

# What a CFO Should Know About Facebook's Libra & the Next Generation of Digital Currencies

December 15, 2019

## I. Executive Summary: 10 Key Takeaways for CFOs

1. **Large institutions** (e.g., Facebook, JP Morgan and the Chinese Government) are driving the development of **the next generation of digital currencies**, and their support increases the likelihood that consumers and businesses will adopt these products in some fashion in the future.
2. Chief Financial Officers ("CFOs") have a vested interest in **encouraging competition from alternative technologies like digital currencies** – at a minimum, this competition exerts pressure on traditional payment solutions to lower their cost to customers and improve their product offering. Currently, consumers pay average fees of 5.4% for cross-border remittances and businesses pay fees between 1.4-3.5% for processing credit card payments.
3. There is **nothing for CFOs to do immediately on Libra** – Facebook has encountered intense resistance from regulators around the globe and is navigating an uncertain regulatory pathway. **There is a significant risk of failure or delays** in the launch of Libra because Facebook is committed to moving forward only with the approval of regulators. Yet, we recommend that CFOs monitor Libra's development, as well as other payment innovations, and we encourage regulators to clarify exactly how digital currencies fit into their financial systems.
4. **Libra would have distinct advantages** over other cryptocurrencies including **network effects from Facebook's 2.8 billion users** (over 30% of the world's population), **simplicity and convenience of use, less price volatility** since it will be backed by a reserve of real-world assets, **open access** for users, **the support and expertise of 21 founding organizations** (including Coinbase, Andreessen Horowitz, Union Square Ventures, Uber, Lyft, and Spotify), and **blockchain scalability**.
5. Libra would be a "centralized" cryptocurrency that is governed and controlled by the Libra Association, which is comprised of Facebook and 21 founding organizations. Therefore, **the market will need to trust the Libra Association**, much like Central Banks are trusted today, to ensure the smooth operation and stability of Libra.
6. If launched as designed, **Libra's path to large scale adoption will be driven by consumers**—Libra has a clear value proposition for Consumer-to-Consumer ("C2C") payments (in particular, cross-border remittances). If consumers adopt Libra for this purpose, they will expect businesses to accept Libra as a payment tool for Consumer-to-Business ("C2B") transactions. And if Libra gains market acceptance, it may impact Business-to-

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Consumer (“B2C”) and Business-to-Business (“B2B”) payments as well. Adoption in the early consumer use cases will increase the likelihood of success in subsequent business use cases<sup>1</sup>.

7. If launched as designed, the **key benefits of Libra for CFOs** would include **lower fees** when making or accepting payments, **instantaneous payments** that may have working capital benefits, and **expanded customer reach** for businesses that can sell through Facebook’s social media platform. The **key costs of Libra for CFOs** would include **increased transaction costs** (e.g., traditional currencies must be exchanged for Libra), the **upfront cost to modify internal accounting systems** to allow payments in Libra, and **increased administrative costs from internal controls** to ensure Libra is used appropriately in all jurisdictions.
8. The **key consideration for CFOs will be whether the net benefit (i.e., benefit minus costs) provides a sufficient return on investment** to justify adopting Libra. If so, the benefit from lower payment fees must exceed the increased transaction costs in converting traditional currencies into and out of Libra. This is certainly feasible given credit card processing fees are as high as 3.5% today. Further, the net benefit would be enhanced if Libra can drive additional revenues by reaching new customers.
9. **Initially, Libra’s early adopters** from a business perspective would likely include **(a) global e-commerce companies** with a large number of C2B transactions who can expand their customer reach through accessing Facebook’s network of consumers, **(b) small and medium-sized enterprises with significant payment transaction costs** in the current system, and **(c) businesses seeking to experiment** with blockchain technology. Over time, if Libra gains market acceptance, companies with large volumes of cross-border payments may benefit as well.
10. **In the event Libra is not launched**, we believe **Facebook will pivot toward a payment solution similar to WeChat**, a successful Chinese mobile payment solution that uses traditional currencies and is built on top of a social media platform. Facebook recently announced Facebook Pay as a move in this direction. This type of payment solution would retain any benefits derived from Facebook’s social media network.

Whether Libra fails or succeeds, CFOs need to monitor payment innovations that can reduce costs and improve margins. Our report includes a recommended action plan for CFOs in Section VII.

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<sup>1</sup> We have borrowed our payments terminology from McKinsey’s Global Payments Report. C2C refers to transfers of money from one consumer to another (e.g., cross-border remittances). C2B refers to payments that consumers make to businesses (e.g., online payments for goods). B2C refers to payments that businesses make to consumers (e.g., refunds, wages, etc.). B2B refers to payments between two businesses (e.g., a business paying a supplier).

# II. The Problem Libra Is Seeking to Address

## A. The Target: The Highly Profitable \$2 Trillion Global Payments Industry

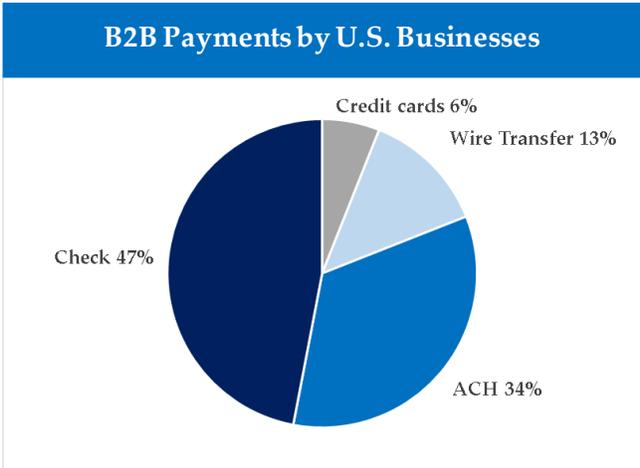
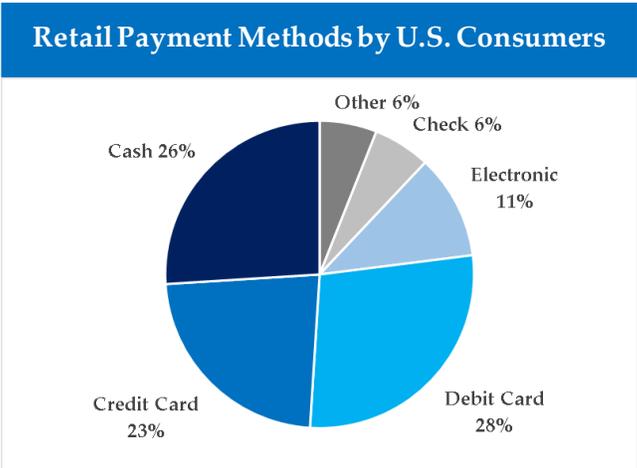
The global payments industry is large and highly profitable. McKinsey estimates that businesses facilitating global payments earned \$1.9 trillion in revenue in 2018 and are expected to earn \$2.7 trillion in revenue by 2023. Many of the established players in the global payments industry (e.g., financial institutions, credit card networks, payment processors, etc.) are among the most profitable businesses in the world. The industry’s large addressable market and the outsized profitability of certain players attracts disruptive technologies like digital currencies.

