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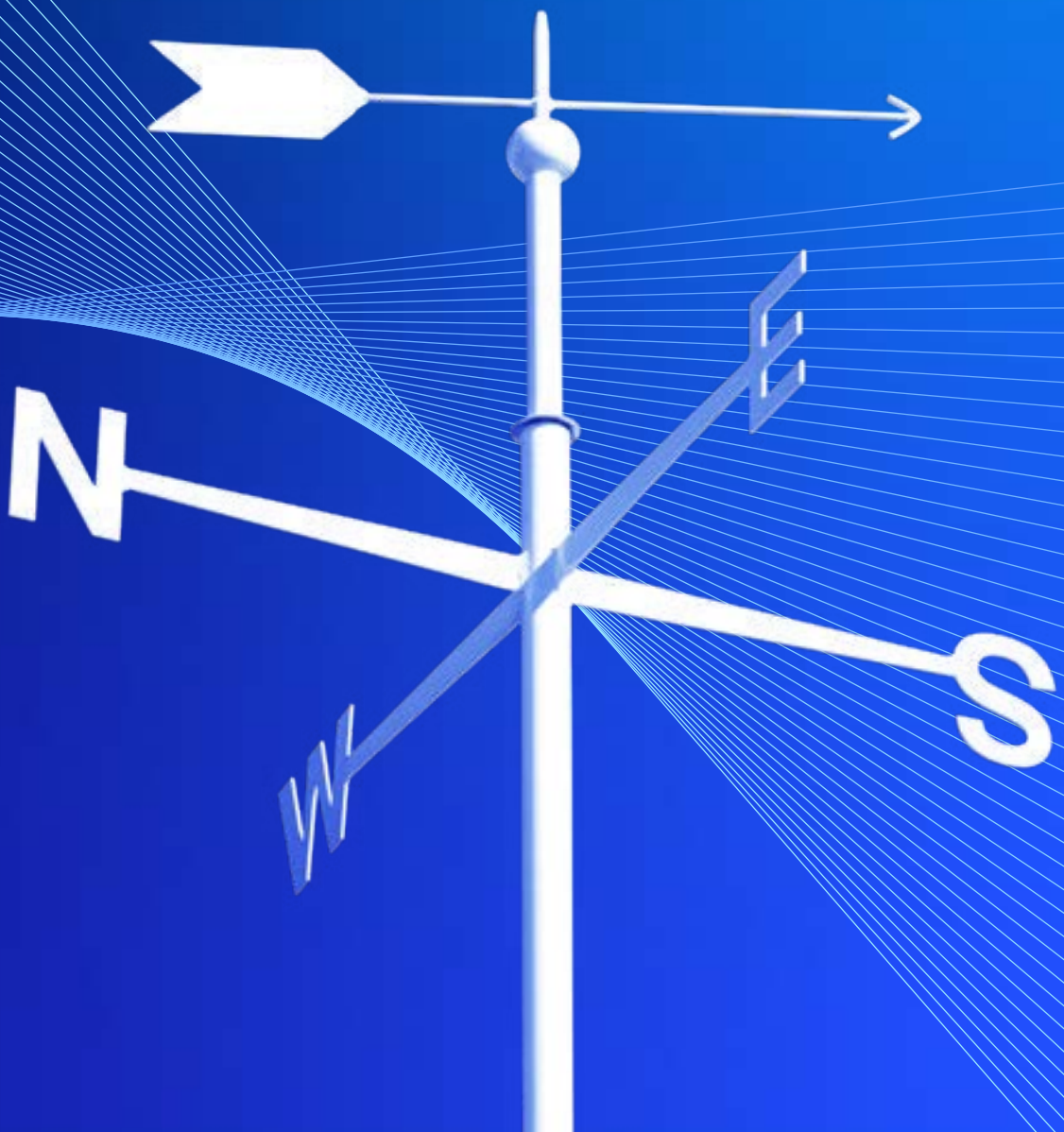
Banking on a sustainable path

Global Banking Annual Review 2022



December 2022

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Executive summary

The much-quoted line about how "there are decades when nothing happens, and weeks when decades happen" has been attributed to a number of sources, none of whom are known for their banking prowess. But for the global banking industry, that remark certainly seems an apt summary of events in 2022. A decade of rather dull predictability was suddenly overturned, as inflation made a galloping return, interest rates soared, and volatility became the watchword on markets ranging from stocks and bonds to cryptocurrencies and Chinese real estate.

In this year's Global Banking Annual Review, we examine what has changed in banking as a result of the shocks to the system wrought by the return of geopolitical instability coupled with lingering long-term disruptive effects from the COVID-19 pandemic. The picture is far from pretty: while revenue and margins rose on the back of higher interest rates, more than half of the world's banks trade below book value. Indeed, banking ranks dead last in a comparison of the market valuations of different industry sectors, driven by its weak profit margins and low growth expectations.

