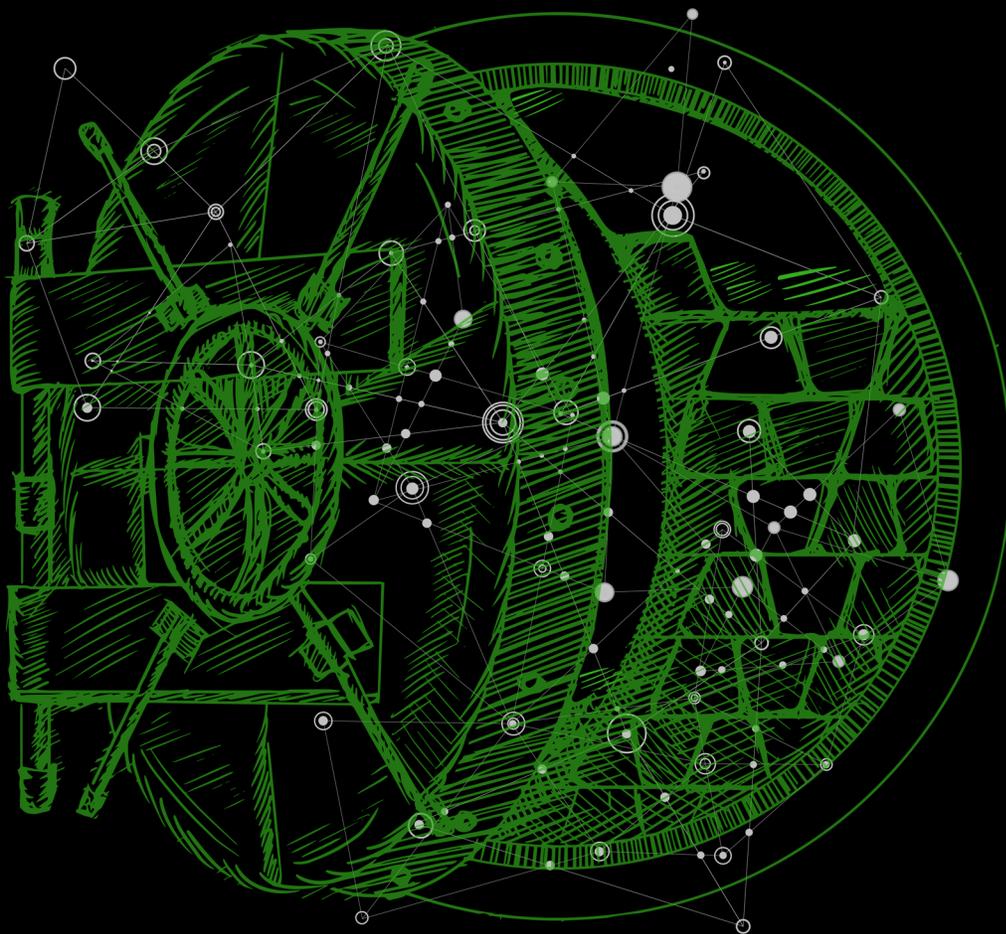


**Deloitte.**



**2019 Banking and  
Capital Markets Outlook**  
Reimagining transformation

Deloitte Center *for*  
**Financial Services**



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# Calmer waters

## A decade after the financial crisis, the banking industry is on firmer ground

The global banking system is not only bigger and more profitable but also more resilient than at any time in the last 10 years (figure 1). According to The Banker's Top 1000 World Banks Ranking for 2018, total assets reached \$124 trillion, while return on assets (ROA) stood at 0.9 percent. Similarly, tier 1 capital ratio as a proportion of assets rose to 6.7 percent, significantly higher than in 2008.<sup>1</sup>

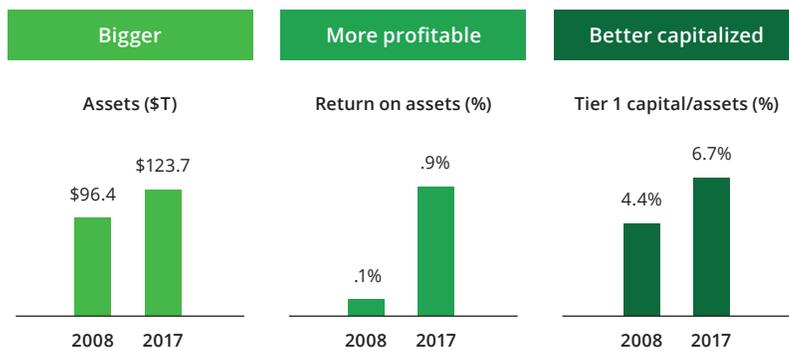
But the recovery since the financial crisis has not been uniform across regions. US banks, compared to their European counterparts, are ahead on multiple measures. Aggressive policy interventions and forceful regulations helped propel US banks to health more quickly. And more recently, favorable GDP growth, tax cuts, and rising rates have further bolstered the state of the industry.

Total assets in the United States reached a peak of \$17.5 trillion.<sup>2</sup> Capital levels are up as well, with average tier 1 capital ratio standing at 13.14 percent. Return on equity (ROE) for the industry is at a post-crisis high of 11.83 percent.<sup>3</sup> Efficiency ratios also are at their best. Similarly, on other metrics, such as nonperforming loans and number of failed institutions, the US banking industry is robust.

However, the same cannot be said of the banking industry in Europe. Structural deficiencies, overcapacity, low/negative interest rates, and the absence of a pan-European banking regulatory agency have all likely contributed to European banks experiencing persistent profitability challenges.

**Figure 1. Growth of the global banking industry**

In the last decade, the top 1,000 world banks have grown



Sources: Danielle Myles, "Top 1000 World Banks 2018," *The Banker*, July 2, 2018; Danielle Myles, "Top 1000 World Banks 2017," *The Banker*, July 3, 2017; Charles Piggott, "Top 1000 World Banks 2009," *The Banker*, June 24, 2009.

Many European banks have become smaller, retrenching from international markets and exiting former profitable businesses. Consider the fact that profits of the top five European banks dropped from \$60 billion in 2007 to \$17.5 billion in 2017.<sup>4</sup> However, European banks are showing some improvement. ROE for Western European banks in the top 1,000 world banks grew to 8.6 percent in 2017, compared with 5.5 percent in 2016.<sup>5</sup>

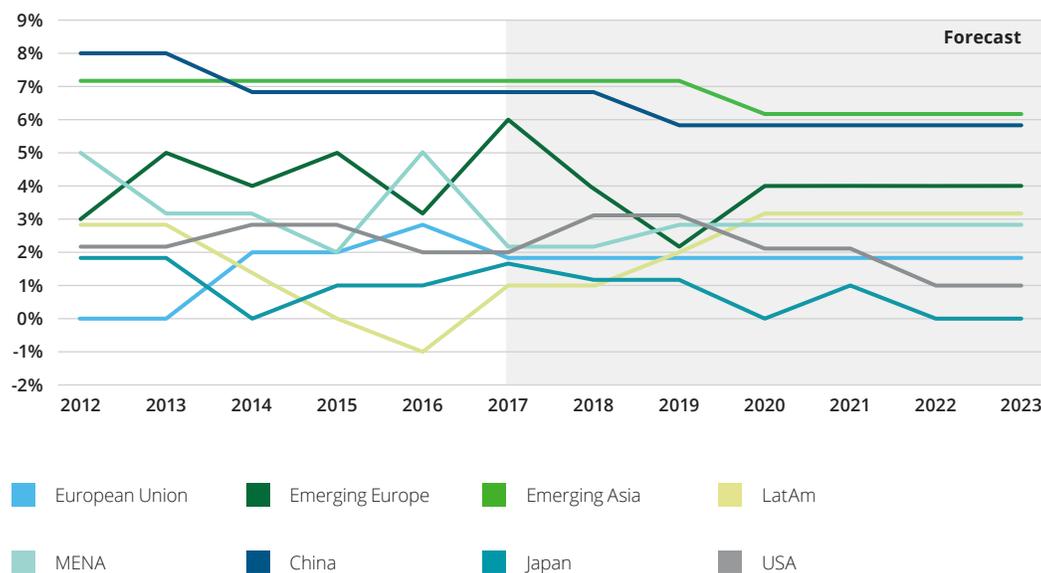
In the Asia Pacific (APAC) region, the growth of Chinese banks has been the most stunning development in the last 10 years. The Chinese banking industry has surpassed that of the European Union (EU) in terms of size. The world’s four largest banks in 2018 are Chinese; in 2007, none of the top 10 banks in the world were Chinese.<sup>6</sup> Chinese banks are also doing well in terms of profitability—the larger banks

reported a 15.3 percent ROE in 2017.<sup>7</sup> However, the concern with economic growth and the tariff war with the United States are already affecting prospects.<sup>8</sup> Meanwhile, Japanese banks, which escaped the financial crisis, have long suffered the effects of slow domestic growth and low/negative interest rates.<sup>9</sup>

Despite this overall optimistic picture for the global banking industry, uncertainties loom on the horizon. Real GDP growth forecasts from the International Monetary Fund (IMF) point to a deceleration in all regions, including China and Emerging Asia (figure 2). In the latest forecast, Deloitte economists are predicting a 25 percent probability of a recession in the United States in 2019. In this scenario, tariffs and dilution of the stimulus effect could weaken US economic growth in late 2019 or early 2020.<sup>10</sup>

**Figure 2. Real GDP growth by region, 2013–2023**

In the last decade, the top 1,000 world banks have grown



Source: World Economic Outlook, October 2018, International Monetary Fund.