Selected Payment Companies vs. S&P 500						
Company						S&P 500 Average
Revenues	\$23Bn	\$16Bn	\$13Bn	\$6Bn	\$5Bn	
Gross Margin	97%	100%	48%	65%	42%	32%
EBITDA Margin	69%	60%	33%	41%	25%	19%
Net Income Margin	53%	43%	20%	11%	21%	10%
EV / EBITDA Multiple	22x	25x	14x	18x	10x	13x

Source: McKinsey, Capital IQ; data represents last twelve months for revenues and margin and next twelve months for multiple

## B. Quick Background: How Are Payments Made Today?

As shown in the exhibits below, consumers and businesses in the United States use a variety of payment methods today. Consumers tend to prefer cash, credit cards and debit cards payment methods, collectively accounting for 77% of all retail payments, for C2B payments. Businesses tend to prefer check, automated clearing house (“ACH”), wire transfers and credit cards for B2B payments.



Source: Philadelphia Federal Reserve Bank, Mastercard

## C. The Key Problems Libra Could Potentially Address

Libra and other innovations in the payments industry seek to address two fundamental problems: access and fees. First, many consumers and businesses, particularly in developing countries, do not have access to the existing payment industry today. Second, as shown in the table below, the current payments industry earns significant fees on all of the most common methods of payment that consumers and businesses utilize today.

Payment Volume and Fees by Category				
Category	Type	Annual Payment	Annual Processing Fees	
		Volume (\$Bn)	%	\$Bn
Credit & Debit Card Payments	C2B Credit (US Only)	3,600	1.4-3.5%	88
	C2B Debit (US Only)	2,880	0.8%	22
	B2B Credit (US Only)	600	1.4-3.5%	15
	<b>Total</b>	<b>7,080</b>	<b>1.8%</b>	<b>125</b>
Cross Border Payments	B2B (Globally)	133,000	0.1%	149
	C2B (Globally)	1,500	2.5%	37
	C2C (Globally)	500	5.4%	27
	B2C (Globally)	1,200	1.5%	18
	<b>Total</b>	<b>136,200</b>	<b>0.2%</b>	<b>231</b>

Source: McKinsey, Federal Reserve; credit and debit volumes as of 2017, cross border payment volumes as of 2018

More specifically, Libra and other innovations in the payment industry seek to address the following problems:

### 1. Providing a Low Cost Payment Solution for Consumers and Businesses Without Access to the Existing Payments Infrastructure

The existing financial system and payments infrastructure underserves a subset of consumers and businesses. The World Bank estimates that 1.7 billion adults remain unbanked (i.e., “without an account at a financial institution or through a mobile money provider”) and live almost exclusively in developing countries. In addition to the unbanked, Libra and other payment innovations can further facilitate access for consumers and businesses in countries with less developed payment infrastructures and unstable currencies.

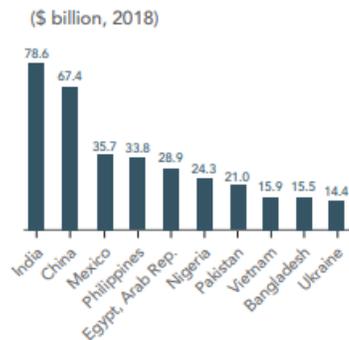
One case study that shows the potential of a payment solution with global reach is M-Pesa, a mobile money transfer service originally launched in Kenya. According to the World Bank, M-Pesa serves 30 million users across 10 African countries. The platform has substantially increased access to financial services with 96% of households outside of Nairobi having at least one M-Pesa account. The World Bank credits M-Pesa with improving the resiliency of low income households, increasing financial empowerment for women, and impacting the growth of Nairobi’s startup ecosystem.

### 2. Reducing Cross-Border Payments Processing Fees That Consumers Pay

McKinsey estimates that consumers sent approximately \$2 trillion in cross-border payments in 2018. In C2C cross-border payments (i.e., remittances), consumers sent \$500 billion to other consumers, while payment providers earned an average 5.4% fee per transaction or \$27 billion in total. In C2B cross-border payments, consumers spent \$1.5 trillion on purchases and payments to businesses and governments, while payment providers earned an average 2.5% fee per transaction or \$37 billion in total.

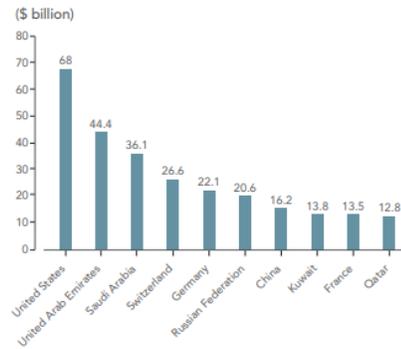
Libra identified remittances as an early use case for Libra. Although fees on these payments averaged 5.4% in 2018, the World Bank estimates the fees for low- and middle-income countries are higher (at 7% on average) and are up to 20% for certain countries. The largest recipients of remittances are China, India, Mexico and other developing nations, while the largest senders of remittances are the United States, United Arab Emirates, Saudi Arabia and other developed nations. Remittance fees disproportionately impact lower income populations.

