations are generally valid indefinitely as long as they are used and/or properly maintained. Through license agreements with our customers, we authorize the use of our trademarks on a royalty-free basis in connection with our customers' issuing and merchant acquiring businesses. In addition, we own a number of patents and patent applications relating to payment solutions, transaction processing, smart cards, contactless, mobile, biometrics, AI, security systems, blockchain and other technologies, which are important to our business operations. These patents expire at varying times depending on the jurisdiction and filing date.

Competition

We face a number of competitors both within and outside of the global payments industry. We compete in all categories of payment (including paper-based payments and all forms of electronic payments) as well as in all categories in which we provide value-added services and solutions:

- **General Purpose Payments Networks.** We compete worldwide with payments networks such as Visa, American Express, JCB, China UnionPay and Discover, among others. These competitors tend to offer a range of card-based payment products. Some competitors have more market share than we do in certain jurisdictions. Some also have different business models that may provide an advantage in pricing, regulatory compliance burdens or otherwise. Globally, financial institutions may issue both Mastercard and Visa-branded payment products, and we compete with Visa for business on the basis of individual portfolios or programs. In addition, a number of our customers issue American Express, China UnionPay and/or Discover-branded payment cards in a manner consistent with a four-party system. We continue to face intense competitive pressure on the prices we charge our issuers and acquirers, and we seek to enter into business agreements with them through which we offer incentives and other support to issue and promote our payment products.

- **Debit and Local Networks.** We compete with ATM and point of sale debit networks in various countries. In addition, in many countries outside of the United States, local debit brands serve as the main domestic brands, while our brands are used mostly to enable cross-border transactions (typically representing a small portion of overall transaction volume). Certain jurisdictions have also created domestic card schemes focused mostly on debit. In addition, several governments are promoting, or considering promoting, local networks for domestic switching. See “Risk Factors” in Part I, Item 1A for a more detailed discussion of the risks related to payments system regulation and government actions that may prevent us from competing effectively.
- **Real-time Account-based Payments Systems.** We face competition in the ACH and real-time account-based payments space from other companies (such as ACI Worldwide, FIS and Volante Technologies) that provide infrastructure, applications and services to support these payment solutions. As these real-time account-based propositions mature, we face a possible increase in competition for our existing domestic person-to-merchant (“P2M”) and person-to-person (“P2P”) transaction market share. Similarly, as interlinking of these infrastructures is further explored, they could disrupt our existing cross-border P2M and P2P market share. Also, several industry initiatives are experimenting with the concept of account-based global schemes, which could lead to a disruption of the clearing and settlement options utilized in various currencies.
- **Alternative Payments Systems and New Entrants.** As the global payments industry becomes more complex, we face increasing competition from alternative payments systems and emerging payments providers, both for customers and data. Many of these providers, who in many circumstances can also be our partners or customers, have developed payments systems focused on online activity in e-commerce and mobile channels (in some cases, expanding to other channels), and may process payments using in-house account transfers, real-time account-based payments networks or global or local networks. Examples include digital wallet providers (such as Paytm, PayPal, Alipay and Amazon), point of sale financing/buy-now-pay-later providers (such as Klarna, Affirm and Afterpay), mobile operator services, mobile phone-based money transfer and microfinancing services (such as M-PESA) and handset manufacturers.
- **Government-Backed Networks.** Governments have been increasingly creating local payments structures (such as the Brazilian Instant Payment System-PIX, FedNow in the U.S., the European Payments Initiative, Nigerian NIBSS Card and the South African Instant Payment System-Payshap), which are increasingly being considered as alternatives to traditional domestic payment solutions and schemes such as ours. In addition to local and regional networks, more than 80 national governments are exploring the use of central bank digital currencies (“CBDCs”).
- **Digital Currencies.** Stablecoins and floating cryptocurrencies may become more popular as they become more regulated and increasingly viewed as providing immediacy, 24/7 accessibility, immutability and efficiency. Such currencies have started to be accepted by P2M players (such as Square), while some banks have started experimenting with blockchain B2B payments (such as J.P. Morgan). These currencies have also introduced into the payments ecosystem an emerging set of providers referred to as crypto natives, who have the ability to disrupt traditional financial markets. The increased prominence of digital currencies creates an opportunity for us but could equally compete with our products and services.
- **Value-Added Service Providers and New Network Capabilities Players.** We face competition from companies that provide alternatives to our value-added services and solutions. These companies include information services and consulting firms that provide consulting services and insights to financial institutions, merchants and governments, technology companies that provide cyber and fraud solutions, and companies that compete against us as providers of loyalty and program management solutions. We also face competition from companies that provide alternatives to our open banking and digital identity solutions. Regulatory initiatives could also lead to increased competition in this space.

We play a valuable role as a trusted intermediary in a complex system, creating value for individual stakeholders and the payments ecosystem overall. Our competitive advantages include:



Global network

Highly adaptable and world class global payments network built over more than 50 years that can reach a variety of parties to enable payments anywhere



Franchise model

Establishing rules, standards and bearing of financial risk (including our settlement guarantee backed by our strong credit standing)



Multi-rail

Multiple payment and new network capabilities based on our innovation and technology that enable choice



Brand

Globally recognized and trusted brands



Security

Enable all parties in the payments ecosystem to transact securely and with confidence through safety and security solutions offered on our network (including fraud prevention and authentication)



Services

Value-added services for all parties including analytics insights, consulting and marketing services and loyalty solutions



Talent and culture

World class talent and culture, with a focus on diversity, equity and inclusion and “doing well by doing good”



Data

Products and services leveraging our data assets, infrastructure and platforms that incorporate our data principles and reflect our Privacy by Design and Data by Design processes



Technology

Leading-edge technology that advances the quality, speed and diversity of our offerings and solutions



Government engagement

Ability to serve a broad array of participants in global payments due to our expanded on-soil presence in individual markets and a heightened focus on working with governments

Collectively, the capabilities that we have created organically, and those that we have obtained through acquisitions, support and build upon each other to enhance the total proposition we offer our customers. They enable us to partner with many participants in the broader payments ecosystem and provide choice, security and services to improve the value we provide to our customers.

Government Regulation

As a technology company operating in the global payments industry, we are subject to government regulation that impacts key aspects of our business. In particular, we are subject to regulations that affect the payments industry in the many countries in which our integrated products and services are used. We are committed to complying with all applicable laws and regulations and implementing policies, procedures and programs designed to promote compliance. We monitor and coordinate globally while acting locally and establish relationships to assess and manage the effects of regulation on us. See “Risk Factors” in Part I, Item 1A for more detail and examples of the regulation to which we are subject.

Payments Oversight and Regulation. Central banks and other regulators in several jurisdictions around the world either have, or are seeking to establish, formal oversight over the payments industry, as well as authority to regulate certain aspects of the payments systems in their countries. Such authority has resulted in regulation of various aspects of our business. In the European Union, Mastercard is subject to systemic importance regulation, which includes various requirements we must meet, including obligations related to governance and risk management. In the U.K., the Bank of England designated Vocalink™, our real-time account-based payments network platform, as a “specified service provider”, and Mastercard Europe as a “recognized payment system”, which includes supervisions and examination requirements. In addition, European Union legislation requires us to separate our scheme activities (brand, products, franchise and licensing) from our switching activities and other processing in terms of how we go to market, make decisions and organize our structure. Examples of other markets where Mastercard is formally overseen include Australia, Brazil, India, Mexico and South Africa. Additionally, certain of our subsidiaries are also regulated as payments institutions, including as money transmitters. This regulation subjects us to licensing obligations and regulatory supervision, as well as various business conduct and risk management requirements.

Interchange Fees. Interchange fees that support the function and value of four-party payments systems like ours are being reviewed or challenged in various jurisdictions around the world via legislation to regulate interchange fees, competition-related regulatory proceedings, central bank regulation and litigation. Examples include statutes in the United States that cap debit interchange for certain regulated activities, proposed legislation in the United States to extend routing mandates to credit, our settlement with the European Commission resolving its investigation into our interregional interchange fees and the European Union legislation capping consumer credit and debit interchange fees on payments issued and acquired within the European Economic Area (the “EEA”). For more detail, see “Risk Factors - Other Regulation” in Part I, Item 1A and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8.

Preferential or Protective Government Actions. Some governments have taken action to provide resources, preferential treatment or other protection to selected domestic payments and processing providers, as well as to create their own national providers. For example, governments in some countries mandate switching of domestic payments either entirely in that country or by only domestic companies. In China, we are currently excluded from domestic switching and are seeking market access, which is uncertain and subject to a number of factors, including receiving regulatory approval. We are in active discussions to explore different solutions. Some jurisdictions are currently considering adopting or have adopted “data localization” requirements, which mandate the collection, processing, and/or storage of data within their borders. This is the case, for instance, in India, China and Saudi Arabia.

Key 2022 Developments

- In 2022, the U.K. Payment Systems Regulator (“PSR”) opened a market review of network constraints in setting network fees and European Union/U.K. cross-border interchange to determine whether the market is functioning in terms of competition, innovation and promoting the interests of end users. The market review will be a multi-year effort during which the PSR may make recommendations for potential changes.
- The U.S. Federal Reserve announced that, effective July 1, 2023, the requirement for issuing customers to enable two unaffiliated networks for routing debit card-present transactions will be extended to debit card-not-present transactions.
- In May 2022, legislation was introduced in the U.S. Senate (but not voted on prior to the end of the previous Congress) that would have extended routing mandates for Mastercard and Visa to credit. The bill stipulated that the top two networks could not be enabled on the same card, leaving room for regional networks to serve as second options. The bill would also have mandated Mastercard provide authentication, tokenization or other security technology to competing networks, whether or not the transaction is switched by Mastercard.
- In December 2022, the U.S. Federal Trade Commission’s Bureau of Competition voted to issue an administrative complaint and accept a consent agreement with Mastercard related to our compliance with the debit routing provisions of the Durbin Amendment. Pursuant to this agreement, we agreed to provide primary account numbers (PANs) so merchants can route tokenized online debit transactions to alternative networks.

Various forms of data localization requirements or data transfer restrictions are also under consideration in other countries and jurisdictions, including the European Union.

Anti-Money Laundering, Counter Financing of Terrorism, Economic Sanctions and Anti-Corruption. We are subject to anti-money laundering (“AML”) and counter-financing of terrorism (“CFT”) laws and regulations globally, including the U.S. Bank Secrecy Act and the USA PATRIOT Act, as well as the various economic sanctions programs, including those imposed and administered by the U.S. Office of Foreign Assets Control (“OFAC”). We have implemented a comprehensive AML/CFT program, comprised of policies, procedures and internal controls, including the designation of a compliance officer, which is designed to prevent our payments network from being used to facilitate money laundering and other illicit activity and to address these legal and regulatory requirements and assist in managing money laundering and terrorist financing risks. The economic sanctions programs administered by OFAC restrict financial transactions and other dealings with certain countries and geographies (specifically Crimea, the Donetsk People’s Republic and Luhansk People’s Republic regions of Ukraine, Cuba, Iran, North Korea and Syria) and with persons and entities included in OFAC sanctions lists including its list of Specially Designated Nationals and Blocked Persons (the “SDN List”). We take measures to prevent transactions that do not comply with OFAC and other applicable sanctions, including establishing a risk-based compliance program that has policies, procedures and controls designed to prevent us from having unlawful business dealings with prohibited countries, regions, individuals or entities. As part of this program, we obligate issuers and acquirers to comply with their local sanctions obligations and the U.S. sanctions programs, including requiring the screening of account holders and merchants, respectively, against OFAC sanctions lists (including the SDN List). Iran and Syria have been identified by the U.S. State Department as terrorist-sponsoring states, and we have no offices, subsidiaries or affiliated entities located in these countries and do not license entities domiciled there. We are also subject to anti-corruption laws and regulations globally, including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act, which, among other things, generally prohibit giving or offering payments or anything of value for the purpose of improperly influencing a business decision or to gain an unfair business advantage. We have implemented policies, procedures and internal controls to proactively manage corruption risk.

Financial Sector Oversight. We are or may be subject to regulations related to our role in the financial industry and our relationship with our financial institution customers. In addition, we are or may be subject to regulation by a number of agencies charged with oversight of, among other things, consumer protection, cybersecurity, financial and banking matters. The regulators have supervisory and independent examination authority as well as enforcement authority that we may be subject to because of the services we provide to financial institutions that issue and acquire our products.

Issuer and Acquirer Practices Legislation and Regulation. Our issuers and acquirers are subject to numerous regulations and investigations applicable to banks, financial institutions and other licensed entities, impacting us as a consequence. Additionally, regulations such as the revised Payment Services Directive (commonly referred to as “PSD2”) in the EEA require financial institutions to provide third-party payment processors access to consumer payment accounts, enabling them to route transactions away from Mastercard products and provide payment initiation and account information services directly to consumers who use our products. PSD2 also requires a new standard for authentication of transactions, which necessitates additional verification information from consumers to complete transactions. This may increase the number of transactions that consumers abandon if we are unable to ensure a frictionless authentication experience under the new standards.

Regulation of Internet, Digital Transactions and High-Risk Merchant Categories. Various jurisdictions have enacted or have proposed regulation related to internet transactions. The legislation applies to payments system participants, including us and our customers, and is implemented through a federal regulation. We may also be impacted by evolving laws surrounding gambling, including fantasy sports, as well as certain legally permissible but high-risk merchant categories, such as adult content, firearms, alcohol and tobacco.

Privacy, Data and Information Security. Aspects of our operations or business are subject to increasingly complex privacy and data protection laws in the United States, the European Union and elsewhere around the world. For example, in the United States, we and our customers are respectively subject to Federal Trade Commission and federal banking agency information safeguarding requirements under the Gramm-Leach-Bliley Act that require the maintenance of a written, comprehensive information security program. In the European Union, we are subject to the General Data Protection Regulation (the “GDPR”), which requires a comprehensive privacy and data protection program to protect the personal and sensitive data of EEA residents. A number of regulators and policymakers around the globe are using the GDPR as a reference to adopt new or updated privacy and data protection laws. Due to increasing data collection and data flows, numerous data breaches and security incidents as well as the use of emerging technologies such as artificial intelligence, regulations in this area are constantly evolving with regulatory and legislative authorities in numerous parts of the world adopting proposals to regulate data and protect information. In addition, the interpretation and application of these privacy and data protection laws are often uncertain and in a state of flux, thus requiring constant monitoring for compliance.

ESG. Various jurisdictions have adopted or are increasingly considering adopting laws and regulations impacting our reporting on ESG governance, strategy, risk management and metrics and targets. Regulations already adopted or being considered include required corporate reporting and disclosures on specific topics as well as broader ESG matters. Specific topics include climate (such as the U.K. Streamlined Energy and Carbon Reporting, the European Union Corporate Sustainability Reporting Directive, or “EU CSRD”, and the SEC proposed rules related to climate change) and human rights (such as the European Union Corporate Sustainability Due Diligence Directive). Broader ESG matters include other environmental matters, treatment of employees and diversity of workforce (such as the EU CSRD).

Additional Regulatory Developments. Various regulatory agencies also continue to examine a wide variety of issues that could impact us, including evolving laws surrounding buy-now-pay-later, digital currencies, marijuana, prepaid payroll cards, identity theft, account management guidelines, disclosure rules, security and marketing that would impact our customers directly.

Additional Information

Mastercard Incorporated was incorporated as a Delaware corporation in May 2001. We conduct our business principally through our principal operating subsidiary, Mastercard International Incorporated, a Delaware non-stock (or membership) corporation that was formed in November 1966. For more information about our capital structure, including our Class A common stock (our voting stock) and Class B common stock (our non-voting stock), see Note 16 (Stockholders' Equity) to the consolidated financial statements included in Part II, Item 8.

Website and SEC Reports

Our internet address is www.mastercard.com. From time to time, we may use our corporate website as a channel of distribution of material company information. Financial and other material information is routinely posted and accessible on the investor relations section of our corporate website. You can also visit “Investor Alerts” in the investor relations section to enroll your email address to automatically receive email alerts and other information about Mastercard.

Our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports are available for review, without charge, on the investor relations section of our corporate website as soon as reasonably practicable after they are filed with, or furnished to, the U.S. Securities and Exchange Commission (the “SEC”). The information contained on our corporate website, including, but not limited to, our Corporate Sustainability Report, our Global Inclusion Report and our U.S. Consolidated EEO-1 Report, is not incorporated by reference into this Report. Our filings are also available electronically from the SEC at www.sec.gov.

Item 1A. Risk factors

RISK HIGHLIGHTS									
<p>Legal and Regulatory</p> <ul style="list-style-type: none"> Payments Industry Regulation Preferential or Protective Government Actions Privacy, Data and Security Other Regulation Litigation 	<p>Business and Operations</p> <table border="1"> <tr> <td>Competition and Technology</td> <td>Brand, Reputational Impact and ESG</td> </tr> <tr> <td>Information Security and Operational Resilience</td> <td>Talent and Culture</td> </tr> <tr> <td>Stakeholder Relationships</td> <td>Acquisitions</td> </tr> <tr> <td>Global Economic and Political Environment</td> <td>Settlement and Third-Party Obligations</td> </tr> </table>	Competition and Technology	Brand, Reputational Impact and ESG	Information Security and Operational Resilience	Talent and Culture	Stakeholder Relationships	Acquisitions	Global Economic and Political Environment	Settlement and Third-Party Obligations
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Global Economic and Political Environment	Settlement and Third-Party Obligations								
<p>Class A Common Stock and Governance Structure</p>									

Legal and Regulatory

Payments Industry Regulation

Global regulatory and legislative activity directly related to the payments industry may have a material adverse impact on our overall business and results of operations.

Jurisdictions increasingly have regulated or established and expanded authority over certain aspects of payments systems such as ours, or have sought to do so. These efforts established, and potentially further expand, obligations or restrictions with respect to the types of products and services that we may offer, the countries in which our integrated products and services may be used, the way we structure and operate our business and the types of consumers and merchants who can obtain or accept our products or services. New regulations and oversight could also relate to our clearing and settlement activities (including policies, procedures and requirements related to risk management, collateral, participant default, timely switching of financial transactions, and capital and financial resource). Several jurisdictions have also inquired about the network fees we charge to our customers (in some cases as part of broader market reviews of retail payments).

Several central banks or similar regulatory bodies around the world have also increased, or are seeking to increase, their formal oversight of the electronic payments industry. In several jurisdictions, we have been designated as a “systemically important payment system”, with other regulators considering similar designations. Parts of our business have also been deemed as a “specified service provider” and considered critical national infrastructure. These obligations, designations and restrictions result in heightened regulatory oversight and scrutiny. They may further expand and could conflict with each other as more jurisdictions impose oversight of payments systems. Moreover, these efforts may influence the approaches of other regulators around the world that are increasingly looking to replicate similar regulation of payments and other industries. Similarly, jurisdictions that regulate a particular product may extend their regulation to similar products (for example, debit regulations could lead to regulation of credit products or network fees). As a result, the risks to our business created by any one new law or regulation are magnified by the potential it has to be replicated in other jurisdictions or involve other products within any particular jurisdiction.

The expansion of our products and services as part of our multi-rail strategy have also created the need for us to obtain new types and increasing numbers of regulatory licenses, resulting in increased supervision and additional compliance burdens distinct from those imposed on our core payment network activities. For example, certain of our subsidiaries maintain money transfer licenses to support certain activities. These licenses typically impose supervisory and examination requirements, as well as capital, safeguarding, risk management and other business obligations.

Increased regulation and oversight of payments systems, as well as increased exposure to regulation resulting from changes to our products and services, have resulted and may continue to result in significant compliance and governance burdens or otherwise increase our costs. As a result, customers could be less willing to participate in our payments system and/or use our other products or services, reduce the benefits offered in connection with the use of our products (making our products less desirable to consumers), reduce the volume of domestic and cross-border transactions or other operational metrics, disintermediate us, impact our profitability and/or limit our ability to innovate or offer differentiated products and services, all of which could materially and adversely impact our financial performance. In addition, any regulation that is enacted related to the type and level of network fees we charge our customers could also materially and adversely impact our results of operations. Regulators could also require us to obtain prior approval for changes to our system rules, procedures or operations, or could require customization with regard to such changes, which could negatively impact us. Such changes could lead to new or different criteria for participation in and access to our payments system by financial institutions or other customers. Moreover, failure to comply with the laws and regulations to which we are subject could result in fines, sanctions, civil damages or other penalties, which could materially and adversely affect our overall business and results of operations, as well as have an impact on our brand and reputation.

Increased regulatory, legislative and litigation activity with respect to interchange rates could have an adverse impact on our business.

Interchange rates are a significant component of the costs that merchants pay in connection with the acceptance of products associated with our core payment network. Although we do not earn revenues from interchange, interchange rates can impact the volume of transactions we see on our payment products. If interchange rates are too high, merchants may stop accepting our products or route transactions away from our network. If interchange rates are too low, issuers may stop promoting our integrated products and services, eliminate or reduce loyalty rewards programs or other account holder benefits (e.g., free checking or low interest rates on balances), or charge fees to account holders (e.g., annual fees or late payment fees).

Governments and merchant groups in a number of countries have implemented or are seeking interchange rate reductions through legislation, competition law, central bank regulation and litigation. See “Business - Government Regulation” in Part I, Item 1 and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8 for more details.

If issuers cannot collect or we are required to reduce interchange rates, issuers may be less willing to participate in our four-party payments system, or may reduce the benefits offered in connection with the use of our products, reducing the attractiveness of our products to consumers. These and other impacts could lower transaction volumes, and/or make proprietary three-party networks or other forms of payment more attractive. Issuers could reduce the benefits associated with our products or choose to charge higher fees to consumers to attempt to recoup a portion of the costs incurred for their services. In addition, issuers could seek a fee reduction from us to decrease the expense of their payment programs, particularly if regulation has a disproportionate impact on us as compared to our competitors in terms of the fees we can charge. This could make our products less desirable to consumers, reduce the volume of transactions and our profitability, and limit our ability to innovate or offer differentiated products.

We are devoting substantial resources to defending our right to establish interchange rates in regulatory proceedings, litigation and legislative activity. The potential outcome of any of these activities could have a more positive or negative impact on us relative to our competitors. If we are ultimately unsuccessful in defending our ability to establish interchange rates, any resulting legislation, regulation and/or litigation may have a material adverse impact on our overall business and results of operations. In addition, regulatory proceedings and litigation could result (and in some cases has resulted) in us being fined and/or having to pay civil damages, the amount of which could be material.

Limitations on our ability to restrict merchant surcharging could materially and adversely impact our results of operations.

We have historically implemented policies, referred to as no-surcharge rules, in certain jurisdictions, including the United States and Canada, that prohibit merchants from charging higher prices to consumers who pay using our products instead of other means. Authorities in several jurisdictions have acted to end or limit the application of these no-surcharge rules (or indicated interest in doing so). Additionally, we have modified our no-surcharge rules to permit U.S. and Canadian merchants to surcharge credit cards, subject to certain limitations. It is possible that over time merchants in some or all merchant categories in these jurisdictions may choose to surcharge as permitted by the rule change. This could result in consumers viewing our products less favorably and/or using alternative means of payment instead of electronic products, which could result in a decrease in our overall transaction volumes, and which in turn could materially and adversely impact our results of operations.

Preferential or Protective Government Actions

Preferential and protective government actions related to domestic payment services could adversely affect our ability to maintain or increase our revenues.

Governments in some countries have acted, or in the future may act, to provide resources, preferential treatment or other protection to selected national payment and switching providers, or have created, or may in the future create, their own national provider. This action may displace us from, prevent us from entering into, or substantially restrict us from participating in, particular geographies, and may prevent us from competing effectively against those providers. For example:

- Governments in some countries have implemented, or may implement, regulatory requirements that mandate switching of domestic payments either entirely in that country or by only domestic companies.
- Some jurisdictions have implemented, or are considering, requirements to collect, process and/or store data within their borders, as well as prohibitions on the transfer of data abroad, leading to technological and operational implications as well as increased compliance burdens and other costs.
- Geopolitical events (such as Russia's invasion of Ukraine) and resulting OFAC sanctions, adverse trade policies, enforcement of U.S. laws related to counter financing of terrorism, economic sanctions and anti-corruption, or other types of government actions could lead affected or other jurisdictions to take actions in response that could adversely affect our business. Moreover, given our decision to suspend business operations in Russia, other separate jurisdictions may decide to increase their focus on growing local payment networks and other solutions.
- Regional groups of countries are considering, or may consider, efforts to restrict our participation in the switching of regional transactions.

Such developments prevent us from utilizing our global switching capabilities for domestic or regional customers. In addition, to the extent a jurisdiction determines us not to be in compliance with regulatory requirements (including those related to data localization), we have, and may continue to be, subject to resource and time pressures in order to come back into compliance. Our inability to effect change in, or work with, these jurisdictions could adversely affect our ability to maintain or increase our revenues and extend our global brand.

Additionally, some jurisdictions have implemented, or may implement, foreign ownership restrictions, which could potentially have the effect of forcing or inducing the transfer of our technology and proprietary information as a condition of access to their markets. Such restrictions could adversely impact our ability to compete in these markets.

Privacy, Data and Security

Regulation of privacy, data, security and the digital economy could increase our costs, as well as negatively impact our growth.

We are subject to increasingly complex regulations related to privacy, data and information security in the jurisdictions in which we do business. These regulations could result in negative impacts to our business. As we continue to develop integrated and personalized products and services to meet the needs of a changing marketplace (as well as acquire new companies), we have expanded our information profile through the collection of additional data from additional sources and across multiple channels. This expansion has amplified the impact of these regulations on our business. This regulation requires monitoring of and changes to our data practices in regard to the collection, use, disclosure, storage, transfer and/or protection of personal and sensitive information, as well as increased care in our data management, governance and quality practices. We are also subject to enhanced compliance and operational requirements in the European Union, and policymakers around the globe are or are considering adopting new or updated privacy laws that have resulted or could result in similar or stricter requirements in other jurisdictions. For example, some jurisdictions have implemented or are otherwise considering requirements to collect, process and/or store data within their borders, as well as prohibitions on the transfer of data abroad, leading to technological and operational implications. Other jurisdictions have adopted or are otherwise considering adopting sector-specific regulations for the payments industry, including forced data sharing requirements or additional verification requirements, as well as regulations on artificial intelligence and data governance, that overlap or conflict with, or diverge from, general privacy rules. Failure to comply with these laws, regulations and requirements could result in fines, sanctions or other penalties, which could materially and adversely affect our results of operations and overall business, as well as have an impact on our reputation.

New requirements or changing interpretations of existing requirements in these areas, or the development of new regulatory schemes related to the digital economy in general, may also increase our costs and/or restrict our ability to leverage data for innovation. This could impact the products and services we offer and other aspects of our business, such as fraud monitoring, the need for improved data management, governance and quality practices, the development of information-based products and solutions, and technology operations. In addition, these requirements may increase the costs to our customers of issuing payment products, which may, in turn, decrease the number of our payment products that they issue. Moreover, due to account data compromise events and privacy abuses by other companies, as well as the disclosure of monitoring activities by certain governmental agencies in combination with the use of artificial intelligence and new technologies, there has been heightened legislative and regulatory scrutiny around the world that could lead to further regulation and requirements and/or future enforcement. Those developments have also raised public attention on companies' data practices and have changed consumer and societal expectations for enhanced privacy and data protection. While we make every effort to comply with all regulatory requirements and we deploy a Privacy by Design and Data by Design approach to all of our product development, the speed and pace of changes in laws (as well as stakeholder interests) may not allow us to meet rapidly evolving regulatory and stakeholder expectations. Any of these developments could materially and adversely affect our overall business and results of operations.

In addition, fraudulent activity and increasing cyberattacks have encouraged legislative and regulatory intervention, and could damage our reputation and reduce the use and acceptance of our integrated products and services or increase our compliance costs. Criminals are using increasingly sophisticated methods to capture consumer personal information to engage in illegal activities such as counterfeiting or other fraud. As outsourcing and specialization become common in the payments industry, there are more third parties involved in processing transactions using our payment products. While we are taking measures to make card and digital payments more secure, increased fraud levels involving our integrated products and services, or misconduct or negligence by third parties switching or otherwise servicing our integrated products and services, could lead to legislative or regulatory intervention, such as enhanced security requirements and liabilities, as well as damage to our reputation.

Other Regulation

Regulations that directly or indirectly apply to Mastercard as a result of our participation in the global payments industry may materially and adversely affect our overall business and results of operations.

We are subject to regulations that affect the payments industry in the many jurisdictions in which our integrated products and services are used. Many of our customers are also subject to regulations applicable to banks and other financial institutions that, at times, consequently affect us. Such regulation has increased significantly in the last several years (as described in "Business - Government Regulation" in Part I, Item 1). Examples include:

- **Anti-Money Laundering, Counter Financing of Terrorism, Economic Sanctions and Anti-Corruption** - We are subject to AML and CFT laws and regulations globally. Economic sanctions programs administered by OFAC restrict financial transactions and other dealings with certain countries and geographies, and persons and entities. We are also subject to anti-corruption laws and regulations globally, which, among other things, generally prohibit giving or offering payments or anything of value for the purpose of improperly influencing a business decision or to gain an unfair business advantage.

- **Account-based Payments Systems** - In the U.K., aspects of our Vocalink business are subject to the U.K. payment system oversight regime and are directly overseen by the Bank of England.
- **Issuer and Acquirer Practices Legislation and Regulation** - Certain regulations (such as PSD2 in the EEA) may impact various aspects of our business. For example, PSD2's strong authentication requirement could increase the number of transactions that consumers abandon if we are unable to secure a frictionless authentication experience under these standards. An increase in the rate of abandoned transactions could adversely impact our volumes or other operational metrics.

Increased regulatory focus on us has resulted and may continue to result in significant compliance and governance burdens or otherwise increase our costs. Similarly, increased regulatory focus on our customers may cause such customers to reduce the volume of transactions processed through our systems, or may otherwise impact the competitiveness of our products. Actions by regulators could influence other organizations around the world to enact or consider adopting similar measures, amplifying any potential compliance burden. Additionally, our compliance with new economic sanctions and related laws with respect to particular jurisdictions or customers could result in a loss of business, which could be significant. Moreover, while our risk-based compliance program obligates issuers and acquirers to comply with their local sanctions programs (among other obligations), the failure of those issuers and acquirers to identify potential non-compliance issues either during or after their customer onboarding processes could ultimately impact our compliance with economic sanctions and related laws. Finally, failure to comply with the laws and regulations discussed above to which we are subject could result in fines, sanctions or other penalties. In particular, a violation and subsequent judgment or settlement against us, or those with whom we may be associated, under economic sanctions and AML, CFT, and anti-corruption laws could subject us to substantial monetary penalties, damages, and/or have a significant reputational impact. Each instance may individually or collectively materially and adversely affect our financial performance and/or our overall business and results of operations, as well as have an impact on our reputation.

We could be subject to adverse changes in tax laws, regulations and interpretations or challenges to our tax positions.

We are subject to tax laws and regulations of the U.S. federal, state and local governments as well as various non-U.S. jurisdictions. Current and potential future changes in existing tax laws, including regulatory guidance, are continuously being considered and have been or may be enacted (such as new guidelines issued by the Organization for Economic Cooperation and Development (OECD) which could impact how multinational enterprises are taxed on their global profits). These changes have or may in the future impact our effective income tax rate and tax payments. Similarly, changes in tax laws and regulations that impact our customers and counterparties, or the economy generally, have and can continue to impact us as well.

In addition, tax laws and regulations are complex and subject to varying interpretations, and any significant failure to comply with applicable tax laws and regulations in all relevant jurisdictions could give rise to substantial penalties and liabilities. Jurisdictions around the globe have also increased tax-related audits, which require time and resources to resolve.

Any changes in enacted tax laws, rules or regulatory or judicial interpretations or guidance; any adverse outcome in connection with tax audits in any jurisdiction; or any changes in the pronouncements relating to accounting for income taxes could materially and adversely impact our effective income tax rate, tax payments, financial condition and results of operations.

Litigation

Liabilities we may incur or limitations on our business related to any litigation or litigation settlements could materially and adversely affect our results of operations.

We are a defendant in a number of civil litigations and regulatory proceedings and investigations, including among others, those alleging violations of competition and antitrust law and those involving intellectual property claims (as described in Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8). In the event we are found liable in any material litigations or proceedings (particularly in a large class-action lawsuit or on the basis of an antitrust claim entitling the plaintiff to treble damages or under which we were jointly and severally liable), we could be subject to significant damages, which could have a material adverse impact on our overall business and results of operations.

Certain limitations have been placed on our business in recent years because of litigation and litigation settlements, such as changes to our no-surcharge rule in the United States and Canada. Any future limitations on our business resulting from the outcomes of any litigation or regulatory proceeding, including any changes to our rules or business practices, could impact our relationships with our customers, including reducing the volume of business that we do with them, which may materially and adversely affect our overall business and results of operations.

Business and Operations

Competition and Technology

Substantial and intense competition worldwide in the global payments industry may materially and adversely affect our overall business and results of operations.

The global payments industry is highly competitive. Our payment programs compete against competitors both within and outside of the global payments industry and compete in all payment categories, including paper-based payments and all forms of electronic payments. We compete against general purpose payments networks, debit and local networks, ACH and real-time account-based payments systems, alternative payments systems and new entrants (focused on online activity across various channels and processing payments using in-house capabilities), government-backed networks and digital currencies. We also face competition from companies that provide alternatives to our value-added services and new adjacent network capabilities (including open banking and digital identity).

Our traditional competitors may have substantially greater financial and other resources than we have, may offer a wider range of programs, services, and payment capabilities than we offer or may use more effective advertising and marketing strategies to achieve broader brand recognition and merchant acceptance than we have. They may also introduce their own innovative programs, value-added services and capabilities that adversely impact our growth.

Certain of our competitors to our core payment network operate three-party payments systems with direct connections to both merchants and consumers and these competitors may derive competitive advantages from their business models. If we continue to attract more regulatory scrutiny than these competitors because we operate a four-party system, or we are regulated because of the system we operate in a way in which our competitors are not, we could lose business to these competitors. See “Business - Competition” in Part I, Item 1.

New entrants against whom we compete have developed alternative payments systems, e-commerce payments systems and payments systems for mobile devices, as well as physical store locations. A number of these new entrants rely principally on technology to support their services that provides cost advantages, and as a result may enjoy lower costs than we do, which could put us at a competitive disadvantage.

Our ability to compete may also be affected by regulatory and legislative initiatives, as well as the outcomes of litigation, competition-related regulatory proceedings and central bank activity and legislative activity. Moreover, the suspension of our business operations in Russia may provide the opportunity for competitors to grow their business and increase their market share and relative competitive position in other jurisdictions.

If we are not able to differentiate ourselves from our competitors, drive value for our customers and/or effectively align our resources with our goals and objectives, we may not be able to compete effectively against these threats. Our failure to compete effectively against any of the foregoing competitive threats could materially and adversely affect our overall business and results of operations.

Disintermediation from stakeholders both within and outside of the payments value chain could harm our business.

As the payments industry continues to develop and change, we face disintermediation and related risks, including:

- Parties that process our transactions in certain countries may try to eliminate our position as an intermediary in the payment process. For example, merchants could switch (and in some cases are switching) transactions directly with issuers. Additionally, processors could process transactions directly between issuers and acquirers. Large scale consolidation within processors could result in these processors developing bilateral agreements or in some cases switching the entire transaction on their own network, thereby disintermediating us.
- Industry participants continue to invest in and develop alternative capabilities, such as account-to-account payments, which could facilitate P2M transactions that compete with both our core payments network and our additional payment capabilities.
- Regulation (such as PSD2 in the EEA) may disintermediate issuers by enabling third-party providers opportunities to route payment transactions away from our network and products and towards other forms of payment by offering account information or payment initiation services directly to those who currently use our products. Such regulation may also provide these processors with the opportunity to commoditize the data that are included in the transactions they are servicing. If our customers are disintermediated in their business, we could face diminished demand for our integrated products and services.
- Although we partner with fintechs and technology companies (such as digital players and mobile providers) that leverage our technology, platforms and networks to deliver their products, they could develop platforms or networks that disintermediate us from digital payments and impact our ability to compete in the digital economy. These companies may also develop products or

services that compete with our customers within the payments ecosystem and, as a result, could diminish demand for our products and services. When we do partner with fintechs and technology companies, we face a heightened risk when we share data as part of those relationships. While we share this data in a controlled manner subject to applicable anonymization and privacy and data standards, sharing this data without proper oversight could provide partners with a competitive advantage.