And on the regulatory front, global divergence shows no signs of abating as governments continue to buck previous post-crisis trends of synchronization. To spur economic growth, local jurisdictions are increasingly implementing their own standards, sometimes in patchwork.

While net new regulations in the United States appear unlikely, the reprieve has largely been confined to smaller and midsize banks. Large banks, despite potential relief from the Volcker Rule, are expected to continue to operate under the same regulatory agenda.

In the technology arena, the promise of exponential technologies seems more real than ever. While the wild enthusiasm with blockchain has tapered off, the industry continues to sail toward a blockchain future. However, the energy might now lie with artificial intelligence (AI) and cloud, as they are already transforming many aspects of banking in significant ways.

But for any of these technologies to have maximal impact, data is key. Although data is plentiful, it is often not easily accessible, clean enough, nor integrated.

Meanwhile, the relationships between banks, fintechs, and bigtechs are evolving rapidly. Fintechs are increasingly no longer seen as scrappy adversaries—collaboration with incumbents is more the norm. With increasing industry convergence, the relationship between the banking industry and bigtech can be characterized as a bit guarded. Banks typically need bigtech, and in some ways bigtechs also need banks, as the banking industry remains a big revenue source for many technology companies.

Last year, we urged banks and capital markets institutions to accelerate their transformation, particularly digital transformation. No doubt many banks have embraced digital transformation across the banking and capital markets value chain.

But how much of this change is purposeful and strategic? Change for change's sake typically only begets disappointment. Banks should bolster their conviction and reimagine transformation as a holistic, multiyear process and "change how they change." The world is becoming too volatile, and external change is happening more rapidly than before. Taking a traditional approach in confronting these challenges may not work. "Change the bank" initiatives should move to the fore and could essentially become the new operating model for "running the bank."

This transformation should fundamentally start with banks reaffirming their role in the global financial system. What do they want to be in the next five or 10 years?

Banks should discard grand visions of becoming "a technology company" and instead focus on customers, enhance trust as financial intermediaries, facilitate capital flows, and provide credit to the global economy with data as the bond that sustains the amalgam of technologies—AI, automation, cloud, core modernization, etc.—best suited for the purpose.

Figure 3. Reimagining transformation in banking and capital markets



Source: Deloitte Center for Financial Services analysis.

**Future-proofing the business**

Our main message, though, is the following: There may be no better time than now to reimagine transformation. Economic fundamentals are stronger than at any time in the last decade. The regulatory climate is not going to get any more challenging. And, technologies to enable transformation are not only getting more powerful but also more readily accessible, easily implementable, and economical than before.

Indeed, there appears to be a new kind of promise in the banking industry.

We urge banks not to become complacent. The economic/ credit cycle is bound to turn at some point. Use recent fortunes to invest wisely, and pursue change with clarity and conviction.

In this report—the 2019 Banking and Capital Markets Outlook—we discuss the need for strategic transformation in the following areas in 2019: regulatory compliance, tax, technology, risk, privacy, and talent. We then lay out our expectations in seven primary business segments: retail banking, corporate banking, transaction banking, investment banking, payments, wealth management, and market infrastructure (figure 3).

# Regulation

## A new era of global regulatory divergence

Last year, we predicted a stabilization on the regulatory front after years of intense scrutiny by regulators around the globe. Much has happened since then. Growing divergence in global regulatory standards remains a fact. As countries look for ways to spur economic growth, many are increasingly showing a willingness to take a fragmented approach, bucking the previous trend of post-crisis synchronization.

In the United States, the focus on refining or even replacing existing regulations remains. A new bill, the Economic Growth, Regulatory Relief, and Consumer Protection Act, amending certain provisions in the Dodd-Frank Act was signed into law. Notably, the statutory systemically important financial institutions (SIFIs) asset thresholds for enhanced prudential regulations, such as stress tests and capital and liquidity ratios, were increased, giving the most relief to banks with assets between \$50 billion and \$100 billion.

As for the Volcker Rule, several changes are still pending. The proposal intends to modify the scope of applicability based on trading size, amend proprietary trading provisions, and simplify compliance reporting. It also offers some relief to foreign banking organizations (FBOs).<sup>11</sup>

The Community Reinvestment Act (CRA), requiring banks to serve the credit needs of their communities, may also be revised. The Office of the Comptroller of the Currency (OCC) has begun seeking public comment on ways to amend this act.<sup>12</sup>

The Department of Labor's (DOL's) fiduciary rule, requiring financial institutions to act in the best interest of their clients, was overturned, but a new best-interest rule from the SEC is still a possibility. Meanwhile, enforcement actions by the Consumer Financial Protection Bureau (CFPB) have declined. As of September 2018, the CFPB had announced only five enforcement actions since February 2017.<sup>13</sup>

While the pace of new regulations has decelerated under the current US administration, the role of the states may grow in prominence. As an example, California passed the Consumer Privacy Act of 2018, which establishes new data protection rights for consumers. Other states are likely to follow suit.

In Europe, the General Data Protection Regulation (GDPR), the first of its kind to provide sweeping data protections to EU citizens, will continue to reshape privacy and data ownership policies. Meanwhile, even though the implementation of Markets in Financial Instruments Directive II (MiFID II) has hit some speed bumps, the drive toward fee transparency will only accelerate. On the other hand, Payment Services Directive II (PSD2) has had the intended effect of promoting innovation and competition in payments.

Additionally, the European Commission (EC) continues to work on completing a single, harmonized regulation rulebook and on finalizing the banking union. However, it has faced headwinds in establishing the banking union because the global trading book capital standards it seeks to incorporate from the Basel Committee's Fundamental Review of the Trading Book are in flux.<sup>14</sup>

In the United Kingdom, as the March 2019 Brexit deadline rapidly approaches, much uncertainty remains. Many banks have already established contingency plans, possibly preparing for the worst—either a no-deal or hard Brexit. Depending on what ultimately happens, these plans could be put to the test.

In the APAC region, conduct and culture were high on the regulation agenda in 2018. China's banking regulators issued extensive guidelines on employee conduct management, while Malaysia's central bank proposed an accountability framework for senior officials in financial institutions.

In 2018, APAC regulators took a closer look at foreign investment and recovery and resolution planning. India's central bank, for instance, introduced a new framework for the resolution of stressed assets, and Hong Kong updated its recovery planning legislation in accordance with international norms.<sup>15</sup>

Meanwhile, in China, the historic step to merge banking and insurance watchdogs might help Chinese regulators better tackle the mounting risk in its financial system.<sup>16</sup>

Despite growing global regulatory divergence, regulators in the United States and abroad seem to be encouraging experimentation by fintechs and welcoming them to the fold.

The OCC announced in July 2018 that it would begin accepting fintech bank charter applications.<sup>17</sup> Meanwhile, the United Kingdom's Financial Conduct Authority (FCA) announced plans for a network of global regulators—dubbed the Global Financial Innovation Network (GFIN)—to establish a global regulatory “sandbox” that can foster innovation among technology companies.<sup>18</sup>

The Monetary Authority of Singapore is also taking a sandbox approach to fintech innovation. And, in Japan, the Financial Services Authority is considering a complete regulatory overhaul in response to the expanding influence of fintechs. These changes, if implemented, could have wide-ranging implications for traditional banks.<sup>19</sup>

With such a dynamic regulatory landscape, banks should buckle down and make compliance modernization a priority in 2019, focusing particularly on making regulatory systems already in place more efficient for business strategy. And, of course, throughout all compliance efforts, banks should prioritize soundness and safety.

# Tax: Strategic recalibration in the new equilibrium

**For the first time in many years, tax issues have come to the forefront for many globally**

One of the most notable developments has been the US Tax Cuts and Jobs Act, which has already had a meaningful impact on banks' financials. Without the lower tax rate, net income for the banking industry in the second quarter of 2018 would have increased by only \$5.6 billion year over year instead of the \$12.1 billion realized.<sup>20</sup>

Lower tax rates may also reduce the ROI for banks to invest in the tax equity market, such as affordable housing projects. Banks may need to recalibrate strategies to meet CRA requirements if ROI on affordable housing projects can no longer be justified. These decisions, no doubt, apply to all corporations, but banks tend to have less wiggle room due to regulatory capital and liquidity constraints.

Besides the tax cut itself, other important provisions that could affect banks include a deduction for foreign revenues called the foreign-derived intangible income (FDII) deduction; the global intangible low-tax income (GILTI) provision, which imposes an income tax on US taxpayers that generate excess income from foreign operations; and the base erosion and anti-abuse tax (BEAT), which disallows tax deductions for payments to foreign affiliates.<sup>21</sup>

Banks are now considering fixes through early 2019 until further guidance on these provisions is released by the Internal Revenue Service and the Department of the Treasury. In the long run, the tax changes should prompt banks to strategically rethink their business and operating models. Take, for instance, onshore vs. offshore resource deployment. With lower taxes in the United States, the financial rationale for offshoring may be less compelling—with the new tax regime upending core operating principles.

With the US shift in tax policy, governments elsewhere seem to have taken notice, and tax reform is now top of mind across numerous global jurisdictions. Finance ministers in the European Union in countries with historically low tax rates are contemplating the potential economic implications in light of these recent developments in the United States. In the interim,

the European Commission has proposed a digital tax on giant tech corporations that operate in the region in the fight for tax revenues.<sup>22</sup> And as regulatory divergence continues, some countries are also taking a deeper look at their own tax policies. Spain, for instance, is considering a new tax on its financial services sector.<sup>23</sup>

Tax reforms globally could also pressure countries in the APAC region. Corporate tax rates have declined over the years in countries like China, Singapore, and Taiwan but have remained elevated in other places like Australia.<sup>24</sup> To remain competitive in the new landscape, Australia and others might be compelled to reassess their tax rate structures.