FIGURE 1.2 Top Remittance Recipients



Source: World Bank

FIGURE 1.3 Outward Remittances from Major Sending Countries, 2017



### 3. Reducing Credit & Debit Card Processing Fees That Businesses (And Ultimately Consumers) Pay

Credit card and debit card transactions dominate C2B payments and are a meaningful portion of B2B payments. In the U.S. alone in 2017, consumers and businesses spent more than \$7 trillion dollars on credit and debit cards combined, and credit and debit card networks earned over \$125 billion in fees on processing these transactions. Incumbents like Visa acknowledge the threat from alternative networks and from Libra itself. In Visa’s latest annual report, it alerts investors to the risk of “alternative payment networks or products...that could reduce our role or otherwise disintermediate us from the transaction processing or the value-added services we provide to support such processing.” Visa specifically cites “...the Libra Association, which seeks to launch a new stablecoin cryptocurrency (Libra Coin) and global blockchain network.”

#### *Credit Card Transactions*

Processing fees for credit card transaction are significant and vary considerably from 1.4 – 3.5% per transaction. In the U.S. alone in 2017, consumers and businesses spend more than \$4 trillion dollars on credit cards, and the credit card value chain earned over \$100 billion in fees on processing these transactions. <sup>2</sup>

<sup>2</sup> Although a relatively simple transaction from a consumer’s perspective, credit card transactions require the coordination of many different actors. These include the merchant (i.e., the business that consumer is buying a product from), the merchant acquirer (i.e., a business that processes credit card and other electronic payments for the merchant), the credit card network (e.g., Visa’s or Mastercard’s network) and the issuing bank (i.e., the financial institution that issued the credit card to the consumer, accept credit risk for purchases and charges interest and account fees to the consumer).

A basic credit card transactions involves the following steps:

- i. The cardholder pays the merchant for a purchase with a credit card
- ii. The merchant sends the credit card details to the merchant acquirer
- iii. The merchant acquirer forwards the credit card details to the appropriate credit card network
- iv. The credit card network requests payment authorization from the issuing bank
- v. The issuing bank verifies the card information and approves or denies the transaction
- vi. If the funds are available, the issuing bank sends an approval code to the merchant via the same channels (through the credit card network and the merchant acquirer)
- vii. The merchant issues a sales slip to the customer to complete the sale

## *Debit Card Transactions*

Processing fees for debit card transactions are lower and more uniform than credit card transactions. The average processing fee per transaction is 0.8%. In the U.S. alone in 2017, consumers and businesses spent more than \$2.9 trillion dollars on debit cards, and the debit card value chain earned over \$22 billion in fees on processing these transactions<sup>3</sup>.

### **4. Reducing Cross-Border Payment Processing Fees that Businesses Pay**

B2B cross-border payments are by far the largest category of global payments. McKinsey estimates these payments totaled \$133 trillion in 2018. On average, business paid 0.1% fees (or \$149 billion) on these payments. In addition, businesses and governments sent payments to consumers across borders of \$1.2 trillion in 2018. On average, businesses paid 1.5% fees (or \$18 billion) on these payments. Although businesses pay significantly lower average fees on a percentage basis, they pay the most in terms of absolute dollars. In our view, low average fees on B2B payments likely indicate that large businesses with the largest cross-border payments pay a certain maximum fee (which still may be overpriced), while small and medium-sized businesses with smaller payment volumes pay a much higher fee on a percentage basis. For both large and small businesses, an alternative payment mechanism has the potential to reduce fees significantly for businesses.

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<sup>3</sup> Debit card transactions are simple to execute for consumers with bank accounts, fairly low cost per transaction and are an accepted payment method by a wide range of merchants. A standard debit card links directly to a consumer's bank account. When a transaction is made, funds are immediately earmarked in the consumer's bank account as a pending transaction. Upon final action by the merchant, funds are instantly transferred from one account to the other and marked as resolved in the consumer's account. This simple process allows the transactions to be executed quickly, often within a matter of hours depending on the speed of the merchant.

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act, Congress gave the Federal Reserve Board the authority to regulate processing fees for debit card transactions. The Federal Reserve has set maximum limits on processing fees that may be charged by large issuers with more than \$10 billion in assets. These regulations are a significant factor in the relatively lower fee structure for these transactions.

# III. Libra's Offering and Where It Fits in the Competitive Landscape

## A. What is Libra?

On June 18, 2019, Facebook along with 27 founding organizations announced the creation of Libra, a new cryptocurrency with a stated mission “to enable a simple global currency and financial infrastructure that empowers billions of people.” As of December 2019, Libra is still under development and is navigating an uncertain regulatory approval process in many jurisdictions globally. Facebook originally expected to launch Libra in 2020, but both the timing of launch and the specific form that Libra will take is highly uncertain today.

libra	
Announcement Date	June 18, 2019
Status	<ul style="list-style-type: none"><li>• Under development</li><li>• Expected Launch – 2020 or later</li></ul>
Founders	Facebook, Andreessen Horowitz, Coinbase, Spotify, Uber, Lyft and 15 other organizations
Primary Purpose	“A simple global currency and financial infrastructure that empowers billions of people”
Asset Collateralization	Backed 1:1 by a reserve of global developed market currencies and short-term government securities
Governance	Libra Association (Switzerland)
Technical Details	<ul style="list-style-type: none"><li>• Blockchain</li><li>• Permitted at first (i.e., restricted set of approvers) with a goal to move to permissionless</li></ul>

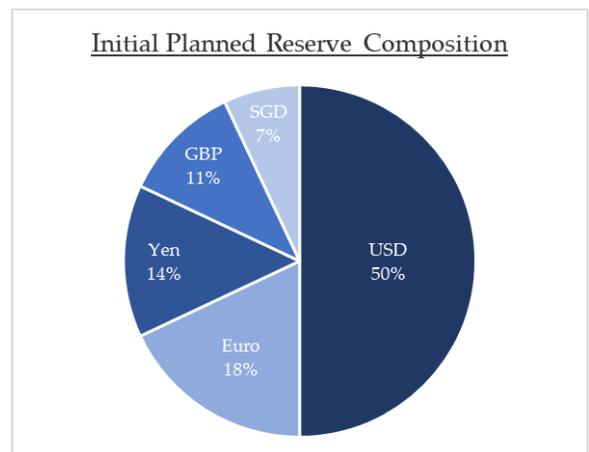
### I. Libra Is Designed to Be A Cryptocurrency That is Easy to Use

Cryptocurrencies are a relatively new innovation that began with the launch of Bitcoin in 2009. Like other cryptocurrencies, Libra will exist only in digital form and will be built on blockchain technology that utilizes cryptography and other safeguards to provide a secure record of ownership and a history of transactions. Like Bitcoin (but unlike traditional currencies), Libra will not be backed by or guaranteed by any government entity (although it is expected to comply with any regulations that governments require).