- Competitors, customers, fintechs, technology companies, governments and other industry participants may develop products that compete with or replace value-added products and services we currently provide to support our switched transaction and payments offerings. These products could either replace, or force us to change our pricing or practices, for these offerings. In addition, governments that develop or encourage the creation of national or international payments platforms may promote their platforms in such a way that could put us at a competitive disadvantage in those markets, or require us to compete differently.
- Participants in the payments industry may merge, create joint ventures or form other business combinations that may strengthen their existing business services or create new payment products and services that compete with our products and services.

Our failure to compete effectively against any of the foregoing competitive threats could materially and adversely affect our overall business and results of operations.

Continued intense pricing pressure may materially and adversely affect our overall business and results of operations.

In order to increase transaction volumes, enter new markets and expand our products and services, we seek to enter into business agreements with customers through which we offer incentives, pricing discounts and other support that promote our products. In order to stay competitive, we may have to increase the amount of these incentives and pricing discounts. We continue to experience pricing pressure. The demand from our customers for better pricing arrangements and greater rebates and incentives moderates our growth. We may not be able to continue our expansion strategy to switch additional transaction volumes or to provide additional services to our customers at levels sufficient to compensate for such lower fees or increased costs in the future, which could materially and adversely affect our overall business and results of operations. In addition, increased pressure on prices increases the importance of cost containment and productivity initiatives in areas other than those relating to customer incentives.

In the future, we may not be able to enter into agreements with our customers if they require terms that we are unable or unwilling to offer, and we may be required to modify existing agreements in order to maintain relationships and to compete with others in the industry. Some of our competitors are larger with greater financial resources and accordingly may be able to charge lower prices to our customers. In addition, to the extent that we offer discounts or incentives under such agreements, we will need to further increase transaction volumes or the amount of services provided thereunder in order to benefit incrementally from such agreements and to increase revenue and profit, and we may not be successful in doing so, particularly in the current regulatory environment. Our customers also may implement cost reduction initiatives that reduce or eliminate payment product marketing or increase requests for greater incentives or greater cost stability. These factors could have a material adverse impact on our overall business and results of operations.

Additionally, we face pricing pressure related to real-time account-based payment schemes and cross-border payments. These pressures include the increased use of domestic real-time account-based payment schemes offering increasingly lower or subsidized pricing for P2M transactions as well as continued downward pressure on pricing for cross-border payments resulting from competition from real-time account-based payment schemes and from initiatives to lower the cost of cross-border payments to end users (such as the G20 Roadmap for Enhancing Cross-border Payments). These factors could have a material adverse impact on our overall business and results of operations.

Rapid and significant technological developments and changes could negatively impact our overall business and results of operations or limit our future growth.

The payments industry is subject to rapid and significant technological changes, which can impact our business in several ways:

- Technological changes, including continuing developments of technologies in the areas of smart cards and devices, contactless and mobile payments, e-commerce, cryptocurrency and blockchain technology, machine learning and AI, could result in new technologies that may be superior to, or render obsolete, the technologies we currently use in our programs and services. Moreover, these changes could result in new and innovative payment methods and products that could place us at a competitive disadvantage and that could reduce the use of our products.
- We rely in part on third parties (including some of our competitors and potential competitors) for the development of and access to new technologies. The inability of these companies to keep pace with technological developments, or the acquisition of these companies by competitors, could negatively impact our offerings.

- Our ability to develop and adopt new services and technologies may be inhibited by industry-wide solutions and standards (such as those related to EMV, tokenization or other safety and security technologies), and by resistance from customers or merchants to such changes.
- Our ability to develop evolving systems and products may be inhibited by any difficulty we may experience in attracting and retaining employees with technology expertise.
- Our ability to adopt these technologies can also be inhibited by intellectual property rights of third parties. We have received, and we may in the future receive, notices or inquiries from patent holders (for example, other operating companies or non-practicing entities) suggesting that we may be infringing certain patents or that we need to license the use of their patents to avoid infringement. Such notices may, among other things, threaten litigation against us or our customers or demand significant license fees.
- Our ability to develop new technologies and reflect technological changes in our payments offerings requires resources, which has resulted in and may further result in additional expenses.
- We work with fintechs, technology companies (such as digital players and mobile providers) and traditional customers that use our technology to enhance payment safety and security and to deliver their payment-related products and services quickly and efficiently to consumers. Our inability to keep pace technologically could negatively impact the willingness of these customers to work with us, and could encourage them to use their own technology and compete against us.
- Regulatory or government requirements have and could continue to require us to host and deliver certain products and services on-soil in certain markets, requiring us to alter our technology and delivery model, potentially resulting in additional expenses.
- Various central banks are experimenting with digital currencies called Central Bank Digital Currencies (CBDCs). CBDCs may be launched with their own networks to transfer money between participants. Policy and design considerations that governments adopt could impact the extent of our role in facilitating CBDC-based payment transactions, potentially impacting the transactions that we may process over our network.

We cannot predict the effect of future technological changes on our business, and our future success will depend, in part, on our ability to anticipate, develop or adapt to technological changes and evolving industry standards. Failure to keep pace with these technological developments or otherwise bring to market products that reflect these technologies could lead to a decline in the use of our products, which could have a material adverse impact on our overall business and results of operations.

Operating a real-time account-based payments network presents risks that could materially affect our business.

U.K. regulators have designated Vocalink, our real-time account-based payments network platform, to be a “specified service provider” and regulators in other countries may in the future expand their regulatory oversight of real-time account-based payments systems in similar ways. In addition, any prolonged service outage on this network could result in quickly escalating impacts, including potential intervention by the Bank of England and significant reputational risk to Vocalink and us. For a discussion of the regulatory risks related to our real-time account-based payments platform and oversight by regulators, see our risk factor in “Risk Factors - Payments Industry Regulation” in this Part I, Item 1A. Furthermore, the complexity of this payment technology requires careful management to address security vulnerabilities that are different from those faced on our core payment network. Operational difficulties, such as the temporary unavailability of our services or products, or security breaches on our real-time account-based payments network could cause a loss of business for these products and services, result in potential liability for us and adversely affect our reputation.

Working with new customers and end users as we expand our multi-rail solutions and integrated products and services can present operational and onboarding challenges, be costly and result in reputational damage if the new products or services do not perform as intended.

The payments markets in which we compete are characterized by rapid technological change, new product introductions, evolving industry standards and changing customer and consumer needs. In order to remain competitive and meet the needs of the payments markets, we are continually involved in developing complex multi-rail solutions and diversifying our integrated products and services. These efforts carry the risks associated with any diversification initiative, including cost overruns, delays in delivery and performance problems. These projects also carry risks associated with working with different types of customers, for example organizations such as corporations that are not financial institutions and non-governmental organizations (“NGOs”), and end users other than those we have traditionally worked with. These differences may present new operational challenges in the development and implementation of our new products or services. These new customers are typically less regulated, and as a result, enhanced infrastructure and monitoring is required.

Our failure to effectively design and deliver these multi-rail solutions and integrated products and services could make our other offerings less desirable to these customers, or put us at a competitive disadvantage. In addition, if there is a delay in the implementation of our products or services (which could include compliance obligations, such as AML and CFT, and licensing requirements for our products and services that operate under regulatory licenses), if our products or services do not perform as anticipated, or we are unable to otherwise adequately anticipate risks related to new types of customers, we could face additional regulatory scrutiny, fines, sanctions or other penalties, which could materially and adversely affect our overall business and results of operations, as well as negatively impact our brand and reputation.

Information Security and Operational Resilience

Information security incidents or account data compromise events could disrupt our business, damage our reputation, increase our costs and cause losses.

Information security risks for payments and technology companies such as ours have significantly increased in recent years in part because of the proliferation of new technologies, the use of the Internet and telecommunications technologies to conduct financial transactions, and the increased sophistication and activities of organized crime, hackers, terrorists and other external parties. These threats may derive from fraud or malice on the part of our employees or third parties, or may result from human error or accidental technological failure. These threats include cyber-attacks such as computer viruses, malicious code (including ransomware), phishing attacks or information security breaches and could lead to the misappropriation of consumer account and other information and identity theft. These types of threats have risen significantly due to a significant portion of our workforce working in a remote or hybrid environment.

Our operations rely on the secure processing, transmission and storage of confidential, proprietary and other information and technology in our computer systems and networks, as well as the systems of our third-party providers. Our customers and other parties in the payments value chain, as well as account holders, rely on our digital technologies, computer systems, software and networks to conduct their operations. In addition, to access our integrated products and services, our customers and account holders increasingly use personal smartphones, tablet PCs and other mobile devices that may be beyond our control. We, like other financial technology organizations, routinely are subject to cyber-threats and our technologies, systems and networks, as well as the systems of our third-party providers, have been subject to attempted cyber-attacks. Because of our position in the payments value chain, we believe that we are likely to continue to be a target of such threats and attacks. In response to U.S. and European sanctions against Russia earlier this year, we saw increased information security threats from state sponsored actors. Other geopolitical events and resulting government activity could also lead to information security threats and attacks by affected or sympathizing jurisdictions or other actors, which could put our information and assets at risk, as well as result in network disruption.

To date, we have not experienced any material impact relating to cyber-attacks or other information security breaches. However, future attacks or breaches could lead to security breaches of the networks, systems (including third-party provider systems) or devices that our customers use to access our integrated products and services, which in turn could result in the unauthorized disclosure, release, gathering, monitoring, misuse, loss or destruction of confidential, proprietary and other information (including account data information) or data security compromises. Such attacks or breaches could also cause service interruptions, malfunctions or other failures in the physical infrastructure or operations systems that support our businesses and customers (such as the lack of availability of our value-added services), as well as the operations of our customers or other third parties. In addition, they could lead to damage to our reputation with our customers, other stakeholders and the broader payments ecosystem, additional costs to us (such as repairing systems, adding new personnel or protection technologies or compliance costs), regulatory penalties, financial losses to both us and our customers and partners and the loss of customers and business opportunities. These consequences could be further pronounced in jurisdictions in which we are deemed critical national infrastructure. If such attacks are not detected immediately, their effect could be compounded.

Despite various mitigation efforts that we undertake, there can be no assurance that we will be immune to these risks and not suffer material breaches and resulting losses in the future, or that our insurance coverage would be sufficient to cover all losses. Our risk and exposure to these matters remain heightened because of, among other things, the evolving nature of these threats, our prominent size and scale and our role in the global payments and technology industries, our plans to continue to implement our digital and mobile channel strategies and develop additional remote connectivity solutions to serve our customers and account holders when and how they want to be served, our global presence, our extensive use of third-party vendors and future joint venture and merger and acquisition opportunities. As a result, information security and the continued development and enhancement of our controls, processes and practices designed to protect our systems, computers, software, data and networks from attack, damage or unauthorized access remain a priority for us. As cyber-threats continue to evolve, we may be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities. Any of the risks described above could materially adversely affect our overall business and results of operations.

In addition to information security risks for our systems, we also routinely encounter account data compromise events involving merchants and third-party payment processors that process, store or transmit payment transaction data, which affect millions of Mastercard, Visa, Discover, American Express and other types of account holders. Further events of this type may subject us to reputational damage and/or lawsuits involving payment products carrying our brands. Damage to our reputation or that of our brands resulting from an account data breach of either our systems or the systems of our customers, merchants and other third parties could decrease the use and acceptance of our integrated products and services. Such events could also slow or reverse the trend toward electronic payments. In addition to reputational concerns, the cumulative impact of multiple account data compromise events could increase the impact of the fraud resulting from such events by, among other things, making it more difficult to identify consumers. Moreover, while most of the lawsuits resulting from account data breaches do not involve direct claims against us and while we have releases from many issuers and acquirers, we could still face damage claims, which, if upheld, could materially and adversely affect our results of operations. Such events could have a material adverse impact on our transaction volumes, results of operations and prospects for future growth, or increase our costs by leading to additional regulatory burdens being imposed on us.

Service disruptions that cause us to be unable to process transactions or service our customers could reduce our operational resilience and materially affect our overall business and results of operations.

Our transaction switching systems and other offerings have experienced in limited instances and may continue to experience interruptions as a result of technology malfunctions, fire, weather events, power outages, telecommunications disruptions, terrorism, workplace violence, accidents or other catastrophic events (including those related to climate change). Our visibility in the global payments industry may also put us at greater risk of attack by terrorists, activists, or hackers who intend to disrupt our facilities and/or systems. Additionally, we rely on third-party service providers for the timely transmission of information across our global data network. Inadequate infrastructure in lesser-developed markets could also result in service disruptions, which could impact our ability to do business in those markets. If one of our service providers fails to provide the communications capacity or services we require, as a result of natural disaster, operational disruptions, terrorism, hacking or any other reason, the failure could interrupt our services. Although we maintain an enterprise resiliency program to analyze risk, assess potential impacts, and develop effective response strategies, we cannot ensure that our business would be immune to these risks, because of the intrinsic importance of our switching systems to our business, any interruption or degradation could adversely affect the perception of the reliability of products carrying our brands and materially adversely affect our overall business and our results of operations.

Stakeholder Relationships

Losing a significant portion of business from one or more of our largest customers could lead to significant revenue decreases in the longer term, which could have a material adverse impact on our business and our results of operations.

Many of our customer relationships are not exclusive. Our customers can reassess their future commitments to us subject to the terms of our contracts, and they separately may develop their own services that compete with ours. Our business agreements with these customers may not ultimately reduce the risk inherent in our business that customers may terminate their relationships with us in favor of relationships with our competitors, or for other reasons, or might not meet their contractual obligations to us.

In addition, a significant portion of our revenue is concentrated among our five largest customers. Loss of business from any of our large customers could have a material adverse impact on our overall business and results of operations.

Exclusive/near exclusive relationships certain customers have with our competitors may have a material adverse impact on our business.

While we have exclusive, or nearly-exclusive, relationships with certain of our customers to issue payment products, other customers have similar exclusive, or nearly-exclusive, relationships with our competitors. These relationships may make it difficult or cost-prohibitive for us to do significant amounts of business with these customers to increase our revenues. In addition, these customers may be more successful and may grow faster than the customers that primarily issue our payment products, which could put us at a competitive disadvantage. Furthermore, we earn substantial revenue from customers with nearly-exclusive relationships with our competitors. Such relationships could provide advantages to the customers to shift business from us to the competitors with which they are principally aligned. A significant loss of our existing revenue or transaction volumes from these customers could have a material adverse impact on our business.

Consolidation amongst our customers could materially and adversely affect our overall business and results of operations.

Our customers' industries have undergone substantial, accelerated consolidation in the past. These consolidations have included customers with a substantial Mastercard portfolio being acquired by institutions with a strong relationship with a competitor. If significant consolidation among customers were to continue, it could result in the substantial loss of business for us, which could have a material adverse impact on our business and prospects. In addition, one or more of our customers could seek to merge with, or acquire, one of our competitors, and any such transaction could also have a material adverse impact on our overall business. Consolidation could also produce a smaller number of large customers, which could increase their bargaining power and lead to lower prices and/or more favorable terms for our customers. These developments could materially and adversely affect our results of operations.

Our business significantly depends on the continued success and competitiveness of our issuing and acquiring customers and, in many jurisdictions, their ability to effectively manage or help manage our brands.

While we work directly with many stakeholders in the payments system, including merchants, governments, fintechs and large digital companies and other technology companies, we are, and will continue to be, significantly dependent on our relationships with our issuers and acquirers and their respective relationships with account holders and merchants to support our programs and services. Furthermore, we depend on our issuing partners and acquirers to continue to innovate to maintain competitiveness in the market. We do not issue cards or other payment devices, extend credit to account holders or determine the interest rates or other fees charged to account holders. Each issuer determines these and most other competitive payment program features. In addition, we do not establish the discount rate that merchants are charged for acceptance, which is the responsibility of our acquiring customers. As a result, our business significantly depends on the continued success and competitiveness of our issuing and acquiring customers and the strength of our relationships with them. In turn, our customers' success depends on a variety of factors over which we have little or no influence, including economic conditions in global financial markets or their disintermediation by competitors or emerging technologies, as well as regulation. If our customers become financially unstable, we may lose revenue or we may be exposed to settlement risk. See our risk factor in "Risk Factors - Settlement and Third-Party Obligations" in this Part I, Item 1A with respect to how we guarantee certain third-party obligations for further discussion.

With the exception of the United States and a select number of other jurisdictions, most in-country (as opposed to cross-border) transactions conducted using Mastercard, Maestro and Cirrus cards are authorized, cleared and settled by our customers or other processors. Because we do not provide domestic switching services in these countries and do not, as described above, have direct relationships with account holders, we depend on our close working relationships with our customers to effectively manage our brands, and the perception of our payments system, among consumers in these countries. We also rely on these customers to help manage our brands and perception among regulators and merchants in these countries, alongside our own relationships with them. From time to time, our customers may take actions that we do not believe to be in the best interests of our payments system overall, which may materially and adversely impact our business.

Merchants' continued focus on acceptance costs may lead to additional litigation and regulatory proceedings and increase our incentive program costs, which could materially and adversely affect our profitability.

Merchants are important constituents in our payments system. We rely on both our relationships with them, as well as their relationships with our issuer and acquirer customers, to continue to expand the acceptance of our integrated products and services. We also work with merchants to help them enable new sales channels, create better purchase experiences, improve efficiencies, increase revenues and fight fraud. In the retail industry, there is a set of larger merchants with increasingly global scope and influence that we believe are having a significant impact on all participants in the global payments industry, including Mastercard. Some large merchants have supported the legal, regulatory and legislative challenges to interchange fees that Mastercard has been defending, including the U.S. merchant litigations. Some merchants are increasingly asking regulators to review and potentially regulate our own network fees, in addition to interchange. See our risk factor in "Risk Factors – Other Regulation" in this Part I, Item 1A with respect to payments industry regulation, including interchange fees. The continued focus of merchants on the costs of accepting various forms of payment, including in connection with the growth of digital payments, may lead to additional litigation and regulatory proceedings.

Certain larger merchants are also able to negotiate incentives from us and pricing concessions from our issuer and acquirer customers as a condition to accepting our products. We also make payments to certain merchants to incentivize them to create co-branded payment programs with us. As merchants consolidate and become even larger, we may have to increase the amount of incentives that we provide to certain merchants, which could materially and adversely affect our results of operations. Competitive and regulatory pressures on pricing could make it difficult to offset the costs of these incentives. Additionally, if the rate of merchant acceptance growth slows our business could suffer.

Our work with governments exposes us to unique risks that could have a material impact on our business and results of operations.

As we increase our work with national, state and local governments, both indirectly through financial institutions and with them directly as our customers, we may face various risks inherent in associating or contracting directly with governments. These risks include, but are not limited to, the following:

- Governmental entities typically fund projects through appropriated monies. Changes in governmental priorities or other political developments, including disruptions in governmental operations, could impact approved funding and result in changes in the scope, or lead to the termination, of the arrangements or contracts we or financial institutions enter into with respect to our payment products and services.
- Our work with governments subjects us to U.S. and international anti-corruption laws, including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act. A violation and subsequent judgment or settlement under these laws could subject us to substantial monetary penalties and damages and have a significant reputational impact.
- Working or contracting with governments, either directly or via our financial institution customers, can subject us to heightened reputational risks, including extensive scrutiny and publicity, as well as a potential association with the policies of a government as a result of a business arrangement with that government. Any negative publicity or negative association with a government entity, regardless of its accuracy, may adversely affect our reputation.

Global Economic and Political Environment

Global economic, political, financial and societal events or conditions could result in a material and adverse impact on our overall business and results of operations.

Adverse economic trends. Adverse economic trends in key countries in which we operate may adversely affect our financial performance. Such impact may include, but is not limited to, the following:

- Customers mitigating their economic exposure by limiting the issuance of new Mastercard products and requesting greater incentive or greater cost stability from us
- Consumers and businesses lowering spending, which could impact domestic and cross-border spend
- Government intervention (including the effect of laws, regulations and/or government investments on or in our financial institution customers), as well as uncertainty due to changing political regimes in executive, legislative and/or judicial branches of government, that may have potential negative effects on our business and our relationships with customers or otherwise alter their strategic direction away from our products
- Tightening of credit availability that could impact the ability of participating financial institutions to lend to us under the terms of our credit facility

Cross-border transactions. We switch substantially all cross-border transactions using Mastercard, Maestro and Cirrus-branded cards and generate a significant amount of revenue from cross-border volume fees and fees related to switched transactions. Revenue from switching cross-border and currency conversion transactions for our customers fluctuates with the levels and destinations of cross-border travel and our customers' need for transactions to be converted into their base currency. Cross-border activity has, and may continue to be, adversely affected by world geopolitical, economic, health, weather and other conditions. These include COVID-19, as well as the threat of terrorism and separate outbreaks of flu, viruses and other diseases (any of which could result in future epidemics or pandemics), as well as major environmental and extreme weather events, including those related to climate change. The impact of and uncertainty that could result from any of these events or factors could ultimately decrease cross-border activity. Additionally, any regulation of interregional interchange fees could also negatively impact our cross-border activity (for example, the targets announced by the G20 Financial Stability Board related to cross-border payments). In each case, decreased cross-border activity could decrease the revenue we receive.

Russia's invasion of Ukraine. In response to the Russian invasion of Ukraine, the United States, the European Union and other governments imposed sanctions and other restrictive measures on certain Russian-related entities and individuals and we suspended our business operations in Russia. We have experienced loss of revenue in this fast-growing market as a result of both the implementation of sanctions and the suspension of our business operations, as well as related impacts in Ukraine and throughout the region. Future developments (including the expansion or extension of the war, future sanctions and/or actions taken by others globally, and other macroeconomic factors) could result in further negative impacts on our business and financial results. As customers, merchants and other business partners are impacted by the invasion, it can further negatively affect the environment in which we operate. Moreover, our compliance with sanctions and our decision to suspend business operations has led, and could further lead, to other legal ramifications and operational challenges, including fines, the nationalization of our subsidiary and any resulting impacts, and/or lawsuits.

Standards. Our operations as a global payments network rely in part on global interoperable standards to help facilitate safe and simple payments. To the extent geopolitical events result in jurisdictions no longer participating in the creation or adoption of these standards, or the creation of competing standards, the products and services we offer could be negatively impacted.

Any of these developments could have a material adverse impact on our overall business and results of operations.

The global COVID-19 pandemic and measures taken in response have adversely impacted our business, results of operations and financial condition, and may continue to do so depending on future developments, which are uncertain.

While conditions related to the global COVID-19 pandemic generally improved in 2022, the pandemic continues to have negative effects on the global economy and has affected business activity, in particular, in areas such as travel and supply chains. These impacts have continued to adversely impact consumers, our customers, suppliers and business partners, as well as our workforce. Governments, businesses and consumers continue to react to changing conditions, including the emergence of variants of the virus, the severity of infections on a regional basis and the global administration of vaccines and boosters. Such reactions have included tightening or loosening safety measures and border restrictions or voluntarily making personal safety decisions, as applicable, based on the current environment of their location.

The COVID-19 pandemic has adversely impacted our business, results of operations and financial condition. There are no comparable recent events which may provide guidance as to the future effects of a global pandemic such as COVID-19, and, as a result, the ultimate impact of this pandemic or a similar health epidemic in the future is uncertain and subject to change. The full extent to which the COVID-19 pandemic, and measures taken in response, further impacts our business, results of operations and financial condition will depend on future developments, which are uncertain, including, but not limited to, the duration of the pandemic and its impact on the global economy, including the extent to which we can continue to progress toward and maintain more consistent economic and operating conditions. Even after the COVID-19 pandemic has subsided, we may continue to experience materially adverse impacts to our business and our results of operations as a result of its global economic impact, including any recession that has occurred or may occur in the future.

Adverse currency fluctuations and foreign exchange controls could negatively impact our results of operations.

During 2022, approximately 67% of our revenue was generated from activities outside the United States. This revenue (and the related expense) could be transacted in a non-functional currency or valued based on a currency other than the functional currency of the entity generating the revenues. Resulting exchange gains and losses are included in our net income. Our risk management activities provide protection with respect to adverse changes in the value of only a limited number of currencies and are based on estimates of exposures to these currencies.

In addition, some of the revenue we generate outside the United States is subject to unpredictable currency fluctuations including devaluation of currencies where the values of other currencies change relative to the U.S. dollar. If the U.S. dollar strengthens compared to currencies in which we generate revenue, this revenue may be translated at a materially lower amount than expected. Furthermore, we may become subject to exchange control regulations that might restrict or prohibit the conversion of our other revenue currencies into U.S. dollars, such as what we have experienced in Venezuela.

The occurrence of currency fluctuations or exchange controls could have a material adverse impact on our results of operations.

Brand, Reputational Impact and ESG

Negative brand perception may materially and adversely affect our overall business.

Our brands and their attributes are key assets of our business. The ability to attract consumers to our branded products and retain them depends upon the external perception of us and our industry:

- Our business may be affected by actions taken by our customers, merchants or other organizations that impact the perception of our brands or the payments industry in general. From time to time, our customers may take actions that we do not believe to be in the best interests of our brands, such as creditor practices that may be viewed as “predatory”. Moreover, adverse developments with respect to our industry or the industries of our customers or other companies and organizations that use our products and services (including certain legally permissible but high- risk merchant categories, such as adult content, firearms, alcohol and tobacco) may also, by association, impair our reputation, or result in greater public, regulatory or legislative scrutiny, as well as potential litigation. We may also face similar scrutiny to the extent that we are unable to detect and/or prevent illegal activities using our payment products or otherwise occurring over our network.
- We have been pursuing the use of social media channels at an increasingly rapid pace. Under some circumstances, our use of social media, or the use of social media by others as a channel for criticism or other purposes, could also cause rapid, widespread reputational harm to our brands by disseminating rapidly and globally actual or perceived damaging information about us, our products or merchants or other end users who utilize our products.

- We are headquartered in the United States. As such, a negative perception of the United States could impact the perception of our company, which could adversely affect our business.

Any of the above issues could have a material and adverse effect on our overall business.

Lack of visibility of our brand in our products and services, or in the products and services of our partners who use our technology, may materially and adversely affect our business.

As more players enter the global payments ecosystem, the layers between our brand and consumers and merchants increase. In order to compete with other powerful consumer brands that are also becoming part of the consumer payment experience, we often partner with those brands on payment solutions. These brands include large digital companies and other technology companies who are our customers and use our networks to build their own acceptance brands. In some cases, our brand may not be featured in the payment solution or may be secondary to other brands. Additionally, as part of our relationships with some issuers, our payment brand is only included on the back of the card. As a result, our brand may either be invisible to consumers or may not be the primary brand with which consumers associate the payment experience. This brand invisibility, or any consumer confusion as to our role in the consumer payment experience, could decrease the value of our brand, which could adversely affect our business.

ESG matters and related stakeholder reaction may impact our reputation, expose us to legal requirements and liability and/or have other business impacts, which could adversely affect our overall business and/or results of operations.

Our brand and reputation are associated with our public commitments to various ESG initiatives, including our goals relating to climate (e.g., our commitment to achieve net-zero emissions by 2040), financial inclusion, and diversity, equity and inclusion. Consumers, investors, employees and other stakeholders are increasingly focused on ESG practices, and to the extent any of our ESG disclosures, public statements and metrics are subsequently viewed as inaccurate, or we are unable to execute on our sustainability initiatives, we may be viewed negatively by stakeholders concerned about these matters. These stakeholders may also have a negative view of us to the extent we have been or in the future are perceived to have not responded appropriately to growing concerns with respect to ESG matters or take or do not take positions that are unpopular with them.

In addition, various jurisdictions are increasingly adopting or considering laws and regulations that have or would impact us pertaining to ESG governance, strategy, risk management and metrics/targets. Regulations already adopted or being considered include required corporate reporting and disclosures on specific topics (such as climate and human rights) as well as broader matters (such as other environmental matters, treatment of employees and diversity of workforce). These requirements would likely result in increased compliance costs for our business and supply chain, which may increase our operating costs.

Moreover, as governments, investors and other stakeholders face pressure to address climate change and other ESG matters, these stakeholders may express new expectations and focus investments in ways that could cause significant shifts in commerce and consumption behaviors. The impact of and uncertainty that could result from such shifts could ultimately impact our business.

Any of the above issues could have a material or adverse impact to our overall business and/or results of operations.

Talent and Culture

We may not be able to attract and retain a highly qualified and diverse workforce, or maintain our corporate culture, which could harm our overall business and results of operations.

Our performance largely depends on the talents and efforts of our employees (including our people leaders), as well as the environment we create for them to enable them to perform their jobs effectively. The market for specialized skill-sets is highly competitive, particularly in technology and other areas that are important to the growth of our business. Our inability to meet candidate demands has led in recent years, and may continue to lead, to an increase in declined offers. In addition, high inflation has impacted both cost structure and employee demand for wage growth, which may lead to talent attrition. Moreover, changes in and enforcement of immigration and work permit laws and visa regulations have made it difficult for employees to work in, or transfer among, jurisdictions where we operate, potentially impairing our ability to attract and retain talent.

In the wake of the global COVID-19 pandemic and the influence of work flexibility on candidate decisions, we have adapted our policies and practices to allow for flexible team-driven work arrangements (including both remote and hybrid). This approach may impact the nature of relationships among our workforce, which in turn could have a negative impact on the quality of our corporate culture and our ability to innovate. To the extent the arrangements we provide do not meet candidate or employee expectations for flexibility, this could also impact our ability to attract and retain talent.

Failure to attract, hire, develop, motivate and retain highly qualified and diverse employee talent could leave us vulnerable to not anticipating or identifying emerging customer or market opportunities. We also rely on our people leaders to display integrity and decency. To the extent our leaders behave in a manner that is not consistent with our values, we could experience significant impact to our brand and reputation, as well as to our corporate culture.

Any one or more of the above could harm our overall business and results of operations.

Acquisitions

Our efforts to enter into acquisitions, strategic investments or entry into new businesses could be impacted or prevented by regulatory scrutiny and could otherwise result in issues that could disrupt our business and harm our results of operations or reputation.

We continue to evaluate our strategic acquisitions of complementary businesses, products or technologies, as well as acquiring interests in related joint ventures or other entities. As we do so, we face increasing regulatory scrutiny with respect to antitrust, national security and other considerations that could impact these efforts. We also face competition for acquisition targets due to the nature of the market for technology companies. As a result, we could be prevented from successfully completing such acquisitions in the future. If we are not successful in these efforts, we could lose strategic opportunities that are dependent, in part, on inorganic growth.

To the extent we do make these acquisitions, we may not be able to successfully partner with or integrate them, despite original intentions and focused efforts. In addition, such an integration may divert management's time and resources from our core business and disrupt our operations. Moreover, we may spend time and money on acquisitions or projects that do not meet our expectations or increase our revenue. To the extent we pay the purchase price of any acquisition in cash, it would reduce our cash reserves available to us for other uses, and to the extent the purchase price is paid with our stock, it could be dilutive to our stockholders. Furthermore, we may inherit litigation risk which may increase our post-acquisition costs of operations and impact our ability to successfully finance that business.

Any acquisition or entry into a new business could subject us to new regulations, both directly as a result of the new business as well as in the other existing parts of our business, with which we would need to comply. This compliance could increase our costs, and we could be subject to liability or reputational harm to the extent we cannot meet any such compliance requirements. Additionally, targets that we acquire may have data practices that do not initially conform to our privacy and data protection standards and data governance model, which could lead to regulatory scrutiny and reputational harm.

Settlement and Third-Party Obligations

Our role as guarantor, as well as other contractual obligations, expose us to risk of loss or illiquidity.

We are a guarantor of certain third-party obligations, including those of certain of our customers. In this capacity, we are exposed to credit and liquidity risk from these customers and certain service providers. We may incur significant losses in connection with transaction settlements if a customer fails to fund its daily settlement obligations due to technical problems, liquidity shortfalls, insolvency or other reasons. Concurrent settlement failures of more than one of our larger customers or of several of our smaller customers either on a given day or over a condensed period of time may exceed our available resources and could materially and adversely affect our results of operations.

We have significant contractual indemnification obligations with certain customers. Should an event occur that triggers these obligations, such an event could materially and adversely affect our overall business and results of operations.

Class A Common Stock and Governance Structure

Provisions in our organizational documents and Delaware law could be considered anti-takeover provisions and have an impact on change-in-control.

Provisions contained in our amended and restated certificate of incorporation and bylaws and Delaware law could be considered anti-takeover provisions, including provisions that could delay or prevent entirely a merger or acquisition that our stockholders consider favorable. These provisions may also discourage acquisition proposals or have the effect of delaying or preventing entirely a change in control, which could harm our stock price. For example, subject to limited exceptions, our amended and restated certificate of incorporation prohibits any person from beneficially owning more than 15% of any of the Class A common stock or any other class or series of our stock with general voting power, or more than 15% of our total voting power. In addition:

- our stockholders are not entitled to the right to cumulate votes in the election of directors
- our stockholders are not entitled to act by written consent
- any representative of a competitor of Mastercard or of Mastercard Foundation is disqualified from service on our board of directors

Mastercard Foundation’s substantial stock ownership, and restrictions on its sales, may impact corporate actions or acquisition proposals favorable to, or favored by, the other public stockholders.

As of February 8, 2023, Mastercard Foundation owned 101,253,283 shares of Class A common stock, representing approximately 10.7% of our general voting power. Currently, Mastercard Foundation may not sell or otherwise transfer its shares of Class A common stock prior to May 1, 2027, except to the extent necessary to satisfy its charitable disbursement requirements, for which purpose earlier sales are permitted and have occurred. Based on that timing, Mastercard Foundation would be permitted to sell all of its remaining shares beginning May 1, 2027, subject to certain conditions. The directors of Mastercard Foundation are required to be independent of us and our customers. The ownership of Class A common stock by Mastercard Foundation, together with the restrictions on transfer, could discourage or make more difficult acquisition proposals favored by the other holders of the Class A common stock. In addition, because Mastercard Foundation is restricted from selling its shares for an extended period of time, it may not have the same interest in short or medium-term movements in our stock price as, or incentive to approve a corporate action that may be favorable to, our other stockholders.

Item 1B. Unresolved staff comments

Not applicable.

Item 2. Properties

We own our corporate headquarters, located in Purchase, New York, and our principal technology and operations center, located in O’Fallon, Missouri. As of December 31, 2022, Mastercard and its subsidiaries owned or leased commercial properties throughout the U.S. and other countries around the world, consisting of corporate and regional offices, as well as our operations centers.

We believe that our facilities are suitable and adequate for the business that we currently conduct. However, we periodically review our space requirements and may acquire or lease new space to meet the needs of our business and address climate-related impacts, or consolidate and dispose of facilities that are no longer required.

Item 3. Legal proceedings

Refer to Note 13 (Accrued Expenses and Accrued Litigation) and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8.

Item 4. Mine safety disclosures

Not applicable.