Navigating the new tax realities will likely be no easy feat, especially for US banks. Banks will need to revisit decades-old decision criteria. More nimble institutions could go beyond direct effects to look at the second- and third-order implications, whether they relate to human capital or research and development.

A rigorous analysis of such impacts can happen only with the best modeling tools and quality data. Also, current general ledgers may not help track and process data required for many of the new provisions in the tax reform law. Companies might need to build new frameworks that can accommodate emerging data sources and modeling scenarios.

In many ways, as banks, particularly those with a global footprint, settle into the new equilibrium, there is a compelling need for a fresh way of thinking and organizing to make the most of the latest tax realities.

# Technology

## Creating a symphonic enterprise

In our 2018 outlook, we highlighted the hodgepodge of systems, platforms, software, and tools—much of it legacy infrastructure—as a key challenge for bank CIOs. This remains relevant for 2019 as well. Banks' success in digital transformation will ultimately depend on how strategy, technology, and operations work together across domains. We refer to this as a “symphonic enterprise,”<sup>25</sup> where different technologies and solutions are seamlessly meshed to create maximum value.

To achieve this, excelling at data management, modernizing core infrastructure, embracing AI, and migrating to the public cloud should take precedence in 2019 (see figure 4 on the following page).

But a key step in any of this digital transformation is getting a better handle on data to extract the greatest value from technology investments. No doubt many banks have established dedicated data management programs, but success up to this point seems modest at best.

The data challenge becomes more daunting as data integrity increases in importance. Regulatory expectations will further elevate the role of effective data management. PSD2 mandates that banks make customer data more accessible to third parties, while GDPR forces banks to ensure the privacy of their customer data. Not managing the conflicting priorities could raise operational risk for banks.

The challenge for many banks is that data, for the most part, is being managed in siloed, disparate systems, which complicates banks' ability to know and serve their clients.

Of course, core system modernization is not a new goal for many, so what is different now? As banks accelerate their digital transformation efforts, relying on a patchwork of archaic systems can pose significant risk. And, as banks consider adopting technologies like machine learning—and eventually blockchain and quantum computing—how well suited are existing systems to run, grow, and secure a modern digital bank?

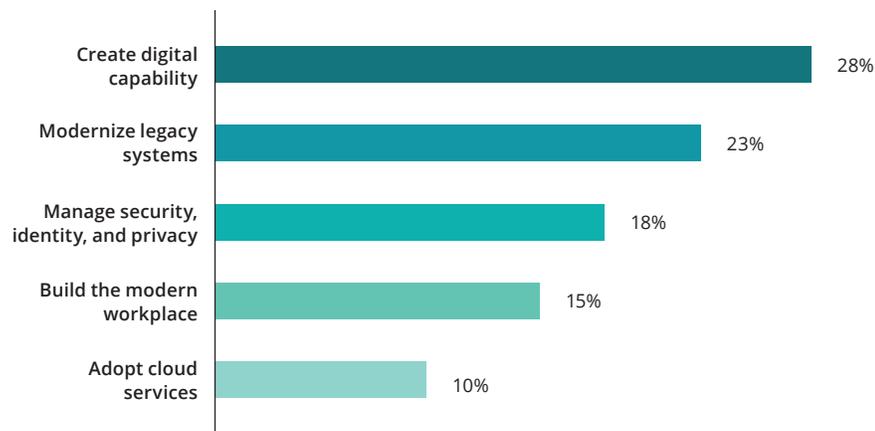
The good news is that more banks are taking the leap, but at their own pace. Some banks have completely replaced their legacy systems, while others, such as Nordea, are following their lead with multiyear modernization initiatives.<sup>26</sup> Others have eschewed the “rip and replace” method in favor of microservices and cloud applications, while gradually reducing reliance on the legacy systems.<sup>27</sup>

Multiple core banking systems can present an additional challenge: Which systems should be modernized first, and how? Systems that process high volumes of transactions, like core deposits and credit card platforms, will likely take significant effort to transform versus some lending platforms that might be easier to migrate. Key Bank, for example, chose to modernize its consumer lending platform to provide a better customer experience.<sup>28</sup>

In contrast, robotic process automation (RPA) and AI in banking are advancing rapidly, with RPA bringing productivity gains and AI enabling intelligent insights on customers, compliance, and operations.

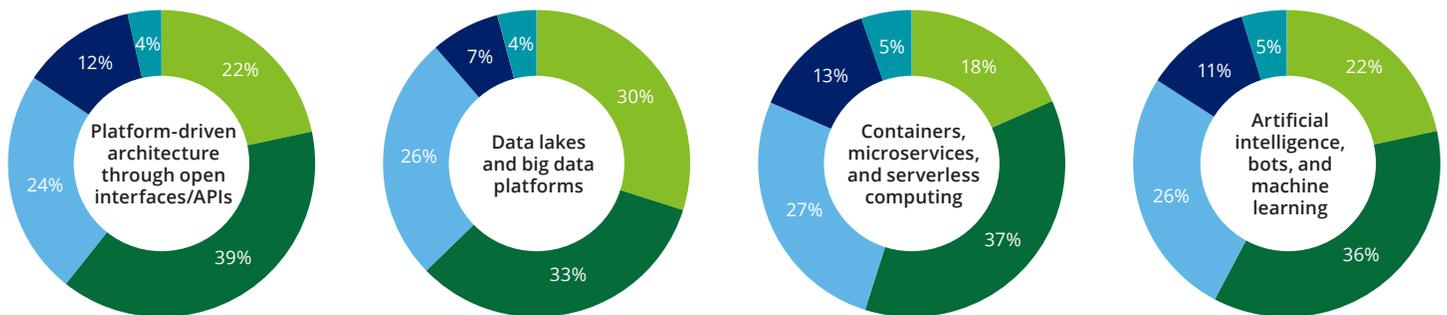
**Figure 4. Plans to use digital technologies**

Most important technology area to the organization



Plans to use digital technologies in the next 12 months

■ Fully deployed    
 ■ Trialing    
 ■ Planning    
 ■ Considering use, but no firm plans    
 ■ Not considering



Sources: ICT Enterprise Insights 2018/19 – Financial Services & Payments: ICT Drivers and Technology Priorities of corporate banks, retail banks, payments, and financial market firms, Ovum.

Totals may not add to 100 percent due to rounding.

We expect some banks and capital markets firms to begin monetizing their technology expertise as-a-service in 2019, turning cost centers into profit centers. For example, Nasdaq's SMARTS Market Surveillance solution, used by exchanges and regulators in 65 markets, analyzes traders' emails and instant messages along with transaction data to ensure market conduct.<sup>29, 30</sup>

We expect cloud will increasingly be viewed to deliver the following technology priorities: core modernization, data

management with storing and processing, and AI-powered analytics for effective decisions. Increasingly sophisticated and diverse offerings from cloud providers seem to be making public cloud migration an attractive option for many, not just for efficiencies but also for agility and scale. Capital One plans to move its core business and customer applications to the public cloud by 2021.<sup>31</sup> However, concentration risk of migrating systems to a single cloud provider and concerns about security are factors to keep in mind.

## Talent: With the future of work near, learning how to learn could be crucial



Banks should take a fresh approach to talent management to prepare for the **future of work**. Automation, the gig economy, crowdsourcing, and demographic shifts could significantly impact how work is done in the future. Automation goes beyond the elimination of routine tasks and cost cuts. Perhaps more importantly, it is about **creating value** for customers and meaningful work for employees by focusing on problem solving and creativity.



Context-agnostic capabilities, such as skills to design superior customer experience or managing change, could become more important than industry knowledge in banking of the future. In a Deloitte global survey of financial services executives, more than 50 percent reported that the capacity to anticipate change and evolving trends is important.<sup>32</sup>



This means banks should embrace "**scalable learning**" to remain competitive.<sup>33</sup> As machines do manual tasks, "learning how to learn" and learning fast can become competitive advantages. Problem-solving skills requiring intuition, creativity, judgment, persuasion, and empathy could command a premium in a machine-dominated world. The work environment needs to be redesigned to accelerate learning. Cross-functional, project-specific teaming should become more common in the future. Lastly, extending the frontiers of knowledge to others in the **ecosystem** should be a priority.

# Risk

## Strengthening the core with new-age defenses

The risk management function within banks appears to be entering a new stage in its evolution, as digitization, automation, and externalization gain ground. Banks in recent years have made notable advances in how they assess and mitigate risk across the enterprise.

However, current systems may be less equipped to manage emerging risks. Algorithms, for instance, enable smarter decisions, but their growing complexity and prevalence could be problematic.<sup>34</sup> Before such applications become the norm, risks from, and to, the algorithms, in addition to the ethics of AI, should be addressed at the design stage itself. Also, as more data is used in AI applications, concerns over data protection and privacy could escalate institutions' risk profile. Increased connectivity with third-party providers and the potential for increased cyber risk is another growing concern.

