

November 8, 2021

Mr. David Boylan  
Defense Industrial Base Division, Office of Technology Evaluation, Bureau of  
Industry and Security  
Department of Commerce  
14th and Constitution Avenue, NW  
Washington, DC 20230

Re: BIS 2021-0036, Notice of Request for Public Comments on Risks in the Semiconductor Supply Chain

Dear Mr. Boylan:

We, the undersigned companies and trade associations, appreciate the opportunity to provide comments on BIS 2021-0036, regarding risks in the semiconductor supply chain. Collectively, we represent various stakeholders in the US payments industry, including point-of-sale terminal manufacturers, payment processors, payment card networks, and card-issuing financial institutions. We write to raise concerns about the impact to American consumers and businesses, should semiconductor chips for payment cards and point-of-sale (POS) terminals be unavailable or greatly restricted in 2022. We respectfully request the Department of Commerce consider the risks to the American economy as it relates to inadequate access to chips for the payments industry.

#### State of Card Transactions in the US

Over the last decade, the payments space has seen a clear shift in consumer payment trends from cash and check to the use of cards. The Federal Reserve Board's annual payment study highlights the increasing reliance on payment cards, such as debit, credit, and prepaid cards, for a wide variety of daily purchases by American consumers. Further, according to the Federal Reserve's 2019 Payments Study, in 2018, nearly 90% of card transactions that took place were conducted on EMV® chip-enabled cards.<sup>1</sup>

This accounts for a huge portion of global economic activity. In the United States, general purpose credit and debit card spending accounts for approximately 47 percent of nominal personal consumption expenditures (NPCE), while consumption represents over two-thirds of U.S. gross domestic product (GDP).

The COVID-19 pandemic has been an accelerating factor in the trend towards digital, online, or contactless payment options. According to the San Francisco Federal Reserve Bank's 2021 Consumer Payments study, in-person, cash transactions declined 15% between August 2020 and

---

<sup>1</sup> 2019 Federal Reserve Payments Study, <https://www.federalreserve.gov/paymentsystems/2019-December-The-Federal-Reserve-Payments-Study.htm>

April 2021.<sup>2</sup> Contactless payments, alone, more than doubled from a year ago to 15% of all U.S. face-to-face transactions.<sup>3</sup> Similarly, more than half (56%) of consumers have used contactless payments whenever possible in the past three months, making it the biggest shift in terms of shopping habits.<sup>4</sup>

The importance of access to online and contactless payment options during the COVID-19 pandemic cannot be overstated. Online and contactless payment options were a lifeline that allowed businesses to remain open and able to continue serving and providing for their local communities, while also allowing consumers to make purchases in a safe and convenient way.

Unfortunately, the ease of access and security that card transactions provide to millions of Americans is threatened by the ongoing global supply chain shortages and backlogs, and specifically by the shortage of EMV chips. Chip manufacturers are communicating a significant concern that demand for EMV chips needed for payment cards and POS terminals will dramatically outpace available supply. While it is difficult to pinpoint an exact date, chip manufacturers and chip suppliers, including several of the undersigned companies, believe that the payments industry faces a severe chip shortage in 2022, posing a very real threat of interruptions in the facilitation of digital commerce.

### EMV Chips

In October 2015, the US payments industry migrated from magnetic stripe cards to EMV-enabled payment terminals and EMV-enabled cards. EMV enablement provides greater security in the interaction between a payment card and a POS terminal by adding in additional verification elements, such as a dynamic cryptogram, which makes it much harder to create and use counterfeit cards in a physical, brick and mortar store. According to Visa, credit cards embedded with EMV chips have reduced fraud by 76%.<sup>5</sup>

In 2015 and 2016, roughly 7 million POS terminals (60% of the global demand for the 2-year span) were updated in connection with the EMV migration in the US. The average life cycle for a POS terminal is 5-7 years, resulting in the potential for millions of businesses also needing new terminals during the impending chip shortage.