Ease of use is a core principle in the design of Libra. First, there is an “onboarding” process whereby users purchase Libra by converting a traditional currency (e.g., U.S. dollars) at a given exchange rate. Cryptocurrency exchanges, such as Coinbase, facilitate onboarding in a way that is simple and intuitive to users and compliant with regulations. Second, users will maintain and use their Libra through a digital wallet. A digital wallet, which frequently is an application on a smart phone, provides information on a user’s balance and facilitates the purchase of goods and services or the transfer of Libra to other users. Facebook has developed its own digital wallet called Calibra that will be integrated into Facebook Messenger, WhatsApp and other platforms. Finally, there is an “offboarding” process whereby users convert their Libra back into a traditional currency (e.g., U.S. dollars). Cryptocurrency exchanges, such as Coinbase, also facilitate the offboarding process.

### II. Libra Is Designed As An Asset-Backed Cryptocurrency

Unlike Bitcoin, stability in the value of the cryptocurrency is a primary goal for Libra. Every unit of Libra will be fully backed by a basket of assets that are held in a reserve. The reserve will include bank deposits and government securities from stable, reputable central banks. As shown in the accompanying exhibit, the initial plan for the composition of the reserve is 50% U.S. dollar assets, 18% Euro assets, 14% Japanese Yen assets, 11% British pound assets and 7% Singapore dollar assets. From the point of view of any single fiat currency, (i.e., the U.S. dollar), Libra’s value will fluctuate as exchange rates fluctuate and the underlying value of the assets in



the basket change. The Libra founders state that the reserve will not be actively managed, and will only be adjusted due to significant changes in market conditions. Importantly, users will not directly interface with the reserve, instead the reserve will be maintained by the Libra Association (more details below).

### **III. Libra Will Be Built on Blockchain Technology**

Like Bitcoin, Libra will utilize blockchain technology to verify transactions, to provide a secure record of Libra ownership, and to maintain a history of transactions. Bitcoin has proven the security and reliability of blockchain technology. In the 10 years since Bitcoin's launch, the authors of this paper are not aware of any security breaches *on the blockchain itself* despite completely open access for anyone with an Internet connection. There have been many highly publicized security vulnerabilities outside the blockchain (e.g., hacking of exchanges, hacking of personal computers, thefts of private keys, etc.).

Libra's blockchain technology is implemented through Libra Core, an open-source software that is freely available on github (<https://github.com/libra>). It utilizes best practices learned from other cryptocurrency projects including an updated Byzantine Fault Tolerance consensus protocol ("LibraBFT"), cryptography to ensure consumer privacy, and a new programming language ("Move") that allows developers to implement custom transactions and smart contracts.

Unlike Bitcoin, Libra will utilize a permissioned blockchain in the beginning. Libra's permissioned blockchain will restrict access for approving or rejecting transactions to an accepted list of validator nodes, the founding members of Libra. The use of validator nodes (as opposed to anyone validating transactions as is the case in Bitcoin) increases transaction processing speed and may assist in overcoming any unexpected difficulties in the early implementation of Libra. Critics have pointed out that the use of validator nodes means that Libra is not truly decentralized, but ultimately controlled by the founding members. Over time, the founders have stated they would like to transition to a permissionless blockchain to mitigate these concerns.

### **IV. Libra Founders Intend to Build an Ecosystem Around Libra**

Like Bitcoin, Ethereum and other cryptocurrency projects, the Libra founders intend to build an ecosystem of developers around the Libra blockchain. As of December 2019, one of the top priorities to ensure Libra's success is the cultivation of a community of developers that will build new products and features on top of the Libra blockchain. Key ecosystem components from other cryptocurrencies include digital wallets, developer tools, cryptocurrency exchanges, marketplaces, banking and lending products, and security services.

### **V. Libra is Governed by the Libra Association**

The Libra Association, whose members are the remaining founders of Libra, is an independent, not-for-profit organization based in Switzerland that is the governing body of the Libra cryptocurrency. The Libra Association is responsible for all major decisions with respect to Libra including:

- Adding or removing members of the Libra Association
- The initial supply of Libra at launch and its distribution
- The ability to mint (i.e., create) or burn (i.e., destroy) Libra after the initial supply is determined
- Any changes in the Libra protocol or cryptocurrency to satisfy regulators
- Approving the technical roadmap to launch Libra
- The composition of the Libra reserve and any adjustments in the event the market loses confidence in Libra
- The transition from a permissioned network to a permissionless network
- Resolving issues in the event the Libra network is hacked or compromised

In addition, members of the Libra Association serve as validator nodes that will approve or reject transactions on the Libra blockchain.

At the announcement in June 2019, Facebook and 27 other partners were founding members of the Libra Association. Subsequently a number of high-profile companies withdrew from the Association, including Visa, Mastercard, Stripe, and PayPal, given the intense regulatory scrutiny Libra has received. As of December 2019, the 21 founding members of the Association highlighted in the accompanying exhibit include Facebook, Coinbase, Andreessen Horowitz, Union Square Ventures, Uber, Lyft, and Spotify, among others. Each partner brings their expertise to the project including technology companies that know how to create global-scale networks and infrastructure, platforms that know how to build user-friendly and popular applications with millions of users, crypto-first companies that have deep subject matter expertise, and venture capital to support start-ups to build applications on top of the Libra network. Facebook's participation is through Calibra, a separate regulated subsidiary designed to ensure separation between Facebook's social and financial data. While Facebook has taken a leadership role in the development of Libra so far, it says its ongoing participation in the Association will be equal to that of other Founding members.



On October 14, 2019, the Association announced the composition of its Board of Directors and Executive Team. The Board of Directors consists of 5 members including David Marcus (the executive at Facebook that led the Libra project), Wences Casares (an early proponent of Bitcoin), Katie Haun (a general partner at Andreessen Horowitz which has been a leading investor in the cryptocurrency space), Patrick Ellis (General Counsel at PayU) and Matthew Davie (Chief Strategy Officer at Kiva). In addition, the Executive Team includes Bertrand Perez (Interim Managing Director and Chief Operating Officer, formerly of PayPal), Dante Disparte (Head of Policy and Communications) and Kurt Hemecker (Head of Business Development, formerly of PayPal).