What's more, traditional risks will likely not subside anytime soon. Going forward, personal accountability is expected to be a key focus area in mitigating conduct risk, such as market abuse or leakage of consumers' confidential data. And amid rising geopolitical risk, most banks are increasingly concerned that cyberattacks from state actors could be potentially disruptive to the industry.<sup>35</sup>

To infuse a strategic mind-set into the risk management function, banks should reassess the roles and responsibilities of the first two lines of defense. The first line of defense (the businesses) should be willing to "own" risk management without too much "oversight" from the second line. Meanwhile, the second line (e.g., the compliance or risk function) should be a true "enabler" of business and be more strategic in its approach. In the United States, the Federal Reserve Board's guidance to extend risk ownership to business leads emphasizes the need for the first line of defense to proactively manage risk.<sup>36</sup>

"Smarter" risk management through the life cycle, especially in the early stages of risk identification and prevention, should be another focus area. This generally requires not only better technology and analytics to spot risks before they bubble up but also processes, preventive controls, and people to enable smart risk identification. ANZ has built a proof of concept that combines deep learning techniques with customer data to better assess risk—and do so on a more dynamic basis than the earlier static models.<sup>37</sup>

This can be equally applicable to cyber risk. Recent cyberattacks have indicated a need for many banks to understand their ecosystem and the inherent vulnerabilities that exist within their networks.<sup>38</sup>

While some banks have made good progress, the next generation of cyber risk management should consider a threefold approach: (1) Going back to basics by strengthening controls such as IT asset management,

patch and vulnerability management to spot and control risks as boundaries expand with cloud and open architecture; (2) applying analytics and AI at scale, while recognizing these technologies can also be used by bad actors—think of smart encryption algorithms and self-morphing/intelligent malware that can spiral out of control; and (3) building a resilient infrastructure to withstand systemic disruption and long periods of stress.

## Privacy: In a post-GDPR world, what should banks do?



Privacy has become a hot button for many reasons. Not only are policy makers introducing new regulations (like GDPR and California's Consumer Privacy Act of 2018), but also consumers are becoming more sensitive about their privacy. With each instance of data mismanagement in the news, consumers are demanding more transparency in how their data is collected, processed, and shared.



In response to GDPR, banks, like other organizations, have updated their privacy policies, but many remain out of compliance with the sweeping regulation.<sup>39</sup> Privacy policy updates could only be a short-term fix. Banks can lead the charge by rethinking privacy in a more holistic way, rather than merely meeting compliance requirements.



As banks use alternative data (biometric information, for example) and new technologies (like AI), privacy is expected to grow more complex. How do organizations protect consumer data while also providing consumers with services they need? Banks can reengineer the privacy equation and become stewards of customers' data assets as well.

# Retail banking

## The digital leadership race

### How is retail banking changing?

The positive economic environment across all regions has boosted banks' net interest margin (NIM) and loan growth in the first half of 2018. The total industry's NIM, globally, stood at 3.59 percent at the end of the first half of 2018, its highest in four years,<sup>40</sup> and customer loans grew by 7.84 percent.<sup>41</sup>

In the United States, most banks benefited from rising interest rates, loan growth, and tax cuts. Meanwhile, in other parts of the world, better cost controls and growth in loan demand boosted profitability.

The growing influence of fintechs and nonbanks seems an accepted fact now. Investment in online lending platforms by both startups and incumbents (e.g., Finn by JPMorgan Chase) is still significant. While it is unclear how many fintechs will apply for the OCC's new banking charter, this seems a sign of maturity in the industry as fintechs become part of the mainstream banking system.

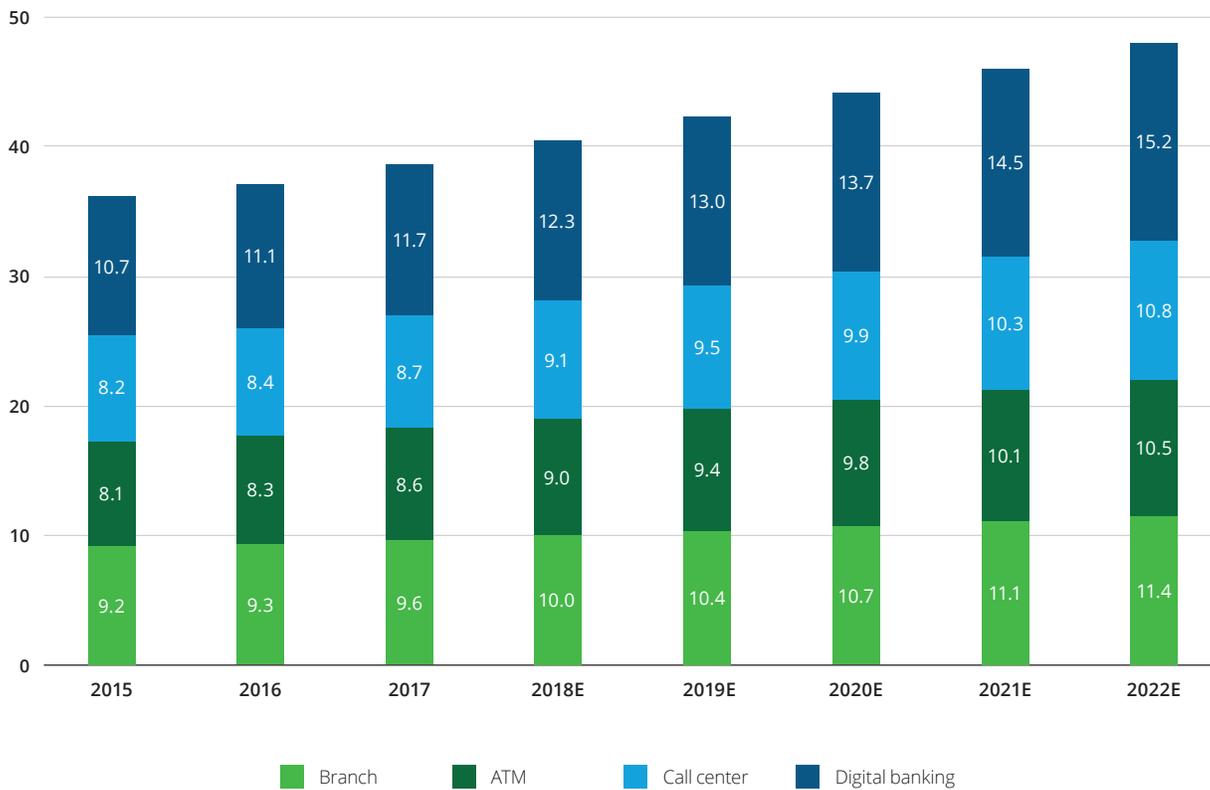
In Europe, PSD2 and the open banking standard are having the intended effects—spurring innovation and creating a more level playing field. But incumbents have not been caught flat-footed—they have responded well to the challenge. Encouragingly, open banking is catching on in other parts of the world, despite the lack of a regulatory mandate. And in the United States, banks are expected to test the waters in 2019.<sup>42</sup>

But, across the globe, the retail banking industry is fast embracing a mobile-centric customer experience, as we highlighted in our 2018 outlook. Investments in mobile technologies have increased meaningfully with Asia Pacific leading the world in the rapid adoption of digital banking due to consumers' constantly evolving demands.<sup>43</sup>

Meanwhile, consumers' experiences in other industries are upping the ante for most banks. Deloitte's recent global digital banking survey across 17 countries showed that banking consumers have a stronger emotional connection to technology brands like Apple, Amazon, and Google than to their banks. Some of these companies' ability to blend experiences from the physical and digital worlds<sup>44</sup> is considered a good model for banks.

In response, banks are deploying a mix of strategies to stay ahead in the game, including higher technology spending on channel improvement—branches, ATMs, call centers, and digital banking (figure 5). JPMorgan Chase (JPMC) has adopted "mobile first, digital everything,"<sup>45</sup> while Santander has four investments in the online lending space alone.<sup>46</sup>

**Figure 5. Retail banks' information and communications technology (ICT) spending on channel improvement, 2015-2022 (\$B)**



Source: ICT Spending, Ovum.

**What can we expect in 2019?**

Price competition in deposits is likely to increase due to higher rates, but a deterioration in credit quality is unlikely in 2019. A potential slowdown in 2020 or beyond could, however, alter the competitive dynamics.

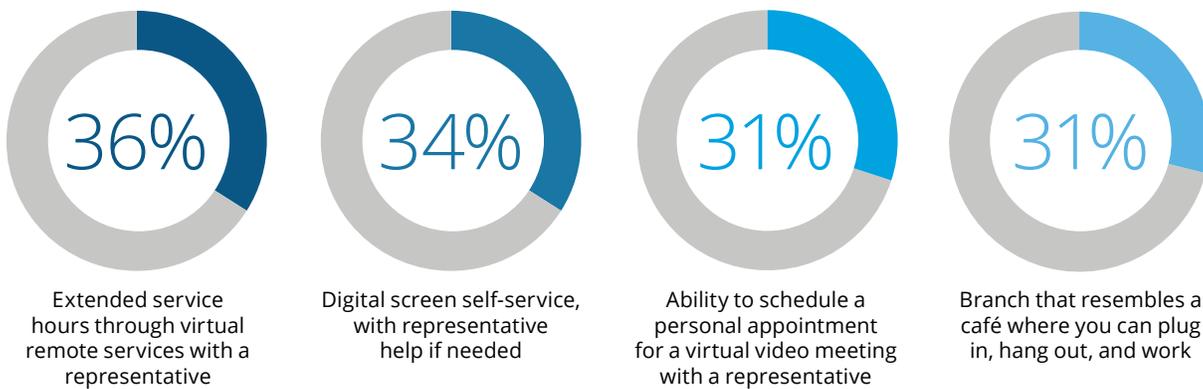
Banks are expected to become more active in the fintech space, either by launching stand-alone digital banks or through partnerships. Online lenders' growth in student loans, home equity, and personal loans can be expected as well. Fintechs now account for about 36 percent of personal loans originated in the United States by dollar volume.<sup>47</sup>

Another trend likely to gain momentum is partnerships with nonbanks. And as digital transformation spreads across the value chain—from origination to post-sale servicing—some

institutions could separate from the pack and leap forward. Such digitization initiatives can boost US banks' return on total capital employed from the current levels of 12 percent in 2017 to 18 percent by 2022 and will likely improve efficiency ratios by 350 bps over time.<sup>48</sup>

However, the importance of the branch in attracting and retaining customers, contrary to conventional wisdom, should remain. According to a recent Deloitte survey, branches will continue to have value, especially with greater digital enablement (figure 6).<sup>49</sup> The need to create a seamless omnichannel experience to improve customer experience (CX) has been around for some time. With the available technologies, retail banks are expected to make significant progress in operating in a fluid, post-channel world.