We estimate that supplying the payments industry with EMV chips for electronic payment cards constitutes roughly 1% of the global chip demand. This represents approximately 540 million chips in 2022. Demand within this figure for chip cards is driven largely by three scenarios to

---

<sup>2</sup> April 2021 San Francisco Federal Reserve Bank Consumer Payments and the COVID-19 Pandemic Supplemental, <https://www.frbsf.org/cash/publications/fed-notes/2021/september/consumer-payments-covid-19-pandemic-diary-consumer-payment-choice-supplement-3/>

<sup>3</sup> Visa Q4, 2021 Earnings Call, October 26, 2021,

[https://s1.q4cdn.com/050606653/files/doc\\_financials/2021/q4/Visa-4Q21-Earnings-Transcript.pdf](https://s1.q4cdn.com/050606653/files/doc_financials/2021/q4/Visa-4Q21-Earnings-Transcript.pdf)

<sup>4</sup> The Visa Back to Business Study, 2021 Outlook, <https://usa.visa.com/dam/VCOM/blogs/visa-back-to-business-study-jan21.pdf>

<sup>5</sup> March 2019 Chip technology helps reduce counterfeit fraud by 76 percent, <https://usa.visa.com/visa-everywhere/blog/bdp/2019/05/28/chip-technology-helps-1559068467332.html>

provide customers with cards: issuance of a replacement card due to an existing card expiring; issuance of a replacement card due to an existing card being lost, stolen, or damaged; and issuance of a first-time card to a new customer.

The expiration date is a critical component in understanding the impact of a chip shortage on the payments industry. Card expiration dates cannot be “turned off,” overridden, or ignored within the existing payments architecture. Expiration dates are not only printed on the card, but they are also embedded into the magnetic stripe on the back of a payment card, coded into the EMV chip, and saved with the issuer’s platform. For that reason, simply extending the lifespan of a payment card is not a feasible option for addressing potential chip shortages.

Further, expiration dates are part of the card authorization message, which is a process that must occur for the card to be used as payment in a purchase. During authorization, card information is collected at the merchant’s POS terminal and transmitted by a payment processor through the payment card networks and to the financial institution that issued the card to the consumer. This communication takes place nearly instantaneously. Additionally, the elements of this authorization message are not treated as individual fields, but rather as one comprehensive message. As a result, the expiration date cannot be removed, ignored, or adjusted, or it would affect the integrity and speed of the entire authorization process.

Additionally, it’s important to understand that each entity within the payment’s architecture must approve the authorization messages, which means that any changes to the authorization fields would have to be replicated by more than 10 million card-accepting merchants, dozens of POS terminal manufacturers, hundreds of payment processors, a dozen credit and debit card networks, and over 8,000 card-issuing financial institutions. Simply put, it is neither a quick nor simple fix.

As a result of the security and verification features of EMV embedded cards and the precise payments architecture that enables seamless digital transactions for merchants and consumers alike, millions of consumers are at risk of being unable to interact in the digital economy in 2022 (and 2023 if the chip shortage persists). Unlike other industries where replacement of chip supported products is often a consumer choice, replacement of chip embedded cards is a necessity for access to the financial system.

Since becoming aware of a potential shortage of EMV capable chips, the payments industry has been exploring all available options to support consumers through the shortage. It might seem logical to consider issuing cards once again without an EMV chip. This is not a viable solution. First and foremost, since 2015, the payments industry has been working to improve consumer education and awareness around the benefit of EMV chips. Reverting to the issuance of non-chip enabled cards – even as a short-term or stop-gap measure – will result in customer confusion and concern.

Additionally, as highlighted earlier in this comment, EMV chip technology has dramatically improved the security measures within the payment space. Without chips, issuers may be

forced to revert to issuing magnetic-stripe only cards, reversing the gains achieved in fraud reduction in recent years and making consumer data more vulnerable

#### Government Assistance Needed

While chip manufacturers and suppliers have implemented several best practices to assist clients in managing the limited supply, it is crucial for leaders to ensure payments cards are given high priority in chip production. We are concerned that the impending chip shortage could disrupt the millions of consumers that rely on payment cards to buy staple and essential household items, as well as the businesses that rely on chip technology to securely accept card payments. Securing chip access for the payments industry is vital to continued economic activity and growth as we emerge from the pandemic.

Again, we will continue to do our part to mitigate this disruption, including diversifying supply chains where possible, establishing short-term supply needs and communicating those needs early and often to manufacturers, delaying reissuance when possible, and avoiding stockpiling. However, we believe the Department of Commerce and the Administration have a vital role to play in supporting payments and other critical industries in meeting chip demand while also working on long-term, domestic chip production improvements.

Thank you for your consideration of our comments. For additional questions or follow up, please contact Lisa Shoemaker at [lisa.shoemaker@us.idemia.com](mailto:lisa.shoemaker@us.idemia.com) or Kim Ford at [kim.ford@fiserv.com](mailto:kim.ford@fiserv.com).

Sincerely,

IDEMIA North America  
Fiserv  
Capital One  
Mastercard  
Visa  
Electronic Transactions Association  
Independent Community Bankers of America  
Innovative Payments Association  
Payments Leadership Council