Information about our executive officers

(as of February 14, 2023)

Name Current Position	Age	Previous Mastercard Experience	Previous Business Experience
Ajay Bhalla <i>President, Cyber and Intelligence Solutions</i> since November 2018	57	President, Enterprise Security Solutions (2014-2018) President, Digital Gateway Services (2011-2013) President, South Asia and Southeast Asia (2008-2011) Various senior leadership positions, including President, Southeast Asia; Country Manager, Singapore and Head of Marketing, Southeast Asia; Vice President	Various leadership positions at HSBC and Xerox Corporation
Michael Froman <i>Vice Chairman and President, Strategic Growth</i> since April 2018	60	Mr. Froman joined the Company in 2018 in his current role	U.S. Trade Representative in the Executive Office of President Obama (2013-2017) Assistant to the President and Deputy National Security Advisor for International Economic Policy (2009-2013) Various senior leadership positions at Citigroup, including CEO, CitiInsurance and COO of Citigroup's alternative investments business
Linda Kirkpatrick <i>President, North America</i> since January 2021	46	President, U.S. Issuers (2020) Executive Vice President, Merchants and Acceptance (2016-2020) Senior Vice President, Core Merchants (2013-2016) Senior Vice President, Franchise Development (2011-2013) Vice President, U.S. Region (2008-2011) Vice President, Investor Relations	
Hai Ling <i>Co-President International Markets</i> since January 2022	52	Co-President, Asia Pacific (2015-2021) President, Enterprise Development (2014-2015) President, Greater China (2010-2014)	Various roles at Booz Allen Hamilton and Bank of America
Raghu Malhotra <i>Co-President International Markets</i> since January 2022	53	President, Middle East and Africa (2016-2021) Division President, Middle East and North Africa (2012-2015) Various leadership roles (2000-2005)	Various roles at Citicorp, American Express and ANZ Grindlays Bank (1992-2000)
Edward McLaughlin <i>President and Chief Technology Officer, Mastercard Technology</i> since May 2017	57	Chief Information Officer (2016-2017) Chief Emerging Payments Officer (2010-2015) Various senior leadership roles, including Chief Franchise Development Officer and Senior Vice President, Bill Payment and Healthcare	Group Vice President, Product and Strategy, Metavante Corporation Co-Founder and CEO, Paytrust, Inc.

Name Current Position	Age	Previous Mastercard Experience	Previous Business Experience
Sachin Mehra <i>Chief Financial Officer</i> since April 2019	52	Chief Financial Operations Officer (2018-2019) Executive Vice President, Commercial Products (2015-2018) Executive Vice President and Business Financial Officer, North America (2013-2015) Corporate Treasurer (2010-2013)	Various senior positions at Hess Corporation, including Vice President and Treasurer Various senior treasury and finance positions, General Motors Corporation and GMAC
Michael Miebach <i>President and Chief Executive Officer</i> since January 2021	55	President (2020) Chief Product Officer (2016-2020) President, Middle East and Africa (2010-2015)	Managing Director, Middle East and North Africa and Managing Director, Sub-Saharan Africa, Barclays Bank PLC Various executive positions at Citigroup in Germany, Austria, U.K. and Turkey
Tim Murphy <i>Chief Administrative Officer</i> since April 2021	55	General Counsel (2014-2021) Chief Product Officer (2009-2014) Various senior leadership roles, including President, U.S. Region; Executive Vice President, Customer Business Planning and Analysis; and Senior Vice President and Associate General Counsel	Associate, Cleary, Gottlieb, Steen and Hamilton, New York and London
Raja Rajamannar <i>Chief Marketing and Communications Officer and President, Healthcare</i> since January 2016	61	Chief Marketing Officer (2013-2015)	Executive Vice President-Senior Business and Chief Transformation Officer, Anthem (formerly, WellPoint, Inc.) (2012- 2013) Senior Vice President and Chief Innovation and Marketing Officer, Humana Inc. (2009-2012) Various management positions at Citigroup, including Executive Vice President and Chief Marketing Officer-Citi Global Cards
Raj Seshadri <i>President, Data and Services</i> since January 2020	57	President, U.S. Issuers (2016-2019)	Managing Director, Head of iShares U.S. Wealth Advisory business, BlackRock (2014-2016) Managing Director, Global Marketing Officer of iShares, BlackRock, Inc. (2012-2014) Various leadership positions at Citigroup, U.S. Trust Company and McKinsey & Company, Inc.
Craig Vosburg <i>Chief Product Officer</i> since January 2021	55	President, North America (2016-2020) Chief Product Officer (2014-2015) Executive Vice President, U.S. Market Development (2010-2014) Various senior leadership roles, including Head of Mastercard Advisors, U.S. and Canada and Head of Mastercard Advisors, Southeast Asia, Greater China and South Asia/Middle East/Africa	Senior member-financial services practice, Bain & Company and A.T. Kearney Vice President, CoreStates Financial Corporation

PART II

Item 5. Market for registrant's common equity, related stockholder matters and issuer purchases of equity securities

Item 6. Reserved

Item 7. Management's discussion and analysis of financial condition and results of operations

Item 7A. Quantitative and qualitative disclosures about market risk

Item 8. Financial statements and supplementary data

Item 9. Changes in and disagreements with accountants on accounting and financial disclosure

Item 9A. Controls and procedures

Item 9B. Other information

Item 5. Market for registrant's common equity, related stockholder matters and issuer purchases of equity securities

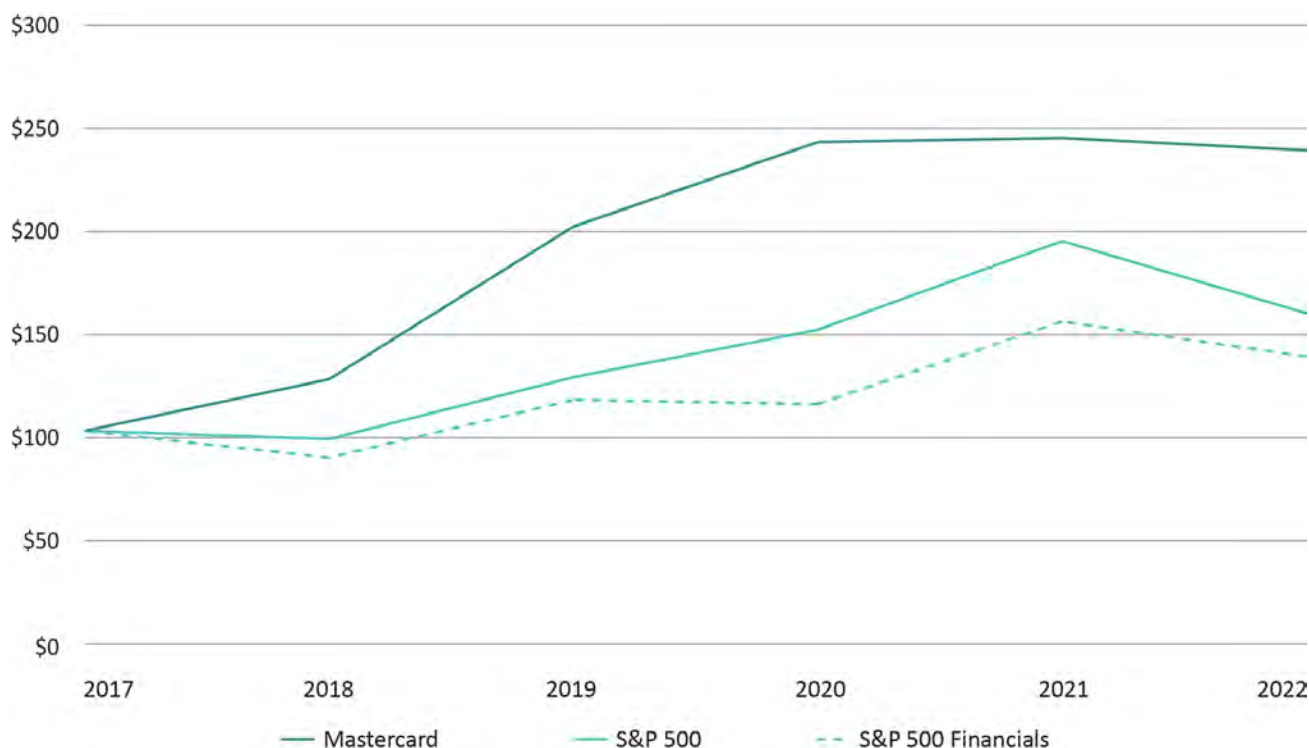
Our Class A common stock trades on the New York Stock Exchange under the symbol "MA". At February 8, 2023, we had 71 stockholders of record for our Class A common stock. We believe that the number of beneficial owners is substantially greater than the number of record holders because a large portion of our Class A common stock is held in "street name" by brokers.

There is currently no established public trading market for our Class B common stock. There were approximately 233 holders of record of our non-voting Class B common stock as of February 8, 2023, constituting approximately 0.8% of our total outstanding equity.

Stock Performance Graph

The graph and table below compare the cumulative total stockholder return of Mastercard's Class A common stock, the S&P 500 and the S&P 500 Financials for the five-year period ended December 31, 2022. The graph assumes a \$100 investment in our Class A common stock and both of the indices and the reinvestment of dividends. Mastercard's Class B common stock is not publicly traded or listed on any exchange or dealer quotation system.

Comparison of cumulative five-year total return



Total returns to stockholders for each of the years presented were as follows:

Company/Index	Base period	Indexed Returns				
		For the Years Ended December 31,				
	2017	2018	2019	2020	2021	2022
Mastercard	\$ 100.00	\$ 125.32	\$ 199.46	\$ 239.70	\$ 242.47	\$ 236.03
S&P 500	100.00	95.62	125.72	148.85	191.58	156.88
S&P 500 Financials	100.00	86.97	114.91	112.96	152.54	136.48

Dividend Declaration and Policy

On December 6, 2022, our Board of Directors declared a quarterly cash dividend of \$0.57 per share paid on February 9, 2023 to holders of record on January 9, 2023 of our Class A common stock and Class B common stock. On February 14, 2023, our Board of Directors declared a quarterly cash dividend of \$0.57 per share payable on May 9, 2023 to holders of record on April 7, 2023 of our Class A common stock and Class B common stock.

Subject to legally available funds, we intend to continue to pay a quarterly cash dividend on our outstanding Class A common stock and Class B common stock. However, the declaration and payment of future dividends is at the sole discretion of our Board of Directors after taking into account various factors, including our financial condition, operating results, available cash and current and anticipated cash needs.

Issuer Purchases of Equity Securities

During the fourth quarter of 2022, we repurchased 7.4 million shares for \$2.4 billion at an average price of \$328.26 per share of Class A common stock. See Note 16 (Stockholders' Equity) to the consolidated financial statements included in Part II, Item 8 for further discussion with respect to our share repurchase programs. The following table presents our repurchase activity on a cash basis during the fourth quarter of 2022:

Period	Total Number of Shares Purchased	Average Price Paid per Share (including commission cost)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Dollar Value of Shares that may yet be Purchased under the Plans or Programs ¹
October 1 – 31	2,170,087	\$ 297.01	2,170,087	\$ 4,943,927,887
November 1 – 30	2,444,959	\$ 333.87	2,444,959	\$ 4,127,621,138
December 1 – 31	2,740,325	\$ 348.01	2,740,325	\$ 12,173,961,341
Total	7,355,371	\$ 328.26	7,355,371	

¹ Dollar value of shares that may yet be purchased under the share repurchase programs is as of the end of the period.

² In December 2022 and November 2021, our Board of Directors approved share repurchase programs of our Class A common stock authorizing us to repurchase up to \$9.0 billion and \$8.0 billion, respectively.

Item 6. [Reserved]

Item 7. Management's discussion and analysis of financial condition and results of operations

The following discussion should be read in conjunction with the consolidated financial statements and notes of Mastercard Incorporated and its consolidated subsidiaries, including Mastercard International Incorporated ("Mastercard International") (together, "Mastercard" or the "Company"), included elsewhere in this Report. Percentage changes provided throughout "Management's Discussion and Analysis of Financial Condition and Results of Operations" were calculated on amounts rounded to the nearest thousand. For discussion related to the results of operations for the year ended December 31, 2021 compared to the year ended December 31, 2020, please see Part II, Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2021. During 2022, the Company updated its disaggregated net revenue presentation by category and geography to reflect the nature of its payment services and to align such information with the way in which management will prospectively view its categories of net revenue. Prior period amounts have been reclassified to conform to the 2022 presentation. The reclassification had no impact on previously reported total net revenue, operating income or net income.

Business Overview

Mastercard is a technology company in the global payments industry. We connect consumers, financial institutions, merchants, governments, digital partners, businesses and other organizations worldwide by enabling electronic payments instead of cash and checks and making those payment transactions safe, simple, smart, and accessible. We make payments easier and more efficient by providing a wide range of payment solutions and services using our family of well-known and trusted brands, including Mastercard®, Maestro® and Cirrus®. We operate a multi-rail payments network that provides choice and flexibility for consumers, merchants and our customers. Through our unique and proprietary core global payments network, we switch (authorize, clear and settle) payment transactions. We have additional payment capabilities that include automated clearing house ("ACH") transactions (both batch and real-time account-based payments). Using these capabilities, we offer integrated payment products and services and capture new payment flows. Our value-added services include, among others, cyber and intelligence solutions to allow all parties to transact easily and with confidence, as well as other services that provide proprietary insights, drawing on our principled use of secure consumer and merchant data. Our investments in new networks, such as open banking solutions and digital identity capabilities, support and strengthen our payments and services solutions. Our franchise model sets the standards and ground-rules for our core global payments network that balance value and risk across all stakeholders and allows for interoperability among them. Our payment solutions are designed to ensure safety and security for the global payments ecosystem.

Mastercard is not a financial institution. We do not issue cards, extend credit, determine or receive revenue from interest rates or other fees charged to account holders by issuers, or establish the rates charged by acquirers in connection with merchants' acceptance of our products. In most cases, account holder relationships belong to, and are managed by, our customers.

Russia and Ukraine

Beginning in February 2022, in response to the Russian invasion of Ukraine, the United States, the European Union and other governments imposed sanctions and other restrictive measures on certain Russian-related entities and individuals and, in March 2022, we suspended our business operations in Russia¹. We have taken steps necessary to ensure compliance with all applicable regulatory restrictions with sanctioned entities and individuals and have suspended our business operations with non-sanctioned customers in Russia. Throughout this process, our priority has been the safety and well-being of our employees and their families.

These actions have impacted our full year 2022 performance. As a point of reference, for the year ended December 31, 2021, approximately 4% of our net revenues were derived from business conducted within, into and out of Russia. Additional financial implications directly related to these actions include, but are not limited to, incremental employee-related costs, reserves on uncollectible balances with certain customers and impacts to net revenue, primarily related to rebates and incentives as a result of revised estimates of customer performance through the date of the suspension of our business operations.

We continue to monitor the effects of the Russian invasion of Ukraine and the related impacts to regional and global economies. The full extent to which this matter affects our business, results of operations and financial condition will depend on future developments, including the duration of the invasion and the impacts on regional and global economies, which are uncertain, and cannot be predicted at this time.

¹ As a result of the suspension of our business operations, which included the suspension of our network services, cards issued by Russian banks are no longer supported by the Mastercard network regardless of where the cards are used, inside or outside of Russia. In addition, any Mastercard issued outside of Russia will not work at merchants or ATMs located in Russia.

Financial Results Overview

The following table provides a summary of our key GAAP operating results, as reported:

	Year ended December 31,			2022 Increase/ (Decrease)	2021 Increase/ (Decrease)
	2022	2021	2020		
	(\$ in millions, except per share data)				
Net revenue	\$ 22,237	\$ 18,884	\$ 15,301	18%	23%
Operating expenses	\$ 9,973	\$ 8,802	\$ 7,220	13%	22%
Operating income	\$ 12,264	\$ 10,082	\$ 8,081	22%	25%
Operating margin	55.2 %	53.4 %	52.8 %	1.8 ppt	0.6 ppt
Income tax expense	\$ 1,802	\$ 1,620	\$ 1,349	11%	20%
Effective income tax rate	15.4 %	15.7 %	17.4 %	(0.4) ppt	(1.7) ppt
Net income	\$ 9,930	\$ 8,687	\$ 6,411	14%	35%
Diluted earnings per share	\$ 10.22	\$ 8.76	\$ 6.37	17%	38%
Diluted weighted-average shares outstanding	971	992	1,006	(2)%	(1)%

The following table provides a summary of our key non-GAAP operating results¹, adjusted to exclude the impact of gains and losses on our equity investments, Special Items (which represent litigation judgments and settlements and certain one-time items) and the related tax impacts on our non-GAAP adjustments. In addition, we have presented growth rates, adjusted for the impact of currency:

	Year ended December 31,			2022 Increase/(Decrease)		2021 Increase/(Decrease)	
	2022	2021	2020	As adjusted	Currency- neutral	As adjusted	Currency- neutral
	(\$ in millions, except per share data)						
Adjusted net revenue	\$ 22,200	\$ 18,884	\$ 15,301	18%	23%	23%	22%
Adjusted operating expenses	\$ 9,549	\$ 8,627	\$ 7,147	11%	14%	21%	19%
Adjusted operating margin	57.0 %	54.3 %	53.3 %	2.7 ppt	3.4 ppt	1.0 ppt	1.2 ppt
Adjusted effective income tax rate	15.7 %	15.4 %	17.2 %	0.3 ppt	0.5 ppt	(1.8) ppt	(1.8) ppt
Adjusted net income	\$ 10,342	\$ 8,333	\$ 6,463	24%	32%	29%	28%
Adjusted diluted earnings per share	\$ 10.65	\$ 8.40	\$ 6.43	27%	34%	31%	30%

Note: Tables may not sum due to rounding.

¹ See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

Key highlights for 2022 as compared to 2021 were as follows:

<p>Net revenue</p> <p>GAAP</p> <p>up 18%</p>	<p>Adjusted net revenue</p> <p>Non-GAAP (currency-neutral)</p> <p>up 23%</p>	<p>Adjusted net revenue increased 23% on a currency-neutral basis. The increase was attributable to our payment network and our value-added services and solutions, which increased 26% and 18%, on a currency-neutral basis, respectively.</p>
<p>Operating expenses</p> <p>GAAP</p> <p>up 13%</p>	<p>Adjusted operating expenses</p> <p>Non-GAAP (currency-neutral)</p> <p>up 14%</p>	<p>Adjusted operating expenses increased 14% on a currency-neutral basis, which includes 4 percentage points of growth due to acquisitions. The remaining increase was primarily due to higher personnel costs, travel and meeting costs, and unfavorable foreign exchange activity.</p>
<p>Effective income tax rate</p> <p>GAAP</p> <p>15.4%</p>	<p>Adjusted effective income tax rate</p> <p>Non-GAAP (currency-neutral)</p> <p>15.7%</p>	<p>The adjusted effective income tax rate of 15.7% was higher than prior year due to the recognition of U.S. tax benefits in 2021 (the majority of which were discrete), a discrete tax benefit in 2021 related to the remeasurement of our net deferred tax asset in the U.K. and a discrete tax expense related to an unfavorable court ruling in 2022, all of which were partially offset by a discrete tax benefit in the first quarter of 2022 due to final U.S. tax regulations published in the current year.</p>

Other 2022 financial highlights were as follows:

- We generated net cash flows from operations of \$11.2 billion.
- We completed the acquisition of a business for total consideration of \$0.3 billion.
- We repurchased 25.7 million shares of our common stock for \$8.8 billion and paid dividends of \$1.9 billion.
- We completed a euro-denominated debt offering for an aggregate principal amount of \$0.8 billion and entered into an Indian rupee-denominated term loan for \$0.3 billion.

Non-GAAP Financial Information

Non-GAAP financial information is defined as a numerical measure of a company's performance that excludes or includes amounts so as to be different than the most comparable measure calculated and presented in accordance with accounting principles generally accepted in the United States ("GAAP"). Our non-GAAP financial measures exclude the impact of gains and losses on our equity investments which includes mark-to-market fair value adjustments, impairments and gains and losses upon disposition and the related tax impacts. Our non-GAAP financial measures also exclude the impact of special items, where applicable, which represent litigation judgments and settlements and certain one-time items, as well as the related tax impacts ("Special Items"). Our non-GAAP financial measures for the comparable periods exclude the impact of the following:

Gains and Losses on Equity Investments

- During 2022, 2021 and 2020, we recorded net losses of \$145 million (\$126 million after tax, or \$0.13 per diluted share), net gains of \$645 million (\$497 million after tax, or \$0.50 per diluted share) and net gains of \$30 million (\$15 million after tax, or \$0.01 per diluted share), respectively. These net gains and losses were primarily related to unrealized fair market value adjustments on marketable and nonmarketable equity securities. In addition, in 2021, net gains also included realized gains on sales of marketable equity securities.

Special Items*Litigation provisions*

- During 2022, we recorded pre-tax charges of \$356 million (\$263 million after tax, or \$0.27 per diluted share) related to litigation provisions which included pre-tax charges of:
 - \$223 million as a result of settlements (both final and agreements in principle) with a number of U.K. merchants, and
 - \$133 million as a result of a change in estimate related to the claims of merchants who opted out of the U.S. merchant class litigation.
- During 2021, we recorded pre-tax charges of \$94 million (\$74 million after tax, or \$0.07 per diluted share) related to litigation settlements and estimated attorneys' fees with U.K. and Pan-European merchants.
- During 2020, we recorded pre-tax charges of \$73 million (\$67 million after tax, or \$0.07 per diluted share) related to litigation provisions which included pre-tax charges of:
 - \$45 million related to a legal matter associated with our prepaid cards in the U.K., and
 - \$28 million related to estimated attorneys' fees and litigation settlements with U.K. and Pan-European merchants.

Russia-related impacts

- During 2022, we recorded a net charge of \$30 million (\$24 million after tax, or \$0.02 per diluted share), directly related to imposed sanctions and the suspension of our business operations in Russia. The net charge is comprised of general and administrative expenses of \$67 million, primarily related to incremental employee-related costs and reserves on uncollectible balances with certain sanctioned customers. These charges are offset by net benefits of \$37 million in net revenue, primarily related to a reduction in rebates and incentives liabilities as a result of lower estimates of customer performance for certain customer business agreements due to the suspension of our business operations in Russia.

Indirect tax matter

- During 2021, we recorded a charge of \$88 million (\$69 million after tax, or \$0.07 per diluted share) to resolve a foreign indirect tax matter for 2015 through 2021 and the related interest expense. The charge is comprised of general and administrative expenses of \$82 million and other income (expense) of \$6 million.

See Note 7 (Investments) and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8 and "Key Developments" above for further discussion related to certain of our non-GAAP financial measures. We excluded these items because management evaluates the underlying operations and performance of the Company separately from these recurring and nonrecurring items.

We believe that the non-GAAP financial measures presented facilitate an understanding of our operating performance and provide a meaningful comparison of our results between periods. We use non-GAAP financial measures to, among other things, evaluate our ongoing operations in relation to historical results, for internal planning and forecasting purposes and in the calculation of performance-based compensation.

Currency-neutral Growth Rates

We present growth rates adjusted for the impact of currency, which is a non-GAAP financial measure. Currency-neutral growth rates are calculated by remeasuring the prior period's results using the current period's exchange rates for both the translational and transactional impacts on operating results. The impact of currency translation represents the effect of translating operating results where the functional currency is different than our U.S. dollar reporting currency. The impact of the transactional currency represents the effect of converting revenue and expenses occurring in a currency other than the functional currency of the entity. The impact of the related realized gains and losses resulting from our foreign exchange derivative contracts designated as cash flow hedging instruments is recognized in the respective financial statement line item on the statement of operations when the underlying forecasted transactions impact earnings. We believe the presentation of currency-neutral growth rates provides relevant information to facilitate an understanding of our operating results.

The translational and transactional impact of currency and the related impact of our foreign exchange derivative contracts designated as cash flow hedging instruments ("Currency impact") has been excluded from our currency-neutral growth rates and has been identified in our "Drivers of Change" tables. See "Foreign Currency - Currency Impact" for further information on our currency impacts and "Financial Results - Revenue and Operating Expenses" for our "Drivers of Change" tables.

Net revenue, operating expenses, operating margin, other income (expense), effective income tax rate, net income and diluted earnings per share adjusted for the impact of gains and losses on our equity investments, Special Items and/or the impact of

currency, are non-GAAP financial measures and should not be relied upon as substitutes for measures calculated in accordance with GAAP.

The following tables reconcile our reported financial measures calculated in accordance with GAAP to the respective adjusted non-GAAP financial measures:

	Year ended December 31, 2022						
	Net revenue	Operating expenses	Operating margin	Other income (expense)	Effective income tax rate	Net income	Diluted earnings per share
	(\$ in millions, except per share data)						
Reported - GAAP	\$ 22,237	\$ 9,973	55.2 %	\$ (532)	15.4 %	\$ 9,930	\$ 10.22
(Gains) losses on equity investments	**	**	**	145	— %	126	0.13
Litigation provisions	**	(356)	1.6 %	**	0.3 %	263	0.27
Russia-related impacts	(37)	(67)	0.2 %	**	— %	24	0.02
Adjusted - Non-GAAP	\$ 22,200	\$ 9,549	57.0 %	\$ (387)	15.7 %	\$ 10,342	\$ 10.65

	Year ended December 31, 2021						
	Net revenue	Operating expenses	Operating margin	Other income (expense)	Effective income tax rate	Net income	Diluted earnings per share
	(\$ in millions, except per share data)						
Reported - GAAP	\$ 18,884	\$ 8,802	53.4 %	\$ 225	15.7 %	\$ 8,687	\$ 8.76
(Gains) losses on equity investments	**	**	**	(645)	(0.5)%	(497)	(0.50)
Litigation provisions	**	(94)	0.5 %	**	0.1 %	74	0.07
Indirect tax matter	**	(82)	0.4 %	6	0.1 %	69	0.07
Adjusted - Non-GAAP	\$ 18,884	\$ 8,627	54.3 %	\$ (413)	15.4 %	\$ 8,333	\$ 8.40

	Year ended December 31, 2020						
	Net revenue	Operating expenses	Operating margin	Other income (expense)	Effective income tax rate	Net income	Diluted earnings per share
	(\$ in millions, except per share data)						
Reported - GAAP	\$ 15,301	\$ 7,220	52.8 %	\$ (321)	17.4 %	\$ 6,411	6.37
(Gains) losses on equity investments	**	**	**	(30)	(0.1)%	(15)	(0.01)
Litigation provisions	**	(73)	0.5 %	**	(0.1)%	67	0.07
Adjusted - Non-GAAP	\$ 15,301	\$ 7,147	53.3 %	\$ (351)	17.2 %	\$ 6,463	\$ 6.43

Note: Tables may not sum due to rounding.

** Not applicable

The following tables represent the reconciliation of our growth rates reported under GAAP to our non-GAAP growth rates:

	Year Ended December 31, 2022 as compared to the Year Ended December 31, 2021					
	Increase/(Decrease)					
	Net revenue	Operating expenses	Operating margin	Effective income tax rate	Net income	Diluted earnings per share
Reported - GAAP	18 %	13 %	1.8 ppt	(0.4) ppt	14 %	17 %
(Gains) losses on equity investments	**	**	**	0.5 ppt	8 %	9 %
Litigation provisions	**	(3)%	1.1 ppt	0.3 ppt	2 %	2 %
Russia-related impacts	—	(1)%	0.2 ppt	— ppt	— %	— %
Indirect tax matter	**	1 %	(0.4) ppt	(0.1) ppt	(1)%	(1)%
Adjusted - Non-GAAP	18 %	11 %	2.7 ppt	0.3 ppt	24 %	27 %
Currency impact ¹	5 %	3 %	0.8 ppt	0.2 ppt	8 %	8 %
Adjusted - Non-GAAP - currency-neutral	23 %	14 %	3.4 ppt	0.5 ppt	32 %	34 %

	Year Ended December 31, 2021 as compared to the Year Ended December 31, 2020					
	Increase/(Decrease)					
	Net revenue	Operating expenses	Operating margin	Effective income tax rate	Net income	Diluted earnings per share
Reported - GAAP	23 %	22 %	0.6 ppt	(1.7) ppt	35 %	38 %
(Gains) losses on equity investments	**	**	**	(0.4) ppt	(7)%	(8)%
Litigation provisions	**	— %	— ppt	0.1 ppt	— %	— %
Indirect tax matter	**	(1)%	0.4 ppt	0.1 ppt	1 %	1 %
Adjusted - Non-GAAP	23 %	21 %	1.0 ppt	(1.8) ppt	29 %	31 %
Currency impact ¹	(1)%	(2)%	0.2 ppt	— ppt	(1)%	(1)%
Adjusted - Non-GAAP - currency-neutral	22 %	19 %	1.2 ppt	(1.8) ppt	28 %	30 %

Note: Tables may not sum due to rounding.

** Not applicable

¹ See “Non-GAAP Financial Information” for further information on Currency impact.

Key Metrics

In addition to the financial measures described above in “Financial Results Overview”, we review the following metrics to evaluate and identify trends in our business, measure our performance, prepare financial projections and make strategic decisions. We believe that the key metrics presented facilitate an understanding of our operating and financial performance and provide a meaningful comparison of our results between periods.

Operating Margin measures how much profit we make on each dollar of sales after our operating costs but before other income (expense) and income tax expense. Operating margin is calculated by dividing our operating income by net revenue.

Key Drivers

Gross Dollar Volume (“GDV”)¹ measures dollar volume of activity, including both domestic and cross-border volume, on cards carrying our brands during the period, on a local currency basis and U.S. dollar-converted basis. GDV represents purchase volume plus cash volume; “purchase volume” means the aggregate dollar amount of purchases made with Mastercard-branded cards for the relevant period; and “cash volume” means the aggregate dollar amount of cash disbursements and includes the impact of balance transfers and convenience checks obtained with Mastercard-branded cards for the relevant period. Information denominated in U.S. dollars relating to GDV is calculated by applying an established U.S. dollar/local currency exchange rate for each local currency in which our volumes are reported. These exchange rates are calculated on a quarterly basis using the average exchange rate for each quarter. We report period-over-period rates of change in purchase volume and cash volume on the basis of local currency information, in order to eliminate the impact of changes in the value of currencies against the U.S. dollar in calculating such rates of change.

Cross-border Volume Growth² measures the growth of cross-border dollar volume during the period, on a local currency basis and U.S. dollar-converted basis, for all Mastercard-branded programs.

Switched Transactions² measures the number of transactions switched by Mastercard, which is defined as the number of transactions initiated and switched through our network during the period.

¹ Data used in the calculation of GDV is provided by Mastercard customers and is subject to verification by Mastercard and partial cross-checking against information provided by Mastercard's transaction switching systems. All data is subject to revision and amendment by Mastercard or Mastercard's customers. Starting in the first quarter of 2022, data related to sanctioned Russian banks was not reported to us and therefore such amounts are not included. Subsequent to the suspension of our business operations in Russia in March 2022, there is no Russian data to be reported.

² Growth rates are normalized to eliminate the effects of differing switching and carryover days between periods. Carryover days are those where transactions and volumes from days where the Company does not clear and settle are processed. In the fourth quarter of 2021, we began clearing and settling transactions and volumes on a daily basis.

The following tables provide a summary of the growth trends in our key drivers.

	For the Years Ended December 31,			
	2022		2021	
	Increase/(Decrease)			
	USD	Local	USD	Local
Mastercard-branded GDV growth ¹	6%	12%	22%	21%
United States	10%	10%	23%	23%
Worldwide less United States	4%	13%	22%	20%
Cross-border volume growth ¹	33%	45%	35%	32%
Mastercard-branded GDV growth adjusted for Russia ^{1,2}	10%	18%	22%	20%
Worldwide less United States GDV growth adjusted for Russia ^{1,2}	10%	22%	22%	19%
Cross-border volume growth adjusted for Russia ^{1,2}	37%	50%	35%	31%
			For the Years Ended December 31,	
			Increase/(Decrease)	
			2022	2021
Switched transactions growth			12%	25%
Switched transactions growth adjusted for Russia ²			21%	24%

¹ Excludes volume generated by Maestro and Cirrus cards.

² Starting in the first quarter of 2022, as a result of imposed sanctions and the suspension of our business operations in Russia, we have provided adjusted growth rates for our key drivers excluding activity from Russian issued cards from the current and prior periods.

Key Metrics related to the Payment Network

Assessments represent agreed upon standard pricing provided to our customers based on various forms of payment-related activity. Assessments are used internally by management to monitor operating performance as it allows for comparability and provides visibility into cardholder trends. Assessments do not represent our net revenue.

The following provides additional information on our key metrics related to the payment network:

- **Domestic assessments** are charges based on activity related to cards that carry the Company's brands where the merchant country and the country of issuance are the same. These assessments are primarily driven by the domestic dollar volume of activity (e.g., domestic purchase volume, domestic cash volume) or the number of cards issued.
- **Cross-border assessments** are charges based on activity related to cards that carry the Company's brands where the merchant country and the country of issuance are different. These assessments are primarily driven by the cross-border dollar volume of activity (e.g., cross-border purchase volume, cross-border cash volume).

- **Transaction processing assessments** are charges primarily driven by the number of switched transactions on our payment network. Switching activities include:
 - Authorization, the process by which a transaction is routed to the issuer for approval
 - Clearing, the determination and exchange of financial transaction information between issuers and acquirers after a transaction has been successfully conducted at the point of interaction
 - Settlement, which facilitates the determination and exchange of funds between parties

These assessments can also include connectivity services and network access which are based on the volume of data transmitted and the number of authorization and settlement messages.

- **Other network assessments** are charges for licensing, implementation and other franchise fees.

The following table provides a summary of our key metrics related to the payment network.

	Year ended December 31,			2022		2021	
	2022	2021	2020	Increase/ (Decrease)	Currency- neutral Increase/ (Decrease)	Increase/ (Decrease)	Currency- neutral Increase/ (Decrease)
	(\$ in millions)						
Domestic assessments	\$ 8,794	\$ 8,064	\$ 6,598	9%	12%	22%	22%
Cross-border assessments	6,597	4,646	3,498	42%	53%	33%	30%
Transaction processing assessments	10,646	9,041	7,137	18%	23%	27%	26%
Other network assessments	766	668	659	15%	14%	1%	4%

Foreign Currency

Currency Impact

Our primary revenue functional currencies are the U.S. dollar, euro, Brazilian real and the British pound. Our overall operating results are impacted by currency translation, which represents the effect of translating operating results where the functional currency is different than our U.S. dollar reporting currency.

Our operating results are also impacted by transactional currency. The impact of the transactional currency represents the effect of converting revenue and expense transactions occurring in a currency other than the functional currency. Changes in currency exchange rates directly impact the calculation of gross dollar volume ("GDV") and gross euro volume ("GEV"), which are used in the calculation of our key metrics related to domestic assessments and cross-border assessments as well as certain volume-related rebates and incentives. In most non-European regions, GDV is calculated based on local currency spending volume converted to U.S. dollars using average exchange rates for the period. In Europe, GEV is calculated based on local currency spending volume converted to euros using average exchange rates for the period. As a result, our key metrics related to domestic assessments and cross-border assessments as well as certain volume-related rebates and incentives are impacted by the strengthening or weakening of the U.S. dollar versus non-European local currencies and the strengthening or weakening of the euro versus other European local currencies. For example, our billing in Australia is in the U.S. dollar, however, consumer spend in Australia is in the Australian dollar. The currency transactional impact of converting Australian dollars to our U.S. dollar billing currency will have an impact on the revenue generated. The strengthening or weakening of the U.S. dollar is evident when GDV growth on a U.S. dollar-converted basis is compared to GDV growth on a local currency basis. In 2022, GDV on a U.S. dollar-converted basis increased 5.9%, while GDV on a local currency basis increased 12.3% versus 2021. In 2021, GDV on a U.S. dollar-converted basis increased 22.0%, while GDV on a local currency basis increased 20.6% versus 2020. Further, the impact from transactional currency occurs in transaction processing revenue, other revenue and operating expenses when the local currency of these items is different than the functional currency of the entity.