**Figure 6. Likelihood to increase branch use if the following features are offered**



Source: Deloitte Center for Financial Services analysis, "Accelerating Digital transformation in banking: Findings from the global consumer survey on digital banking," Deloitte Insights, October 9, 2018.

## M&A: A highly favorable environment for deal-making



Globally, the M&A environment in the banking industry is more favorable now than in recent years. Technology infrastructure, regulatory divergence, rising rates, and the fight for deposits will likely drive a new wave of M&A, particularly “transformative” M&A.



The dynamics, however, differ by region. In the United States, bank M&A activity, especially “deals of want,” are expected to gain further momentum, particularly as midsized banks in the \$10 billion to \$50 billion asset band scale up in response to the increase in the SIFI threshold. We might also see community banks merge with growth-oriented credit unions. Consolidation is anticipated especially in the regional bank space among those that are digitally challenged.<sup>50</sup>



Additionally, the large US banks, constrained domestically, may look for expansion opportunities overseas as they look to spend the extra cash from tax relief and favorable domestic business conditions. As competition in the fintech space ramps up, some of this cash may be deployed to acquire fintech startups as well.



In Europe, where the pace of financial recovery has lagged, capital-constrained institutions have been much slower in restructuring business models than their American counterparts.<sup>51</sup> European banks are facing an existential threat as larger US banks eat up investment and corporate banking market share.<sup>52</sup> And, considering other factors—overcapacity, persistent profitability challenges, record low interest rates, lack of consistent regulation across the European Union, and the rising risk from challenger banks<sup>53</sup>—the rationale for strategic M&A in Europe (“deals of need”) appears compelling. In other words, consolidation could be a matter of survival for many banks. However, political factors could weigh heavily in discouraging consolidation of the banking industry in Europe, both within and across countries.



The M&A picture seems different in Asia, where many banks are pursuing growth overseas in an increasingly competitive environment.<sup>54</sup> Activity has increased particularly in the Southeast region, where conditions appear ripe due to marked regional government and regulator support for foreign banks. Mitsubishi UFJ Financial Group (MUFG), for instance, has recently been increasing its bank alliances in Vietnam, Thailand, Indonesia, and the Philippines.<sup>55</sup>

# Corporate banking

## Digitization and a new credit discipline

### How is corporate banking changing?

Global corporate lending is on an upward trajectory, with the Americas region leading growth.<sup>56</sup> Revenue from corporate lending grew by 19.5 percent in the Americas from 2015 to 2017. In contrast, corporate lending in the EMEA region declined by 0.8 percent. With American firms increasing their market share, EMEA corporate lending has stagnated as the pace of economic recovery remains uneven. The APAC region, meanwhile, saw corporate lending increase by 5.8 percent in revenues. As Asian markets expand, the competitive dynamics and opportunities within APAC's corporate banking landscape have significantly increased.

Corporate lending in the United States seems to be benefiting from currently relaxed credit standards. According to the July 2018 Senior Loan Officer Opinion Survey, US banks' lending standards on C&I loans have relaxed since 2005.<sup>57</sup> Similarly, the OCC in its latest Semiannual Risk Perspective also highlighted the easing in commercial credit underwriting practices. The 24 percent increase in the number of outstanding matters requiring attention (MRAs) related to commercial credit underwriting from the first quarter of 2017 through the first quarter of 2018 suggests there could already be a problem with relaxed credit standards.<sup>58</sup>

Similarly, terms for leveraged loans have also become more borrower friendly, causing the leveraged loan market to surpass \$1 trillion, rivaling the size of the junk bond market.<sup>59</sup>

### What can we expect in 2019?

Competition for corporate loans is expected to intensify in 2019, along with further easing in credit underwriting standards in the first half of 2019. But given the higher likelihood of a downturn in the next several years, banks should adjust their risk appetite accordingly in 2019. To alleviate this risk, banks should strengthen their specialized lending expertise, which, if executed well, can result in a superior ability to screen, value collateral, structure loans to minimize potential losses, and manage the workout of problem loans. Smaller regional banks, especially, could stand to benefit from this focus.

On the modernization front, corporate banks in 2018 prioritized streamlining front-end operations, as anticipated. Looking ahead, the next big opportunity for innovation will likely be in the back office, such as servicing and default management. Also, corporate lending arms at banks could learn from fintechs' use of AI and alternative data for faster underwriting decisions.

Corporate banks that modernize their operations could be better prepared to seize opportunities in the expanding middle market, where revenue is projected to grow by 6.7 percent in the next 12 months.<sup>60</sup> As banks continue optimizing their cost models, the middle market could become a more attractive source for fee income and loan growth.

Finally, corporate banks should consider the role of the "banker," a position likely to evolve with automation and increased competition from banks and nonbanks alike. The most successful bankers might not be generalists; instead, they will likely specialize in specific industries, solutions, or client segments to add value and insights through unique hard and soft skills that AI cannot yet replicate.

# Transaction banking

## Modernizing operations with a focus on improving the client experience

### How is transaction banking changing?

The transaction banking industry continues to be a stable contributor to banks' topline growth. Meanwhile, revenues in custody and asset services in the United States are expected to increase to \$33 billion in 2018, a growth of 5.3 percent from 2017.<sup>61</sup> But in trade finance, competition from local players continues to challenge revenues at the top banks, despite steady trade volumes and a huge trade finance gap.<sup>62, 63</sup>

However, despite the seeming stability in many of the transaction banking businesses, some fundamental forces appear at play.

First, the nature of client demand seems to be shifting rapidly. Clients are increasingly expecting bespoke, value-added services, such as seamless connectivity and proactive intelligence. Corporate treasurers, for instance, tend to be seeking more sophisticated risk management solutions to manage credit, operational, and cyber risks.

Technology infrastructure should also be modernized. Using reconciliation as an example, many banks are still performing manual, inefficient processes despite previous attempts to automate. To address this problem, BNP Paribas successfully completed a pilot for an end-to-end fund distribution transaction on blockchain<sup>64</sup> and automated security transfers in the custody business.<sup>65</sup>

While many transaction banking businesses enjoy high barriers to entry, this has not prevented fintechs from entering these businesses—consider London-based fintech firm Kantox growing in the foreign exchange market.<sup>66</sup>

Lastly, geopolitical concerns, such as Brexit, trade wars, and global divergence in regulatory expectations, seem to remain top of mind for transaction banking executives.<sup>67</sup>

### What can we expect in 2019?

Although current protectionist policies and geopolitical frictions may not materially hurt global trade volumes, they could open new trade corridors within the Asia Pacific region

in 2019.<sup>68</sup> If this were to happen, banks in Asia may be best positioned to pick up financing of the redirected trade volumes.

In cash management, developments such as SWIFT's global payments innovation (gpi) standards will likely strengthen the business case for faster and more transparent cross-border payments. However, with faster payments, corporate treasurers, for instance, will want their banks to provide more dynamic reporting of liquidity positions and forex exposures in place of today's end-of-day reporting practices.<sup>69</sup> Similarly in prime brokerage, hedge funds wanting to trade cryptocurrencies could be looking for clearing, settlement, and custody solutions from their prime brokers in the OTC market. Citigroup is in the early stages of building a crypto custody solution for its institutional customers.<sup>70</sup>

Catering to customer needs typically requires a multipronged client-centric approach. For example, Deutsche Bank brought together its clients and product developers in its North Carolina office to better understand clients' pain points and technology solution requirements.<sup>71</sup> Acknowledging the limitations of its legacy system, the bank collaborated with fintechs to address clients' needs.<sup>72</sup> The bank is also a participant in the SWIFT gpi initiative, where it plans to use cloud and open APIs for real-time payments and reporting.<sup>73</sup>

As noted in a last year's report, automating existing processes is not enough. Instead, banks should empower clients to serve themselves when and how they desire.<sup>74</sup> This message might bear repeating as banks ramp up modernization.

As with other banking products, incumbents are expected to expand the use of blockchain, RPA, and AI technologies and better data management in both the front and back offices in transaction banking. In July, State Street launched AI-based news feeds to help clients in its asset servicing business with their investment decisions.<sup>75</sup>

# Investment banking

## New client engagement models and ecosystem orchestration

### How is investment banking changing?

The global investment banking industry has yet to find its footing after the financial crisis. However, the industry seems to be inching back to normalcy, in terms of capital adequacy and profitability. For the first time since 2012, revenues in both trading and advisory businesses will have increased in 2018.<sup>76</sup>

Business is good on several fronts: Global M&A activity reached \$2.1 trillion in the first half of 2018, a 36 percent year-over-year increase. Cross-border M&A deals also set a record.<sup>77</sup>

The recovery in fortunes, however, has not been uniform—the global dominance of US banks continues. For instance, the top spots for M&A and equity and fixed-income underwriting were held by US banks. In fact, among the top global investment banks, US banks' market share has increased from 49 percent in 2010 to 58 percent in 2017.<sup>78</sup>

But geopolitical uncertainty from trade wars, the US midterm elections, and Brexit could weigh on the investment banking industry, even as the regulatory climate seems less ominous. In Europe, MiFID II's impact appears to be marginal.<sup>79,80</sup> And, globally, investment banks are preparing for LIBOR's replacement in 2021 (see sidebar on page 21).