Libra Association Board of Directors



David Marcus



Wences Casares



Katie Haun



Patrick Ellis



Matthew Davie



## B. Facebook's Relationship with Libra

Facebook is the first large multinational company to propose a broad-based cryptocurrency, and its global reach would provide Libra with a number of unique advantages.

### I. Facebook Has Unparalleled Global Reach and Practically Unlimited Funds to Make Libra A Success

Facebook's social media platform is larger than any other organization or collection of people that the authors of this report have identified. As of the third quarter of 2019, Facebook had 2.5 billion monthly active users and 1.6 billion daily active users on its social media platform and 2.8 billion unique users across all of its platforms. To put its user base in context, Facebook reaches more than 30% of the world's population every month. Facebook reaches more people than the Catholic Church (1.3 billion), the population of China (1.4 billion), and the population of India (1.3 billion).

In addition, Facebook has significant financial resources. As of December 2019, Facebook is one of the top 10 largest public companies in the world with a market capitalization of more than \$570 billion. In the third quarter of 2019, Facebook had \$52 billion of cash on its balance sheet.

### II. Facebook Has a History of Experimentation in Payments and Virtual Currencies

Facebook has made multiple attempts to incorporate payment services to its platform over its 15-year life. As shown in the exhibit below, growth in payments (especially with its successful WhatsApp India pilot in 2018) has been a key priority for the company.



Facebook's Payments Experience	
Initiative	Description
Facebook Credits (2009)	<ul style="list-style-type: none"> <li>Partnered with PayPal to introduce a virtual currency to purchase virtual goods on the platform</li> <li>Terminated in 2011</li> </ul>
Facebook Payments Inc. (Launched 2011)	Created a subsidiary focused on payments that is a licensed money transmitter in the United States
Facebook Marketplace (Launched 2016)	<ul style="list-style-type: none"> <li>Platform for users to buy and sell goods on Facebook</li> <li>Used by hundreds of millions of people</li> <li>Generates revenues by selling advertising</li> </ul>
WhatsApp Payments in India (2018)	<ul style="list-style-type: none"> <li>Beta version of a peer-to-peer payment service</li> <li>WhatsApp has 400 million monthly users in India</li> </ul>
Facebook Pay (2019)	<ul style="list-style-type: none"> <li>Allows users to send money to other users on Facebook, Instagram, Messenger and WhatsApp</li> <li>Built on the existing financial infrastructure; utilizes credit cards, debit cards, PayPal, etc.</li> </ul>

### III. Our View On Facebook’s Motivation: To Increase User Engagement and Revenue on Its Platform

Although Facebook cited the need to serve the unbanked population as its purpose for launching the Libra project, our view is that Facebook’s primary motivation is to increase its share price. Facebook’s user growth is plateauing, while its advertising business continues to grow and is incredibly profitable. Facebook needs to continue to drive traffic to its platform. Facebook’s efforts to integrate Libra with its platform and to develop the Calibra digital wallet will position it to capture significant benefits from the success of Libra. These benefits may be direct (i.e., incremental revenue streams from payments) or indirect (i.e., increased user engagement on its platform or better advertising algorithms).

### IV. Facebook is Committed to Working With Regulators on Libra and Will Have to Overcome Its Own Checkered History

Facebook has stated that it will not launch Libra without the approval of regulators. As discussed further in Section V below, there are significant regulatory hurdles that may be insurmountable for Facebook. Furthermore, Facebook faces skepticism from regulators globally due to recent controversies including Russia’s use of its platform to influence the 2016 election, its role in enabling violence in Myanmar, and the Cambridge Analytica scandal. Regulators may choose to oppose Libra simply to stop Facebook from having access to consumer’s social media and financial data.

### V. In the Event Libra Never Launches, We Believe Facebook Will Pivot Towards WeChat’s Model

China represents a \$40 trillion mobile payment market in which two platforms, WeChat Pay and Alipay, account for 90% market share according to CGAP.

Alipay was the first mover that enabled consumers to purchase goods on its various e-commerce platforms. Since WeChat is the most popular social media and messaging application in China with over 1 billion monthly active users, consumers rapidly adopted its complementary payments service. Importantly, WeChat Pay and Alipay are simple and convenient mobile payment solutions that utilize the Chinese Yuan. Neither company has endeavored to create its own cryptocurrency.

	 微信支付 WeChat Pay	 支付宝 ALIPAY
Owner	Tencent	Alibaba
Launch Date	2013	2004
Active Users	910MM	740MM

Similar to WeChat prior to the launch of WeChat Pay, Facebook may have the opportunity to monetize its leading social media platforms through mobile payments. If Facebook can become the dominant leader in mobile payments in the United States, it would increase user engagement on the platform and diversify its revenue outside advertising. Most, if not all, of its goals in launching Libra would be met with a solution that moves toward WeChat Pay. And such a solution would have all of the benefits from Facebook’s global reach. Therefore, Facebook is likely to continue to pursue a WeChat Pay model (e.g., see its recent launch of Facebook Pay) and still benefit even if the Libra cryptocurrency fails.

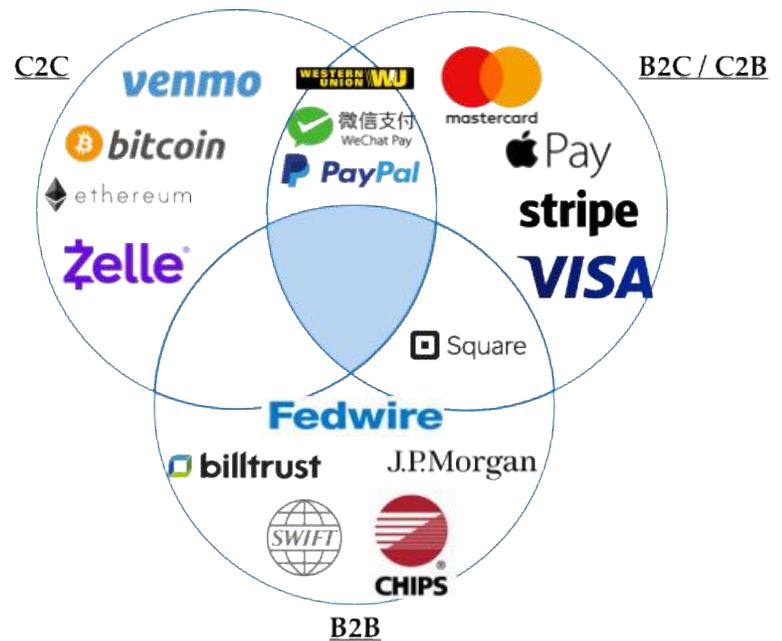
## C. Where Libra Fits in the Broader Payments Landscape

As a disruptive technology, Libra and the next generation of cryptocurrencies must convince consumers and businesses to adopt their product instead of the well-entrenched alternatives in the current financial system. As of December 2019, cryptocurrencies have struggled to gain market acceptance beyond a few committed early adopters. However, with companies like Facebook as promoters, the next generation of cryptocurrencies will likely appeal to more consumers.