Through December 31, 2020, our approach to managing transactional currency exposure consisted of hedging a portion of anticipated revenues impacted by transactional currencies by entering into foreign exchange derivative contracts, and recording the related changes in fair value in general and administrative expenses on the consolidated statement of operations. During the first quarter of 2021, we started to formally designate certain newly-executed foreign exchange derivative contracts, which meet the established accounting criteria, as cash flow hedges. Gains and losses resulting from changes in fair value of these designated

contracts are deferred in accumulated other comprehensive income (loss) and subsequently recognized in the respective component of net revenue when the underlying forecasted transactions impact earnings.

Foreign Exchange Activity

We incur foreign currency gains and losses from remeasuring monetary assets and liabilities, including settlement assets and obligations, that are denominated in a currency other than the functional currency of the entity. To manage this foreign exchange risk, we may enter into foreign exchange derivative contracts to economically hedge the foreign currency exposure of a portion of our nonfunctional currency monetary assets and liabilities. The gains or losses resulting from the changes in fair value of these contracts are intended to reduce the potential effect of the underlying hedged exposure and are recorded net within general and administrative expenses on the consolidated statement of operations. The impact of this foreign exchange activity, including the related hedging activities, has not been eliminated in our currency-neutral results.

Our foreign exchange risk management activities are discussed further in Note 23 (Derivative and Hedging Instruments) to the consolidated financial statements included in Part II, Item 8.

Risk of Currency Devaluation

We are exposed to currency devaluation in certain countries. In addition, we are subject to exchange control regulations that restrict the conversion of financial assets into U.S. dollars. While these revenues and assets are not material to us on a consolidated basis, we can be negatively impacted should there be a continued and sustained devaluation of local currencies relative to the U.S. dollar and/or a continued and sustained deterioration of economic conditions in these countries.

Financial Results

Net Revenue

The components of net revenue were as follows:

	For the Years Ended December 31,			Increase (Decrease)	
	2022	2021	2020	2022	2021
	(\$ in millions)				
Payment network	\$ 14,358	\$ 11,943	\$ 9,897	20%	21%
Value-added services and solutions	7,879	6,941	5,404	14%	28%
Net revenue	\$ 22,237	\$ 18,884	\$ 15,301	18%	23%

2022

For the year ended December 31, 2022, net revenue increased 18% versus the comparable period in 2021. Adjusted net revenue increased 18%, or 23% on a currency-neutral basis. The increase in net revenue was attributable to both our payment network and our value-added services and solutions and included 1 percentage point of growth from acquisitions. Net revenue includes \$13,084 million of rebates and incentives provided to our customers, an increase of 19%, or 23% on a currency-neutral basis, in 2022 versus 2021.

Net revenue from our payment network increased 20%, or 26% on a currency-neutral basis, in 2022 versus 2021. The increase was primarily driven by growth in domestic and cross-border dollar volumes and an increase in the number of switched transactions, reflecting trends of growth in our key drivers. Net revenue from our payment network includes \$12,445 million of rebates and incentives provided to customers, which increased 19%, or 23% on a currency-neutral basis, in 2022 versus 2021, primarily due to an increase in our key drivers as well as new and renewed deals.

Net revenue from our value-added services and solutions increased 14%, or 18% on a currency-neutral basis, in 2022 versus 2021, which includes a 4 percentage point increase from acquisitions. The remaining increase was primarily driven by our cyber and intelligence and data and services solutions.

2021

For the year ended December 31, 2021, net revenue increased 23%, or 22% on a currency neutral basis, versus the comparable period in 2020. The increase in net revenue was attributable to both our payment network and our value-added services and solutions and included 2 percentage points of growth from acquisitions. Net revenue includes \$10,961 million of rebates and incentives provided to our customers, an increase of 32%, or 31% on a currency-neutral basis, in 2021 versus 2020.

Net revenue from our payment network increased 21%, or 20% on a currency-neutral basis, in 2021 versus 2020. The increase was primarily driven by growth in domestic and cross-border dollar volumes and an increase in the number of switched transactions, reflecting trends of growth in our key drivers. Net revenue from our payment network include \$10,476 million of rebates and incentives provided to customers, which increased 31%, or 30% on a currency-neutral basis, in 2021 versus 2020, primarily due to an increase in our key drivers as well as new and renewed deals.

Net revenue from our value-added services and solutions increased 28%, or 27% on a currency-neutral basis, in 2021 versus 2020, which includes a 6 percentage point increase from acquisitions. The remaining increase was primarily driven by our cyber and intelligence and data and services solutions.

See Note 3 (Revenue) to the consolidated financial statements included in Part II, Item 8 for a further discussion of how we recognize revenue.

Drivers of Change

The following table summarizes the drivers of change in net revenue:

	For the Years Ended December 31,									
	Operational		Acquisitions		Currency Impact ³		Special Items ⁴		Total	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
Payment network	26% ¹	20% ¹	—%	—%	(6)%	1%	—%	—%	20 %	21 %
Value-added services and solutions	15% ²	21% ²	4%	6%	(4)%	1%	**	—%	14 %	28 %
Net revenue	22%	20%	1%	2%	(5)%	1%	—%	—%	18 %	23 %

Note: Table may not sum due to rounding

¹ Includes impacts from our key drivers and metrics, offset by rebates and incentives.

² Includes impacts from cyber and intelligence, data and services, processing and gateway, ACH batch and real-time account-based domestic and cross-border payments and solutions, opening banking and digital identity, offset by rebates and incentives.

³ Includes the translational and transactional impact of currency and the related impact of our foreign exchange derivative contracts designated as cash flow hedging instruments.

⁴ See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

No individual country, other than the United States, generated more than 10% of net revenue in any such period. A significant portion of our net revenue is concentrated among our five largest customers. In 2022, the net revenue from these customers was approximately \$4.7 billion, or 21%, of total net revenue. The loss of any of these customers or their significant card programs could adversely impact our revenue.

Operating Expenses

Operating expenses increased 13% in 2022 versus the prior year. Adjusted operating expenses increased 11%, or 14% on a currency-neutral basis, versus the prior year, which includes a 4 percentage point increase from acquisitions. The remaining increase was primarily due to higher personnel costs, travel and meeting costs and unfavorable foreign exchange activity.

The components of operating expenses were as follows:

	For the Years Ended December 31,			Increase (Decrease)	
	2022	2021	2020	2022	2021
	(\$ in millions)				
General and administrative	\$ 8,078	\$ 7,087	\$ 5,910	14 %	20 %
Advertising and marketing	789	895	657	(12)%	36 %
Depreciation and amortization	750	726	580	3 %	25 %
Provision for litigation	356	94	73	**	**
Total operating expenses	9,973	8,802	7,220	13 %	22 %
Special Items ¹	(423)	(176)	(73)	**	**
Adjusted operating expenses (excluding Special Items ¹)	\$ 9,549	\$ 8,627	\$ 7,147	11 %	21 %

Note: Table may not sum due to rounding.

** Not meaningful

¹ See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

The following table summarizes the drivers of changes in operating expenses:

	For the Years Ended December 31,									
	Operational		Acquisitions		Currency Impact ¹		Special Items ²		Total	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
General and administrative	13%	11 %	4 %	6 %	(3)%	2 %	— %	1 %	14 %	20 %
Advertising and marketing	(9)%	35 %	1 %	1 %	(4)%	1 %	**	**	(12)%	36 %
Depreciation and amortization	(1)%	3 %	8 %	20 %	(4)%	2 %	**	**	3 %	25 %
Provision for litigation	**	**	**	**	**	**	**	**	**	**
Total operating expenses	10%	12 %	4 %	7 %	(3)%	2 %	3 %	1 %	13 %	22 %

Note: Table may not sum due to rounding.

** Not meaningful

¹ Represents the translational and transactional impact of currency.

² See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

General and Administrative

General and administrative expenses increased 14%, or 17% on a currency-neutral basis, in 2022 versus the prior year. Current year results include growth of 4 percentage points from acquisitions. The remaining increase was primarily due to higher personnel costs to support our continued investment in our strategic initiatives across payments, services and new networks, increased travel and meeting costs and balance sheet remeasurement losses due to unfavorable foreign exchange activity.

The components of general and administrative expenses were as follows:

	For the Years Ended December 31,			Increase (Decrease)	
	2022	2021	2020	2022	2021
	(\$ in millions)				
Personnel ¹	\$ 5,263	\$ 4,489	\$ 3,787	17%	19%
Professional fees	480	433	384	11%	13%
Data processing and telecommunications	926	898	756	3%	19%
Foreign exchange activity ²	102	51	9	**	**
Other ^{1,3}	1,307	1,216	974	7%	25%
Total general and administrative expenses	\$ 8,078	\$ 7,087	\$ 5,910	14%	20%

Note: Table may not sum due to rounding.

** Not meaningful

¹ For the year ended December 31, 2022, total general and administrative expenses includes a Special Item for Russia-related impacts of \$67 million, of which \$35 million is included within Personnel and \$32 million is included within Other. See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

² Foreign exchange activity includes the impact of remeasurement of assets and liabilities denominated in foreign currencies net of the impact of gains and losses on foreign exchange derivative contracts. See Note 23 (Derivative and Hedging Instruments) to the consolidated financial statements included in Part II, Item 8 for further discussion.

³ Includes a Special Item related to a foreign indirect tax matter of \$82 million for the year ended December 31, 2021. See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

Advertising and Marketing

Advertising and marketing expenses decreased 12%, or 8% on a currency-neutral basis, in 2022 versus the prior year, primarily due to lower spending on marketing campaigns.

Depreciation and Amortization

Depreciation and amortization expenses increased 3%, or 7% on a currency-neutral basis, in 2022 versus the prior year, due to the amortization of acquired intangible assets from acquisitions.

Provision for Litigation

In 2022, 2021 and 2020, we recorded \$356 million, \$94 million and \$73 million, respectively, related to various legal proceedings. See "Non-GAAP Financial Information" in this section and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8 for further discussion.

Other Income (Expense)

Other income (expense) was unfavorable \$757 million in 2022 versus the prior year, primarily due to net losses in the current year versus net gains in the prior year related to unrealized fair market value adjustments on marketable and nonmarketable equity securities and realized gains on sales of marketable equity securities in 2021. Adjusted other income (expense) was favorable \$26 million versus the prior year, primarily due to an increase in our investment income, partially offset by increased interest expense related to our 2022 debt issuances.

The components of other income (expense) were as follows:

	For the Years Ended December 31,			Increase (Decrease)	
	2022	2021	2020	2022	2021
	(\$ in millions)				
Investment income	\$ 61	\$ 11	\$ 24	**	(52)%
Gains (losses) on equity investments, net	(145)	645	30	**	**
Interest expense	(471)	(431)	(380)	9 %	13 %
Other income (expense), net	23	—	5	**	**
Total other income (expense)	(532)	225	(321)	**	**
(Gains) losses on equity investments ¹	145	(645)	(30)	**	**
Special Items ¹	—	6	—	**	**
Adjusted total other income (expense) ¹	\$ (387)	\$ (413)	\$ (351)	(6)%	18 %

Note: Table may not sum due to rounding.

** Not meaningful

¹ See "Non-GAAP Financial Information" for further information on our non-GAAP adjustments and the reconciliation to GAAP reported amounts.

Income Taxes

The effective income tax rates for the years ended December 31, 2022 and 2021 were 15.4% and 15.7%, respectively. The adjusted effective income tax rates for the years ended December 31, 2022 and 2021 were 15.7% and 15.4%, respectively. The effective income tax rate was lower in 2022 primarily due to a discrete tax benefit in the first quarter of 2022 related to final U.S. tax regulations published in the current year. These regulations resulted in a valuation allowance release of \$333 million associated with the U.S. foreign tax credit carryforward deferred tax asset. The regulations limit Mastercard's ability to generate foreign tax credits starting in 2022 for certain foreign taxes paid, resulting in additional U.S. tax expense. Additionally, a more favorable geographic mix of earnings in 2022 contributed to the lower effective tax rate. The lower effective income tax rate was partially offset by:

- the recognition of U.S. tax benefits in 2021 (the majority of which were discrete) resulting from a higher foreign derived intangible income deduction and greater utilization of foreign tax credits in the U.S.
- a discrete tax benefit in 2021 related to the remeasurement of the our net deferred tax asset in the U.K. due to an enacted tax rate change in 2021
- a discrete tax expense related to an unfavorable court ruling in 2022

The adjusted effective income tax rate was higher in 2022 primarily due to:

- the recognition of U.S. tax benefits in 2021 (the majority of which were discrete) resulting from a higher foreign derived intangible income deduction and greater utilization of foreign tax credits in the U.S.
- a discrete tax benefit in 2021 related to the remeasurement of the our net deferred tax asset in the U.K. due to an enacted tax rate change in 2021
- a discrete tax expense related to an unfavorable court ruling in 2022

All of the above impacts were partially offset by a discrete tax benefit in the first quarter of 2022 related to final U.S. tax regulations published in the current year. These regulations resulted in a valuation allowance release of \$333 million associated with the U.S. foreign tax credit carryforward deferred tax asset. The regulations limit Mastercard's ability to generate foreign tax credits starting in 2022 for certain foreign taxes paid, resulting in additional U.S. tax expense.

See Note 20 (Income Taxes) to the consolidated financial statements included in Part II, Item 8 for further discussion.

In August 2022, the U.S. enacted the Inflation Reduction Act (the "IRA"). The IRA includes a corporate alternative minimum tax of 15% on the adjusted financial statement income of corporations for years beginning after December 31, 2022, and an excise tax of 1% on the fair market value of annual net stock repurchases made after December 31, 2022. We continue to analyze the impacts of the IRA, however, it is not expected to have a material impact on our financial statements.

Liquidity and Capital Resources

We rely on existing liquidity, cash generated from operations and access to capital to fund our global operations, credit and settlement exposure, capital expenditures, investments in our business and current and potential obligations. The following table summarizes the cash, cash equivalents, investments and credit available to us at December 31:

	2022		2021	
	(in billions)			
Cash, cash equivalents and investments ¹	\$	7.4	\$	7.9
Unused line of credit		8.0		6.0

¹ Investments include available-for-sale securities and held-to-maturity securities. This amount excludes restricted cash and restricted cash equivalents of \$2.2 billion and \$2.5 billion at December 31, 2022 and 2021, respectively.

We believe that our existing cash, cash equivalents and investment securities balances, our cash flow generating capabilities, and our access to capital resources are sufficient to satisfy our future operating cash needs, capital asset purchases, outstanding commitments and other liquidity requirements associated with our existing operations and potential obligations which include litigation provisions and credit and settlement exposure.

Our liquidity and access to capital could be negatively impacted by global credit market conditions. We guarantee the settlement of many of the transactions between our customers. Historically, payments under these guarantees have not been significant; however, historical trends may not be an indication of potential future losses. The risk of loss on these guarantees is specific to individual customers, but may also be driven by regional or global economic conditions, including, but not limited to the health of the financial institutions in a country or region. See Note 22 (Settlement and Other Risk Management) to the consolidated financial statements in Part II, Item 8 for a description of these guarantees.

Our liquidity and access to capital could also be negatively impacted by the outcome of any of the legal or regulatory proceedings to which we are a party. For additional discussion of these and other risks facing our business, see Part I, Item 1A - Risk Factors - Legal and Regulatory Risks and Note 21 (Legal and Regulatory Proceedings) to the consolidated financial statements included in Part II, Item 8.

Cash Flow

The table below shows a summary of the cash flows from operating, investing and financing activities:

	For the Years Ended December 31,		
	2022	2021	2020
	(in millions)		
Net cash provided by operating activities	\$ 11,195	\$ 9,463	\$ 7,224
Net cash used in investing activities	(1,470)	(5,272)	(1,879)
Net cash used in financing activities	(10,328)	(6,555)	(2,152)

Net cash provided by operating activities increased \$1.7 billion in 2022 versus the prior year, primarily due to higher net income adjusted for non-cash items and timing of settlement with customers.

Net cash used in investing activities decreased \$3.8 billion in 2022 versus the prior year, primarily due to lower business acquisition activity in the current year.

Net cash used in financing activities increased \$3.8 billion in 2022 versus the prior year, primarily due to higher repurchases of our Class A common stock in the current year.

Debt and Credit Availability

In February 2022, we issued €750 million (\$800 million as of December 31, 2022) principal amount of notes due February 2029 (the "2022 EUR Notes"). In July 2022, we entered into an unsecured INR22.7 billion (\$275 million as of December 31, 2022) term loan due July 2023 (the "INR Term Loan"). During 2022, €700 million (\$724 million as of the maturity date) of principal related to the 2015 Euro Notes matured and was paid. Our total debt outstanding was \$14.0 billion at December 31, 2022, with the earliest maturity of INR22.7 billion (\$275 million as of December 31, 2022) of principal occurring in July 2023.

As of December 31, 2022, we have a commercial paper program (the "Commercial Paper Program"), under which we are authorized to issue up to \$6 billion in outstanding notes, with maturities up to 397 days from the date of issuance. On January 27, 2023, we increased our Commercial Paper Program from \$6 billion to \$8 billion. In conjunction with the Commercial Paper Program, we have a committed unsecured \$8 billion revolving credit facility (the "Credit Facility") which now expires in November 2027.

Borrowings under the Commercial Paper Program and the Credit Facility are to be used to provide liquidity for general corporate purposes, including providing liquidity in the event of one or more settlement failures by our customers. In addition, we may borrow and repay amounts under these facilities for business continuity purposes. We had no borrowings outstanding under the Commercial Paper Program or the Credit Facility at December 31, 2022.

See Note 15 (Debt) to the consolidated financial statements included in Part II, Item 8 for further discussion on our debt, the Commercial Paper Program and the Credit Facility.

Dividends and Share Repurchases

We have historically paid quarterly dividends on our outstanding Class A common stock and Class B common stock. Subject to legally available funds, we intend to continue to pay a quarterly cash dividend. The declaration and payment of future dividends is at the sole discretion of our Board of Directors after taking into account various factors, including our financial condition, operating results, available cash and current and anticipated cash needs.

The following table summarizes the annual, per share dividends paid in the years reflected:

	For the Years Ended December 31,		
	2022	2021	2020
	(in millions, except per share data)		
Cash dividend, per share	\$ 1.96	\$ 1.76	\$ 1.60
Cash dividends paid	\$ 1,903	\$ 1,741	\$ 1,605

On December 6, 2022, our Board of Directors declared a quarterly cash dividend of \$0.57 per share paid on February 9, 2023 to holders of record on January 9, 2023 of our Class A common stock and Class B common stock. The aggregate amount of this dividend was \$545 million.

On February 14, 2023, our Board of Directors declared a quarterly cash dividend of \$0.57 per share payable on May 9, 2023 to holders of record on April 7, 2023 of our Class A common stock and Class B common stock. The aggregate amount of this dividend is estimated to be \$543 million.

Repurchased shares of our common stock are considered treasury stock. In December 2022, November 2021 and December 2020, our Board of Directors approved share repurchase programs of our Class A common stock authorizing us to repurchase up to \$9.0 billion, \$8.0 billion and \$6.0 billion, respectively. The program approved in 2022 will become effective after completion of the share repurchase program approved in 2021. The timing and actual number of additional shares repurchased will depend on a variety of factors, including cash requirements to meet the operating needs of the business, legal requirements, as well as the share price and economic and market conditions. The following table summarizes our share repurchase authorizations and repurchase activity of our Class A common stock through December 31, 2022:

	(in millions, except per share data)
Remaining authorization at December 31, 2021	\$ 11,927
Dollar-value of shares repurchased in 2022	\$ 8,753
Remaining authorization at December 31, 2022	\$ 12,174
Shares repurchased in 2022	25.7
Average price paid per share in 2022	\$ 340.60

See Note 16 (Stockholders' Equity) to the consolidated financial statements included in Part II, Item 8 for further discussion.

Critical Accounting Estimates

The application of GAAP requires us to make estimates and assumptions about certain items and future events that directly affect our reported financial condition. Our significant accounting policies, including recent accounting pronouncements, are described in Note 1 (Summary of Significant Accounting Policies) to the consolidated financial statements included in Part II, Item 8.

Revenue Recognition - Rebates and Incentives

We enter into business agreements with certain customers that provide for rebates and incentives when customers meet certain volume thresholds or other incentives tied to customer performance. We consider various factors in estimating customer performance, including forecasted transactions, card issuance and card conversion volumes, expected payments and historical experience with that customer. Rebates and incentives are recorded within net revenue based on these estimates primarily when volume- and transaction- based revenues are recognized over the contractual term. Differences between actual results and our estimates are adjusted in the period the customer reports actual performance. If our customers' actual performance is not consistent with our estimates of their performance, net revenue may be materially different.

Loss Contingencies

We are currently involved in various claims and legal proceedings. We regularly review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount can be reasonably estimated, we accrue a liability for the estimated loss. Significant judgment is required in both the determination of probability and whether an exposure is reasonably estimable. Our judgments are subjective based on the status of the legal or regulatory proceedings, the merits of our defenses and consultation with in-house and outside legal counsel. Because of uncertainties related to these matters, accruals are based only on the best information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation and may revise our estimates. Due to the inherent uncertainties of the legal and regulatory process in the multiple jurisdictions in which we operate, our judgments may be materially different than the actual outcomes.

Income Taxes

In calculating our effective income tax rate, estimates are required regarding the timing and amount of taxable and deductible items which will adjust the pretax income earned in various tax jurisdictions. Through our interpretation of local tax regulations, adjustments to pretax income for income earned in various tax jurisdictions are reflected within various tax filings. Although we believe that our estimates and judgments discussed herein are reasonable, actual results may be materially different than the estimated amounts.

We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. Significant judgment is required in determining the valuation allowance. In assessing the need for a valuation allowance, we consider all sources of taxable income, including projected future taxable income, reversing taxable temporary differences and ongoing tax planning strategies. If it is determined that we are able to realize deferred tax assets in excess of the net carrying value

or to the extent we are unable to realize a deferred tax asset, we would adjust the valuation allowance in the period in which such a determination is made, with a corresponding increase or decrease to earnings.

We record tax liabilities for uncertain tax positions taken, or expected to be taken, which may not be sustained or may only be partially sustained, upon examination by the relevant taxing authorities. We consider all relevant facts and current authorities in the tax law in assessing whether any benefit resulting from an uncertain tax position is more likely than not to be sustained and, if so, how current law impacts the amount reflected within these financial statements. If upon examination, we realize a tax benefit which is not fully sustained or is more favorably sustained, this would generally increase earnings in the period. In certain situations, we will have offsetting tax credits or taxes in other jurisdictions.

Deferred taxes are established on the estimated foreign exchange gains or losses for foreign earnings that are not considered permanently reinvested, which will be recognized through cumulative translation adjustments as incurred. Ultimately, the working capital requirements of foreign affiliates will determine the amount of cash to be remitted from respective jurisdictions.

Business Combinations

We account for our business combinations using the acquisition method of accounting. The acquisition purchase price, including contingent consideration, if any, is allocated to the underlying identified, tangible and intangible assets, liabilities assumed and any non-controlling interest in the acquiree, based on their respective estimated fair values on the acquisition date. Any excess of purchase price over the fair value of net assets acquired, including identifiable intangible assets, is recorded as goodwill. The amounts and useful lives assigned to acquisition-related tangible and intangible assets impact the amount and timing of future amortization expense. We use various valuation techniques to determine fair value, primarily discounted cash flows analysis, relief-from-royalty and multi-period excess earnings for estimating the value of intangible assets. These valuation techniques include comparable company multiples, discount rates, growth projections and other assumptions of future business conditions. Determining the fair value of assets acquired, liabilities assumed, any non-controlling interest in the acquiree and the expected useful lives, requires management's judgment. The significance of management's estimates and assumptions is relative to the size of the acquisition. Our estimates are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable.

Item 7A. Quantitative and qualitative disclosures about market risk

Market risk is the potential for economic losses to be incurred on market risk sensitive instruments arising from adverse changes in factors such as interest rates and foreign currency exchange rates. Our exposure to market risk from changes in interest rates and foreign exchange rates is limited. Management monitors risk exposures on an ongoing basis and establishes and oversees the implementation of policies governing our funding, investments and use of derivative financial instruments to manage these risks.

Foreign currency and interest rate exposures are managed through our risk management activities, which are discussed further in Note 23 (Derivative and Hedging Instruments) to the consolidated financial statements included in Part II, Item 8.

Foreign Exchange Risk

We enter into foreign exchange derivative contracts to manage currency exposure associated with anticipated receipts and disbursements occurring in a currency other than the functional currency of the entity. We may also enter into foreign currency derivative contracts to offset possible changes in value of assets and liabilities due to foreign exchange fluctuations. The objective of these activities is to reduce our exposure to transaction gains and losses resulting from fluctuations of foreign currencies against our functional currencies, principally the U.S. dollar and euro. The effect of a hypothetical 10% adverse change in the value of the functional currencies could result in a fair value loss of approximately \$94 million and \$70 million on our foreign exchange derivative contracts outstanding at December 31, 2022 and 2021, respectively, before considering the offsetting effect of the underlying hedged activity.

We are also subject to foreign exchange risk as part of our daily settlement activities. To manage this risk, we enter into short duration foreign exchange contracts based upon anticipated receipts and disbursements for the respective currency position. This risk is typically limited to a few days between when a payment transaction takes place and the subsequent settlement with our customers. The effect of a hypothetical 10% adverse change in the value of the functional currencies would not have a material impact to the fair value of our short duration foreign exchange derivative contracts outstanding at December 31, 2022 and 2021, respectively.

We are further exposed to foreign exchange rate risk related to translation of our net investment in foreign subsidiaries where the functional currency is different than our U.S. dollar reporting currency. To manage this risk, we may enter into foreign exchange derivative contracts to hedge a portion of our net investment in foreign subsidiaries. The effect of a hypothetical 10% adverse change in the value of the U.S. dollar could result in a fair value loss of approximately \$203 million and \$165 million on our foreign exchange derivative contracts designated as a net investment hedge at December 31, 2022 and 2021, respectively, before considering the offsetting effect of the underlying hedged activity.

Interest Rate Risk

Our available-for-sale debt investments include fixed and variable rate securities that are sensitive to interest rate fluctuations. Our policy is to invest in high quality securities, while providing adequate liquidity and maintaining diversification to avoid significant exposure. A hypothetical 100 basis point adverse change in interest rates would not have a material impact to the fair value of our investments at December 31, 2022 and 2021.

We are also exposed to interest rate risk related to our fixed-rate debt. To manage this risk, we may enter into interest rate derivative contracts to hedge a portion of our fixed-rate debt that is exposed to changes in fair value attributable to changes in a benchmark interest rate. The effect of a hypothetical 100 basis point adverse change in interest rates could result in a fair value loss of approximately \$36 million and \$49 million on our interest rate derivative contracts designated as a fair value hedge of our fixed-rate debt at December 31, 2022 and 2021, respectively, before considering the offsetting effect of the underlying hedged activity.

Item 8. Financial statements and supplementary data

Mastercard Incorporated Index to consolidated financial statements

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Management's report on internal control over financial reporting

The management of Mastercard Incorporated ("Mastercard") is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with accounting principles generally accepted in the United States of America. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. As required by Section 404 of the Sarbanes-Oxley Act of 2002, management has assessed the effectiveness of Mastercard's internal control over financial reporting as of December 31, 2022. In making its assessment, management has utilized the criteria set forth in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Management has concluded that, based on its assessment, Mastercard's internal control over financial reporting was effective as of December 31, 2022. The effectiveness of Mastercard's internal control over financial reporting as of December 31, 2022 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears on the next page.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Mastercard Incorporated

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheet of Mastercard Incorporated and its subsidiaries (the “Company”) as of December 31, 2022 and 2021, and the related consolidated statements of operations, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on internal control over financial reporting. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue Recognition - Rebates and Incentives

As described in Notes 1 and 3 to the consolidated financial statements, the Company provides certain customers with rebates and incentives which are a portion of total net revenue of \$22.2 billion for the year ended December 31, 2022. The Company has business agreements with certain customers that provide for rebates and incentives within net revenue that could be either fixed or variable. Variable rebates and incentives are recorded primarily when volume- and transaction-based revenues are recognized over the contractual term. Variable rebates and incentives are calculated based upon estimated customer performance, such as volume thresholds, and the terms of the related business agreements. As disclosed by management, various factors are considered in estimating customer performance, including forecasted transactions, card issuance and card conversion volumes, expected payments and historical experience with that customer.

The principal considerations for our determination that performing procedures relating to rebates and incentives is a critical audit matter are (i) the significant judgment by management when developing estimates related to rebates and incentives based on customer performance; and (ii) a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating management's estimates related to customer performance, including the reasonableness of the various applicable factors considered by management in the estimate.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to rebates and incentives, including controls over evaluating estimated customer performance. These procedures also included, among others, evaluating the reasonableness of estimated customer performance for a sample of customer agreements, including (i) evaluating the agreements to identify whether all rebates and incentives are identified and recorded accurately; (ii) testing management's process for developing estimated customer performance, including evaluating the reasonableness of the various applicable factors considered by management; and (iii) evaluating estimated customer performance as compared to actual results in the period the customer reports actual performance.

/s/ PricewaterhouseCoopers LLP

New York, New York
February 14, 2023

We have served as the Company's auditor since 1989.

Consolidated Statement of Operations

	For the Years Ended December 31,		
	2022	2021	2020
	(in millions, except per share data)		
Net Revenue	\$ 22,237	\$ 18,884	\$ 15,301
Operating Expenses:			
General and administrative	8,078	7,087	5,910
Advertising and marketing	789	895	657
Depreciation and amortization	750	726	580
Provision for litigation	356	94	73
Total operating expenses	9,973	8,802	7,220
Operating income	12,264	10,082	8,081
Other Income (Expense):			
Investment income	61	11	24
Gains (losses) on equity investments, net	(145)	645	30
Interest expense	(471)	(431)	(380)
Other income (expense), net	23	—	5
Total other income (expense)	(532)	225	(321)
Income before income taxes	11,732	10,307	7,760
Income tax expense	1,802	1,620	1,349
Net Income	\$ 9,930	\$ 8,687	\$ 6,411
Basic Earnings per Share	\$ 10.26	\$ 8.79	\$ 6.40
Basic weighted-average shares outstanding	968	988	1,002
Diluted Earnings per Share	\$ 10.22	\$ 8.76	\$ 6.37
Diluted weighted-average shares outstanding	971	992	1,006

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statement of Comprehensive Income

	For the Years Ended December 31,		
	2022	2021	2020
	(in millions)		
Net Income	\$ 9,930	\$ 8,687	\$ 6,411
Other comprehensive income (loss):			
Foreign currency translation adjustments	(712)	(442)	345
Income tax effect	37	55	(59)
Foreign currency translation adjustments, net of income tax effect	(675)	(387)	286
Translation adjustments on net investment hedges	353	269	(177)
Income tax effect	(78)	(60)	40
Translation adjustments on net investment hedges, net of income tax effect	275	209	(137)
Cash flow hedges	1	6	(189)
Income tax effect	—	(1)	42
Reclassification adjustment for cash flow hedges	(10)	5	4
Income tax effect	2	(1)	(1)
Cash flow hedges, net of income tax effect	(7)	9	(144)
Defined benefit pension and other postretirement plans	(45)	57	(12)
Income tax effect	14	(14)	2
Reclassification adjustment for defined benefit pension and other postretirement plans	(1)	(2)	(1)
Income tax effect	—	—	—
Defined benefit pension and other postretirement plans, net of income tax effect	(32)	41	(11)
Investment securities available-for-sale	(6)	(1)	(1)
Income tax effect	1	—	—
Investment securities available-for-sale, net of income tax effect	(5)	(1)	(1)
Other comprehensive income (loss), net of income tax effect	(444)	(129)	(7)
Comprehensive Income	\$ 9,486	\$ 8,558	\$ 6,404

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Balance Sheet

	December 31,	
	2022	2021
	(in millions, except per share data)	
Assets		
Current assets:		
Cash and cash equivalents	\$ 7,008	\$ 7,421
Restricted cash for litigation settlement	589	586
Investments	400	473
Accounts receivable	3,425	3,006
Settlement assets	1,270	1,319
Restricted security deposits held for customers	1,568	1,873
Prepaid expenses and other current assets	2,346	2,271
Total current assets	16,606	16,949
Property, equipment and right-of-use assets, net	2,006	1,907
Deferred income taxes	1,151	486
Goodwill	7,522	7,662
Other intangible assets, net	3,859	3,671
Other assets	7,580	6,994
Total Assets	\$ 38,724	\$ 37,669
Liabilities, Redeemable Non-controlling Interests and Equity		
Current liabilities:		
Accounts payable	\$ 926	\$ 738
Settlement obligations	1,111	913
Restricted security deposits held for customers	1,568	1,873
Accrued litigation	1,094	840
Accrued expenses	7,801	6,642
Short-term debt	274	792
Other current liabilities	1,397	1,364
Total current liabilities	14,171	13,162
Long-term debt	13,749	13,109
Deferred income taxes	393	395
Other liabilities	4,034	3,591
Total Liabilities	32,347	30,257
Commitments and Contingencies		
Redeemable Non-controlling Interests	21	29
Stockholders' Equity		
Class A common stock, \$0.0001 par value; authorized 3,000 shares, 1,399 and 1,397 shares issued and 948 and 972 shares outstanding, respectively	—	—
Class B common stock, \$0.0001 par value; authorized 1,200 shares, 8 shares issued and outstanding	—	—
Additional paid-in-capital	5,298	5,061
Class A treasury stock, at cost, 451 and 425 shares, respectively	(51,354)	(42,588)
Retained earnings	53,607	45,648
Accumulated other comprehensive income (loss)	(1,253)	(809)
Mastercard Incorporated Stockholders' Equity	6,298	7,312
Non-controlling interests	58	71
Total Equity	6,356	7,383
Total Liabilities, Redeemable Non-controlling Interests and Equity	\$ 38,724	\$ 37,669

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statement of Changes in Equity

	Stockholders' Equity								
	Common Stock		Additional Paid-In Capital	Class A Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Mastercard Incorporated Stockholders' Equity	Non- Controlling Interests	Total Equity
	Class A	Class B							
	(in millions, except per share data)								
Balance at December 31, 2019	\$ —	\$ —	\$ 4,787	\$(32,205)	\$33,984	\$ (673)	\$ 5,893	\$ 24	\$ 5,917
Net income	—	—	—	—	6,411	—	6,411	—	6,411
Activity related to non-controlling interests	—	—	—	—	—	—	—	73	73
Redeemable non-controlling interest adjustments	—	—	—	—	(7)	—	(7)	—	(7)
Other comprehensive income (loss)	—	—	—	—	—	(7)	(7)	—	(7)
Dividends	—	—	—	—	(1,641)	—	(1,641)	—	(1,641)
Purchases of treasury stock	—	—	—	(4,459)	—	—	(4,459)	—	(4,459)
Share-based payments	—	—	195	6	—	—	201	—	201
Balance at December 31, 2020	—	—	4,982	(36,658)	38,747	(680)	6,391	97	6,488
Net income	—	—	—	—	8,687	—	8,687	—	8,687
Activity related to non-controlling interests	—	—	—	—	—	—	—	(9)	(9)
Acquisition of non-controlling interest	—	—	(122)	—	—	—	(122)	(17)	(139)
Redeemable non-controlling interest adjustments	—	—	—	—	(5)	—	(5)	—	(5)
Other comprehensive income (loss)	—	—	—	—	—	(129)	(129)	—	(129)
Dividends	—	—	—	—	(1,781)	—	(1,781)	—	(1,781)
Purchases of treasury stock	—	—	—	(5,934)	—	—	(5,934)	—	(5,934)
Share-based payments	—	—	201	4	—	—	205	—	205
Balance at December 31, 2021	—	—	5,061	(42,588)	45,648	(809)	7,312	71	7,383

Consolidated Statement of Changes in Equity (Continued)

	Stockholders' Equity								Total Equity
	Common Stock		Additional Paid-In Capital	Class A Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Mastercard Incorporated Stockholders' Equity	Non- Controlling Interests	
	Class A	Class B							
	(in millions, except per share data)								
Balance at December 31, 2021	—	—	5,061	(42,588)	45,648	(809)	7,312	71	7,383
Net income	—	—	—	—	9,930	—	9,930	—	9,930
Activity related to non-controlling interests	—	—	—	—	—	—	—	(13)	(13)
Redeemable non-controlling interest adjustments	—	—	—	—	(3)	—	(3)	—	(3)
Other comprehensive income (loss)	—	—	—	—	—	(444)	(444)	—	(444)
Dividends	—	—	—	—	(1,968)	—	(1,968)	—	(1,968)
Purchases of treasury stock	—	—	—	(8,773)	—	—	(8,773)	—	(8,773)
Share-based payments	—	—	237	7	—	—	244	—	244
Balance at December 31, 2022	\$ —	\$ —	\$ 5,298	\$(51,354)	\$53,607	\$ (1,253)	\$ 6,298	\$ 58	\$ 6,356

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated Statement of Cash Flows

	For the Years Ended December 31,		
	2022	2021	2020
	(in millions)		
Operating Activities			
Net income	\$ 9,930	\$ 8,687	\$ 6,411
Adjustments to reconcile net income to net cash provided by operating activities:			
Amortization of customer and merchant incentives	1,586	1,371	1,072
Depreciation and amortization	750	726	580
(Gains) losses on equity investments, net	145	(645)	(30)
Share-based compensation	295	273	254
Deferred income taxes	(651)	(69)	73
Other	44	36	14
Changes in operating assets and liabilities:			
Accounts receivable	(481)	(397)	(86)
Income taxes receivable	12	(87)	(2)
Settlement assets	48	390	1,288
Prepaid expenses	(2,175)	(2,087)	(1,552)
Accrued litigation and legal settlements	240	(1)	(73)
Restricted security deposits held for customers	(305)	177	326
Accounts payable	190	100	26
Settlement obligations	201	(568)	(1,242)
Accrued expenses	1,188	1,355	(114)
Long-term taxes payable	(121)	(52)	(37)
Net change in other assets and liabilities	299	254	316
Net cash provided by operating activities	11,195	9,463	7,224
Investing Activities			
Purchases of investment securities available-for-sale	(267)	(389)	(220)
Purchases of investments held-to-maturity	(239)	(294)	(198)
Proceeds from sales of investment securities available-for-sale	54	83	361
Proceeds from maturities of investment securities available-for-sale	211	291	140
Proceeds from maturities of investments held-to-maturity	265	296	121
Purchases of property and equipment	(442)	(407)	(339)
Capitalized software	(655)	(407)	(369)
Purchases of equity investments	(88)	(228)	(214)
Proceeds from sales of equity investments	7	186	—
Acquisition of businesses, net of cash acquired	(313)	(4,436)	(989)
Settlement of interest rate derivative contracts	—	—	(175)
Other investing activities	(3)	33	3
Net cash used in investing activities	(1,470)	(5,272)	(1,879)
Financing Activities			
Purchases of treasury stock	(8,753)	(5,904)	(4,473)
Dividends paid	(1,903)	(1,741)	(1,605)
Proceeds from debt, net	1,123	2,024	3,959
Payment of debt	(724)	(650)	—
Acquisition of redeemable non-controlling interests	(4)	—	(49)
Acquisition of non-controlling interest	—	(133)	—
Contingent consideration paid	—	(64)	—
Tax withholdings related to share-based payments	(141)	(133)	(150)
Cash proceeds from exercise of stock options	90	61	97
Other financing activities	(16)	(15)	69
Net cash used in financing activities	(10,328)	(6,555)	(2,152)
Effect of exchange rate changes on cash, cash equivalents, restricted cash and restricted cash equivalents	(103)	(153)	257
Net increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	(706)	(2,517)	3,450
Cash, cash equivalents, restricted cash and restricted cash equivalents - beginning of period	9,902	12,419	8,969
Cash, cash equivalents, restricted cash and restricted cash equivalents - end of period	\$ 9,196	\$ 9,902	\$ 12,419

The accompanying notes are an integral part of these consolidated financial statements.