Meanwhile, most investment banks are going full throttle on a variety of digital transformation efforts to contain costs and improve customer experience. However, many operational inefficiencies still remain, and the business models at most banks generally remain the same.<sup>81</sup>

Overall, a subtle yet fundamental change appears under way in investment banking. The balance of power seems to be shifting to the buy side, especially to the large institutions.<sup>82</sup> Commoditization, price competition, and growth in market clout have bolstered clients' negotiating power. Until recently, investment banks could count on their balance sheets, product breadth, global scale, market-making prowess, and reputation to attract clients and

command price premiums. But the post-crisis economics and the rapid spread of digitization seem to have altered the competitive dynamics significantly—with many of the earlier differentiators becoming less potent.<sup>83</sup>

The economic realities across the trading life cycle continue to put pressure on many institutions. While much has been done already in rationalizing business models and ramping up efficiencies, the vestiges of old operating models are still visible, even at the most mature institutions.<sup>84,85</sup> Unfortunately, the journey is not complete. There is still room to simplify the core.

### What can we expect in 2019?

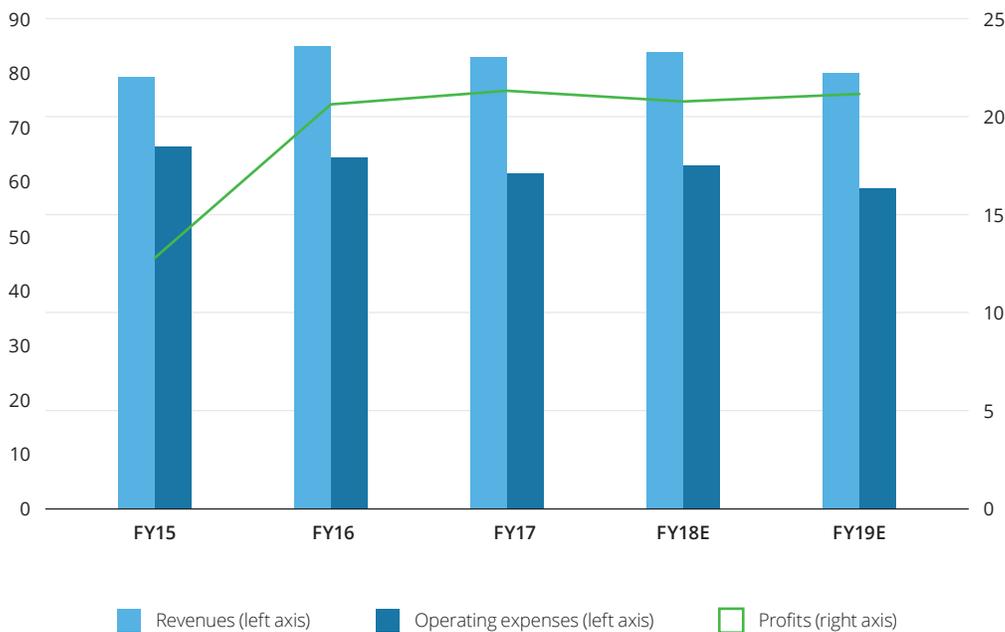
2019 could turn out to be a pivotal year in investment banks' transition to become simpler and leaner, yet stronger, franchises. Meaningful changes are expected on many fronts.

First, trading arms should get their FICC cost base under control (figure 7); although some progress has been made in rationalizing expenses, the job is not complete. For instance, in 2017, staff costs dropped sharply, partly as a result of continued cost-reduction efforts, but these savings have been offset by new technology investments. This trend is expected to continue for some time.

But more strategically, a fundamental rethinking of the client engagement model should be considered: a pivot from product orientation to a client-centric, bespoke delivery of services, and orchestrating solutions from others in the ecosystem. This new engagement model would empower clients through seamless connectivity, self-discovery, and "intelligent" delivery of insights.

The simplification path will entail a sharper focus on who to serve, what to offer, and how—essentially the clients-products-solutions matrix. To execute on this new vision, investment banks should think more broadly about using third parties and utilities for noncore activities. This would require greater agility.

**Figure 7. Performance of FICC businesses (\$B)**



Source: Tricumen forecasts of aggregate performance of 13 major US and European investment banks.

Banks have been at the forefront of digitization for a while now and continue to spend billions of dollars in modernizing their technology infrastructure.<sup>86</sup> This trend is picking up even in areas that have been averse to automation in the past, like fixed-income trading. Examples include Goldman’s bond-pricing engine that can handle transactions of up to \$2 million without a human touch,<sup>87</sup> Credit Suisse’s Clive, which automates small trades,<sup>88</sup> and AllianceBernstein’s latest Abbie algorithm, which handles about 35 percent of its bond trades.<sup>89</sup>

Sell-side firms can use AI and machine learning for more sophisticated uses beyond efficiency improvement. Embedding increasingly intelligent systems into trading algorithms, pricing engines, and risk management systems should be a key focus area, particularly in FICC and derivatives trading.<sup>90</sup> And, as with other areas within banking and capital markets, public cloud adoption could boost digitization efforts across the board, particularly for noncore processes.<sup>91</sup>

Becoming a true client-centric operation cannot happen without excelling at using multiple sources of data and applying rigorous analytics to generate client insights across the life cycle. Competitive advantage will accrue not merely from having the most advanced trade execution technology but also predictive analytics to help solve clients' problems.

So, what is the future state of investment banking? While the exact state might differ by institution, one thing that seems quite certain is that in five or 10 years, the investment bank of the future will likely be simpler, leaner, and more agile: simple in the sense that it will simplify business processes across the value chain and chop off any layers of complexity that do not directly support the core mission of being client-centric.

## LIBOR: The likely path ahead in the LIBOR transition

**LIBOR—one of the world's most-referenced financial benchmarks—might cease to exist in 2021. As a result, financial institutions and regulators have been working feverishly to design replacements.**



The desire for transaction-based LIBOR alternatives is a global phenomenon. In the United States, the New York Federal Reserve began to publish the Secured Overnight Funding Rate (SOFR), as an alternative to USD LIBOR, in April 2018. In other regions, replacements include the Sterling Overnight Index Average (SONIA) in the United Kingdom, the Swiss Average Rate Overnight (SARON) in Switzerland, the Tokyo Overnight Average Rate (TONAR) in Japan, and the Euro Overnight Index Average (EONIA) in the European Union.



Dealing with multiple reference rates—for different markets/currencies that are not uniform in that they may be secured or unsecured, with differing underlying references, and in varying stages of implementation—will likely increase complexity for financial institutions operating globally.



Of course, before the alternative reference rates are adopted, a robust term-rates market needs to exist for most financial transactions. And, although documentation citing these alternative rates is beginning to take hold for new financial contracts, revising the language for legacy transactions could be one of the thorniest challenges.



As such, the transition to alternative reference rates globally seems fraught with risk and uncertainty. Financial institutions will need to contend with many operational, accounting, technical, governance, and other issues. We expect banks and their clients to accelerate their efforts to gear up for the transition in 2019. They should assess the impact LIBOR has on their businesses and design a transition plan. A successful transition will likely require involvement from a wide range of stakeholders.

# Payments

## The imperative to diversify growth, bolster security, and restructure the organization

### How is payments changing?

Payments continues to be one of the most disruptive and dynamic banking businesses. Innovations spanning the spectrum from incumbents to fintechs alike are reshaping the payments landscape, boosting customer expectations, and intensifying competition globally.

With friction endemic in almost every legacy payment system, the search for frictionless digital payment experiences continues. PayPal, for instance, crossed 250 million active users worldwide.<sup>92</sup> Apple Pay and Amazon Go<sup>93</sup> are bringing in new users rapidly. Similarly, in China, Tencent and Alipay are setting new records for digital payment transactions.<sup>94</sup> In fact, contactless in-store payments are expected to total \$2 trillion globally by 2020.<sup>95</sup>

Meanwhile, payment modernization efforts in the form of new rails to process faster/real-time payments (RTP) continue to gather steam in many countries, including Australia, Canada, and the United States. Also, regulations encouraging competition and innovation, like PSD2, are fostering new account-to-account payments solutions<sup>96</sup> and challenging existing payment rails.

Payments is also attracting more capital and M&A globally (figure 8). Adyen's \$1 billion initial public offering in Europe<sup>97</sup> and PayPal's acquisition of iZettle to expand its in-store payments<sup>98</sup> are two such examples.

**Figure 8. Payments is a hotbed of investments and M&A**

	1H 2018	FY 2017
 Venture capital funding	\$15.3B 55 deals	\$2.7B 131 deals
 Payments processing M&A	\$43.2B 67 deals	\$31.2B 73 deals

Sources: Venture Scanner data, Deloitte Center for Financial Services analysis for venture capital funding. Dealogic data for payments processing M&A.

These disruptive innovations are forcing incumbents to respond to a fundamental business reality: how to maintain revenue growth and profitability and withstand product commoditization.