### I. The Current Payments Landscape is Crowded and Many Disruptors Have Failed in the Past

As discussed in Section II above, consumers and businesses have many different options in the existing payments landscape. Some solutions focus more on consumer-to-consumer payments (e.g., Venmo), others on B2C and C2B payments (e.g., Visa, Mastercard, Stripe, etc.) and others on B2B payments (e.g., SWIFT, financial institutions, etc.). Established companies have been pushed to innovate in recent years (e.g., SWIFT gpi) to maintain their market leading position in the face of increased competition from alternatives like cryptocurrencies.

Caution is warranted when considering any new solution to disrupt the payments space given the number of failures over time. According to Morgan Stanley research, many past efforts have failed to gain widespread merchant acceptance including ISIS (from wireless networks), MCX (from large U.S. retailers), Apple Pay, Amazon Payments, Google Wallets, Chase Pay, Visa Checkout, and Mastercard.



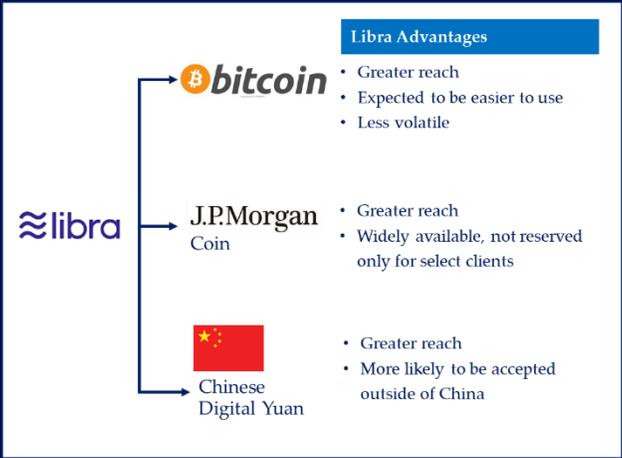
### II. Cryptocurrencies Do Not Have Consumer and Business Acceptance Today for Payments

As of December 2019, consumers and businesses do not utilize cryptocurrencies in any material way as an alternative to traditional payment solutions. Although there are a groups of institutional and retail investors that view cryptocurrencies as attractive financial assets (e.g., Bitcoin as digital gold), the use of cryptocurrencies as a medium of exchange (i.e., in the purchase of goods and services in the real economy) is limited. Efforts to increase adoption of cryptocurrencies have been hampered by a lack of convenience relative to traditional payment solutions, extreme price volatility, and the difficulty in understanding these products for those without a technology background.

### III. But Consumers and Business Are More Likely to Utilize the Next Generation of Cryptocurrencies

Libra is an example of the next generation of cryptocurrencies that may gain broader acceptance among consumers and businesses as payment alternatives. Libra's design improves upon many of the perceived deficiencies of the original cryptocurrencies like Bitcoin. Libra is being promoted by Facebook (an organization with unparalleled global reach), is expected to be simple to use, seamlessly integrated with Facebook's social media platform, and less volatile given it is backed by a reserve of assets.

The next generation of cryptocurrencies also includes initiatives from large financial institutions and governments. In February 2019, JP Morgan created JPM Coin, a digital coin that makes instantaneous payments using blockchain technology. JPM Coin is not a new currency itself, but rather represents U.S. dollars held in designated accounts at JP Morgan. Unlike Libra, JPM Coin will only be available to institutional clients of JP Morgan. In addition, China is reportedly close to launching a new cryptocurrency based on its currency, a digital Yuan. If it launches, China will be the first government with its own cryptocurrency and may lead other governments to consider their own state-backed cryptocurrency. Consumers and businesses will be more likely to utilize the next generation of cryptocurrencies in some fashion in the future given the significant investments from large institutions like Facebook, JP Morgan, China and others.



## IV. A Conceptual Framework for a Cost Benefit Analysis of Libra

### A. Benefits of Libra

The key benefits of Libra for consumers and businesses are highlighted in the exhibit below. If implemented as designed, Libra would provide the most significant and immediate benefits for consumers and businesses in C2C and C2B transactions. In B2B transactions, Libra's benefits will likely take much longer to materialize, but regardless of the timeline, Libra may provide indirect benefits through increased competition with existing payment channels.

Key Benefits of Libra vs. Existing Payment Channels	
<b>For Consumers on C2C and C2B Payments</b>	
Lower Fees	Lower fees on remittances
Increased Access	Better access for underbanked populations (anyone with a cell phone)
Convenience	Transferring money as simple as sending a text message
Less Volatile Cryptocurrency	Less volatile than other cryptocurrencies and some developing market currencies
Blockchain Benefits	Secure recordkeeping, smart contracts, etc.
<b>For Businesses on C2B and B2C Payments</b>	
Lower Transaction Fees	Lower fees to merchant vs. the traditional credit card / debit card payment channels
Expanded Customer Reach	Unparalleled access to a large, global user base (30% of World's Population)
Instantaneous Payments	Potential to lower working capital costs to businesses
Better Advertising & Interactivity	Additional insights into customer behavior; better targeted advertising and customer engagement
Blockchain Benefits	Secure recordkeeping, smart contracts, etc.
<b>For Businesses on B2B Payments</b>	
Lower Fees on Cross-Border Payments	Increased competition and potentially lower fees on cross-border transactions (directly or indirectly)
Instantaneous Payments	Potential to lower working capital costs to businesses
Blockchain Benefits	Secure recordkeeping, smart contracts, etc.