Notes to consolidated financial statements

Note 1. Summary of Significant Accounting Policies

Organization

Mastercard Incorporated and its consolidated subsidiaries, including Mastercard International Incorporated (“Mastercard International” and together with Mastercard Incorporated, “Mastercard” or the “Company”), is a technology company in the global payments industry. Mastercard connects consumers, financial institutions, merchants, governments, digital partners, businesses and other organizations worldwide by enabling electronic forms of payment instead of cash and checks and making those payment transactions safe, simple, smart and accessible. The Company makes payments easier and more efficient by providing a wide range of payment solutions and services through its family of well-known and trusted brands, including Mastercard®, Maestro® and Cirrus®. The Company operates a multi-rail payments network that provides choice and flexibility for consumers, merchants and Mastercard customers. Through its unique and proprietary core global payments network, the Company switches (authorizes, clears and settles) payment transactions. The Company has additional payment capabilities that include automated clearing house (“ACH”) transactions (both batch and real-time account-based payments). Using these capabilities, the Company offers integrated payment products and services and captures new payment flows. The Company’s value-added services include, among others, cyber and intelligence solutions to allow all parties to transact easily and with confidence, as well as other services that provide proprietary insights, drawing on Mastercard’s principled use of secure consumer and merchant data. The Company’s investments in new networks, such as open banking solutions and digital identity capabilities, support and strengthen our payments and services solutions. The Company’s franchise model sets the standards and ground-rules for our core global payments network that balance value and risk across all stakeholders and allows for interoperability among them. The Company’s payment solutions are designed to ensure safety and security for the global payments ecosystem.

Mastercard is not a financial institution. The Company does not issue cards, extend credit, determine or receive revenue from interest rates or other fees charged to account holders by issuers, or establish the rates charged by acquirers in connection with merchants’ acceptance of the Company’s products. In most cases, account holder relationships belong to, and are managed by, the Company’s financial institution customers.

Significant Accounting Policies

Consolidation and basis of presentation - The consolidated financial statements include the accounts of Mastercard and its majority-owned and controlled entities, including any variable interest entities (“VIEs”) for which the Company is the primary beneficiary. Investments in VIEs for which the Company is not considered the primary beneficiary are not consolidated and are accounted for as marketable, equity method or measurement alternative method investments and recorded in other assets on the consolidated balance sheet. At December 31, 2022 and 2021, there were no significant VIEs which required consolidation and the investments were not considered material to the consolidated financial statements. The Company consolidates acquisitions as of the date on which the Company has obtained a controlling financial interest. Intercompany transactions and balances have been eliminated in consolidation. During 2022, the Company updated its disaggregated net revenue presentation by category and geography to reflect the nature of its payment services and to align such information with the way in which management will prospectively view its categories of net revenue. Prior period amounts have been reclassified to conform to the 2022 presentation. The reclassification had no impact on previously reported total net revenue, operating income or net income. The Company follows accounting principles generally accepted in the United States of America (“GAAP”).

Non-controlling interests represent the equity interest not owned by the Company and are recorded for consolidated entities in which the Company owns less than 100% of the interests. Changes in a parent’s ownership interest while the parent retains its controlling interest are accounted for as equity transactions, and upon loss of control, retained ownership interests are remeasured at fair value, with any gain or loss recognized in earnings. For 2022, 2021 and 2020, net losses attributable to non-controlling interests were not material and, as a result, amounts are included on the consolidated statement of operations within other income (expense).

Use of estimates - The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods. Future events and their effects cannot be predicted with certainty; accordingly, accounting estimates require the exercise of judgment. These financial statements were prepared using information reasonably available as of December 31, 2022 and through the date of this Report. The accounting estimates used in the preparation of the Company’s consolidated financial statements may change as new events occur, as more experience is acquired, as additional information is obtained and as the Company’s operating environment changes. Actual results may differ from these estimates.

Revenue recognition - Revenue is recognized to depict the transfer of promised services to customers in an amount that reflects the consideration to which the Company expects to be entitled to in exchange for those services.

Revenue from the Company's payment network is primarily generated by charging fees to customers (issuers, acquirers and other market participants) for providing switching and other network-related services, as well as by charging fees to customers based primarily on the gross dollar volume of activity (GDV, which includes both domestic and cross-border volume) on the cards that carry the Company's brands. Revenue is recognized in the period in which the related transactions and volume occur. Certain volume-based revenue is determined from information reported by customers.

Revenue from the Company's value-added services and solutions is generated through either fixed or transaction-based fees. These services and solutions can be integrated and sold with the Company's payment network services or can be sold on a stand-alone basis. Revenue from the Company's value-added services and solutions is recognized in the period in which the related services and solutions are performed or transactions occur. For services provided to customers where delivery involves the use of a third-party, the Company recognizes revenue on a gross basis if it acts as the principal, controlling the service to the customer, or on a net basis if it acts as the agent, arranging for the service to be provided.

Mastercard has business agreements with certain customers that provide for rebates and incentives within net revenue that could be either fixed or variable. Fixed incentives typically represent payments to a customer directly related to entering into an agreement, which are generally capitalized and amortized over the life of the agreement on a straight-line basis. Variable rebates and incentives are recorded primarily when volume- and transaction-based revenues are recognized over the contractual term. Variable rebates and incentives are calculated based upon estimated customer performance, such as volume thresholds, and the terms of the related business agreements.

Contract assets include unbilled consideration typically resulting from executed data analytic and consulting services performed for customers in connection with Mastercard's payments network service arrangements. Collection for these services typically occurs over the contractual term. Contract assets are included in prepaid expenses and other current assets and other assets on the consolidated balance sheet.

The Company defers the recognition of revenue when consideration has been received prior to the satisfaction of performance obligations. As these performance obligations are satisfied, revenue is subsequently recognized. Deferred revenue primarily relates to certain value-added services and solutions. Deferred revenue is included in other current liabilities and other liabilities on the consolidated balance sheet.

Business combinations - The Company accounts for business combinations under the acquisition method of accounting. The Company measures the tangible and intangible identifiable assets acquired, liabilities assumed, any non-controlling interest in the acquiree and contingent consideration at fair value as of the acquisition date. Acquisition-related costs are expensed as incurred and are included in general and administrative expenses on the consolidated statement of operations. Any excess purchase price over the fair value of net assets acquired, including identifiable intangible assets, is recorded as goodwill. Measurement period adjustments, if any, to the preliminary estimated fair value of the intangibles assets as of the acquisition date are recorded in goodwill.

Goodwill and other intangible assets - Indefinite-lived intangible assets consist of goodwill and customer relationships. Goodwill represents the synergies expected to arise after the acquisition date and the assembled workforce. Finite-lived intangible assets consist of capitalized software costs, customer relationships and other intangible assets. Intangible assets with finite useful lives are amortized over their estimated useful lives, on a straight-line basis, which range from one to twenty years. Capitalized software includes internal and external costs incurred directly related to the design, development and testing phases of each capitalized software project, as well as technology acquired in business combinations.

The valuation methods for goodwill and other intangible assets acquired in business combinations involve assumptions concerning comparable company multiples, discount rates, growth projections and other assumptions of future business conditions. The Company uses various valuation techniques to determine the fair value of its intangible assets, primarily discounted cash flows analysis, relief-from-royalty and multi-period excess earnings. As the assumptions employed to measure these assets are based on management's judgment using internal and external data, these fair value determinations are classified in Level 3 of the Valuation Hierarchy (as defined in Fair value subsection below).

Impairment of assets - Goodwill and indefinite-lived intangible assets are not amortized but tested annually for impairment at the reporting unit level in the fourth quarter, or sooner when circumstances indicate an impairment may exist. The impairment evaluation for goodwill utilizes a qualitative assessment to determine whether it is more likely than not that goodwill is impaired. The qualitative factors may include, but are not limited to, macroeconomic conditions, industry and market conditions, operating environment, financial performance and other relevant events. If it is determined that it is more likely than not that goodwill is impaired, then the Company is required to perform a quantitative goodwill impairment test. If the fair value of the reporting unit

exceeds the carrying value, goodwill is not impaired. If the fair value of the reporting unit is less than its carrying value, then goodwill is impaired and the excess of the reporting unit's carrying value over the fair value is recognized as an impairment charge.

The impairment test for indefinite-lived intangible assets consists of a qualitative assessment to evaluate relevant events and circumstances that could affect the significant inputs used to determine the fair value of indefinite-lived intangible assets. If the qualitative assessment indicates that it is more likely than not that indefinite-lived intangible assets are impaired, then a quantitative assessment is required.

Long-lived assets, other than goodwill and indefinite-lived intangible assets, are tested for impairment whenever events or circumstances indicate that their carrying amount may not be recoverable. If the carrying value of the asset cannot be recovered from estimated future cash flows, undiscounted and without interest, the fair value of the asset is calculated using the present value of estimated net future cash flows. If the carrying amount of the asset exceeds its fair value, an impairment is recorded.

Impairment charges, if any, are recorded in general and administrative expenses on the consolidated statement of operations.

Litigation - The Company is a party to certain legal and regulatory proceedings with respect to a variety of matters. The Company evaluates the likelihood of an unfavorable outcome of all legal or regulatory proceedings to which it is a party and accrues a loss contingency when the loss is probable and reasonably estimable. Loss contingencies are recorded in provision for litigation on the consolidated statement of operations. These judgments are subjective based on the status of the legal or regulatory proceedings, the merits of its defenses and consultation with in-house and external legal counsel. Legal costs are expensed as incurred and recorded in general and administrative expenses on the consolidated statement of operations.

Settlement and other risk management - Mastercard's rules guarantee the settlement of many of the transactions between its customers. Settlement exposure is the outstanding settlement risk to customers under Mastercard's rules due to the difference in timing between the payment transaction date and subsequent settlement. For those transactions the Company guarantees, the guarantee will cover the full amount of the settlement obligation to the extent the settlement obligation is not otherwise satisfied. Settlement is generally completed on a same-day basis, however, in some circumstances, funds may not settle until subsequent business days creating a short-term settlement exposure.

The Company also enters into agreements in the ordinary course of business under which the Company agrees to indemnify third parties against damages, losses and expenses incurred in connection with legal and other proceedings arising from relationships or transactions with the Company. As the extent of the Company's obligations under these agreements depends entirely upon the occurrence of future events, the Company's potential future liability under these agreements is not determinable.

The Company accounts for each of its guarantees by recording the guarantee at its fair value at the inception or modification date through earnings.

Income taxes - The Company follows an asset and liability based approach in accounting for income taxes as required under GAAP. Deferred income tax assets and liabilities are recorded to reflect the tax consequences on future years of temporary differences between the financial statement carrying amounts and income tax bases of assets and liabilities. Deferred income taxes are displayed separately as noncurrent assets and liabilities on the consolidated balance sheet. Valuation allowances are provided against assets which are not more likely than not to be realized. The Company recognizes all material tax positions, including uncertain tax positions in which it is more likely than not that the position will be sustained based on its technical merits and if challenged by the relevant taxing authorities. At each balance sheet date, unresolved uncertain tax positions are reassessed to determine whether subsequent developments require a change in the amount of recognized tax benefit. The allowance for uncertain tax positions is recorded in other current and noncurrent liabilities on the consolidated balance sheet. The Company records interest expense related to income tax matters as interest expense on the consolidated statement of operations. The Company includes penalties related to income tax matters in the income tax provision.

Cash and cash equivalents - Cash and cash equivalents include certain investments with daily liquidity and with an original maturity of three months or less from the date of purchase. Cash equivalents are recorded at cost, which approximates fair value.

Restricted cash - The Company classifies cash and cash equivalents as restricted when it is unavailable for withdrawal or use in its general operations. The Company has the following types of restricted cash and restricted cash equivalents which are included in the reconciliation of beginning-of-period and end-of-period amounts shown on the consolidated statement of cash flows:

- *Restricted cash for litigation settlement* - The Company has restricted cash for litigation within a qualified settlement fund related to the settlement agreement for the U.S. merchant class litigation. The funds continue to be restricted for payments until the litigation matter is resolved.
- *Restricted security deposits held for customers* - The Company requires certain customers to enter into risk mitigation arrangements, including cash collateral and/or other forms of credit enhancement such as letters of credit and guarantees, for settlement of their transactions. Certain risk mitigation arrangements for settlement, such as standby letters of credit and bank

guarantees, are not recorded on the consolidated balance sheet. The Company also holds cash deposits and certificates of deposit from certain customers as collateral for settlement of their transactions, which are recorded as assets on the consolidated balance sheet. These assets are fully offset by corresponding liabilities included on the consolidated balance sheet. The amount of these security deposits and the duration held are determined by the risk profile of the individual customer and the Company's risk management practices.

- *Other restricted cash balances* - The Company has other restricted cash balances which include contractually restricted deposits, as well as cash balances that are restricted based on the Company's intention with regard to usage. These funds are classified on the consolidated balance sheet within prepaid expenses and other current assets and other assets.

Fair value - The Company measures certain financial assets and liabilities at fair value on a recurring basis by estimating the price that would be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. The Company also measures certain financial and non-financial assets and liabilities at fair value on a nonrecurring basis, when a change in fair value or impairment is evidenced. The Company classifies these recurring and nonrecurring fair value measurements into a three-level hierarchy ("Valuation Hierarchy").

The Valuation Hierarchy is based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date. A financial instrument's categorization within the Valuation Hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The three levels of the Valuation Hierarchy are as follows:

- Level 1 - inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- Level 2 - inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in inactive markets and inputs that are observable for the asset or liability.
- Level 3 - inputs to the valuation methodology are unobservable and cannot be directly corroborated by observable market data.

The Company's financial assets and liabilities measured at fair value on a recurring basis include investment securities available for sale, marketable securities, derivative instruments and deferred compensation. The Company's financial assets and liabilities measured at fair value on a nonrecurring basis include nonmarketable securities, debt and other financial instruments. The Company's non-financial assets measured at fair value on a nonrecurring basis include property, equipment and right-of-use assets, goodwill and other intangible assets and are subject to fair value adjustments in certain circumstances, such as when there is evidence of impairment.

Contingent consideration - Certain business combinations involve the potential for future payment of consideration that is contingent upon the achievement of performance milestones. These liabilities are classified within Level 3 of the Valuation Hierarchy as the inputs used to measure fair value are unobservable and require management's judgment. The fair value of the contingent consideration at the acquisition date and subsequent periods is determined utilizing an income approach based on a Monte Carlo technique and is recorded in other current liabilities and other liabilities on the consolidated balance sheet. Changes to projected performance milestones of the acquired businesses could result in a higher or lower contingent consideration liability. The changes in fair value as a result of updated assumptions are recorded in general and administrative expenses on the consolidated statement of operations.

Investment securities - The Company classifies investments as available-for-sale or held-to-maturity at the date of acquisition.

- Available-for-sale debt securities:
 - Investments in debt securities that are available to meet the Company's current operational needs are classified as current assets and the securities that are not available for current operational needs are classified as noncurrent assets on the consolidated balance sheet.

The debt securities are carried at fair value, with unrealized gains and losses, net of tax, recorded as a separate component of accumulated other comprehensive income (loss) on the consolidated statement of comprehensive income. Net realized gains and losses on debt securities are recognized in investment income on the consolidated statement of operations. The specific identification method is used to determine realized gains and losses.

The Company evaluates its debt securities for impairment on an ongoing basis. When there has been a decline in fair value of a debt security below the amortized cost basis, the Company recognizes an impairment if: (1) it has the intent to sell the security; (2) it is more likely than not that it will be required to sell the security before recovery of the amortized cost basis; or (3) it does not expect to recover the entire amortized cost basis of the security. The credit loss component of the impairment is recognized as an allowance and recorded in other income (expense), net on the consolidated statement of operations while the non-credit related loss remains in accumulated other comprehensive income (loss) until realized from a sale or subsequent impairment.

- Held-to-maturity securities:
 - Time deposits - The Company classifies time deposits with original maturities greater than three months as held-to-maturity. Held-to-maturity securities that mature within one year are classified as current assets within investments on the consolidated balance sheet while held-to-maturity securities with maturities of greater than one year are classified as other assets. Time deposits are carried at amortized cost on the consolidated balance sheet and are intended to be held until maturity.

Equity investments - The Company holds equity securities of publicly traded and privately held companies.

- Marketable equity securities - Marketable equity securities are strategic investments in publicly traded companies and are measured at fair value using quoted prices in their respective active markets with changes recorded through gains (losses) on equity investments, net on the consolidated statement of operations. Marketable equity securities that are expected to be held as part of the Company's long-term investment strategy are classified in other assets on the consolidated balance sheet.
- Nonmarketable equity investments - The Company's nonmarketable equity investments, which are reported in other assets on the consolidated balance sheet, include investments in privately held companies without readily determinable market values. The Company uses discounted cash flows and market assumptions to estimate the fair value of its nonmarketable equity investments when certain events or circumstances indicate that impairment may exist. The Company's nonmarketable equity investments are accounted for under the measurement alternative method or equity method.
 - Measurement alternative method - The Company accounts for investments in common stock or in-substance common stock under the measurement alternative method of accounting when it does not exercise significant influence, generally when it holds less than 20% ownership in the entity or when the interest in a limited partnership or limited liability company is less than 5% and the Company has no significant influence over the operations of the investee. Investments in companies that Mastercard does not control, but that are not in the form of common stock or in-substance common stock, are also accounted for under the measurement alternative method of accounting. Measurement alternative investments are measured at cost, less any impairment and adjusted for changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. Fair value adjustments, as well as impairments, are included in gains (losses) on equity investments, net on the consolidated statement of operations.
 - Equity method - The Company accounts for investments in common stock or in-substance common stock under the equity method of accounting when it has the ability to exercise significant influence over the operations of the investee, generally when it holds between 20% and 50% ownership in the entity. The excess of the cost over the underlying net equity of investments accounted for under the equity method is allocated to identifiable tangible and intangible assets and liabilities based on fair values at the date of acquisition. The amortization of the excess of the cost over the underlying net equity of investments and Mastercard's share of net earnings or losses of entities accounted for under the equity method of accounting is included in other income (expense), net on the consolidated statement of operations.

In addition, investments in flow-through entities such as limited partnerships and limited liability companies are also accounted for under the equity method when the Company has the ability to exercise significant influence over the operations of the investee, generally when the investment ownership percentage is equal to or greater than 5% of the outstanding ownership interest. The Company's share of net earnings or losses for these investments are included in gains (losses) on equity investments, net on the consolidated statement of operations.

Derivative and hedging instruments - The Company's derivative financial instruments are recorded as either assets or liabilities on the balance sheet and measured at fair value. The Company's foreign exchange and interest rate derivative contracts are included in Level 2 of the Valuation Hierarchy as the fair value of the contracts are based on inputs, which are observable based on broker quotes for the same or similar instruments. The Company does not enter into derivative instruments for trading or speculative purposes. For derivatives that are not designated as hedging instruments, realized and unrealized gains and losses from the change in fair value of the derivatives are recognized in current earnings.

The Company's derivatives that are designated as hedging instruments are required to meet established accounting criteria. In addition, an effectiveness assessment is required to demonstrate that the derivative is expected to be highly effective at offsetting changes in fair value or cash flows of the underlying exposure both at inception of the hedging relationship and on an ongoing basis. The method of assessing hedge effectiveness and measuring hedge results is formally documented at hedge inception and assessed at least quarterly throughout the designated hedge period.

The Company may designate derivative instruments as cash flow, fair value and net investment hedges, as follows:

- Cash flow hedges - Fair value adjustments to derivative instruments are recorded, net of tax, in other comprehensive income (loss) on the consolidated statement of comprehensive income. Any gains and losses deferred in accumulated other

comprehensive income (loss) are subsequently reclassified to the corresponding line item on the consolidated statement of operations when the underlying hedged transactions impact earnings. For hedges that are no longer deemed highly effective, hedge accounting is discontinued prospectively, and any gains and losses remaining in accumulated other comprehensive income (loss) are reclassified to earnings when the underlying forecasted transaction occurs. If it is probable that the forecasted transaction will no longer occur, the associated gains or losses in accumulated other comprehensive income (loss) are reclassified to the corresponding line item on the consolidated statement of operations in current earnings.

- Fair value hedges - Changes in the fair value of derivative instruments are recorded in current-period earnings, along with the gain or loss on the hedged asset or liability (“hedged item”) that is attributable to the hedged risk. All amounts recognized in earnings are recorded to the corresponding line item on the consolidated statement of operations as the earnings effect of the hedged item. Hedged items are measured on the consolidated balance sheet at their carrying amount adjusted for any changes in fair value attributable to the hedged risk (“basis adjustments”). The Company defers the amortization of any basis adjustments until the end of the derivative instrument’s term. If the hedge designation is discontinued for reasons other than derecognition of the hedged item, the remaining basis adjustments are amortized in accordance with applicable GAAP for the hedged item.
- Net investment hedges - The Company has numerous investments in foreign subsidiaries. The net assets of these subsidiaries are exposed to volatility in foreign currency exchange rates. The Company may use foreign currency denominated debt and/or derivative instruments to hedge a portion of its net investment in foreign operations against adverse movements in exchange rates. The effective portion of the foreign currency gains and losses related to the hedging instruments are reported in accumulated other comprehensive income (loss) on the consolidated balance sheet as a cumulative translation adjustment component of equity. Gains and losses in accumulated other comprehensive income (loss) are reclassified to earnings only if the Company sells or substantially liquidates its net investments in foreign subsidiaries. Amounts excluded from effectiveness testing of net investment hedges are recognized in earnings over the life of the hedging instrument. The Company evaluates the effectiveness of the net investment hedge each quarter.

Settlement assets/obligations - The Company operates systems for settling payment transactions among participants in the payments ecosystem in which the Company operates. Settlement is generally completed on a same-day basis, however, in some circumstances, funds may not settle until subsequent business days. In addition, the Company may receive or post funds in advance of transactions related to certain payment capabilities over its multi-rail payments network. The Company classifies the balances arising from these various activities as settlement assets and settlement obligations.

Property, equipment and right-of-use assets - Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation and amortization is computed using the straight-line method over the estimated useful lives of the assets. Depreciation of leasehold improvements and amortization of finance leases is included in depreciation and amortization expense on the consolidated statement of operations. Operating lease amortization expense is included in general and administrative expenses on the consolidated statement of operations.

The useful lives of the Company’s assets are as follows:

Asset Category	Estimated Useful Life
Buildings	30 years
Building equipment	10 - 15 years
Furniture and fixtures and equipment	3 - 5 years
Leasehold improvements	Shorter of life of improvement or lease term
Right-of-use assets	Shorter of life of the asset or lease term

The Company determines if a contract is, or contains, a lease at contract inception. The Company’s right-of-use (“ROU”) assets are primarily related to operating leases for office space, automobiles and other equipment. Leases are included in property, equipment and right-of-use assets, other current liabilities and other liabilities on the consolidated balance sheet.

ROU assets represent the right to use an underlying asset for the lease term and lease liabilities represent the obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. In addition, ROU assets include initial direct costs incurred by the lessee as well as any lease payments made at or before the commencement date, and exclude lease incentives. As most of the Company’s leases do not provide an implicit rate, the Company uses its incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments. The incremental borrowing rate is determined by using the rate of interest that the Company would pay to borrow on a collateralized basis an amount equal to the lease payments for a similar term and in a similar economic environment. Lease terms include options to extend or terminate the lease when it is

reasonably certain that the Company will exercise that option. Leases with a term of one year or less are excluded from ROU assets and liabilities.

The Company excludes variable lease payments in measuring ROU assets and lease liabilities, other than those that depend on an index, a rate or are in-substance fixed payments. Lease and nonlease components are generally accounted for separately. When available, consideration is allocated to the separate lease and nonlease components in a lease contract on a relative standalone price basis using observable standalone prices.

Pension and other postretirement plans - The Company recognizes the funded status of its single-employer defined benefit pension plans and postretirement plans as assets or liabilities on its consolidated balance sheet and recognizes changes in the funded status in the year in which the changes occur through accumulated other comprehensive income (loss). The funded status is measured as the difference between the fair value of plan assets and the projected benefit obligation at December 31, the measurement date. Overfunded plans, if any, are aggregated and recorded in other assets, while underfunded plans are aggregated and recorded as accrued expenses and other liabilities on the consolidated balance sheet.

Net periodic pension and postretirement benefit cost/(income), excluding the service cost component, is recognized in other income (expense), net on the consolidated statement of operations. These costs include interest cost, expected return on plan assets, amortization of prior service costs or credits and gains or losses previously recognized as a component of accumulated other comprehensive income (loss). The service cost component is recognized in general and administrative expenses on the consolidated statement of operations.

Defined contribution plans - The Company's contributions to defined contribution plans are recorded as employees render service to the Company. The charge is recorded in general and administrative expenses on the consolidated statement of operations.

Advertising and marketing - Expenses incurred to promote Mastercard's brand, products and services are recognized in advertising and marketing on the consolidated statement of operations. The timing of recognition is dependent on the type of advertising or marketing expense.

Foreign currency remeasurement and translation - Monetary assets and liabilities in a currency other than the functional currency are remeasured using current exchange rates in effect at the balance sheet date. Non-monetary assets and liabilities are recorded at historical exchange rates. Revenue and expense accounts are remeasured at the weighted-average exchange rate for the period. Resulting exchange gains and losses related to remeasurement are included in general and administrative expenses on the consolidated statement of operations.

Where a non-U.S. currency is the functional currency, translation from that functional currency to U.S. dollars is performed for balance sheet accounts using current exchange rates in effect at the balance sheet date and for revenue and expense accounts using a weighted-average exchange rate for the period. Resulting translation adjustments are reported as a component of accumulated other comprehensive income (loss).

Treasury stock - The Company records the repurchase of shares of its common stock at cost on the trade date of the transaction. These shares are considered treasury stock, which is a reduction to stockholders' equity. Treasury stock is included in authorized and issued shares but excluded from outstanding shares.

Share-based payments - The Company measures share-based compensation expense at the grant date, based on the estimated fair value of the award and uses the straight-line method of attribution, net of estimated forfeitures, for expensing awards over the requisite employee service period. The Company estimates the fair value of its non-qualified stock option awards ("Options") using a Black-Scholes valuation model. The fair value of restricted stock units ("RSUs") is determined and fixed on the grant date based on the Company's stock price, adjusted for the exclusion of dividend equivalents. The Monte Carlo simulation valuation model is used to determine the grant date fair value of performance stock units ("PSUs") granted. All share-based compensation expenses are recorded in general and administrative expenses on the consolidated statement of operations.

Redeemable non-controlling interests - The Company's business combinations may include provisions allowing non-controlling equity owners the ability to require the Company to purchase additional interests in the subsidiary at their discretion. The interests are initially recorded at fair value and in subsequent reporting periods are accreted or adjusted to the estimated redemption value. The adjustments to the redemption value are recorded to retained earnings or additional paid-in capital on the consolidated balance sheet. The redeemable non-controlling interests are considered temporary and reported outside of permanent equity on the consolidated balance sheet at the greater of the carrying amount adjusted for the non-controlling interest's share of net income (loss) or its redemption value.

Earnings per share - The Company calculates basic earnings per share ("EPS") by dividing net income by the weighted-average number of common shares outstanding during the year. Diluted EPS is calculated by dividing net income by the weighted-average number of common shares outstanding during the year, adjusted for the potentially dilutive effect of stock options and unvested

stock units using the treasury stock method. The Company may be required to calculate EPS using the two-class method as a result of its redeemable non-controlling interests. If redemption value exceeds the fair value of the redeemable non-controlling interests, the excess would be a reduction to net income for the EPS calculation.

Note 2. Acquisitions

In 2022, 2021 and 2020, the Company acquired several businesses for total consideration of \$0.3 billion, \$4.7 billion and \$1.1 billion, respectively, representing both cash and contingent consideration. These acquisitions align with the Company's strategy to grow, diversify and build the Company's business. Refer to Note 1 (Summary of Significant Accounting Policies) for the valuation techniques Mastercard utilizes to fair value the respective components of business combinations and contingent consideration. The residual value allocated to goodwill is primarily attributable to the synergies expected to arise after the acquisition date and a majority of the goodwill is not expected to be deductible for local tax purposes.

On April 1, 2022, Mastercard acquired a 100% equity interest in Dynamic Yield LTD ("Dynamic Yield") for cash consideration of \$325 million. The Company's preliminary estimate of net assets acquired has been recorded primarily as intangible assets, including goodwill of \$200 million that is primarily attributable to the synergies expected to arise after the acquisition date. None of the goodwill is expected to be deductible for local tax purposes.

On March 5, 2021, Mastercard acquired a majority of the Corporate Services business of Nets Denmark A/S ("Nets") for €3.0 billion (approximately \$3.6 billion as of the date of acquisition) in cash consideration based on a €2.85 billion enterprise value, adjusted for cash and net working capital at closing. The business acquired is primarily comprised of clearing and instant payment services and e-billing solutions. In relation to this acquisition, the net assets acquired primarily relate to intangible assets, including goodwill of \$2.1 billion, of which \$0.8 billion is expected to be deductible for local tax purposes. The goodwill arising from this acquisition is primarily attributable to the synergies expected to arise through geographic, product and customer expansion, the underlying technology and workforce acquired.

On June 9, 2021, Mastercard acquired a 100% equity interest in Ekata, Inc. ("Ekata") for cash consideration of \$861 million, based on an \$850 million enterprise value, adjusted for cash and net working capital at closing. The acquisition of Ekata is expected to broaden the Company's digital identity verification capabilities. The residual value allocated to goodwill is primarily attributable to the synergies expected to arise after the acquisition date and none of the goodwill is expected to be deductible for local tax purposes.

Mastercard acquired additional businesses in 2021 for consideration of \$272 million. These businesses were not considered individually material to Mastercard.

Among the businesses acquired in 2020, the largest acquisition relates to Fincity Corporation ("Fincity"), an open-banking provider, headquartered in Salt Lake City, Utah. On November 18, 2020, Mastercard acquired 100% equity interest in Fincity for cash consideration of \$809 million. In addition, the Fincity sellers earned additional contingent consideration of \$64 million upon meeting 2021 revenue targets in accordance with terms of the purchase agreement. The additional businesses acquired in 2020 were not considered individually material to Mastercard.

The Company is evaluating and finalizing the purchase accounting for Dynamic Yield. In 2022, the Company finalized the purchase accounting for businesses acquired during 2021. The estimated and final fair values of the purchase price allocations in aggregate, as of the acquisition dates, are noted below for the years ended December 31.

	2022	2021	2020
	(in millions)		
Assets:			
Cash and cash equivalents	\$ 11	\$ 253	\$ 6
Other current assets	7	41	14
Other intangible assets	125	2,071	237
Goodwill	200	2,842	844
Other assets	9	15	11
Total assets	352	5,222	1,112
Liabilities:			
Other current liabilities	15	112	15
Deferred income taxes	3	398	23
Other liabilities	9	12	8
Total liabilities	27	522	46
Net assets acquired	\$ 325	\$ 4,700	\$ 1,066

The following table summarizes the identified intangible assets acquired during the years ended December 31:

	2022	2021	2020	2022	2021	2020
	Acquisition Date Fair Value			Weighted-Average Useful Life		
	(in millions)			(in years)		
Developed technologies	\$ 100	\$ 433	\$ 122	7.8	11.7	6.3
Customer relationships	25	1,614	114	17.0	19.2	12.0
Other	—	24	1	—	7.1	1.0
Other intangible assets	\$ 125	\$ 2,071	\$ 237	9.6	17.5	9.0

Proforma information related to these acquisitions was not included because the impact on the Company's consolidated results of operations was not considered to be material.

Note 3. Revenue

Mastercard is a payments network service provider that generates revenue from a wide range of payment solutions provided to customers. Revenue from contracts with customers is recognized when services are performed in an amount that reflects the consideration to which the Company expects to be entitled to in exchange for those services (i.e., fees charged to customers). The Company disaggregates its net revenue from contracts with customers into two categories: (i) payment network and (ii) value-added services and solutions. The Company's net revenue categories, payment network and value-added services and solutions, are recognized net of rebates and incentives provided to customers. Rebates and incentives can be either fixed or variable and are attributed to the category of revenue to which they pertain.