### What can we expect in 2019?

Driving volume-based fee growth in payments is expected to become increasingly challenging for card issuers in 2019. Cheaper digital solutions from nontraditional players and expensive reward programs may make it difficult for card issuers to increase fee income.<sup>99</sup> However, focusing on growing the card portfolio for its predictable interest income is still paramount.

Furthermore, incumbents are expected to differentiate customer experience in areas fraught with friction—cross-border payments and B2B payments being prime examples. For example, Visa recently acquired Freedom, a software-as-a-service solution,<sup>100</sup> to expand in the growing B2B payments space.

Ancillary services should be another focus area. Data-driven insights to help merchants and consumers in their decisions should be valued, such as Mastercard's tool to analyze retailers' purchase data to determine new store locations.<sup>101</sup>

Growth of faster payments is likely to be sluggish in the United States due to the absence of a regulatory mandate and a burning consumer need in the retail market. However,

in business payments, demand for low-cost RTP solutions is likely to be stronger, given current inefficiencies and the size of the float volume. Therefore, US payment providers, both large and small, should refine their value proposition and go-to-market strategy in RTP solutions in 2019.

Faster payments could also amplify the need to balance convenience and speed with security. Account takeover fraud (prevalent in digital payments) has replaced counterfeit card fraud (common in physical payments) as the top fraud type.<sup>102</sup> Also, more merchants could begin accepting new payment forms, including cryptocurrencies and tokens, in which incumbents currently have limited risk management experience. Behavioral biometrics and AI should be used alongside physical biometrics to step up dynamic authentication. Royal Bank of Scotland began collecting behavioral biometrics data for its wealthy clients two years ago and has now expanded the scope to include all retail and commercial customers.<sup>103</sup>

Unlocking the full value of data in designing new services or strengthening security may be difficult unless there is a concerted effort to bring together disparate data across different business lines and systems, however. Therefore, incumbents should consider restructuring their organizations around customer solutions rather than products. This could improve organizational agility and enhance customer experience.

# Wealth management

## Balancing business growth with product rationalization and transparency

### How is wealth management changing?

Wealth management remains one of the best-performing businesses for banks globally. Fueled by positive macroeconomic trends, robust stock market performance, continued movement toward fee-based vs. transaction-based relationships, and favorable demographic shifts, wealth management businesses have achieved impressive top- and bottom-line performance.

Demographic trends are adding to this optimism. Maturing populations in advanced economies are contributing to a greater desire for wealth preservation and intergenerational wealth transfer. In Asia, the burgeoning entrepreneur class is expanding the ranks of the wealthy at a rapid clip. Although growth may vary by region, the ultra-high-net-worth (UHNW) client segment is expected to expand meaningfully—9 percent by total assets over the next decade.<sup>104</sup>

While digital advice platforms are capturing a greater share of assets, the existential threat from robo-advisers and other fintech players is slowly vanishing as attention has shifted to how banks can embed digital advice more seamlessly into their current offerings.

On the regulatory front, in the United States, even though the DOL's fiduciary rule has been overturned, the SEC is floating a best-interest standard for comment. Globally, regulators continue the march toward a fiduciary advice model.

In the product area, the shift toward zero-/low-cost products and the push for greater fee transparency are changing market dynamics significantly. Responding to new entrants that offer a feeless trading service, such as Robinhood and eToro, incumbents are getting into the act. JPMorgan recently launched a digital investing service You Invest that includes 100 free trades in the first year.<sup>105</sup>

### What can we expect in 2019?

Wealth management business at banks is expected to continue to drive growth in 2019, given secular demand, brand equity, and scale. Revenue for the largest global wealth managers is estimated to grow at four percent CAGR for the next two years.<sup>106</sup> While much of the profitability might still come from the high-net-worth (HNW) segment, asset growth from digital platforms and low-cost service offerings should add to the revenue mix.

However, the prospect of a market slowdown, growth of digital advice platforms, regulatory uncertainty, the drive toward low-cost options, and the push for greater price transparency would create a challenging environment for banks' wealth management units. As a result, businesses cannot be complacent and should leverage these good times to fund internal investments and drive the transformation of their business.

Robo-advice will continue to bring new customers into the advice market, even mass-market customers with limited assets. JPMC's new offering, which combines You Invest with Acorns and robo-advice,<sup>107</sup> is likely the future model of digital advice for the mass market. This could be an important shift in how different solutions are bundled (low-cost trading platform, savings tools, and advice engine). This could be revolutionary in the sense that advice would become the core of all consumer financial relationships, even with mass-market customers. It might no longer be checking or current accounts.

Wealth franchises should invest in improving customer experience and expanding the product suite to include goal-based advice, tax strategies, and estate planning. This could be just as important as investment performance to sustain growth.

The move to fee-based relationships brings steady and predictable revenue along with more scale and simplicity. However, it raises the risk of operating a fiduciary business along with the transaction business. On the product side, to fight fee compression, focusing on a larger share of “discretionary mandates” (with wealth managers having more discretion to manage assets) with higher margins could be important.

In response to customer demands and regulatory expectations, wealth managers could be forced to rationalize their product portfolios and boost price transparency. Startups such as Bloom, ForUsAll, and Guideline are intensifying the competition through clear fee structures.<sup>108</sup>

Banks are expected to make significant investment in data management, analytics, and AI to improve both the customer and adviser experience. Also, real-time forms, identity verification, and video chat/recording compatibility that improve onboarding should become a standard in wealth management. REACH, a fintech that enables organizations to close transactions remotely by verifying clients’ identities and getting their signatures on documents in real time, while video recording the whole session, is an example of this.

We also expect wealth units to invest heavily in enterprise governance, risk, and compliance (eGRC) platforms. Modernizing core processes such as fee and expense calculations, account reviews, investment guideline management, supervision, and surveillance should be another priority.

While the needs of the different wealth segments—UHNW, HNW, and mass affluent—are expected to continue to vary, there is one commonality in how automation/digitization is impacting them all: Blending high-touch/personalized services with low-touch/automated interactions could be key to improving CX and also maintaining profitability.

Lastly, the importance of trust and security, regardless of the segment, is expected to continue, especially as automation, cloud, and open banking take hold.

# Market infrastructure

## Harnessing the power of data and technologies to drive a competitive growth agenda

### How is market infrastructure changing?

Consolidation in the last few years has resulted in a few institutions dominating the market infrastructure industry, especially the exchanges. With declining revenues from transactional services, exchanges in the United States, Europe, and Asia Pacific have been diversifying revenues, especially in the market data space, the highest-growing revenue driver in 2017.<sup>109</sup> Similarly, clearing firms are expanding their data offerings.

Meanwhile, product innovations continue at a steady pace, with crypto trading entering the mainstream. Intercontinental Exchange (ICE) launched BAKKT, a platform for digital assets,<sup>110</sup> while the Boston Options Exchange (BOX) has a joint venture with tZERO to launch a blockchain-based trading platform for security tokens.<sup>111</sup>

On the technology side, adoption of RPA, cloud, and AI is on the rise among market infrastructure firms, not just to streamline operations but also for regulatory compliance like the Consolidated Audit Trail (CAT). Blockchain use is in a nascent stage with pilots in trading and clearing operations in small pockets.<sup>112</sup>

### What can we expect in 2019?

Exchanges with multiple technology platforms should strive to integrate these disparate systems. While this could be a multiyear process, traction in 2019 is expected because the need has reached critical mass.

The next wave of modernization, after equities, may be in fixed income for the most part. The electronification of the rates market, particularly US treasuries, is already a reality, and corporate bonds are expected to move along the same trajectory in 2019.<sup>113</sup> In Europe, the regulatory push from MiFID II should accelerate the migration of fixed-income trading on to regulated markets, further improving transparency.<sup>114</sup>

In the growing crypto world, newly established exchanges will likely seek ecosystem partners in traditional custodians and transfer agents. However, most incumbents will seek regulatory clarity, especially on asset custody and investor protection, before jumping in.

Other developments—like swaps deregulation,<sup>115</sup> standardization of trade data reporting with distributed ledgers,<sup>116</sup> and central banks' unwinding of the balance sheet<sup>117</sup>—should boost exchange volumes. Unparalleled challenges from Brexit—like the bulk transfer of existing portfolios from UK central counterparties (CCPs) to EU27 CCPs—could test the industry's technology resilience and could heighten market, operational, and liquidity risks.

As in other areas of capital markets, the use of AI and machine learning are expected to expand at a rapid pace, creating new solutions such as Nasdaq's "Analytics Hub."<sup>118</sup> The platform uses natural language processing to analyze company filings and earnings calls for more targeted investment insights.<sup>119</sup> More broadly, AI can help transform market infrastructure players in multiple ways—from predictive market surveillance models and prevention of predatory trading strategies to intelligent reconciliation systems to improve operational efficiencies.<sup>120</sup>

That said, technology alone is not a panacea. As technology transforms the nature of work, incumbents should not lose sight of upskilling their talent. Training employees to work with and, more importantly, supervise advanced technology platforms could become critical in a world marked by an accelerated speed of computing, trades electronification, and growing sophistication of cyberattacks.