### B. Costs of Libra

The key costs of Libra for consumers and businesses are highlighted in the exhibit below. The magnitude of the costs for businesses will depend on the complexity of each business's payment systems. For large multinational companies, the cost to modify an ERP system could be \$1-3 million and the cost of modifying internal controls would need to be weighed carefully. Finally, this list *excludes societal costs* which may be considered by regulators. Such costs include systematic risks like the weakening of a country's monetary sovereignty.

Key Costs of Libra	
<b>For Consumers on C2C and C2B Payments</b>	
Increased Transaction Costs	Fees paid to exchanges to convert traditional currencies into Libra (and vice versa)
Lost Value Relative to Fiat Currencies	Losses incurred from holding Libra relative to traditional currencies due to price fluctuations
<b>For Businesses on C2B, B2C or B2B Payments</b>	
Increased Transaction Costs	Fees paid to exchanges or processors to convert traditional currencies into Libra (and vice versa)
Cost to Modify Internal Systems	Cost to adjust internal accounting or ERP systems to handle Libra payment
Administrative Costs for Internal Controls	Additional costs to ensure Libra is utilized in compliance with all laws in different jurisdictions
Lost Value Relative to Fiat Currencies	Losses incurred from holding Libra relative to traditional currencies due to price fluctuations
Cost to Mitigate Security Risks	Cost to ensure Libra holdings are secure and protected
Hedging Costs	Additional hedging on balances held in Libra

## C. Net Benefit / Cost of Libra

For businesses, the most pressing questions will be whether the benefits outweigh the costs, and whether the net benefit (benefits minus costs) provides a sufficient return on investment to justify adopting Libra. As of December 2019, these questions are unfortunately unanswerable given Libra's current stage of development. However, there are a number of important considerations to address including:

- Lower payment fees vs. increased transaction costs** – the most glaring issue for Libra is that the benefit from lower payment fees is directly countered by increased transaction costs in converting traditional currencies into and out of Libra. This is a fundamental problem for the use of many cryptocurrencies as payment tools. Ultimately this is an empirical question – for each transaction, Libra's lower fees relative to traditional payment options must be greater than the all-in cost to businesses for using Libra. In a scenario where Libra saves 1% in payment fees but costs 2% to convert Libra back to a traditional currency, the economics favor traditional payment options and merchant acceptance is likely to be low. In our opinion, it is certainly feasible that Libra's lower fees could outweigh the increased transaction costs – especially for credit card transactions (where fees can be up to 3.5%).
- Can Libra drive additional revenues for businesses?** Many of the cost benefit concerns would be alleviated if businesses believed that Libra and Facebook's platform could drive additional revenues by reaching new customers. If true, the business case for adopting Libra is significantly enhanced.
- The net benefit must be large enough to generate a sufficient return** – for businesses, the net benefit must be sufficient to justify the upfront costs in modifying its internal systems. Consider a sample scenario where a company saves \$0.10 per transaction on 1,000 transactions and it would cost \$10,000 to modify its internal systems. The net benefit in this scenario ( $\$0.10 \times 1,000 = \$100$ ) would not generate an attractive return on investment ( $\$100$  divided by  $\$10,000$  equates to a paltry 1% return on invested capital). But if the same company could sell 100 additional units at a \$10 profit (an additional benefit of \$1,000), the net benefit would generate an attractive return on investment ( $\$1,100$  divided by  $\$10,000$  equates to an 11% return on invested capital).

## V. Risks to the Launch of Libra

As of December 2019, there is considerable skepticism about whether Libra will launch. The most immediate concern is regulatory risk from various jurisdictions around the world. Central banks in the U.S., the European Union, China, the United Kingdom and other major countries are concerned that Libra may threaten their monetary sovereignty. The fact that regulators are so concerned about Libra is evidence of its potential for large scale adoption. The primary risks that Libra must overcome are highlighted in the exhibit below.

Key Risks for Libra		
Risk Category	Key Issue	Mitigant
1. Regulatory (Global)		
a. Monetary sovereignty	Libra must not be perceived as a threat to monetary sovereignty by Central Banks	Unclear - some amount of regulatory oversight by Central Banks
b. Money laundering, terrorism and bribery	Libra and its facilitators must comply with each jurisdiction's regulations	A detailed jurisdiction-by-jurisdiction strategy, protocol changes as required
c. Consumer protection and privacy	Libra and its facilitators must comply with each jurisdiction's regulations	A detailed jurisdiction-by-jurisdiction strategy, protocol changes as required
d. Tax compliance	Libra and its facilitators must comply with each jurisdiction's regulations	A detailed jurisdiction-by-jurisdiction strategy, protocol changes as required
2. Execution		
a. Blockchain development	A robust, scalable, and safe blockchain must be built	Challenging but feasible technologically
b. Building a developer community	A developer community of a critical mass to build an ecosystem to engage users	Many cryptocurrency projects have achieved this
c. Ensuring a competitive market in exchanges	High fees in exchanging traditional currencies for Libra would negate its benefits	The current market for cryptocurrency exchanges is highly competitive
d. Unforeseen Security Breaches	Resolving unexpected security breaches on or off the blockchain (e.g. Ethereum DAO hack)	Libra Association should have a strategy in advance
e. Unforeseen Stability Issues with Libra	Resolving major deviations between Libra's market value and the value of its reserve assets	Unclear - auditing of reserve assets, intervention by the Libra Association
3. Merchant Acceptance		
a. Costs to merchants	Additional costs required by companies to utilize Libra	Consumer demand
b. Merchant acquirer costs	Getting merchant acquirers to utilize Libra as a payment option for businesses	Consumer demand

## **VI. Looking Ahead: Libra's Potential Path to Widespread Adoption**

If Libra receives approval from regulators and launches successfully, the path to large scale adoption will start with consumers. Adoption in early consumer use cases will increase the likelihood of success in subsequent business use cases. A view of the path forward is discussed below.

### **A. It All Begins With Consumers and Global Remittances**

Libra is designed to be a fast, efficient and inexpensive medium of exchange that is optimized for cross-border payments. In developing Libra, the founders identified global remittances as a primary and immediate use case given the exorbitant fee structure that exists in the current system. As discussed in Section II, consumers send \$500 billion of global remittances each year and are charged 5.4% fees on average and as high as 20% in certain cases.