Payment network

Mastercard's payment network involves four participants in addition to the Company: account holders (a person or entity who holds a card or uses another device enabled for payment), issuers (the account holders' financial institutions), merchants and acquirers (the merchants' financial institutions). Revenue from the Company's payment network is primarily generated by charging fees to customers (issuers, acquirers and other market participants) for providing switching and other network-related services, as well as by charging fees to customers based primarily on the gross dollar volume of activity (GDV, which includes both domestic and cross-border volume) on the cards that carry the Company's brands. As a payments network service provider, the Company provides its

customers with continuous access to its global payments network and stands ready to provide transaction processing over the contractual term. Consideration is variable and is recognized as revenue in the period in which volumes and transactions occur.

Value-added services and solutions

The Company generates revenues from value-added services and solutions through either fixed or transaction-based fees. These services and solutions can be integrated and sold with the Company's payment network services or can be sold on a stand-alone basis. These services and solutions primarily include cyber and intelligence, data and services, processing and gateway, ACH batch and real-time account-based payments and solutions, open banking and digital identity. Revenue from these value-added services and solutions is recognized in the period in which the related services and solutions are performed or transactions occur.

The Company's disaggregated net revenue by category and geographic region were as follows for the years ended December 31:

	2022	2021	2020
	(in millions)		
Revenue by category:			
Payment network	\$ 14,358	\$ 11,943	\$ 9,897
Value-added services and solutions	7,879	6,941	5,404
Net revenue	\$ 22,237	\$ 18,884	\$ 15,301
Net revenue by geographic region:			
North American Markets	\$ 7,809	\$ 6,667	\$ 5,473
International Markets	14,428	12,217	9,828
Net revenue	\$ 22,237	\$ 18,884	\$ 15,301

The Company's customers are generally billed weekly, however, the frequency is dependent upon the nature of the performance obligation and the underlying contractual terms. The Company does not typically offer extended payment terms to customers. The following table sets forth the location of the amounts recognized on the consolidated balance sheet from contracts with customers at December 31:

	2022	2021
	(in millions)	
Receivables from contracts with customers		
Accounts receivable	\$ 3,213	\$ 2,829
Contract assets		
Prepaid expenses and other current assets	118	134
Other assets	442	487
Deferred revenue ¹		
Other current liabilities	434	482
Other liabilities	248	180

¹ Revenue recognized from performance obligations satisfied in 2022 was \$1.6 billion.

The Company's remaining performance periods for its contracts with customers for its payments network services are typically long-term in nature (generally up to 10 years). As a payments network service provider, the Company provides its customers with continuous access to its global payments network and stands ready to provide transaction processing and related services over the contractual term. Consideration is variable as the Company generates volume- and transaction-based revenues from charging fees on its customers' current period activity. The Company has elected the optional exemption to not disclose the remaining performance obligations related to its payments network services. The Company also earns revenue from value-added services and solutions. At December 31, 2022, the estimated aggregate consideration allocated to unsatisfied performance obligations for these value-added services and solutions is \$1.4 billion, which is expected to be recognized through 2027. The estimated remaining performance obligations related to these revenues are subject to change and are affected by several factors, including modifications and terminations and are not expected to be material to any future annual period.

Note 4. Earnings Per Share

The components of basic and diluted EPS for common shares for each of the years ended December 31 were as follows:

	2022	2021	2020
	(in millions, except per share data)		
Numerator			
Net income	\$ 9,930	\$ 8,687	\$ 6,411
Denominator			
Basic weighted-average shares outstanding	968	988	1,002
Dilutive stock options and stock units	3	4	4
Diluted weighted-average shares outstanding ¹	971	992	1,006
Earnings per Share			
Basic	\$ 10.26	\$ 8.79	\$ 6.40
Diluted	\$ 10.22	\$ 8.76	\$ 6.37

Note: Table may not sum due to rounding.

¹ For the years presented, the calculation of diluted EPS excluded a minimal amount of anti-dilutive share-based payment awards.

Note 5. Cash, Cash Equivalents, Restricted Cash and Restricted Cash Equivalents

The following table provides a reconciliation of cash, cash equivalents, restricted cash and restricted cash equivalents reported on the consolidated balance sheet that total to the amounts shown on the consolidated statement of cash flows for the years ended December 31:

	2022	2021
	(in millions)	
Cash and cash equivalents	\$ 7,008	\$ 7,421
Restricted cash and restricted cash equivalents		
Restricted cash for litigation settlement	589	586
Restricted security deposits held for customers	1,568	1,873
Prepaid expenses and other current assets	31	22
Cash, cash equivalents, restricted cash and restricted cash equivalents	\$ 9,196	\$ 9,902

Note 6. Supplemental Cash Flows

The following table includes supplemental cash flow disclosures for each of the years ended December 31:

	2022	2021	2020
	(in millions)		
Cash paid for income taxes, net of refunds	\$ 2,506	\$ 1,820	\$ 1,349
Cash paid for interest	414	399	311
Cash paid for legal settlements	114	98	149
Non-cash investing and financing activities			
Dividends declared but not yet paid	545	479	439
Accrued property, equipment and right-of-use assets	118	15	154
Fair value of assets acquired, net of cash acquired	341	4,969	1,106
Fair value of liabilities assumed related to acquisitions	27	522	46

Note 7. Investments

The Company's investments on the consolidated balance sheet include both available-for-sale and held-to-maturity debt securities (see Investments section below). The Company classifies its investments in equity securities of publicly traded and privately held companies within other assets on the consolidated balance sheet (see Equity Investments section below).

Investments

Investments on the consolidated balance sheet consisted of the following at December 31:

	2022	2021
	(in millions)	
Available-for-sale securities ¹	\$ 272	\$ 314
Held-to-maturity securities ²	128	159
Total investments	\$ 400	\$ 473

¹ See Available-for-Sale Securities section below for further detail.

² The cost of these securities approximates fair value.

Available-for-Sale Securities

The major classes of the Company's available-for-sale investment securities and their respective amortized cost basis and fair values at December 31 were as follows:

	2022				2021			
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value
	(in millions)							
Municipal securities	\$ —	\$ —	\$ —	\$ —	\$ 2	\$ —	\$ —	\$ 2
Government and agency securities	91	—	(2)	89	98	—	—	98
Corporate securities	187	—	(4)	183	214	—	—	214
Total	\$ 278	\$ —	\$ (6)	\$ 272	\$ 314	\$ —	\$ —	\$ 314

The Company's corporate and municipal available-for-sale investment securities held at December 31, 2022 and 2021, primarily carried a credit rating of A- or better. Corporate securities are comprised of commercial paper and corporate bonds. Municipal securities are comprised of state tax-exempt bonds and are diversified across states and sectors. Government and agency securities include U.S. government bonds, U.S. government sponsored agency bonds and foreign government bonds which are denominated in the national currency of the issuing country. Unrealized gains and losses are recorded as a separate component of other comprehensive income (loss) on the consolidated statement of comprehensive income.

The maturity distribution based on the contractual terms of the Company's available-for-sale investment securities at December 31, 2022 was as follows:

	Amortized Cost	Fair Value
	(in millions)	
Due within 1 year	\$ 158	\$ 157
Due after 1 year through 5 years	120	115
Total	\$ 278	\$ 272

Investment income on the consolidated statement of operations primarily consists of interest income generated from cash, cash equivalents, time deposits and available-for-sale investment securities, as well as realized gains and losses on the Company's investment securities. The realized gains and losses from the sales of available-for-sale securities for 2022, 2021 and 2020 were not material.

Equity Investments

Included in other assets on the consolidated balance sheet are equity investments with readily determinable fair values (“Marketable securities”) and equity investments without readily determinable fair values (“Nonmarketable securities”). Marketable securities are equity interests in publicly traded companies and are measured using unadjusted quoted prices in their respective active markets. Nonmarketable securities that do not qualify for equity method accounting are measured at cost, less any impairment and adjusted for changes resulting from observable price changes in orderly transactions for the identical or similar investments of the same issuer (“Measurement alternative”).

The following table is a summary of the activity related to the Company’s equity investments:

	Balance at December 31, 2021	Purchases	Sales	Changes in Fair Value ¹	Other ²	Balance at December 31, 2022
	(in millions)					
Marketable securities	\$ 627	\$ —	\$ —	\$ (213)	\$ (15)	\$ 399
Nonmarketable securities	1,207	88	(7)	68	(25)	1,331
Total equity investments	\$ 1,834	\$ 88	\$ (7)	\$ (145)	\$ (40)	\$ 1,730

¹ Recorded in gains (losses) on equity investments, net on the consolidated statement of operations.

² Includes translational impact of currency.

The following table sets forth the components of the Company’s Nonmarketable securities at December 31:

	2022	2021
	(in millions)	
Measurement alternative	\$ 1,087	\$ 952
Equity method	244	255
Total Nonmarketable securities	\$ 1,331	\$ 1,207

The following table summarizes the total carrying value of the Company’s Measurement alternative investments, including cumulative unrealized gains and losses through December 31:

	2022
	(in millions)
Initial cost basis	\$ 503
Cumulative adjustments ¹ :	
Upward adjustments	620
Downward adjustments (including impairment)	(36)
Carrying amount, end of period	\$ 1,087

¹ Includes immaterial translational impact of currency.

The following table summarizes the unrealized gains and losses included in the carrying value of the Company’s Measurement alternative investments and Marketable securities for the years ended December 31:

	2022	2021	2020
	(in millions)		
Measurement alternative investments:			
Upward adjustments	\$ 114	\$ 468	\$ 21
Downward adjustments (including impairment)	\$ (23)	\$ (2)	\$ (3)
Marketable securities:			
Unrealized gains (losses), net	\$ (213)	\$ 8	\$ (5)

Note 8. Fair Value Measurements

The Company classifies its fair value measurements of financial instruments into a three-level hierarchy (the “Valuation Hierarchy”). Financial instruments are categorized for fair value measurement purposes as recurring or nonrecurring in nature.

Financial Instruments - Recurring Measurements

The distribution of the Company's financial instruments measured at fair value on a recurring basis within the Valuation Hierarchy were as follows:

	December 31, 2022				December 31, 2021			
	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in millions)							
Assets								
Investment securities available-for-sale¹:								
Municipal securities	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 2	\$ —	\$ 2
Government and agency securities	35	54	—	89	35	63	—	98
Corporate securities	—	183	—	183	—	214	—	214
Derivative instruments²:								
Foreign exchange contracts	—	108	—	108	—	8	—	8
Interest rate contracts	—	—	—	—	—	6	—	6
Marketable securities³:								
Equity securities	399	—	—	399	627	—	—	627
Deferred compensation plan⁴:								
Deferred compensation assets	74	—	—	74	89	—	—	89
Liabilities								
Derivative instruments²:								
Foreign exchange contracts	\$ —	\$ 21	\$ —	\$ 21	\$ —	\$ 15	\$ —	\$ 15
Interest rate contracts	—	105	—	105	—	8	—	8
Deferred compensation plan⁵:								
Deferred compensation liabilities	73	—	—	73	89	—	—	89

¹ The Company's U.S. government securities are classified within Level 1 of the Valuation Hierarchy as the fair values are based on unadjusted quoted prices for identical assets in active markets. The fair value of the Company's available-for-sale municipal securities, non-U.S. government and agency securities and corporate securities are based on observable inputs such as quoted prices, benchmark yields and issuer spreads for similar assets in active markets and are therefore included in Level 2 of the Valuation Hierarchy.

² The Company's foreign exchange and interest rate derivative asset and liability contracts have been classified within Level 2 of the Valuation Hierarchy as the fair value is based on observable inputs such as broker quotes for similar derivative instruments. See Note 23 (Derivative and Hedging Instruments) for further details.

³ The Company's Marketable securities are publicly held and classified within Level 1 of the Valuation Hierarchy as the fair values are based on unadjusted quoted prices in their respective active markets.

⁴ The Company has a nonqualified deferred compensation plan where assets are invested primarily in mutual funds held in a rabbi trust, which is restricted for payments to participants of the plan. The Company has elected to use the fair value option for these mutual funds, which are measured using quoted prices of identical instruments in active markets and are included in prepaid expenses and other current assets on the consolidated balance sheet.

⁵ The deferred compensation liabilities are measured at fair value based on the quoted prices of identical instruments to the investment vehicles selected by the participants. These are included in other liabilities on the consolidated balance sheet.

Financial Instruments - Nonrecurring Measurements

Nonmarketable Securities

The Company's Nonmarketable securities are recorded at fair value on a nonrecurring basis in periods after initial recognition under the equity method or measurement alternative method. Nonmarketable securities are classified within Level 3 of the Valuation Hierarchy due to the absence of quoted market prices, the inherent lack of liquidity and unobservable inputs used to measure fair value that require management's judgment. The Company uses discounted cash flows and market assumptions to estimate the fair value of its Nonmarketable securities when certain events or circumstances indicate that impairment may exist. See Note 7 (Investments) for further details.

Debt

The Company estimates the fair value of its debt based on either market quotes or observable market data. Debt is classified as Level 2 of the Valuation Hierarchy as it is generally not traded in active markets. At December 31, 2022, the carrying value and fair value of debt was \$14.0 billion and \$12.7 billion, respectively. At December 31, 2021, the carrying value and fair value of debt was \$13.9 billion and \$15.3 billion, respectively. See Note 15 (Debt) for further details.

Other Financial Instruments

Certain other financial instruments are carried on the consolidated balance sheet at cost or amortized cost basis, which approximates fair value due to their short-term, highly liquid nature. These instruments include cash and cash equivalents, restricted cash, time deposits, accounts receivable, settlement assets, restricted security deposits held for customers, accounts payable, settlement obligations and other accrued liabilities.

Note 9. Prepaid Expenses and Other Assets

Prepaid expenses and other current assets consisted of the following at December 31:

	2022	2021
	(in millions)	
Customer and merchant incentives	\$ 1,392	\$ 1,326
Prepaid income taxes	34	92
Other	920	853
Total prepaid expenses and other current assets	\$ 2,346	\$ 2,271

Other assets consisted of the following at December 31:

	2022	2021
	(in millions)	
Customer and merchant incentives	\$ 4,578	\$ 3,798
Equity investments	1,730	1,834
Income taxes receivable	633	645
Other	639	717
Total other assets	\$ 7,580	\$ 6,994

Customer and merchant incentives represent payments made to customers and merchants under business agreements. Payments made directly related to entering into such an agreement are generally capitalized and amortized over the life of the agreement.

Note 10. Property, Equipment and Right-of-Use Assets

Property, equipment and right-of-use assets consisted of the following at December 31:

	2022	2021
	(in millions)	
Building, building equipment and land	\$ 652	\$ 615
Equipment	1,711	1,456
Furniture and fixtures	96	96
Leasehold improvements	376	371
Operating lease right-of-use assets	1,075	983
Property, equipment and right-of-use assets	3,910	3,521
Less: Accumulated depreciation and amortization	(1,904)	(1,614)
Property, equipment and right-of-use assets, net	\$ 2,006	\$ 1,907

Depreciation and amortization expense for the above property, equipment and right-of-use assets was \$473 million, \$424 million and \$400 million for 2022, 2021 and 2020, respectively.

Operating lease ROU assets and operating lease liabilities are recorded on the consolidated balance sheet as follows at December 31:

	2022	2021
	(in millions)	
Balance sheet location		
Property, equipment and right-of-use assets, net	\$ 679	\$ 671
Other current liabilities	140	127
Other liabilities	630	645

Operating lease amortization expense was \$137 million, \$122 million and \$123 million for 2022, 2021 and 2020, respectively. As of December 31, 2022 and 2021, the weighted-average remaining lease term of operating leases was 8.4 years and 8.8 years and the weighted-average discount rate for operating leases was 2.5% and 2.6%, respectively.

The following table summarizes the maturity of the Company's operating lease liabilities at December 31, 2022 based on lease term:

	Operating Leases	
	(in millions)	
2023	\$	136
2024		135
2025		106
2026		91
2027		73
Thereafter		308
Total operating lease payments		849
Less: Interest		(79)
Present value of operating lease liabilities	\$	770

Note 11. Goodwill

The changes in the carrying amount of goodwill for the years ended December 31 were as follows:

	2022		2021	
	(in millions)			
Beginning balance	\$	7,662	\$	4,960
Additions		200		2,842
Foreign currency translation		(340)		(140)
Ending balance	\$	7,522	\$	7,662

The Company performed its annual qualitative assessment of goodwill during the fourth quarter of 2022 and determined a quantitative assessment was not necessary. The Company concluded that goodwill was not impaired and had no accumulated impairment losses at December 31, 2022.

Note 12. Other Intangible Assets

The following table sets forth net intangible assets, other than goodwill, at December 31:

	2022			2021		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
	(in millions)					
Finite-lived intangible assets						
Capitalized software	\$ 3,448	\$ (1,402)	\$ 2,046	\$ 2,929	\$ (1,288)	\$ 1,641
Customer relationships	2,161	(521)	1,640	2,272	(429)	1,843
Other	54	(37)	17	59	(38)	21
Total	5,663	(1,960)	3,703	5,260	(1,755)	3,505
Indefinite-lived intangible assets						
Customer relationships	156	—	156	166	—	166
Total	\$ 5,819	\$ (1,960)	\$ 3,859	\$ 5,426	\$ (1,755)	\$ 3,671

The increase in the gross carrying amount of amortized intangible assets in 2022 was primarily related to software additions and the business acquired in 2022. See Note 2 (Acquisitions) for further details. Certain intangible assets are denominated in foreign currencies. As such, the change in intangible assets includes a component attributable to foreign currency translation. Based on the qualitative assessment performed in 2022, it was determined that the Company's indefinite-lived intangible assets were not impaired.

Amortization on the assets above amounted to \$414 million, \$424 million and \$303 million in 2022, 2021 and 2020, respectively. The following table sets forth the estimated future amortization expense on finite-lived intangible assets on the consolidated balance sheet at December 31, 2022 for the years ending December 31:

	(in millions)
2023	\$ 493
2024	468
2025	450
2026	455
2027 and thereafter	1,837
Total	\$ 3,703

Note 13. Accrued Expenses and Accrued Litigation

Accrued expenses consisted of the following at December 31:

	2022	2021
	(in millions)	
Customer and merchant incentives	\$ 5,600	\$ 4,730
Personnel costs	1,322	980
Income and other taxes	279	337
Other	600	595
Total accrued expenses	\$ 7,801	\$ 6,642

Customer and merchant incentives represent amounts to be paid to customers under business agreements. As of December 31, 2022 and 2021, long-term customer and merchant incentives included in other liabilities were \$2,293 million and \$1,835 million, respectively.

As of December 31, 2022 and 2021, the Company's provision for litigation was \$1,094 million and \$840 million, respectively. These amounts are not included in the accrued expenses table above and are separately reported as accrued litigation on the consolidated balance sheet. See Note 21 (Legal and Regulatory Proceedings) for additional information regarding the Company's accrued litigation.

Note 14. Pension, Postretirement and Savings Plans

The Company and certain of its subsidiaries maintain various pension and other postretirement plans that cover substantially all employees worldwide.

Defined Contribution Plans

The Company sponsors defined contribution retirement plans. The primary plan is the Mastercard Savings Plan, a 401(k) plan for substantially all of the Company's U.S. employees, which is subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended. In addition, the Company has several defined contribution plans outside of the U.S. The Company's total expense for its defined contribution plans was \$204 million, \$175 million and \$150 million in 2022, 2021 and 2020, respectively.

Defined Benefit and Other Postretirement Plans

The Company sponsors pension and postretirement plans for certain non-U.S. employees (the "non-U.S. Plans") that cover various benefits specific to their country of employment. Additionally, Vocalink has a defined benefit pension plan (the "Vocalink Plan") which was permanently closed to new entrants and future accruals as of July 21, 2013, however, plan participants' obligations are adjusted for future salary changes. The term "Pension Plans" includes the non-U.S. Plans and the Vocalink Plan.

The Company maintains a postretirement plan providing health coverage and life insurance benefits for substantially all of its U.S. employees hired before July 1, 2007 (the "Postretirement Plan").

The Company uses a December 31 measurement date for the Pension Plans and its Postretirement Plan (collectively the “Plans”). The Company recognizes the funded status of its Plans, measured as the difference between the fair value of the plan assets and the projected benefit obligation, on the consolidated balance sheet. The following table sets forth the Plans’ funded status, key assumptions and amounts recognized on the Company’s consolidated balance sheet at December 31:

	Pension Plans		Postretirement Plan	
	2022	2021	2022	2021
	(\$ in millions)			
Change in benefit obligation				
Benefit obligation at beginning of year	\$ 596	\$ 604	\$ 62	\$ 70
Service cost	12	14	1	1
Interest cost	9	9	2	2
Actuarial (gain) loss	(156)	(6)	(16)	(7)
Benefits paid	(16)	(17)	(6)	(4)
Transfers in	5	4	—	—
Foreign currency translation	(58)	(12)	—	—
Benefit obligation at end of year	392	596	43	62
Change in plan assets				
Fair value of plan assets at beginning of year	688	617	—	—
Actual gain/(loss) on plan assets	(203)	63	—	—
Employer contributions	25	32	6	4
Benefits paid	(16)	(17)	(6)	(4)
Transfers in	5	4	—	—
Foreign currency translation	(69)	(11)	—	—
Fair value of plan assets at end of year	430	688	—	—
Funded status at end of year	\$ 38	\$ 92	\$ (43)	\$ (62)
Amounts recognized on the consolidated balance sheet consist of:				
Noncurrent assets	\$ 44	\$ 105	\$ —	\$ —
Other liabilities, short-term	—	—	(3)	(3)
Other liabilities, long-term	(6)	(13)	(40)	(59)
	\$ 38	\$ 92	\$ (43)	\$ (62)
Accumulated other comprehensive income consists of:				
Net actuarial (gain) loss	\$ 23	\$ (38)	\$ (14)	\$ 2
Prior service credit	1	1	(1)	(2)
Balance at end of year	\$ 24	\$ (37)	\$ (15)	\$ —
Weighted-average assumptions used to determine end of year benefit obligations				
Discount rate				
Non-U.S. Plans	3.80 %	0.90 %	*	*
Vocalink Plan	4.80 %	1.75 %	*	*
Postretirement Plan	*	*	5.50 %	2.75 %
Rate of compensation increase				
Non-U.S. Plans	1.50 %	1.50 %	*	*
Vocalink Plan	2.70 %	3.20 %	*	*
Postretirement Plan	*	*	3.00 %	3.00 %

* Not applicable

At December 31, 2022 and 2021, the Company's aggregated Pension Plan assets exceeded the benefit obligations. For plans where the benefit obligations exceeded plan assets, the projected benefit obligation was \$8 million and \$116 million, the accumulated benefit obligation was \$6 million and \$115 million and plan assets were \$2 million and \$104 million at December 31, 2022 and 2021, respectively. Information on the Pension Plans were as follows as of December 31:

	2022	2021
	(in millions)	
Projected benefit obligation	\$ 392	\$ 596
Accumulated benefit obligation	388	592
Fair value of plan assets	430	688

For the year ended December 31, 2022, the Company's projected benefit obligation related to its Pension Plans decreased \$204 million, primarily attributable to actuarial gains related to higher discount rate assumptions. For the year ended December 31, 2021, the Company's projected benefit obligation related to its Pension Plans decreased \$8 million, primarily attributable to actuarial gains related to higher discount rate assumptions.

Components of net periodic benefit cost recorded in earnings were as follows for the Plans for each of the years ended December 31:

	Pension Plans			Postretirement Plan		
	2022	2021	2020	2022	2021	2020
	(in millions)					
Service cost	\$ 12	\$ 14	\$ 13	\$ 1	\$ 1	\$ 1
Interest cost	9	9	9	2	2	2
Expected return on plan assets	(14)	(19)	(18)	—	—	—
Amortization of actuarial loss	—	(1)	—	—	—	—
Amortization of prior service credit	—	—	—	(1)	(1)	(1)
Net periodic benefit cost	\$ 7	\$ 3	\$ 4	\$ 2	\$ 2	\$ 2

The service cost component is recognized in general and administrative expenses on the consolidated statement of operations. Net periodic benefit cost, excluding the service cost component, is recognized in other income (expense) on the consolidated statement of operations.

Other changes in plan assets and benefit obligations recognized in other comprehensive income for the years ended December 31 were as follows:

	Pension Plans			Postretirement Plan		
	2022	2021	2020	2022	2021	2020
	(in millions)					
Current year actuarial loss (gain)	\$ 61	\$ (50)	\$ 5	\$ (16)	\$ (7)	\$ 7
Amortization of prior service credit	\$ —	\$ —	\$ —	\$ 1	\$ 2	\$ 1
Total other comprehensive loss (income)	\$ 61	\$ (50)	\$ 5	\$ (15)	\$ (5)	\$ 8
Total net periodic benefit cost and other comprehensive loss (income)	\$ 68	\$ (47)	\$ 9	\$ (13)	\$ (3)	\$ 10

Assumptions

Weighted-average assumptions used to determine net periodic benefit cost were as follows for the years ended December 31:

	Pension Plans			Postretirement Plan		
	2022	2021	2020	2022	2021	2020
Discount rate						
Non-U.S. Plans	0.90 %	0.70 %	0.70 %	*	*	*
Vocalink Plan	1.75 %	1.55 %	1.55 %	*	*	*
Postretirement Plan	*	*	*	2.75 %	2.50 %	3.25 %
Expected return on plan assets						
Non-U.S. Plans	1.60 %	1.60 %	1.60 %	*	*	*
Vocalink Plan	2.30 %	3.20 %	3.20 %	*	*	*
Rate of compensation increase						
Non-U.S. Plans	1.50 %	1.50 %	1.50 %	*	*	*
Vocalink Plan	3.20 %	2.75 %	2.75 %	*	*	*
Postretirement Plan	*	*	*	3.00 %	3.00 %	3.00 %

* Not applicable

The Company's discount rate assumptions are based on yield curves derived from high quality corporate bonds, which are matched to the expected cash flows of each respective plan. The expected return on plan assets assumptions are derived using the current and expected asset allocations of the Pension Plans' assets and considering historical as well as expected returns on various classes of plan assets. The rates of compensation increases are determined by the Company, based upon its long-term plans for such increases.

The following additional assumptions were used at December 31 in accounting for the Postretirement Plan:

	2022	2021
Healthcare cost trend rate assumed for next year	6.50 %	6.75 %
Ultimate trend rate	5.00 %	5.00 %
Year that the rate reaches the ultimate trend rate	6	7

Assets

Plan assets are managed taking into account the timing and amount of future benefit payments. The Vocalink Plan assets are managed with the following target asset allocations: cash and cash equivalents 14%, U.K. government securities 41%, fixed income 18%, equity 16% and real estate 11%. For the non-U.S. Plans, the assets are concentrated primarily in insurance contracts.

The Valuation Hierarchy of the Pension Plans' assets is determined using a consistent application of the categorization measurements for the Company's financial instruments. See Note 1 (Summary of Significant Accounting Policies) for additional information.

The following table sets forth by level within the Valuation Hierarchy, the Pension Plans' assets at fair value:

	December 31, 2022				December 31, 2021			
	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Fair Value	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Fair Value
	(in millions)							
Cash and cash equivalents ¹	\$ 43	\$ —	\$ —	\$ 43	\$ 246	\$ —	\$ —	\$ 246
Mutual funds ²	106	128	—	234	185	102	—	287
Insurance contracts ³	—	114	—	114	—	104	—	104
Total	\$ 149	\$ 242	\$ —	\$ 391	\$ 431	\$ 206	\$ —	\$ 637
Investments at Net Asset Value ("NAV") ⁴				39				51
Total Plan Assets				\$ 430				\$ 688

¹ Cash and cash equivalents are valued at quoted market prices, which represent the net asset value of the shares held by the Plans.

² Certain mutual funds are valued at quoted market prices, which represent the value of the shares held by the Plans, and are therefore included in Level 1. Certain other mutual funds are valued at unit values provided by investment managers, which are based on the fair value of the underlying investments utilizing public information, independent external valuation from third-party services or third-party advisors, and are therefore included in Level 2.

³ Insurance contracts are valued at unit values provided by investment managers, which are based on the fair value of the underlying investments utilizing public information, independent external valuation from third-party services or third-party advisors.

⁴ Investments at NAV include mutual funds (comprised primarily of credit investments) and other investments (comprised primarily of real estate investments) and are valued using the net asset value provided by the administrator as a practical expedient, and therefore these investments are not included in the valuation hierarchy. These investments have quarterly redemption frequencies with redemption notice periods ranging from 60 to 90 days.

The following table summarizes expected benefit payments (as of December 31, 2022) through 2032 for the Pension Plans and the Postretirement Plan, including those payments expected to be paid from the Company's general assets. Actual benefit payments may differ from expected benefit payments.

	Pension Plans	Postretirement Plan
	(in millions)	
2023	\$ 28	\$ 3
2024	20	3
2025	19	3
2026	18	3
2027	25	4
2028 - 2032	114	18

Note 15. Debt

Debt consisted of the following at December 31:

		2022	2021	Effective Interest Rate
		(in millions)		
Senior Notes				
2022 EUR Notes ¹	1.000 % Senior Notes due February 2029	\$ 800	\$ —	1.138 %
2021 USD Notes	2.000 % Senior Notes due November 2031	750	750	2.112 %
	1.900 % Senior Notes due March 2031	600	600	1.981 %
	2.950 % Senior Notes due March 2051	700	700	3.013 %
2020 USD Notes	3.300 % Senior Notes due March 2027	1,000	1,000	3.420 %
	3.350 % Senior Notes due March 2030	1,500	1,500	3.430 %
	3.850 % Senior Notes due March 2050	1,500	1,500	3.896 %
2019 USD Notes	2.950 % Senior Notes due June 2029	1,000	1,000	3.030 %
	3.650 % Senior Notes due June 2049	1,000	1,000	3.689 %
	2.000 % Senior Notes due March 2025	750	750	2.147 %
2018 USD Notes	3.500 % Senior Notes due February 2028	500	500	3.598 %
	3.950 % Senior Notes due February 2048	500	500	3.990 %
2016 USD Notes	2.950 % Senior Notes due November 2026	750	750	3.044 %
	3.800 % Senior Notes due November 2046	600	600	3.893 %
2015 EUR Notes ²	1.100 % Senior Notes due December 2022	—	793	1.265 %
	2.100 % Senior Notes due December 2027	854	906	2.189 %
	2.500 % Senior Notes due December 2030	160	170	2.562 %
2014 USD Notes	3.375 % Senior Notes due April 2024	1,000	1,000	3.484 %
Other Debt				
INR Term Loan ³	8.640 % Term Loan due July 2023	275	—	9.090 %
		14,239	14,019	
Less: Unamortized discount and debt issuance costs		(111)	(116)	
Less: Cumulative hedge accounting fair value adjustments ⁴		(105)	(2)	
Total debt outstanding		14,023	13,901	
Less: Short-term debt ⁵		(274)	(792)	
Long-term debt		\$ 13,749	\$ 13,109	

¹ €750 million euro-denominated debt issued in February 2022.

² €1.650 billion euro-denominated debt issued in December 2015 of which €700 million (\$724 million) matured and was paid during 2022.

³ INR22.7 billion Indian rupee-denominated loan issued in July 2022.

⁴ In 2021, the Company entered into an interest rate swap which is accounted for as a fair value hedge. See Note 23 (Derivative and Hedging Instruments) for additional information.

⁵ The INR Term Loan due July 2023 is classified as short-term debt on the consolidated balance sheet as of December 31, 2022. The 2015 EUR Notes due December 2022 are classified as short-term debt on the consolidated balance sheet as of December 31, 2021.

Senior Notes

In February 2022, the Company issued €750 million (\$800 million as of December 31, 2022) principal amount of notes due February 2029 (the "2022 EUR Notes"). The net proceeds from the issuance of the 2022 EUR Notes, after deducting the original issue discount, underwriting discount and offering expenses, were €743 million (\$843 million as of the date of settlement).

In March 2021, the Company issued \$600 million principal amount of notes due March 2031 and \$700 million principal amount of notes due March 2051. In November 2021, the Company also issued \$750 million principal amount of notes due November 2031. The two issuances in 2021 are collectively referred to as the “2021 USD Notes”. The net proceeds from the issuance of the 2021 USD Notes, after deducting the original issue discount, underwriting discount and offering expenses, were \$2.024 billion.

In March 2020, the Company issued \$1 billion principal amount of notes due March 2027, \$1.5 billion principal amount of notes due March 2030 and \$1.5 billion principal amount of notes due March 2050 (collectively the “2020 USD Notes”). The net proceeds from the issuance of the 2020 USD Notes, after deducting the original issue discount, underwriting discount and offering expenses, were \$3.959 billion.

The Senior Notes described above are not subject to any financial covenants and may be redeemed in whole, or in part, at the Company’s option at any time for a specified make-whole amount. These notes are senior unsecured obligations and would rank equally with any future unsecured and unsubordinated indebtedness.

Indian Rupee (“INR”) Term Loan

In July 2022, the Company entered into an unsecured INR22.7 billion (\$275 million as of December 31, 2022) term loan due July 2023 (the “INR Term Loan”). The net proceeds of the INR Term Loan, after deducting issuance costs, were INR22.6 billion (\$284 million as of the date of settlement).

The Company obtained the INR Term Loan to serve as an economic hedge to offset possible changes in the value of INR-denominated monetary assets due to foreign exchange fluctuations. The INR Term Loan is not subject to any financial covenants and it may be repaid in whole at the Company’s option at any time for a specified make-whole amount.

Scheduled annual maturities of the principal portion of long-term debt outstanding at December 31, 2022 are summarized below.

	(in millions)
2023	\$ 275
2024	1,000
2025	750
2026	750
2027	1,854
Thereafter	9,610
Total	\$ 14,239

As of December 31, 2022, the Company has a commercial paper program (the “Commercial Paper Program”) under which the Company is authorized to issue up to \$6 billion in unsecured commercial paper notes with maturities of up to 397 days from the date of issuance. On January 27, 2023, the Company increased its Commercial Paper Program from \$6 billion to \$8 billion. The Commercial Paper Program is available in U.S. dollars.

In conjunction with the Commercial Paper Program, the Company entered into a committed five-year unsecured \$8 billion revolving credit facility (the “Credit Facility”) on November 10, 2022. The Credit Facility, which expires on November 10, 2027, amended and restated the Company’s prior \$6 billion credit facility which was set to expire on November 12, 2026. Borrowings under the Credit Facility are available in U.S. dollars and/or euros. The facility fee under the Credit Facility is determined according to the Company’s credit rating and is payable on the average daily commitment, regardless of usage, per annum. In addition to the facility fee, interest rates on borrowings under the Credit Facility would be based on prevailing market interest rates plus applicable margins that fluctuate based on the Company’s credit rating. The Credit Facility contains customary representations, warranties, affirmative and negative covenants, events of default and indemnification provisions. The Company was in compliance in all material respects with the covenants of the Credit Facility at December 31, 2022 and 2021.

Borrowings under the Commercial Paper Program and the Credit Facility are to be used to provide liquidity for general corporate purposes, including providing liquidity in the event of one or more settlement failures by the Company’s customers. The Company may borrow and repay amounts under the Commercial Paper Program and Credit Facility from time to time. The Company had no borrowings under the Credit Facility or the Commercial Paper Program at December 31, 2022 and 2021.

Note 16. Stockholders' Equity

Classes of Capital Stock

Mastercard's amended and restated certificate of incorporation authorizes the following classes of capital stock:

Class	Par Value Per Share	Authorized Shares (in millions)	Dividend and Voting Rights
A	\$0.0001	3,000	One vote per share Dividend rights
B	\$0.0001	1,200	Non-voting Dividend rights
Preferred	\$0.0001	300	No shares issued or outstanding at December 31, 2022 and 2021. Dividend and voting rights are to be determined by the Board of Directors of the Company upon issuance.