The annual review is not just a tale of woe, however. Even amid the poor outlook for global banking as a whole, there are some very bright spots, with outperformers to be found in India and other fast-growing markets, as well as in certain groups of banks in advanced economies including the United States and Canada. The main message that comes through is that, at a time of growing divergence, and relatively better returns in 2022, banks everywhere need to work harder to "future-proof" themselves, improving their short-term resilience and embracing longer-term opportunities to grow and become more profitable.

One of those opportunities is sustainable finance, a burgeoning new theme for banking. We look at the topic in depth, and attempt to disentangle the real business case from the hype and greenwashing. In the second chapter of this report, we examine evidence suggesting that sustainable finance is entering a "next era," as the initial surge of funding for renewable energies gives way to a deeper engagement with banking clients across all sectors.

Key findings from our global banking review for 2022:

Banks rebounded from the pandemic with strong revenue growth from higher margins and capital ratios. Bank profitability reached a 14-year high in 2022, with expected return on equity of between 11.5 percent and 12.5 percent. Revenue globally grew by $345 billion, propelled by a sharp increase in net margins, as interest rates rose after languishing for years on their cyclical floors. For now, banking globally is sitting comfortably on Tier 1 capital ratios of between 14 percent and 15 percent, and many segments of banking—including retail, wholesale, and wealth—have benefited.

Despite these short-term improvements, return on equity remains weak, far below where it was before the 2008 financial crisis. While half the world's banks in 2022 continue to have a return on equity that is above the cost of equity, our analysis suggests that the recent margin increases delivered returns above the cost of equity for just 35 percent of banks globally.

Strong regional variations in bank performance underlie this global picture. Banks in some countries, including many regional banks in the US, the largest banks in Canada, and banks in Indonesia, Mexico, and India, are experiencing rapid growth and rising profitability, while others, including in Europe and China are seeing marked downturns. One notable effect of this divergence is that the whole notion of "emerging markets" (in banking) is dead, because the group of countries to which this term refers is no longer monolithic: some of the best-performing and high-growth banks are to be found in Asia—as are some of the worst-performing and lowest-growth ones.

As the economy slows, the divergence between banks will widen further. The boost to profitability from higher margins may prove transitory, and all banks face a long-term growth slowdown. Banks in Asia–Pacific may gain from a stronger macroeconomic outlook, whereas European banks face a bleaker outlook: in the event of a long recession, we estimate that banks' return on equity globally could fall to 7 percent by 2026—and below 6 percent for European banks. The net impact will likely be a further concentration of growth in Emerging Asia, China, Latin America, and the United States. We expect that these regions will account for about 80 percent of the estimated $1.3 trillion in global banking revenue growth between 2021 and 2025.

Banking as a sector is valued substantially below other industries. Total global market capitalization peaked in 2021 at $16 trillion and dropped back to $14.5 trillion by May 2022. Traditional banking institutions account for half of this valuation, while specialists and fintechs represent the other half—up from a 30 percent share five years ago. About one-half of the valuation gap with other sectors is driven by the low profitability of the banking industry. The other half comes from the lack of future growth, demonstrated by the low price-to-earnings of about 13, compared with an average in other sectors of 20. Today, only one out of six banks qualify as what we call "North Stars"—institutions with both high profitability and high growth.

Banks now have an opportunity to take bold steps to build short-term resilience and lay the groundwork for long-term growth. Optimizing balance sheets and cost and capital positions will help banks through these volatile times, and it will be more important than ever to build exceptional risk management practices and technological infrastructure that can resist cyberattacks. In the longer term, banks from traditional business models in particular will need to transition to more future-proof platforms, in which different business units such as everyday banking and complex financing or advisory services will be decoupled, so that banks can foster highly differentiated customer relationships. They will also need to embrace new industry-shaping growth trends, such as environmental, social, and governance (ESG) investing, beyond-banking offerings, and advanced analytics.

Sustainable finance has grown fast from almost nothing five years ago to become a major theme for banks. Issuance of sustainable bonds now accounts for about 11 percent of the total bond market volume, while sustainability-related syndicated loans are about 13 percent of the global syndicated loans market volume. While Europe historically led issuance of sustainable debt instruments—issuing more than 80 percent of sustainable syndicated loans, including sustainability-linked loans, in 2018—it has since been overtaken by North American issuers.

Financing clean energy marked the first phase of growth, but sustainable finance is now broadening and deepening. There will still be a focus on capital deployment for low-emissions power generation in the next phase, but many new aspects of the global energy transition will also become priorities, including growth in electrification, the build-out of energy transmission and distribution infrastructure, and emissions reductions across sectors. Expected heavy spending on physical assets required to meet net-zero emissions goals alone could provide commercial financial institutions with an annual direct financing opportunity of about $820 billion. We estimate that banks could also facilitate an additional $1.5 trillion of investments for corporates between 2021 and 2030.

To capture the sustainable finance opportunities and scale the business, banks will need to address critical issues. Only a small percentage of banks have near-term capabilities to finance some of the most dynamic burgeoning areas, including grid-scale infrastructure, green hydrogen, green fuels, biomass, and carbon capture and storage. Challenges include credit risk, complex project economics, and lack of established standards for sustainability-related financial products. But new instruments, new markets, and new revenue pools beckon for those corporate and investment banks, lenders to small business and retail customers, and wealth managers, among others, who step willingly into the next era for sustainable finance.