If Libra can deliver a solution with no or limited fees, it has a clear value proposition and would be attractive to a sizeable percentage of the global population. Facebook's platform and its 2.8 billion users would easily reach consumers interested in such a product. If Libra accounted for only 10% of the global remittances market, there would be \$50 billion worth of Libra circulating internationally.

### **B. Once Consumers Receive Libra, What Will They Do Next?**

If consumers begin using Libra for global remittances, what will they do with their Libra balances? If there is no other use for Libra, consumers would clearly exchange their Libra back into traditional currencies. But, if there was a convenient way to use Libra to buy goods and services on Facebook Marketplace or Amazon, consumers would likely prefer to hold balances of Libra for this purpose.

There are several reasons why consumers would prefer to hold Libra balances if they are able to use them to buy goods and services:

1. To avoid the extra step of converting Libra into a traditional currency (i.e., convenience)
2. To avoid any fees associated with converting Libra into a traditional currency
3. To take advantage of a more stable store of value (especially for countries with less stable currencies)

In this scenario, consumers would push businesses, especially global e-commerce businesses, to accept Libra as a payment tool.

### **C. For Businesses, Early Adopters Will Likely Meet Certain Criteria**

Libra will meet significant resistance in trying to convince businesses to use its product. Existing payment systems are well-entrenched – widely accepted by merchants, convenient, secure, and backed by powerful companies such as Visa. As discussed above, we believe pressure from consumers is necessary to force companies to consider Libra.

Ultimately, adoption from businesses will depend on the net benefit of Libra and will likely turn on whether Libra helps the business gain new customers. Therefore, early adopters will likely include (a) global e-commerce companies who receive a high volume of C2B payments and who can expand their customer reach through Facebook's network, (b) small and medium-sized enterprises with significant payment transaction costs (i.e., companies that do not receive the same benefits from the current system as large companies do), and (c) businesses seeking to experiment with blockchain technology.

## D.B2B Payments Will Be Last and Will Take Time

B2B transactions (e.g., a business paying its supplier) is the most difficult use case for Libra. A number of major hurdles includes exist including:

1. Slow pace of change in B2B payments (e.g., checks still represent a significant share of B2B payments largely because no solution has been adopted broadly, especially in small and medium-sized businesses where payment solutions may be too costly)
2. Availability – to facilitate B2B transactions, both parties to the transaction must be willing to transact in Libra
3. Libra liquidity – there must be a sufficient amount of Libra to facilitate large transaction sizes
4. Fierce competition from existing solutions (e.g., ePayables, same day ACH transactions, Visa’s new B2B Connect service, Mastercard’s Mastercard Track product, etc.)

However, if Libra gains market acceptance over time, companies with large volumes of cross-border payments may benefit from Libra. And if Libra becomes a solution that many small and medium-sized businesses utilize to transition from checks to digital payments, Libra could make significant inroads into B2B transactions.

## VII. Recommended Action Plan for CFOs Seeking to Evaluate Digital Currencies

The landscape of digital currencies and other payment innovations changes rapidly. In order to stay up to speed and understand how these technologies may benefit their business, CFOs should pursue the action plan detailed below. Like any other investment, CFOs should analyze Libra and other digital currencies using a strict cost-benefit framework. CFOs will ultimately need to assess the investment required to utilize Libra and analyze the return on invested capital for that investment relative to other opportunities.

### Recommended Action Plan

1. **Nominate a key person or team** – someone within the finance organization needs to be responsible for understanding the relevant digital currencies. Ideally an organization would create a cross-functional team to analyze the situation from multiple angles. Cross-functional teams should include someone with a technology background as well as someone within finance that understands payments and cash management.
2. **Fully understand your current payment processes and costs** – a CFO needs to understand exactly how payments are made within the organization. A variety of payment channels likely exist for paying and receiving payments from customers, suppliers, vendors, banks, shareholders, and others. A detailed mapping of payment channels and the cost of each of those channels are critical to understand where digital currencies may or may not be useful. In addition, we recommend a review of hedging procedures, exposures, and costs since digital currencies may require changes to these policies.
3. **Identify the requirements and costs of adapting current systems for digital currencies** – we recommend commissioning an analysis of the company’s current enterprise resource planning (“ERP”) systems or other internal control / accounting systems. The analysis should identify exactly what changes would be necessary in order to accept digital currencies, as well as the estimated costs and timeline. Ideally, vendors will be able to offer

insights from their experiences with other organizations who have gone through the same process and share the lessons learned from those implementations.

4. **Quantify the benefits and costs, and calculate a return on invested capital for this investment** – as discussed, benefits may include increased revenue, lower fees on transactions with consumers or vendors, reduced hedging costs, or other benefits. Costs will include any items identified in step 3 above, as well as additional procedures that will need to be put in place in different jurisdictions or additional hedging costs. Finally, the return on invested capital should be calculated (defined as after-tax earnings before interest and taxes divided by the total funding required) and must exceed the company's cost of capital and should be attractive relative to other potential uses of that capital.
5. **Monitor key developments in the space on a regular basis** – it is likely that many CFOs will not be utilizing this option in the near-term. Developments related to payments innovations should be monitored on a regularly basis (i.e., quarterly) to stay abreast of key changes in the space from multiple perspectives (e.g., regulators, digital currency platforms, your customers, your suppliers / vendors, etc.). It will be important for the team to identify the key development milestones they would like to see in order to accelerate analysis of this option.

## VIII. Conclusion

Libra is an example of the next generation of digital currencies that have distinct advantages over prior versions of cryptocurrencies that have struggled to achieve broad market adoption. Libra's advantages include support from Facebook and 21 founding organizations, network effects from Facebook's social media platform and 2.8 billion users, simplicity and convenience of use, lower price volatility since it is backed by a reserve of real world assets, open access for users, and scalability. Because of these advantages, Libra has received intense scrutiny from regulators, who now need to clarify exactly how digital currencies fit into their financial systems.

As of December 2019, there is considerable uncertainty about if and when Libra will be launched. In the event Libra is not launched, we believe Facebook will pivot to a payment solution utilizing traditional currencies, similar to We Chat Pay. Such a payment solution would retain all of the benefits of Facebook's global reach. In either scenario, CFOs should encourage competition from alternative technologies like digital currencies in order to exert pressure on traditional payment solutions to lower their cost to customers and improve their product offering. Furthermore, CFOs must have an action plan to stay on top of payment innovations that can help them manage costs and improve margins.