Dividends

The Company declared a quarterly cash dividend on its Class A and Class B Common Stock during each of the four quarters of 2022, 2021 and 2020.

The Company declared total per share dividends on its Class A and Class B Common Stock during the years ended December 31 as summarized below:

	2022		2021		2020	
	(in millions, except per share data)					
Dividends declared per share	\$	2.04	\$	1.81	\$	1.64
Total dividends declared	\$	1,968	\$	1,781	\$	1,641

Ownership and Governance Structure

Equity ownership and voting power of the Company's shares were allocated as follows as of December 31:

	2022		2021	
	Equity Ownership	General Voting Power	Equity Ownership	General Voting Power
Public Investors (Class A stockholders)	88.5 %	89.3 %	88.4 %	89.2 %
Principal or Affiliate Customers (Class B stockholders)	0.8 %	— %	0.8 %	— %
Mastercard Foundation (Class A stockholders)	10.7 %	10.7 %	10.8 %	10.8 %

Class B Common Stock Conversions

Shares of Class B common stock are convertible on a one-for-one basis into shares of Class A common stock. Entities eligible to hold Mastercard's Class B common stock are defined in the Company's amended and restated certificate of incorporation (generally the Company's principal or affiliate customers), and they are restricted from retaining ownership of shares of Class A common stock. Class B stockholders are required to subsequently sell or otherwise transfer any shares of Class A common stock received pursuant to such a conversion.

Mastercard Foundation

In connection and simultaneously with its 2006 initial public offering (the “IPO”), the Company issued and donated 135 million newly authorized shares of Class A common stock to Mastercard Foundation. Mastercard Foundation is a private charitable foundation incorporated in Canada that is controlled by directors who are independent of the Company and its principal customers. Under the terms of the donation, Mastercard Foundation became able to resell the donated shares in May 2010 to the extent necessary to meet charitable disbursement requirements pursuant to Canadian tax law. Under such current law, Mastercard Foundation must annually disburse at least 3.5% of its assets not used in its charitable activities and administration in the previous eight quarters (“Disbursement Quota”). However, Mastercard Foundation obtained permission from the Canada Revenue Agency to, until December 31, 2021, meet its cumulative Disbursement Quota obligations over a period of time that, on average, demonstrated compliance with the requirement for such established time period. Currently, Mastercard Foundation may not sell or otherwise transfer its donated shares prior to May 1, 2027, except to the extent necessary to satisfy the Disbursement Quota. Based on that timing, Mastercard Foundation would be permitted to sell all of its remaining shares beginning May 1, 2027, subject to certain conditions.

Common Stock Activity

The following table presents the changes in the Company’s outstanding Class A and Class B common stock for the years ended December 31:

	Outstanding Shares	
	Class A	Class B
	(in millions)	
Balance at December 31, 2019	996.0	11.2
Purchases of treasury stock	(14.3)	—
Share-based payments	2.3	—
Conversion of Class B to Class A common stock	2.9	(2.9)
Balance at December 31, 2020	986.9	8.3
Purchases of treasury stock	(16.5)	—
Share-based payments	1.2	—
Conversion of Class B to Class A common stock	0.5	(0.5)
Balance at December 31, 2021	972.1	7.8
Purchases of treasury stock	(25.7)	—
Share-based payments	1.8	—
Conversion of Class B to Class A common stock	0.2	(0.2)
Balance at December 31, 2022	948.4	7.6

The Company’s Board of Directors have approved share repurchase programs of its Class A Common Stock authorizing the Company to repurchase shares. The following table summarizes the Company’s share repurchase authorizations of its Class A common stock for the years ended December 31:

	2022			2021			2020		
	(In millions, except per share data)								
Board authorization	\$	9,000	\$	8,000	\$	6,000			
Dollar-value of shares repurchased	\$	8,753	\$	5,904	\$	4,473			
Shares repurchased		25.7		16.5		14.3			
Average price paid per share	\$	340.60	\$	356.82	\$	312.68			

As of December 31, 2022, the remaining authorization under the share repurchase programs approved by the Company’s Board of Directors was \$12.2 billion.

Note 17. Accumulated Other Comprehensive Income (Loss)

The changes in the balances of each component of accumulated other comprehensive income (loss), net of tax, for the years ended December 31, 2022 and 2021 were as follows:

	December 31, 2021	Increase / (Decrease)	Reclassifications	December 31, 2022
	(in millions)			
Foreign currency translation adjustments ¹	\$ (739)	\$ (675)	\$ —	\$ (1,414)
Translation adjustments on net investment hedges ²	34	275	—	309
Cash flow hedges				
Foreign exchange contracts ³	4	1	(13)	(8)
Interest rate contracts	(128)	—	5	(123)
Defined benefit pension and other postretirement plans ⁴	21	(31)	(1)	(11)
Investment securities available-for-sale	(1)	(5)	—	(6)
Accumulated other comprehensive income (loss)	\$ (809)	\$ (435)	\$ (9)	\$ (1,253)

	December 31, 2020	Increase / (Decrease)	Reclassifications	December 31, 2021
	(in millions)			
Foreign currency translation adjustments ¹	\$ (352)	\$ (387)	\$ —	\$ (739)
Translation adjustments on net investment hedges ²	(175)	209	—	34
Cash flow hedges				
Foreign exchange contracts ³	—	5	(1)	4
Interest rate contracts	(133)	—	5	(128)
Defined benefit pension and other postretirement plans ⁴	(20)	43	(2)	21
Investment securities available-for-sale	—	(1)	—	(1)
Accumulated other comprehensive income (loss)	\$ (680)	\$ (131)	\$ 2	\$ (809)

¹ During 2022, the increase in the accumulated other comprehensive loss related to foreign currency translation adjustments was driven primarily by the depreciation of the euro and British pound against the U.S. dollar. During 2021, the increase in the accumulated other comprehensive loss related to foreign currency translation adjustments was driven primarily by the depreciation of the euro against the U.S. dollar.

² During 2022 and 2021, the increase in the accumulated other comprehensive income related to the net investment hedges was driven by the depreciation of the euro against the U.S. dollar. See Note 23 (Derivative and Hedging Instruments) for additional information.

³ Certain foreign exchange derivative contracts are designated as cash flow hedging instruments. Gains and losses resulting from changes in the fair value of these contracts are deferred in accumulated other comprehensive income (loss) and subsequently reclassified to the consolidated statement of operations when the underlying hedged transactions impact earnings. See Note 23 (Derivative and Hedging Instruments) for additional information.

⁴ During 2022, the increase in the accumulated other comprehensive loss related to the Plans was driven primarily by a net actuarial loss within the Pension Plans. During 2021, the increase in the accumulated other comprehensive income related to the Plans was driven primarily by a net actuarial gain within the Pension Plans. See Note 14 (Pension, Postretirement and Savings Plans) for additional information.

Note 18. Share-Based Payments

In May 2006, the Company granted the following awards under the Mastercard Incorporated 2006 Long Term Incentive Plan, which was amended and restated as of June 22, 2021 (the "LTIP"). The LTIP is a stockholder-approved plan that permits the grant of various types of equity awards to employees. The Company has granted Options, RSUs and PSUs under the LTIP. The Company uses the straight-line method of attribution for expensing all equity awards. Compensation expense is recorded net of estimated forfeitures, with estimates adjusted as appropriate.

There are approximately 116 million shares of Class A common stock authorized for equity awards under the LTIP. Although the LTIP permits the issuance of shares of Class B common stock, no such shares have been authorized for issuance. Shares issued as a result of Option exercises and the conversions of RSUs and PSUs were funded primarily with the issuance of new shares of Class A common stock.

Stock Options

Options expire ten years from the date of grant and vest ratably over three years for awards granted on or after March 1, 2022. For awards granted before March 1, 2022, they vest ratably over four years. For Options granted, a participant's unvested awards are forfeited upon termination. In the event a participant terminates employment due to disability or retirement more than seven months after receiving the award, however, the participant retains all of their awards without providing additional service to the Company. Retirement eligibility is dependent upon age and years of service. Compensation expense is recognized over the vesting period as stated in the LTIP.

The fair value of each Option is estimated on the date of grant using a Black-Scholes option pricing model. The following table presents the weighted-average assumptions used in the valuation and the resulting weighted-average fair value per Option granted for the years ended December 31:

	2022	2021	2020
Risk-free rate of return	1.6 %	0.9 %	1.0 %
Expected term (in years)	6.00	6.00	6.00
Expected volatility	24.6 %	26.1 %	19.3 %
Expected dividend yield	0.6 %	0.5 %	0.6 %
Weighted-average fair value per Option granted	\$ 86.92	\$ 91.70	\$ 80.92

The risk-free rate of return was based on the U.S. Treasury yield curve in effect on the date of grant. The expected term and the expected volatility were based on historical Mastercard information. The expected dividend yields were based on the Company's expected annual dividend rate on the date of grant.

The following table summarizes the Company's option activity for the year ended December 31, 2022:

	Options (in millions)	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding at January 1, 2022	5.4	\$ 152		
Granted	0.3	\$ 344		
Exercised	(0.9)	\$ 100		
Forfeited	(0.1)	\$ 308		
Expired	—	\$ 363		
Outstanding at December 31, 2022	4.7	\$ 173	4.9	\$ 828
Exercisable at December 31, 2022	3.9	\$ 143	4.3	\$ 788
Options vested and expected to vest at December 31, 2022	4.7	\$ 173	4.9	\$ 827

As of December 31, 2022, there was \$19 million of total unrecognized compensation cost related to non-vested Options. The cost is expected to be recognized over a weighted-average period of 1.7 years.

Restricted Stock Units

For RSUs granted on or after March 1, 2022, the awards generally vest ratably over three years. For RSUs granted on or after March 1, 2020 but before March 1, 2022, the awards generally vest ratably over four years. A participant's unvested awards are forfeited upon termination of employment. In the event of termination due to job elimination (as defined by the Company), however, a participant will retain a pro-rata portion of the unvested awards for services performed through the date of termination. In the event a participant terminates employment due to disability or retirement more than seven months after receiving the award, the participant retains all of their awards without providing additional service to the Company. Compensation expense is recognized over the shorter of the vesting periods stated in the LTIP or the date the individual becomes eligible to retire but not less than seven months.

The following table summarizes the Company's RSU activity for the year ended December 31, 2022:

	Units (in millions)	Weighted-Average Grant-Date Fair Value	Aggregate Intrinsic Value (in millions)
Outstanding at January 1, 2022	2.2	\$ 291	
Granted	1.0	\$ 340	
Converted	(1.2)	\$ 258	
Forfeited	(0.2)	\$ 332	
Outstanding at December 31, 2022	1.8	\$ 335	\$ 641
RSUs expected to vest at December 31, 2022	1.8	\$ 335	\$ 615

The fair value of each RSU is the closing stock price on the New York Stock Exchange of the Company's Class A common stock on the date of grant, adjusted for the exclusion of dividend equivalents. Upon vesting, a portion of the RSU award may be withheld to satisfy the minimum statutory withholding taxes. The remaining RSUs will be settled in shares of the Company's Class A common stock after the vesting period. As of December 31, 2022, there was \$334 million of total unrecognized compensation cost related to non-vested RSUs. The cost is expected to be recognized over a weighted-average period of 2.0 years.

Performance Stock Units

PSUs vest after three years and are subject to a mandatory one-year post-vest hold, during which they are eligible for dividend equivalents. A participant's unvested awards are forfeited upon termination of employment. In the event of termination due to job elimination (as defined by the Company), however, a participant will retain a pro-rata portion of the unvested awards for services performed through the date of termination. In the event a participant terminates employment due to disability or retirement more than seven months after receiving the award, the participant retains all of their awards without providing additional service to the Company.

The following table summarizes the Company's PSU activity for the year ended December 31, 2022:

	Units (in millions)	Weighted-Average Grant-Date Fair Value	Aggregate Intrinsic Value (in millions)
Outstanding at January 1, 2022	0.4	\$ 334	
Granted	0.2	\$ 335	
Converted	—	\$ —	
Other	(0.2)	\$ 291	
Outstanding at December 31, 2022	0.4	\$ 352	\$ 128
PSUs expected to vest at December 31, 2022	0.4	\$ 352	\$ 128

Since 2013, PSUs containing performance and market conditions have been issued. Performance measures used to determine the actual number of shares that vest after three years include net revenue growth, EPS growth and relative total shareholder return (“TSR”). Relative TSR is considered a market condition, while net revenue and EPS growth are considered performance conditions. The Monte Carlo simulation valuation model is used to determine the grant-date fair value.

Compensation expense for PSUs is recognized over the requisite service period, or the date the individual becomes eligible to retire but not less than seven months, if it is probable that the performance target will be achieved and subsequently adjusted if the probability assessment changes. During the year ended December 31, 2020, performance targets related to PSU awards granted in 2018 (“2018 PSU Awards”) were adjusted to exclude certain pandemic-related financial impacts deemed outside of the Company’s control. The adjustment during the year ended December 31, 2020 required the Company to apply modification accounting to the 2018 PSU Awards which had an immaterial impact on compensation expense. As of December 31, 2022, there was \$29 million of total unrecognized compensation cost related to non-vested PSUs. The cost is expected to be recognized over a weighted-average period of 1.7 years.

Additional Information

The following table includes additional share-based payment information for each of the years ended December 31:

	2022	2021	2020
	(in millions, except weighted-average fair value)		
Share-based compensation expense: Options, RSUs and PSUs	\$ 295	\$ 273	\$ 254
Income tax benefit recognized for equity awards	61	57	53
Income tax benefit realized related to Options exercised	49	36	68
<i>Options:</i>			
Total intrinsic value of Options exercised	231	169	317
<i>RSUs:</i>			
Weighted-average grant-date fair value of awards granted	340	358	288
Total intrinsic value of RSUs converted into shares of Class A common stock	420	360	330
<i>PSUs:</i>			
Weighted-average grant-date fair value of awards granted	335	385	291
Total intrinsic value of PSUs converted into shares of Class A common stock	—	32	92

Note 19. Commitments

At December 31, 2022, the Company had the following future minimum payments due under noncancelable agreements, primarily related to sponsorships to promote the Mastercard brand and licensing arrangements. The Company has accrued \$12 million of these future payments as of December 31, 2022.

	(in millions)
2023	\$ 428
2024	317
2025	222
2026	106
2027	85
Thereafter	47
Total	\$ 1,205

Note 20. Income Taxes

Components of Income and Income Tax Expense

The domestic and foreign components of income before income taxes for the years ended December 31 are as follows:

	2022	2021	2020
	(in millions)		
United States	\$ 4,228	\$ 4,261	\$ 3,304
Foreign	7,504	6,046	4,456
Income before income taxes	\$ 11,732	\$ 10,307	\$ 7,760

The total income tax provision for the years ended December 31 is comprised of the following components:

	2022	2021	2020
	(in millions)		
Current			
Federal	\$ 1,024	\$ 663	\$ 439
State and local	133	51	56
Foreign	1,296	976	781
	2,453	1,690	1,276
Deferred			
Federal	(661)	(31)	106
State and local	(40)	(4)	9
Foreign	50	(35)	(42)
	(651)	(70)	73
Income tax expense	\$ 1,802	\$ 1,620	\$ 1,349

Effective Income Tax Rate

A reconciliation of the effective income tax rate to the U.S. federal statutory income tax rate for the years ended December 31, is as follows:

	2022		2021		2020	
	Amount	Percent	Amount	Percent	Amount	Percent
	(\$ in millions)					
Income before income taxes	\$ 11,732		\$ 10,307		\$ 7,760	
Federal statutory tax	2,464	21.0 %	2,164	21.0 %	1,630	21.0 %
State tax effect, net of federal benefit	72	0.6 %	60	0.6 %	57	0.7 %
Foreign tax effect	(347)	(3.0)%	(283)	(2.7)%	(193)	(2.5)%
Valuation allowance - U.S. foreign tax credit	(333)	(2.8)%	—	— %	—	— %
U.S. tax expense on foreign operations	111	0.9 %	63	0.6 %	47	0.6 %
Foreign-derived intangible income deduction	(129)	(1.1)%	(69)	(0.7)%	(46)	(0.6)%
U.S. tax benefits ¹	—	— %	(132)	(1.3)%	—	— %
Windfall benefit	(68)	(0.6)%	(67)	(0.7)%	(119)	(1.5)%
Other, net	32	0.3 %	(116)	(1.1)%	(27)	(0.3)%
Income tax expense	\$ 1,802	15.4 %	\$ 1,620	15.7 %	\$ 1,349	17.4 %

Note: Table may not sum due to rounding.

The effective income tax rates for the years ended December 31, 2022, 2021 and 2020 were 15.4%, 15.7% and 17.4%, respectively. The effective income tax rate for 2022 was lower than the effective income tax rate for 2021, primarily due to a discrete tax benefit in the first quarter of 2022 related to final U.S. tax regulations published in the current year. These regulations resulted in a valuation allowance release of \$333 million associated with the U.S. foreign tax credit carryforward deferred tax asset. The

regulations limit the Company's ability to generate foreign tax credits starting in 2022 for certain foreign taxes paid, resulting in additional U.S. tax expense. Additionally, a more favorable geographic mix of earnings in 2022 contributed to the lower effective tax rate. The lower effective income tax rate in 2022 was partially offset by:

- the recognition of U.S. tax benefits in 2021 (the majority of which were discrete) resulting from a higher foreign derived intangible income deduction and greater utilization of foreign tax credits in the U.S.
- a discrete tax benefit in 2021 related to the remeasurement of the Company's net deferred tax asset in the U.K. due to an enacted tax rate change in 2021
- a discrete tax expense related to an unfavorable court ruling in 2022

The effective income tax rate for 2021 was lower than the effective income tax rate for 2020, primarily due to the recognition of U.S. tax benefits (the majority of which were discrete) resulting from a higher foreign derived intangible income deduction and greater utilization of foreign tax credits in the U.S. In addition, a more favorable geographic mix of earnings in 2021 contributed to the Company's lower effective tax rate. These benefits were partially offset by a lower discrete tax benefit related to share-based payments in 2021.

Singapore Income Tax Rate

In connection with the expansion of the Company's operations in the Asia Pacific, Middle East and Africa region, the Company's subsidiary in Singapore, Mastercard Asia Pacific Pte. Ltd. ("MAPPL") received an incentive grant from the Singapore Ministry of Finance in 2010. The incentive had provided MAPPL with, among other benefits, a reduced income tax rate for the 10-year period commencing January 1, 2010 on taxable income in excess of a base amount. The Company continued to explore business opportunities in this region, resulting in an expansion of the incentives being granted by the Ministry of Finance, including a further reduction to the income tax rate on taxable income in excess of a revised fixed base amount commencing July 1, 2011 and continuing through December 31, 2025. Without the incentive grant, MAPPL would have been subject to the statutory income tax rate on its earnings. For 2022, 2021 and 2020, the impact of the incentive grant received from the Ministry of Finance resulted in a reduction of MAPPL's income tax liability of \$454 million, or \$0.47 per diluted share, \$300 million, or \$0.30 per diluted share, and \$260 million, or \$0.26 per diluted share, respectively.

Indefinite Reinvestment

As of December 31, 2022 the Company does not accrue taxes on \$1.6 billion of foreign earnings which remain permanently reinvested outside the U.S. The Company expects that taxes associated with any future repatriation of these earnings are immaterial.

Deferred Taxes

Deferred tax assets and liabilities represent the expected future tax consequences of temporary differences between the carrying amounts and the tax basis of assets and liabilities. The components of deferred tax assets and liabilities at December 31 are as follows:

	2022	2021
	(in millions)	
Deferred Tax Assets		
Accrued liabilities	\$ 697	\$ 497
Compensation and benefits	316	260
State taxes and other credits	43	40
Net operating losses	156	136
U.S. foreign tax credits	274	333
Property, plant and equipment	52	—
Intangible assets	186	206
Other items	162	161
Less: Valuation allowance	(114)	(415)
Total Deferred Tax Assets	1,772	1,218
Deferred Tax Liabilities		
Prepaid expenses and other accruals	186	114
Gains on equity investments	132	153
Goodwill and intangible assets	561	571
Property, plant and equipment	—	174
Other items	135	115
Total Deferred Tax Liabilities	1,014	1,127
Net Deferred Tax Assets	\$ 758	\$ 91

The valuation allowance balance at December 31, 2022 primarily related to the Company's ability to recognize future tax benefits associated with certain foreign losses. The recognition of the foreign losses is dependent on the timing and character of future taxable income in the applicable jurisdictions. The valuation allowance balance at December 31, 2021 primarily related to the Company's ability to recognize future tax benefits associated with the carry forward of U.S. foreign tax credits and certain foreign losses. The valuation allowance associated with the carryforward of U.S. foreign tax credits was released in 2022 as a result of the publication of final U.S. tax regulations. The regulations limit the Company's ability to generate foreign tax credits for certain taxes paid beginning in 2022, but have the effect of allowing the Company to utilize its foreign tax credit carryforwards.

As of December 31, 2022, the Company had foreign tax credit and tax effected net operating loss carryforwards of \$274 million and \$156 million, respectively. The foreign tax credits begin to expire in 2029 and the majority of the net operating losses can be carried forward indefinitely.

A reconciliation of the beginning and ending balance for the Company's unrecognized tax benefits for the years ended December 31, is as follows:

	2022	2021	2020
	(in millions)		
Beginning balance	\$ 360	\$ 388	\$ 203
Additions:			
Current year tax positions	22	17	19
Prior year tax positions ¹	65	4	192
Reductions:			
Prior year tax positions ¹	(14)	(31)	(10)
Settlements with tax authorities	(13)	(15)	(12)
Expired statute of limitations	(6)	(3)	(4)
Ending balance	\$ 414	\$ 360	\$ 388

¹ Includes immaterial translational impact of currency.

As of December 31, 2022, the amount of unrecognized tax benefit was \$414 million. This amount, if recognized, would reduce the effective income tax rate by \$362 million. The Company's unrecognized tax benefits increased in 2020 primarily due to a prior year tax issue resulting from a refund claim filed in 2020.

The Company is subject to tax in the U.S., Belgium, Singapore, the United Kingdom and various other foreign jurisdictions, as well as state and local jurisdictions. Uncertain tax positions are reviewed on an ongoing basis and are adjusted after considering facts and circumstances, including progress of tax audits, developments in case law and closing of statutes of limitation. Within the next twelve months, the Company believes that the resolution of certain federal, foreign and state and local examinations is reasonably possible and that a change in estimate, reducing unrecognized tax benefits, may occur. While such a change may be significant, it is not possible to provide a range of the potential change until the examinations progress further or the related statutes of limitation expire. The Company has effectively settled its U.S. federal income tax obligations through 2014. With limited exception, the Company is no longer subject to state and local or foreign examinations by tax authorities for years before 2011.

Note 21. Legal and Regulatory Proceedings

Mastercard is a party to legal and regulatory proceedings with respect to a variety of matters in the ordinary course of business. Some of these proceedings are based on complex claims involving substantial uncertainties and unascertainable damages. Accordingly, except as discussed below, it is not possible to determine the probability of loss or estimate damages, and therefore, Mastercard has not established reserves for any of these proceedings. When the Company determines that a loss is both probable and reasonably estimable, Mastercard records a liability and discloses the amount of the liability if it is material. When a material loss contingency is only reasonably possible, Mastercard does not record a liability, but instead discloses the nature and the amount of the claim, and an estimate of the loss or range of loss, if such an estimate can be made. Unless otherwise stated below with respect to these matters, Mastercard cannot provide an estimate of the possible loss or range of loss based on one or more of the following reasons: (1) actual or potential plaintiffs have not claimed an amount of monetary damages or the amounts are unsupported or exaggerated, (2) the matters are in early stages, (3) there is uncertainty as to the outcome of pending appeals or motions, (4) there are significant factual issues to be resolved, (5) the existence in many such proceedings of multiple defendants or potential defendants whose share of any potential financial responsibility has yet to be determined and/or (6) there are novel legal issues presented. Furthermore, except as identified with respect to the matters below, Mastercard does not believe that the outcome of any individual existing legal or regulatory proceeding to which it is a party will have a material adverse effect on its results of operations, financial condition and overall business. However, an adverse judgment or other outcome or settlement with respect to any proceedings discussed below could result in fines or payments by Mastercard and/or could require Mastercard to change its business practices. In addition, an adverse outcome in a regulatory proceeding could lead to the filing of civil damage claims and possibly result in significant damage awards. Any of these events could have a material adverse effect on Mastercard's results of operations, financial condition and overall business.

Interchange Litigation and Regulatory Proceedings

Mastercard's interchange fees and other practices are subject to regulatory, legal review and/or challenges in a number of jurisdictions, including the proceedings described below. When taken as a whole, the resulting decisions, regulations and legislation with respect to interchange fees and acceptance practices may have a material adverse effect on the Company's prospects for future growth and its overall results of operations, financial position and cash flows.

United States. In June 2005, the first of a series of complaints were filed on behalf of merchants (the majority of the complaints were styled as class actions, although a few complaints were filed on behalf of individual merchant plaintiffs) against Mastercard International, Visa U.S.A., Inc., Visa International Service Association and a number of financial institutions. Taken together, the claims in the complaints were generally brought under both Sections 1 and 2 of the Sherman Act, which prohibit monopolization and attempts or conspiracies to monopolize a particular industry, and some of these complaints contain unfair competition law claims under state law. The complaints allege, among other things, that Mastercard, Visa, and certain financial institutions conspired to set the price of interchange fees, enacted point of sale acceptance rules (including the no surcharge rule) in violation of antitrust laws and engaged in unlawful tying and bundling of certain products and services, resulting in merchants paying excessive costs for the acceptance of Mastercard and Visa credit and debit cards. The cases were consolidated for pre-trial proceedings in the U.S. District Court for the Eastern District of New York in MDL No. 1720. The plaintiffs filed a consolidated class action complaint seeking treble damages.

In July 2006, the group of purported merchant class plaintiffs filed a supplemental complaint alleging that Mastercard's initial public offering of its Class A Common Stock in May 2006 (the "IPO") and certain purported agreements entered into between Mastercard and financial institutions in connection with the IPO: (1) violate U.S. antitrust laws and (2) constituted a fraudulent conveyance because the financial institutions allegedly attempted to release, without adequate consideration, Mastercard's right to assess them for Mastercard's litigation liabilities. The class plaintiffs sought treble damages and injunctive relief including, but not limited to, an order reversing and unwinding the IPO.

In February 2011, Mastercard and Mastercard International entered into each of: (1) an omnibus judgment sharing and settlement sharing agreement with Visa Inc., Visa U.S.A. Inc. and Visa International Service Association and a number of financial institutions; and (2) a Mastercard settlement and judgment sharing agreement with a number of financial institutions. The agreements provide for the apportionment of certain costs and liabilities which Mastercard, the Visa parties and the financial institutions may incur, jointly and/or severally, in the event of an adverse judgment or settlement of one or all of the merchant litigation cases. Among a number of scenarios addressed by the agreements, in the event of a global settlement involving the Visa parties, the financial institutions and Mastercard, Mastercard would pay 12% of the monetary portion of the settlement. In the event of a settlement involving only Mastercard and the financial institutions with respect to their issuance of Mastercard cards, Mastercard would pay 36% of the monetary portion of such settlement.

In October 2012, the parties entered into a definitive settlement agreement with respect to the merchant class litigation (including with respect to the claims related to the IPO) and the defendants separately entered into a settlement agreement with the individual merchant plaintiffs. The settlements included cash payments that were apportioned among the defendants pursuant to the omnibus judgment sharing and settlement sharing agreement described above. Mastercard also agreed to provide class members with a short-term reduction in default credit interchange rates and to modify certain of its business practices, including its "no surcharge" rule. The court granted final approval of the settlement in December 2013, and objectors to the settlement appealed that decision to the U.S. Court of Appeals for the Second Circuit. In June 2016, the court of appeals vacated the class action certification, reversed the settlement approval and sent the case back to the district court for further proceedings. The court of appeals' ruling was based primarily on whether the merchants were adequately represented by counsel in the settlement. As a result of the appellate court ruling, the district court divided the merchants' claims into two separate classes - monetary damages claims (the "Damages Class") and claims seeking changes to business practices (the "Rules Relief Class"). The court appointed separate counsel for each class.

In September 2018, the parties to the Damages Class litigation entered into a class settlement agreement to resolve the Damages Class claims. The time period during which Damages Class members were permitted to opt out of the class settlement agreement ended in July 2019 with merchants representing slightly more than 25% of the Damages Class interchange volume choosing to opt out of the settlement. The district court granted final approval of the settlement in December 2019. The district court's settlement approval order has been appealed and oral argument on the appeal was heard in March 2022. Mastercard has commenced settlement negotiations with a number of the opt-out merchants and has reached settlements and/or agreements in principle to settle a number of these claims. The Damages Class settlement agreement does not relate to the Rules Relief Class claims. Separate settlement negotiations with the Rules Relief Class are ongoing. Briefing on summary judgment motions in the Rules Relief Class and opt-out merchant cases was completed in December 2020. In September 2021, the district court granted the Rules Relief Class's motion for class certification.

As of December 31, 2022 and 2021, Mastercard had accrued a liability of \$894 million and \$783 million, respectively, as a reserve for both the Damages Class litigation and the opt-out merchant cases. During 2022, Mastercard recorded an additional accrual of \$133 million as a result of a change in estimate with respect to the claims of merchants who opted out of the Damages Class litigation. As of December 31, 2022 and 2021, Mastercard had \$589 million and \$586 million, respectively, in a qualified cash settlement fund related to the Damages Class litigation and classified as restricted cash on its consolidated balance sheet. The reserve as of December 31, 2022 for both the Damages Class litigation and the opt-out merchants represents Mastercard's best estimate of its

probable liabilities in these matters. The portion of the accrued liability relating to both the opt-out merchants and the Damages Class litigation settlement does not represent an estimate of a loss, if any, if the matters were litigated to a final outcome. Mastercard cannot estimate the potential liability if that were to occur.

Europe. Since May 2012, a number of United Kingdom (“U.K.”) merchants filed claims or threatened litigation against Mastercard seeking damages for excessive costs paid for acceptance of Mastercard credit and debit cards arising out of alleged anti-competitive conduct with respect to, among other things, Mastercard’s cross-border interchange fees and its U.K. and Ireland domestic interchange fees (the “U.K. Merchant claimants”). In addition, Mastercard, has faced similar filed or threatened litigation by merchants with respect to interchange rates in other countries in Europe (the “Pan-European Merchant claimants”). Mastercard has resolved a substantial amount of these damages claims through settlement or judgment. During 2022, Mastercard incurred charges of \$223 million as a result of settlements (both final and agreements in principle) with a number of U.K. merchants. During 2021 and 2020, Mastercard incurred charges of \$94 million and \$28 million, respectively, to reflect both the litigation settlements and estimated attorneys’ fees with a number of U.K. and Pan-European merchants. Following these settlements, an amount in excess of £0.6 billion (approximately \$0.7 billion as of December 31, 2022) of unresolved damages claims remain.

In January 2017, Mastercard received a liability judgment in its favor on all significant matters in a separate action brought by ten of the U.K. Merchant claimants. Three of the U.K. Merchant claimants appealed the judgment, and these appeals were combined with Mastercard’s appeal of a 2016 judgment in favor of one U.K. merchant. In July 2018, the U.K. appellate court heard the appeals of the four merchant claimants and ruled against both Mastercard and Visa on two of the three legal issues being considered. The parties appealed the rulings to the U.K. Supreme Court. In June 2020, the U.K. Supreme Court ruled against Mastercard and Visa with respect to one of the liability issues being considered by the Court related to U.K domestic interchange fees. Additionally, the U.K. Supreme Court set out the legal standard that should be applied by lower trial courts with respect to determining whether interchange was exemptible under applicable law, and provided guidance to lower courts with regard to the legal standard that should be applied in assessing merchants’ damages claims. The U.K. Supreme Court sent three of the merchant cases back to the trial court solely for the purpose of determining damages issues. Mastercard subsequently reached settlement agreements with all four merchants.

Mastercard continues to litigate with the remaining U.K. and Pan-European Merchant claimants and it has submitted statements of defense disputing liability and damages claims. A number of those matters are now progressing with motion practice and discovery. In one of the actions involving multiple merchant plaintiff claims, the U.K. trial court in November 2021 denied the plaintiffs’ motion for summary judgment on certain liability issues. In October 2022, the appellate court rejected the plaintiffs’ appeal. In a separate matter filed in Belgium involving multiple merchants from the Czech Republic and Slovakia, the trial court held a hearing in June 2022 on liability issues, and the decision is pending.

During the third quarter of 2022, Mastercard and Visa were served with a proposed collective action complaint in the U.K. on behalf of merchants seeking damages for commercial card transactions and inter-regional consumer card transactions in both the U.K. and the European Union. The plaintiffs have claimed damages against Mastercard of approximately £0.5 billion (approximately \$0.6 billion as of December 31, 2022). The court has scheduled a hearing on the plaintiffs’ collective action application for April 2023.

In September 2016, a proposed collective action was filed in the United Kingdom on behalf of U.K. consumers seeking damages for intra-EEA and domestic U.K. interchange fees that were allegedly passed on to consumers by merchants between 1992 and 2008. The complaint, which seeks to leverage the European Commission’s 2007 decision on intra-EEA interchange fees, claims damages in an amount that exceeds £14 billion (approximately \$17 billion as of December 31, 2022). Following various hearings since July 2017 regarding collective action and scope, in August 2021, the trial court issued a decision in which it granted class certification to the plaintiffs but narrowed the scope of the class. In January 2023, the trial court held a hearing on Mastercard’s request to narrow the number of years of damages sought by the plaintiffs on statute of limitations grounds. The trial court has scheduled an additional hearing for July 2023 regarding Mastercard’s request to preclude the plaintiffs from seeking damages with respect to U.K. domestic interchange fees.

Mastercard has been named as a defendant in a proposed consumer collective action filed in Portugal on behalf of Portuguese consumers. The complaint, which seeks to leverage the 2019 resolution of the European Commission’s investigation of Mastercard’s central acquiring rules and interregional interchange fees, claims damages of approximately €0.4 billion (approximately \$0.4 billion as of December 31, 2022) for interchange fees that were allegedly passed on to consumers by Portuguese merchants for a period of approximately 20 years. Mastercard has submitted a statement of defense that disputes both liability and damages.

Australia. In May 2022, the Australian Competition & Consumer Commission (“ACCC”) filed a complaint targeting certain agreements entered into by Mastercard and certain Australian merchants related to Mastercard’s debit program. The ACCC alleges that by entering into such agreements, Mastercard engaged in conduct with the purpose of substantially lessening competition in the supply of debit card acceptance services. The ACCC seeks both declaratory relief and monetary fines and costs.

ATM Non-Discrimination Rule Surcharge Complaints

United States. In October 2011, a trade association of independent Automated Teller Machine (“ATM”) operators and 13 independent ATM operators filed a complaint styled as a class action lawsuit in the U.S. District Court for the District of Columbia against both Mastercard and Visa (the “ATM Operators Complaint”). Plaintiffs seek to represent a class of non-bank operators of ATM terminals that operate in the United States with the discretion to determine the price of the ATM access fee for the terminals they operate. Plaintiffs allege that Mastercard and Visa have violated Section 1 of the Sherman Act by imposing rules that require ATM operators to charge non-discriminatory ATM surcharges for transactions processed over Mastercard’s and Visa’s respective networks that are not greater than the surcharge for transactions over other networks accepted at the same ATM. Plaintiffs seek both injunctive and monetary relief equal to treble the damages they claim to have sustained as a result of the alleged violations and their costs of suit, including attorneys’ fees.