# Contacts

## Industry leadership

### Scott Baret

Vice Chairman & Partner  
US Banking & Capital Markets leader  
Deloitte & Touche LLP  
+1 908 902 1383  
sbaret@deloitte.com

### Anna Celner

Vice Chairman & Partner  
Global Banking & Capital Markets leader  
Deloitte AG  
+41 (0) 58 279 68 50  
acelner@deloitte.ch

## Deloitte Center for Financial Services

### Jim Eckenrode

Managing director  
Deloitte Center for Financial Services  
Deloitte Services LP  
+1 617 585 4877  
jeckenrode@deloitte.com

## Luxembourg Contacts

### Pascal Martino

Partner – Banking Leader  
pamartino@deloitte.lu

### Martin Flaunet

Partner – Banking Audit Leader  
mflaunet@deloitte.lu

### Eric Centi

Partner – Financial Services Tax Partner  
ecenti@deloitte.lu

## Authors

### Val Srinivas, PhD

Research leader, Banking & Capital Markets  
Deloitte Center for Financial Services  
Deloitte Services LP  
+1 212 436 3384  
vsrinivas@deloitte.com

### Richa Wadhvani

Assistant manager, Banking & Capital Markets  
Deloitte Center for Financial Services  
Deloitte Support Services India Pvt. Ltd.

### Tiffany Ramsay

Senior analyst, Banking & Capital Markets  
Deloitte Center for Financial Services  
Deloitte Services LP

### Aarushi Jain

Senior analyst, Banking & Capital Markets  
Deloitte Center for Financial Services  
Deloitte Support Services India Pvt. Ltd.

### Yashu Singh

Senior analyst, Banking & Capital Markets  
Deloitte Center for Financial Services  
Deloitte Support Services India Pvt. Ltd.

**The Center wishes to thank the following Deloitte industry leaders for their insights and contributions to the report:**

### Vikram Bhat

Principal  
US Banking & Capital Markets Risk & Financial Advisory leader  
Deloitte & Touche LLP

### Robert Contri

Principal  
Global Financial Services Industry leader  
Deloitte Services LP

### Jason Marmo

Principal  
US Banking & Capital Markets Tax leader  
Deloitte Tax LLP

### James Reichbach

Executive Officer  
Japan and Asia Pacific Financial Services leader  
Deloitte Tohmatsu LLC

### Lawrence Rosenberg

Partner  
US Capital Markets Audit leader  
Deloitte & Touche LLP

### Mark Shilling

Principal  
US Banking & Capital Markets Consulting leader  
Deloitte Consulting LLP

### Kenny Smith

Principal  
Financial Services Industry leader  
Deloitte Consulting LLP

### Neil Tomlinson

Partner  
UK Banking Sector head  
Consulting  
Deloitte MCS Limited

### Troy Vollertsen

Partner  
US Banking Audit leader  
Deloitte & Touche LLP

### Center for the Edge

#### John Hagel III

Co-chairman  
Center for the Edge  
Deloitte Services LLP

### Deloitte UK Insights

#### Margaret Doyle

Partner  
Deloitte LLP

#### Peter Evans

Manager  
Deloitte LLP

#### Christopher Ross

Assistant manager  
Deloitte LLP

### Audit & Assurance

#### Hugh Guyler

Partner  
Deloitte & Touche LLP

#### Kristine Obrecht

Partner  
Deloitte & Touche LLP

#### Alan Schaub

Partner  
Deloitte & Touche LLP

### Capital & Liquidity

#### Alexandre Brady

Principal  
Deloitte & Touche LLP

#### Matt Dunn

Managing director  
Deloitte & Touche LLP

### Customer & Marketing

#### Ryan Alderman

Principal  
Deloitte Consulting LLP

### Economics

#### Daniel Bachman

Senior manager  
Deloitte Services LP

#### Ira Kalish

Managing director  
Deloitte Touche Tohmatsu Ltd.

### Regulations

#### Irene Gecas-McCarthy

Principal  
Deloitte & Touche LLP

#### Christopher Spoth

Managing director  
Deloitte & Touche LLP

#### David Wright

Managing director  
Deloitte & Touche LLP

### Risk & Governance

#### Elia Alonso

Principal  
Deloitte & Touche LLP

#### Edward Appert

Managing director  
Deloitte & Touche LLP

#### Ed Hida

Partner  
Deloitte & Touche LLP

#### Nitish Idnani

Principal  
Deloitte & Touche LLP

### Cyber Risk

#### Julie Bernard

Principal  
Deloitte & Touche LLP

#### Mark Nicholson

Principal  
Deloitte & Touche LLP

### M&A

#### Maximiliano Bercum

Principal  
Deloitte Consulting LLP

#### Jay Langan

Partner  
Deloitte & Touche LLP

### Talent

#### Margaret Painter

Principal  
Deloitte Consulting LLP

### Tax

#### Aaron Turenshine

Senior manager  
Deloitte Tax LLP

### Retail & Corporate Banking

#### Gopi Billa

Partner  
Deloitte & Touche LLP

#### Elizabeth Jordan

Managing director  
Deloitte & Touche LLP

#### Angus Ross

Managing director  
Deloitte Consulting LLP

#### Deron Weston

Principal  
Deloitte Consulting LLP

### Transaction Banking

#### Chris Doroszczyk

Principal  
Deloitte Consulting LLP

### Investment Banking

#### Larry Albin

Principal  
Deloitte Consulting LLP

#### Kapil Bansal

Managing director  
Deloitte Consulting LLP

#### David Myers

Partner  
Deloitte MCS Limited

#### Sanjiv Nathwani

Principal  
Deloitte Consulting LLP

#### Rajiv Shah

Principal  
Deloitte Consulting LLP

#### Sachin Sondhi

Principal  
Deloitte Consulting LLP

### Payments

#### Zach Aron

Principal  
Deloitte Consulting LLP

#### Ulrike Guigui

Managing director  
Deloitte Consulting LLP

#### Prakash Santhana

Managing director  
Deloitte Transactions and  
Business Analytics LLP

#### Jade Shopp

Partner  
Deloitte & Touche LLP

### Wealth Management

#### Karl Ehram

Principal  
Deloitte & Touche LLP

#### Gauthier Vincent

Principal  
Deloitte Consulting LLP

**The Center wishes to thank the following Deloitte client service professionals for their insights and contributions to the report:**

#### Michelle Chodosh

Senior manager  
Deloitte Services LP

#### Michelle Dahl

Senior manager  
Deloitte Services LP

#### Patricia Danielecki

Senior manager  
Deloitte Services LP

#### Sylvia Gentsch

Senior manager  
Deloitte Touche Tohmatsu Ltd.

#### Samia Hazuria

Assistant manager  
Deloitte Support Services India Pvt. Ltd.

#### Susan Jackson

Senior manager  
Deloitte Services LP

#### Erin Loucks

Manager  
Deloitte Services LP

#### Rima Pai

Analyst  
Deloitte Support Services India Pvt. Ltd.

#### Bridget Xue

Senior manager  
Deloitte Consulting LLP

# Endnotes

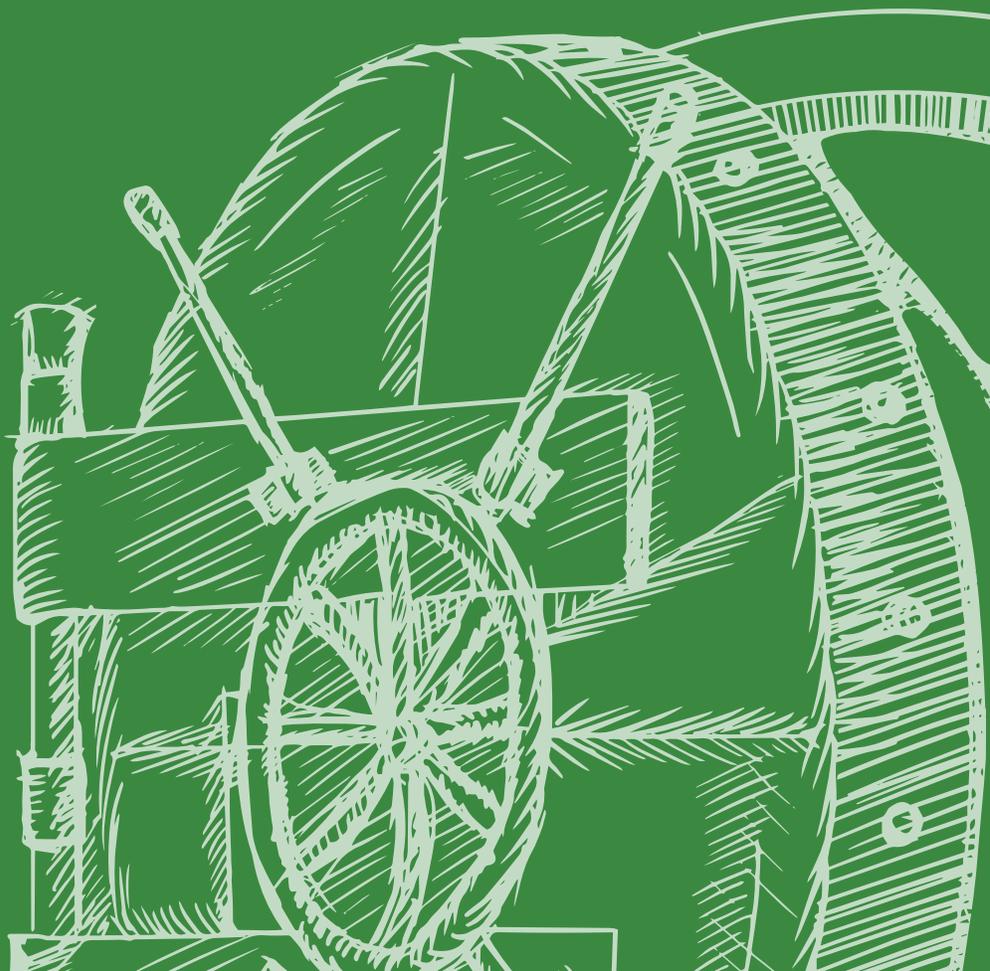
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