Subsequently, multiple related complaints were filed in the U.S. District Court for the District of Columbia alleging both federal antitrust and multiple state unfair competition, consumer protection and common law claims against Mastercard and Visa on behalf of putative classes of users of ATM services (the “ATM Consumer Complaints”). The claims in these actions largely mirror the allegations made in the ATM Operators Complaint, although these complaints seek damages on behalf of consumers of ATM services who pay allegedly inflated ATM fees at both bank and non-bank ATM operators as a result of the defendants’ ATM rules. Plaintiffs seek both injunctive and monetary relief equal to treble the damages they claim to have sustained as a result of the alleged violations and their costs of suit, including attorneys’ fees.

In January 2012, the plaintiffs in the ATM Operators Complaint and the ATM Consumer Complaints filed amended class action complaints that largely mirror their prior complaints. In September 2019, the plaintiffs filed with the district court their motions for class certification in which the plaintiffs, in aggregate, allege over \$1 billion in damages against all of the defendants. In August 2021, the trial court issued an order granting the plaintiffs’ request for class certification. Visa and Mastercard subsequently appealed the certification decision to the appellate court and oral argument on the appeal was heard in September 2022.

Europe. Mastercard has been named as a defendant in an action brought by Euronet 360 Finance Limited, Euronet Polska Spolka z.o.o. and Euronet Services spol. s.r.o. (“Euronet”) alleging that certain rules affecting ATM access fees in Poland, the Czech Republic and Greece by Visa and Mastercard, and certain of their subsidiaries, breach various competition laws. Euronet seeks damages, costs and injunctive relief to prevent the defendants from enforcing these rules. A trial has been scheduled for October 2023.

U.S. Liability Shift Litigation

In March 2016, a proposed U.S. merchant class action complaint was filed in federal court in California alleging that Mastercard, Visa, American Express and Discover (the “Network Defendants”), EMVCo, and a number of issuing banks (the “Bank Defendants”) engaged in a conspiracy to shift fraud liability for card present transactions from issuing banks to merchants not yet in compliance with the standards for EMV chip cards in the United States (the “EMV Liability Shift”), in violation of the Sherman Act and California law. Plaintiffs allege damages equal to the value of all chargebacks for which class members became liable as a result of the EMV Liability Shift on October 1, 2015. The plaintiffs seek treble damages, attorney’s fees and costs and an injunction against future violations of governing law, and the defendants filed a motion to dismiss. In September 2016, the district court denied the Network Defendants’ motion to dismiss the complaint, but granted such a motion for EMVCo and the Bank Defendants. In May 2017, the district court transferred the case to New York so that discovery could be coordinated with the U.S. merchant class interchange litigation described above. In August 2020, the district court issued an order granting the plaintiffs’ request for class certification and in January 2021, the Network Defendants’ request for permission to appeal that decision was denied. The plaintiffs have submitted expert reports that allege aggregate damages in excess of \$1 billion against the four Network Defendants. The Network Defendants have submitted expert reports rebutting both liability and damages. Briefing on summary judgment is scheduled to conclude in July 2023.

Telephone Consumer Protection Class Action

Mastercard is a defendant in a Telephone Consumer Protection Act (“TCPA”) class action pending in Florida. The plaintiffs are individuals and businesses who allege that approximately 381,000 unsolicited faxes were sent to them advertising a Mastercard co-brand card issued by First Arkansas Bank (“FAB”). The TCPA provides for uncapped statutory damages of \$500 per fax. Mastercard has asserted various defenses to the claims, and has notified FAB of an indemnity claim that it has (which FAB has disputed). In December 2019, the Federal Communications Commission (“FCC”) issued a declaratory ruling clarifying that the TCPA does not apply to faxes sent to online fax services that are received online via email. In December 2021, the trial court granted plaintiffs’ request for class certification, but narrowed the scope of the class to stand alone fax recipients only. Mastercard’s request to appeal that decision was denied.

U.S. Federal Trade Commission Investigation

In June 2020, the U.S. Federal Trade Commission’s Bureau of Competition (“FTC”) informed Mastercard that it has initiated a formal investigation into compliance with the Durbin Amendment to the Dodd-Frank Wall Street Reform and Consumer Protection Act. In particular, the investigation focused on Mastercard’s compliance with the debit routing provisions of the Durbin Amendment. In December 2022, the FTC voted to issue an administrative complaint and accept a consent agreement with Mastercard. Pursuant to this agreement, Mastercard agreed to provide primary account numbers (PANs) so that merchants can route tokenized online debit transactions to alternative networks. The consent agreement does not include any monetary penalty. The consent agreement is currently undergoing a comment period, after which the FTC will decide whether to make the proposed consent agreement final.

U.K. Prepaid Cards Matter

In 2019, Mastercard was informed by the U.K. Payment Systems Regulator (“PSR”) that Mastercard was a target of its investigation into alleged anti-competitive conduct by public sector prepaid card program managers in the U.K. This matter focused exclusively on historic behavior. In March 2021, the PSR announced the resolution and settlement of this investigation. As part of the resolution, Mastercard agreed to pay a maximum fine of £32 million. This matter has no prospective impact on Mastercard’s on-going business. In connection with this matter, in the fourth quarter of 2020, Mastercard recorded a litigation charge of \$45 million. Mastercard paid the agreed fine in March 2022.

Note 22. Settlement and Other Risk Management

Mastercard’s rules guarantee the settlement of many of the transactions between its customers (“settlement risk”). Settlement exposure is the settlement risk to customers under Mastercard’s rules due to the difference in timing between the payment transaction date and subsequent settlement. For those transactions the Company guarantees, the guarantee will cover the full amount of the settlement obligation to the extent the settlement obligation is not otherwise satisfied. Settlement is generally completed on a same-day basis, however, in some circumstances, funds may not settle until subsequent business days creating a short-term settlement exposure.

Gross settlement exposure is estimated using the average daily payment volume during the three months prior to period end multiplied by the estimated number of days of exposure. The Company has global risk management policies and procedures, which include risk standards, to provide a framework for managing the Company’s settlement risk and exposure. In the event of failed settlement by a customer, Mastercard may pursue one or more remedies available under the Company’s rules to recover potential losses. Historically, the Company has experienced a low level of losses from customer settlement failures.

As part of its policies, Mastercard requires certain customers that are not in compliance with the Company’s risk standards to enter into risk mitigation arrangements, including cash collateral and/or other forms of credit enhancement such as letters of credit and guarantees. This requirement is based on a review of the individual risk circumstances for each customer. Mastercard monitors its credit risk portfolio and the adequacy of its risk mitigation arrangements on a regular basis. Additionally, from time to time, the Company reviews its risk management methodology and standards. As such, the amounts of estimated settlement exposure are revised as necessary.

The Company’s estimated settlement exposure was as follows at December 31:

	2022	2021
	(in millions)	
Gross settlement exposure	\$ 64,885	\$ 59,571
Risk mitigation arrangements applied to settlement exposure	(10,697)	(7,710)
Net settlement exposure	\$ 54,188	\$ 51,861

Mastercard also provides guarantees to customers and certain other counterparties indemnifying them from losses stemming from failures of third parties to perform duties. This includes guarantees of Mastercard-branded travelers cheques issued, but not yet cashed of \$342 million and \$361 million at December 31, 2022 and 2021, respectively, of which the Company has risk mitigation arrangements for \$273 million and \$287 million at December 31, 2022 and 2021, respectively. In addition, the Company enters into agreements in the ordinary course of business under which the Company agrees to indemnify third parties against damages, losses and expenses incurred in connection with legal and other proceedings arising from relationships or transactions with the Company. Certain indemnifications do not provide a stated maximum exposure. As the extent of the Company’s obligations under these agreements depends entirely upon the occurrence of future events, the Company’s potential future liability under these agreements is not determinable. Historically, payments made by the Company under these types of contractual arrangements have not been material.

Note 23. Derivative and Hedging Instruments

The Company monitors and manages its foreign currency and interest rate exposures as part of its overall risk management program which focuses on the unpredictability of financial markets and seeks to reduce the potentially adverse effects that the volatility of these markets may have on its operating results. A primary objective of the Company's risk management strategies is to reduce the financial impact that may arise from volatility in foreign currency exchange rates principally through the use of both foreign exchange derivative contracts and foreign currency denominated debt. In addition, the Company may enter into interest rate derivative contracts to manage the effects of interest rate movements on the Company's aggregate liability portfolio, including potential future debt issuances.

Cash Flow Hedges

The Company may enter into foreign exchange derivative contracts, including forwards and options, to manage the impact of foreign currency variability on anticipated revenues and expenses, which fluctuate based on currencies other than the functional currency of the entity. The objective of these hedging activities is to reduce the effect of movement in foreign exchange rates for a portion of revenues and expenses forecasted to occur. As these contracts are designated as cash flow hedging instruments, gains and losses resulting from changes in fair value of these contracts are deferred in accumulated other comprehensive income (loss) and subsequently reclassified to the consolidated statement of operations when the underlying hedged transactions impact earnings.

In addition, the Company may enter into interest rate derivative contracts to manage the effects of interest rate movements on the Company's aggregate liability portfolio, including potential future debt issuances, and designate such derivatives as hedging instruments in a cash flow hedging relationship. In 2019, the Company entered into treasury rate locks which are accounted for as cash flow hedges. In the first quarter of 2020, in connection with the issuance of the 2020 USD Notes, these contracts were settled at a loss of \$136 million, after tax, in accumulated other comprehensive income (loss). As of December 31, 2022, a cumulative loss of \$123 million, after tax, remains in accumulated other comprehensive income (loss) associated with these contracts and will be reclassified as an adjustment to interest expense over the respective terms of the 2020 USD Notes due in March 2030 and March 2050.

Fair Value Hedges

The Company may enter into interest rate derivative contracts, including interest rate swaps, to manage the effects of interest rate movements on the fair value of the Company's fixed-rate debt and designate such derivatives as hedging instruments in a fair value hedging relationship. Changes in fair value of these contracts and changes in fair value of fixed-rate debt attributable to changes in the hedged benchmark interest rate generally offset each other and are recorded in interest expense on the consolidated statement of operations. Gains or losses related to the net settlements of interest rate swaps are also recorded in interest expense on the consolidated statement of operations. The periodic cash settlements are included in operating activities on the consolidated statement of cash flows.

During the fourth quarter of 2021, the Company entered into an interest rate swap designated as a fair value hedge related to \$1.0 billion of the 3.850% Senior Notes due March 2050. In effect, the interest rate swap synthetically converts the fixed interest rate on this debt to a variable interest rate based on the Secured Overnight Financing Rate ("SOFR") Overnight Index Swap Rate. The net impact to interest expense for the years ended December 31, 2022 and 2021 was not material.

Net Investment Hedges

The Company may use foreign currency denominated debt and/or foreign exchange derivative contracts to hedge a portion of its net investment in foreign subsidiaries against adverse movements in exchange rates. The effective portion of the net investment hedge is recorded as a currency translation adjustment in accumulated other comprehensive income (loss). Forward points are designated as an excluded component and recognized in general and administrative expenses on the consolidated statement of operations over the hedge period. The amounts recognized in earnings related to forward points for 2022 and 2021 were not material.

In 2015 and 2022, the Company designated its €1,650 million and €750 million euro-denominated debt, respectively, as hedges of a portion of its net investment in its European operations. In 2022, €700 million of the 2015 euro-denominated debt matured and was de-designated as a net investment hedge. During 2022, 2021 and 2020 the Company recorded a pre-tax net foreign currency gain of \$176 million, gain of \$155 million and loss of \$177 million, respectively, in other comprehensive income (loss).

As of December 31, 2022 and 2021, the Company had net foreign currency gains of \$309 million and \$34 million, after tax, respectively, in accumulated other comprehensive income (loss) associated with this hedging activity.

Non-designated Derivatives

The Company may also enter into foreign exchange derivative contracts to serve as economic hedges, such as to offset possible changes in the value of monetary assets and liabilities due to foreign exchange fluctuations, without designating these derivative contracts as hedging instruments. In addition, the Company is subject to foreign exchange risk as part of its daily settlement activities. This risk is typically limited to a few days between when a payment transaction takes place and the subsequent settlement with customers. To manage this risk, the Company may enter into short duration foreign exchange derivative contracts based upon anticipated receipts and disbursements for the respective currency position. The objective of these activities is to reduce the Company's exposure to volatility arising from gains and losses resulting from fluctuations of foreign currencies against its functional currencies. Gains and losses resulting from changes in fair value of these contracts are recorded in general and administrative expenses on the consolidated statement of operations, net, along with the foreign currency gains and losses on monetary assets and liabilities.

The following table summarizes the fair value of the Company's derivative financial instruments and the related notional amounts:

	December 31, 2022			December 31, 2021		
	Notional	Derivative Assets	Derivative Liabilities	Notional	Derivative Assets	Derivative Liabilities
	(in millions)					
<i>Derivatives designated as hedging instruments</i>						
Foreign exchange contracts in a cash flow hedge ¹	\$ 642	\$ 4	\$ 15	\$ 206	\$ 7	\$ 3
Interest rate contracts in a fair value hedge ²	1,000	—	105	1,000	6	8
Foreign exchange contracts in a net investment hedge ¹	1,814	103	4	1,473	—	4
<i>Derivatives not designated as hedging instruments</i>						
Foreign exchange contracts ¹	521	1	2	530	1	8
Total derivative assets/liabilities	\$ 3,977	\$ 108	\$ 126	\$ 3,209	\$ 14	\$ 23

¹ Foreign exchange derivative assets and liabilities are included within prepaid expenses and other current assets and other current liabilities, respectively, on the consolidated balance sheet.

² As of December 31, 2022, interest rate derivative liabilities are included within other current liabilities and other liabilities on the consolidated balance sheet. As of December 31, 2021, interest rate derivative assets and liabilities are included within prepaid expenses and other current assets and other liabilities, respectively, on the consolidated balance sheet.

The pre-tax gain (loss) related to the Company's derivative financial instruments designated as hedging instruments are as follows:

	Gain (Loss) Recognized in OCI			Location of Gain (Loss) Reclassified from AOCI into Earnings	Gain (Loss) Reclassified from AOCI		
	Year ended December 31,				Year ended December 31,		
	2022	2021	2020		2022	2021	2020
	(in millions)				(in millions)		
Derivative financial instruments in a cash flow hedge relationship:							
Foreign exchange contracts	\$ 1	\$ 6	\$ —	Net revenue	\$ 16	\$ 1	\$ —
Interest rate contracts	\$ —	\$ —	\$ (189)	Interest expense	\$ (6)	\$ (6)	\$ (4)
Derivative financial instruments in a net investment hedge relationship:							
Foreign exchange contracts	\$ 177	\$ 114	\$ —				

The Company estimates that \$17 million, pre-tax, of the net deferred loss on cash flow hedges recorded in accumulated other comprehensive income (loss) at December 31, 2022 will be reclassified into the consolidated statement of operations within the next 12 months. The term of the foreign exchange derivative contracts designated in hedging relationships are generally less than 18 months.

The amount of gain (loss) recognized on the consolidated statement of operations for non-designated derivative contracts is summarized below:

Derivatives not designated as hedging instruments:	Year ended December 31,		
	2022	2021	2020
	(in millions)		
Foreign exchange derivative contracts			
General and administrative	\$ 21	\$ (10)	\$ 40

The Company's derivative financial instruments are subject to both market and counterparty credit risk. Market risk is the potential for economic losses to be incurred on market risk sensitive instruments arising from adverse changes in market factors such as foreign currency exchange rates, interest rates and other related variables. Counterparty credit risk is the risk of loss due to failure of the counterparty to perform its obligations in accordance with contractual terms. The Company's derivative contracts are subject to enforceable master netting arrangements, which contain various netting and setoff provisions. To mitigate counterparty credit risk, the Company enters into derivative contracts with a diversified group of selected financial institutions based upon their credit ratings and other factors. Generally, the Company does not obtain collateral related to derivatives because of the high credit ratings of the counterparties.

Note 24. Segment Reporting

Mastercard has concluded it has one reportable operating segment, "Payment Solutions." Mastercard's Chief Executive Officer has been identified as the chief operating decision-maker. All of the Company's activities are interrelated, and each activity is dependent upon and supportive of the other. Accordingly, all significant operating decisions are based upon analysis of Mastercard at the consolidated level.

Revenue by geographic market is based on the location of the Company's customer that issued the card, the location of the merchant acquirer where the card is being used or the location of the customer receiving services. Revenue generated in the U.S. was approximately 33% of net revenue in 2022, 32% in 2021 and 33% in 2020. No individual country, other than the U.S., generated more than 10% of net revenue in those periods. Mastercard did not have any individual customer that generated greater than 10% of net revenue in 2022, 2021 or 2020.

The following table reflects the geographical location of the Company's property, equipment and right-of-use assets, net, as of December 31:

	Year ended December 31,		
	2022	2021	2020
	(in millions)		
United States	\$ 1,123	\$ 1,117	\$ 1,185
Other countries	883	790	717
Total	\$ 2,006	\$ 1,907	\$ 1,902

Item 9. Changes in and disagreements with accountants on accounting and financial disclosure

Not applicable.

Item 9A. Controls and procedures

Evaluation of Disclosure Controls and Procedures

Our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission and to ensure that information required to be disclosed is accumulated and communicated to management, including our President and Chief Executive Officer and our Chief Financial Officer, to allow timely decisions regarding disclosure. The President and Chief Executive Officer and the Chief Financial Officer, with assistance from other members of management, have reviewed the effectiveness of our disclosure controls and procedures as of December 31, 2022 and, based on their evaluation, have concluded that the disclosure controls and procedures were effective as of such date.

Internal Control over Financial Reporting

In addition, Mastercard Incorporated’s management assessed the effectiveness of Mastercard’s internal control over financial reporting as of December 31, 2022. Management’s report on internal control over financial reporting is included in Part II, Item 8. PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the consolidated financial statements included in this Annual Report on Form 10-K and, as part of their audit, has issued their report, included herein, on the effectiveness of our internal control over financial reporting.

Changes in Internal Control over Financial Reporting

There was no change in Mastercard’s internal control over financial reporting that occurred during the three months ended December 31, 2022 that has materially affected, or is reasonably likely to materially affect, Mastercard’s internal control over financial reporting.

Item 9B. Other information

Pursuant to Section 219 of the Iran Threat Reduction and Syria Human Rights Act of 2012, we hereby incorporate by reference herein the disclosure contained in Exhibit 99.1 of this Report.

PART III

Item 10. Directors, executive officers and corporate governance

Item 11. Executive compensation

Item 12. Security ownership of certain beneficial owners and management and related stockholder matters

Item 13. Certain relationships and related transactions, and director independence

Item 14. Principal accountant fees and services

Item 10. Directors, executive officers and corporate governance

Information regarding our executive officers is included in section “Information about our executive officers” in Part I of this Report. Additional information required by this Item with respect to our directors and executive officers, code of ethics, procedures for recommending nominees, audit committee, audit committee financial experts and compliance with Section 16(a) of the Exchange Act will appear in our definitive proxy statement to be filed with the SEC and delivered to stockholders in connection with our 2023 annual meeting of stockholders (the “Proxy Statement”).

The aforementioned information in the Proxy Statement is incorporated by reference into this Report.

Item 11. Executive compensation

The information required by this Item with respect to executive officer and director compensation will appear in the Proxy Statement and is incorporated by reference into this Report.

Item 12. Security ownership of certain beneficial owners and management and related stockholder matters

The information required by this Item with respect to security ownership of certain beneficial owners and management equity and compensation plans will appear in the Proxy Statement and is incorporated by reference into this Report.

Item 13. Certain relationships and related transactions, and director independence

The information required by this Item with respect to transactions with related persons, the review, approval or ratification of such transactions and director independence will appear in the Proxy Statement and is incorporated by reference into this Report.

Item 14. Principal accountant fees and services

The information required by this Item with respect to auditors’ services and fees will appear in the Proxy Statement and is incorporated by reference into this Report.

PART IV

Item 15. Exhibits and financial statement schedules

Item 16. Form 10-K summary

Item 15. Exhibits and financial statement schedules

(a) The following documents are filed as part of this Report:

- 1 Consolidated Financial Statements

See Index to Consolidated Financial Statements in Part II, Item 8.

- 2 Consolidated Financial Statement Schedules

None.

- 3 The following exhibits are filed as part of this Report or, where indicated, were previously filed and are hereby incorporated by reference:

Refer to the Exhibit Index included herein.

Item 16. Form 10-K summary

None.

Exhibit index

Exhibit number	Exhibit Description
3.1	Amended and Restated Certificate of Incorporation of Mastercard Incorporated (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed June 24, 2022 (File No. 001-32877)).
3.2	Amended and Restated By-Laws of Mastercard Incorporated (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed June 24, 2022 (File No. 001-32877)).
4.1	Indenture, dated as of March 31, 2014, between the Company and Deutsche Bank Trust Company Americas, as trustee (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 31, 2014 (File No. 001-32877)).
4.2	Officer's Certificate of the Company, dated as of March 31, 2014 (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K filed on March 31, 2014 (File No. 001-32877)).
4.3	Form of Global Note representing the Company's 3.375% Notes due 2024 (included in Officer's Certificate of the Company, dated as of March 31, 2014) (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K filed on March 31, 2014 (File No. 001-32877)).
4.4	Officer's Certificate of the Company, dated as of December 1, 2015 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on December 1, 2015 (File No. 001-32877)).
4.5	Form of Global Note representing the Company's 2.100% Notes due 2027 (included in Officer's Certificate of the Company, dated as of December 1, 2015) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on December 1, 2015 (File No. 001-32877)).
4.6	Form of Global Note representing the Company's 2.500% Notes due 2030 (included in Officer's Certificate of the Company, dated as of December 1, 2015) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on December 1, 2015 (File No. 001-32877)).
4.7	Officer's Certificate of the Company, dated as of November 21, 2016 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 21, 2016 (File No. 001-32877)).
4.8	Form of Global Note representing the Company's 2.950% Notes due 2026 (included in Officer's Certificate of the Company, dated as of November 21, 2016) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 21, 2016 (File No. 001-32877)).
4.9	Form of Global Note representing the Company's 3.800% Notes due 2046 (included in Officer's Certificate of the Company, dated as of November 21, 2016) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 21, 2016 (File No. 001-32877)).
4.10	Officer's Certificate of the Company, dated as of February 26, 2018 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on February 26, 2018 (File No. 001-32877)).
4.11	Form of Global Note representing the Company's 3.5% Notes due 2028 (included in Officer's Certificate of the Company, dated as of February 26, 2018) (incorporated by reference to Exhibit 4.1 of the of the Company's Current Report on Form 8-K filed on February 26, 2018 (File No. 001-32877)).
4.12	Form of Global Note representing the Company's 3.95% Notes due 2048 (included in Officer's Certificate of the Company, dated as of February 26, 2018) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on February 26, 2018 (File No. 001-32877)).
4.13	Officer's Certificate of the Company, dated as of May 31, 2019 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on May 31, 2019 (File No. 001-32877)).
4.14	Form of Global Note representing the Company's 2.950% Notes due 2029 (included in Officer's Certificate of the Company, dated as of May 31, 2019) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on May 31, 2019 (File No. 001-32877)).
4.15	Form of Global Note representing the Company's 3.650% Notes due 2049 (included in Officer's Certificate of the Company, dated as of May 31, 2019) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on May 31, 2019 (File No. 001-32877)).
4.16	Officer's Certificate of the Company, dated as of December 3, 2019 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on December 3, 2019 (File No. 001-32877)).

4.17	Form of Global Note representing the Company's 2.000% Notes due 2025 (included in Officer's Certificate of the Company, dated as of December 3, 2019) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on December 3, 2019 (File No. 001-32877)).
4.18	Officer's Certificate of the Company, dated as of March 26, 2020 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 26, 2020 (File No. 001-32877)).
4.19	Form of Global Note representing the Company's 3.300% Notes due 2027 (included in Officer's Certificate of the Company, dated as of March 26, 2020) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 26, 2020 (File No. 001-32877)).
4.20	Form of Global Note representing the Company's 3.350% Notes due 2030 (included in Officer's Certificate of the Company, dated as of March 26, 2020) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 26, 2020 (File No. 001-32877)).
4.21	Form of Global Note representing the Company's 3.850% Notes due 2050 (included in Officer's Certificate of the Company, dated as of March 26, 2020) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 26, 2020 (File No. 001-32877)).
4.22	Officer's Certificate of the Company, dated as of March 4, 2021 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 4, 2021 (File No. 001-32877)).
4.23	Form of Global Note representing the Company's 1.900% Notes due 2031 (included in Officer's Certificate of the Company, dated as of March 4, 2021) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 4, 2021 (File No. 001-32877)).
4.24	Form of Global Note representing the Company's 2.950% Notes due 2051 (included in Officer's Certificate of the Company, dated as of March 4, 2021) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on March 4, 2021 (File No. 001-32877)).
4.25	Officer's Certificate of the Company, dated as of November 18, 2021 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 18, 2021 (File No. 001-32877)).
4.26	Form of Global Note representing the Company's 2.000% Notes due 2031 (included in Officer's Certificate of the Company, dated as of November 18, 2021) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 18, 2021 (File No. 001-32877)).
4.27	Officer's Certificate of the Company, dated as of February 22, 2022 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on February 22, 2022 (File No. 001-32877)).
4.28	Form of Global Note representing the Company's 1.000% Notes due 2029 (included in Officer's Certificate of the Company, dated as of February 22, 2022) (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on February 22, 2022 (File No. 001-32877)).
4.29*	Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.
10.1*	\$8,000,000,000 Amended and Restated Credit Agreement, dated as of November 10, 2022, among Mastercard Incorporated, the several lenders and agents from time to time party thereto, Citibank, N.A., as managing administrative agent and JPMorgan Chase Bank, N.A. as administrative agent.
10.2+	Employment Agreement between Mastercard International Incorporated and Ajaypal Banga, dated as of July 1, 2010 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed July 8, 2010 (File No. 001-32877)).
10.2.1+	Employment Letter Agreement between Mastercard International Incorporated and Ajaypal Banga, dated as of December 31, 2020 (incorporated by reference to Exhibit 10.2.1 to the Company's Annual Report on Form 10-K filed February 12, 2021 (File No. 001-32877)).
10.2.2	Consulting Letter Agreement between Mastercard International Incorporated and Ajaypal Banga, dated as of December 13, 2021 (incorporated by reference to Exhibit 10.2.2 to the Company's Annual Report on Form 10-K filed February 11, 2022 (File No. 001-32877)).
10.3+	Description of Employment Arrangement with Craig Vosburg (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed May 2, 2018 (File No. 001-32877)).
10.4+	Description of Employment Arrangement with Tim Murphy (incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q filed April 30, 2019 (File No. 001-32877)).
10.5+	Description of Employment Arrangement with Michael Froman (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed April 29, 2020 (File No. 001-32877)).

10.6+	Description of Employment Arrangement with Sachin Mehra (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed April 29, 2020 (File No. 001-32877)).
10.7+	Description of Employment Arrangement with Michael Miebach (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed April 29, 2020 (File No. 001-32877)).
10.8+	Mastercard International Senior Executive Annual Incentive Compensation Plan, as amended and restated effective September 7, 2022 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed October 27, 2022 (File No. 001-32877)).
10.9+	Mastercard International Incorporated Restoration Program, as amended and restated January 1, 2007 unless otherwise provided (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K filed February 19, 2009 (File No. 001-32877)).
10.10+	Mastercard Incorporated Deferral Plan, as amended and restated effective December 1, 2008 for account balances established after December 31, 2004 (incorporated by reference to Exhibit 10.25 to the Company's Annual Report on Form 10-K filed February 19, 2009 (File No. 001-32877)).
10.11+	Mastercard Incorporated 2006 Long Term Incentive Plan, amended and restated effective June 22, 2021 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed July 29, 2021 (File No. 001-32877)).
10.12+	Form of Restricted Stock Unit Agreement for awards under 2006 Long Term Incentive Plan (effective for awards granted on and subsequent to March 1, 2022) (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed April 28, 2022 (File No. 001-32877)).
10.13+	Form of Stock Option Agreement for awards under 2006 Long Term Incentive Plan (effective for awards granted on and subsequent to March 1, 2022) (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed April 28, 2022 (File No. 001-32877)).
10.14+	Form of Performance Stock Unit Agreement for awards under 2006 Long Term Incentive Plan (effective for awards granted on and subsequent to March 1, 2022) (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed April 28, 2022 (File No. 001-32877)).
10.15+	Form of Mastercard Incorporated Long Term Incentive Plan Non-Competition and Non-Solicitation Agreement for named executive officers (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K filed February 16, 2012 (File No. 001-32877)).
10.16+	Amended and Restated Mastercard International Incorporated Executive Severance Plan, amended and restated as of April 11, 2022 (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q filed April 28, 2022 (File No. 001-32877)).
10.17+	Amended and Restated Mastercard International Incorporated Change in Control Severance Plan, amended and restated as of April 11, 2022 (incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q filed April 28, 2022 (File No. 001-32877)).
10.18	Schedule of Non-Employee Directors' Annual Compensation effective as of January 1, 2022 (incorporated by reference to to Exhibit 10.20 to the Company's Annual Report on Form 10-K filed February 11, 2022 (File No. 001-32877)).
10.19	2006 Non-Employee Director Equity Compensation Plan, amended and restated effective as of June 22, 2021 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed July 29, 2021 (File No. 001-32877)).
10.20	Form of Deferred Stock Unit Agreement for awards under 2006 Non-Employee Director Equity Compensation Plan, amended and restated effective June 22, 2021 (effective for awards granted on and subsequent to June 21, 2022) (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed July 28, 2022 (File No. 001-32877)).
10.21	Form of Restricted Stock Agreement for awards under 2006 Non-Employee Director Equity Compensation Plan, amended and restated effective June 22, 2021 (effective for awards granted on and subsequent to June 21, 2022) (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed July 28, 2022 (File No. 001-32877)).
10.22	Form of Indemnification Agreement between Mastercard Incorporated and certain of its directors (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed May 2, 2006 (File No. 000-50250)).

10.23	Form of Indemnification Agreement between Mastercard Incorporated and certain of its director nominees (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed May 2, 2006 (File No. 000-50250)).
10.24	Deed of Gift between Mastercard Incorporated and Mastercard Foundation (incorporated by reference to Exhibit 10.28 to Pre-Effective Amendment No. 5 to the Company's Registration Statement on Form S-1 filed May 3, 2006 (File No. 333-128337)).
10.25	Settlement Agreement, dated as of June 4, 2003, between Mastercard International Incorporated and Plaintiffs in the class action litigation entitled In Re Visa Check/MasterMoney Antitrust Litigation (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed August 8, 2003 (File No. 000-50250)).
10.26	Stipulation and Agreement of Settlement, dated July 20, 2006, between Mastercard Incorporated, the several defendants and the plaintiffs in the consolidated federal class action lawsuit titled In re Foreign Currency Conversion Fee Antitrust Litigation (MDL 1409), and the California state court action titled Schwartz v. Visa Int'l Corp., et al. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed November 1, 2006 (File No. 001-32877)).
10.27	Omnibus Agreement Regarding Interchange Litigation Judgment Sharing and Settlement Sharing, dated as of February 7, 2011, by and among Mastercard Incorporated, Mastercard International Incorporated, Visa Inc., Visa U.S.A. Inc., Visa International Service Association and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.33 to Amendment No.1 to the Company's Annual Report on Form 10-K/A filed on November 23, 2011).
10.27.1	Amendment to Omnibus Agreement Regarding Interchange Litigation Judgment Sharing and Settlement Sharing, dated as of August 25, 2014, by and among Mastercard Incorporated, Mastercard International Incorporated, Visa Inc., Visa U.S.A. Inc., Visa International Service Association and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed October 30, 2014 (File No. 001-32877)).
10.27.2	Second Amendment to Omnibus Agreement Regarding Interchange Litigation Judgment Sharing and Settlement Sharing, dated as of October 22, 2015, by and among Mastercard Incorporated, Mastercard International Incorporated, Visa Inc., Visa U.S.A. Inc., Visa International Service Association and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed October 29, 2015 (File No. 001-32877)).
10.28**	Mastercard Settlement and Judgment Sharing Agreement, dated as of February 7, 2011, by and among Mastercard Incorporated, Mastercard International Incorporated and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.34 to Amendment No.1 to the Company's Annual Report on Form 10-K/A filed on November 23, 2011).
10.28.1	Amendment to Mastercard Settlement and Judgment Sharing Agreement, dated as of August 26, 2014, by and among Mastercard Incorporated, Mastercard International Incorporated and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed October 30, 2014 (File No. 001-32877)).
10.28.2	Second Amendment to Mastercard Settlement and Judgment Sharing Agreement, dated as of October 22, 2015, by and among Mastercard Incorporated, Mastercard International Incorporated and Mastercard's customer banks that are parties thereto (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q filed October 29, 2015 (File No. 001-32877)).
10.29	Superseding and Amended Class Settlement Agreement, dated September 17, 2018, by and among Mastercard Incorporated and Mastercard International Incorporated; Visa, Inc., Visa U.S.A. Inc. and Visa International Service Association; the Class Plaintiffs defined therein; and the Customer Banks defined therein (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed September 18, 2018 (File No. 001-32877)).
21*	List of Subsidiaries of Mastercard Incorporated.
23.1*	Consent of PricewaterhouseCoopers LLP.
31.1*	Certification of Michael Miebach, President and Chief Executive Officer, pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Sachin Mehra, Chief Financial Officer, pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Michael Miebach, President and Chief Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

32.2*	Certification of Sachin Mehra, Chief Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
99.1*	Disclosure pursuant to Section 219 of the Iran Threat Reduction and Syria Human Rights Act of 2012.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

+ Management contracts or compensatory plans or arrangements.

* Filed or furnished herewith.

** Exhibit omits certain information that has been filed separately with the U.S. Securities and Exchange Commission and has been granted confidential treatment.

The agreements and other documents filed as exhibits to this report are not intended to provide factual information or other disclosure other than with respect to the terms of the agreements or other documents themselves, and should not be relied upon for that purpose. In particular, any representations and warranties made by the Company in these agreements or other documents were made solely within the specific context of the relevant agreement or document and may not describe the actual state of affairs as of the date they were made or at any other time.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

MASTERCARD INCORPORATED
(Registrant)

Date: February 14, 2023

By:

/s/ MICHAEL MIEBACH

Michael Miebach
President and Chief Executive Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

Date: February 14, 2023

By:

/s/ MICHAEL MIEBACH

Michael Miebach
President and Chief Executive Officer; Director
(Principal Executive Officer)

Date: February 14, 2023

By:

/s/ SACHIN MEHRA

Sachin Mehra
Chief Financial Officer
(Principal Financial Officer)

Date: February 14, 2023

By:

/s/ SANDRA ARKELL

Sandra Arkell
Corporate Controller
(Principal Accounting Officer)

Date: February 14, 2023

By:

/s/ CANDIDO BRACHER

Candido Bracher
Director

Date: February 14, 2023

By:

/s/ RICHARD K. DAVIS

Richard K. Davis
Director

Date: February 14, 2023

By: _____ /s/ JULIUS GENACHOWSKI

Julius Genachowski**Director**

Date: February 14, 2023

By: _____ /s/ CHOON PHONG GOH

Choon Phong Goh**Director**

Date: February 14, 2023

By: _____ /s/ MERIT E. JANOW

Merit E. Janow**Chairman of the Board; Director**

Date: February 14, 2023

By: _____ /s/ OKI MATSUMOTO

Oki Matsumoto**Director**

Date: February 14, 2023

By: _____ /s/ YOUNGME MOON

Youngme Moon**Director**

Date: February 14, 2023

By: _____ /s/ RIMA QURESHI

Rima Qureshi**Director**

Date: February 14, 2023

By: _____ /s/ GABRIELLE SULZBERGER

Gabrielle Sulzberger**Director**

Date: February 14, 2023

By: _____ /s/ JACKSON TAI

Jackson Tai**Director**

Date: February 14, 2023

By: _____ /s/ HARIT TALWAR

Harit Talwar**Director**

Date: February 14, 2023

By: _____ /s/ LANCE UGGLA

Lance Uggl**Director**