The year everything changed—except banking valuations

Over the past 12 years, the global banking sector has experienced a remarkably flat period. Return on equity hovered at or below the cost of equity. Revenue growth remained below GDP growth, and margins were slowly eroded by low interest rates and rising competition, including from well-funded fintechs and bigtechs. Emerging markets, thanks to their strong performance, closed the gap with advanced economies; China featured as a consistent outperformer. Asset values rose seemingly inexorably, fueled by low interest rates, and some high-risk asset classes, including cryptocurrencies, soared to new heights. Even a once-in-a-century pandemic made barely a ripple in these predictable trends.

Then came 2022, and suddenly almost everything changed (Exhibit 1).

Interest rates leaped from their historic lows, and with them, bank margins increased after a decade or more of contraction. At a global level, banks' return on equity edged above the cost of capital after years of languishing below it.

The context in which banks operate also changed. The Russian invasion of Ukraine and renewed tensions over Taiwan pushed geopolitics onto business agendas globally, even as the COVID-19 pandemic's longer-term impacts continued to reverberate through the global economy. Sustainable finance moved from being an emerging and imprecise theme to a better-defined source of growth (as we outline in the next chapter).

Inflation, long relegated to hazy memories of a distant past, made a rude return.

On a country-by-country level, the worst banking performance occurred in China, long the engine of global growth in banking and other sectors, as the country stayed in pandemic lockdown mode and its overleveraged property market ran into trouble. That contributed to a divergence in the performance of financial institutions in developing countries, which had previously moved largely in lockstep, and undermined the very notion of an "emerging market" bank.

Even fintechs, rising stars for much of the past few years, took a beating as several segments, including buy now, pay later (BNPL) and crypto markets, ran into trouble.

In fact, only one aspect of banking remained stubbornly, resolutely immutable: banks' ultralow valuations, which make the sector the least valued of any industry. While almost half of banks create positive economic profit, only about 15 percent of financial institutions are both profitable and growing rapidly. Despite an expected uptick of two to three percentage points in global banking ROE for 2022, investors appear to be emphasizing future growth and remain reluctant to trade at higher price-to-book ratios.

What brought about all these reversals? In this chapter, we examine the key causes and the broader lessons as the global banking industry goes through an extraordinary period of volatility. Among the main learnings, even as they try to remain resilient during the current tumult, banks everywhere have an opportunity to make use of higher margins to invest and reinvent as they lay the groundwork for long-term growth and profitability. That so many banks have such low valuations is a clear sign that the banking industry lacks a future-proof business model and the growth premium seen in other industries. This is the time to change the existing model.

Exhibit 1

The year everything changed—except banking valuations.

	The Flat Decade (2012–21) →	The New Era (2022) →
Profitability	Return on equity at or below cost of equity	Return on equity 2–3% above cost of equity
Revenue growth	Slightly below GDP growth, with volume growth offset by slowly eroding margins due to competition and low interest rates	Slightly above GDP growth, as margins expand with higher base rates, offset by limited volume growth
Risk and capital	Converging and low-risk cycle with capital buffer reaching historical highs	Period of higher risk cost with divergence (by segment, geography) and further uptick in capital ratios driven by the higher profitability
Geographic spread	Slow convergence between emerging and developed markets (with emerging consistently outperforming)	The concepts of emerging and developed markets blur, with huge market-level divergences (eg, China vs India)
Competition	Well-funded, frequently loss-making fintechs and ever-expanding bigtechs cherry-picked lucrative segments with limited market share gain and sustained disruption	Fintech and bigtech valuation corrections lead to retrenchment to focus on profitability vs growth; many at-scale success stories emerge
Global environment	Stagnation of globalization, general stability, strong international rules of law ensuring stable global flows	Reemergence of geopolitics as a disruptive force (most notably driven by the invasion of Ukraine); potential regionalization of banking
Asset valuations	Continuous growth fueled by low interest rates, high-risk asset classes (eg, crypto) leading to overvaluation (eg, in Chinese real estate)	Major valuation correction, retrenchment to value investing, huge market volatility, and uncertainty
New social contract	ESG accreditation is universally accepted measure and driver of banker and investor behavior	Substantial rethinking of the measures and impact of sustainability, with wide regional divergence in maturity

What did not change: Banks continue to be valued at a historically high discount compared with the broader economy, and the gap is widening, with 50% of banks destroying value

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For banks, 2022 has been a tumultuous year of multiple shocks and growing uncertainty

Banks rebounded from the pandemic with strong revenue growth from higher margins and Tier 1 capital ratios at their highest level in 20 years. But the context has changed dramatically, with a series of interrelated shocks—some geopolitical and others lingering economic and social effects of the pandemic—exacerbating fragilities. While some banks in some geographies are doing very well, more than half of banks globally are earning less than the cost of equity.

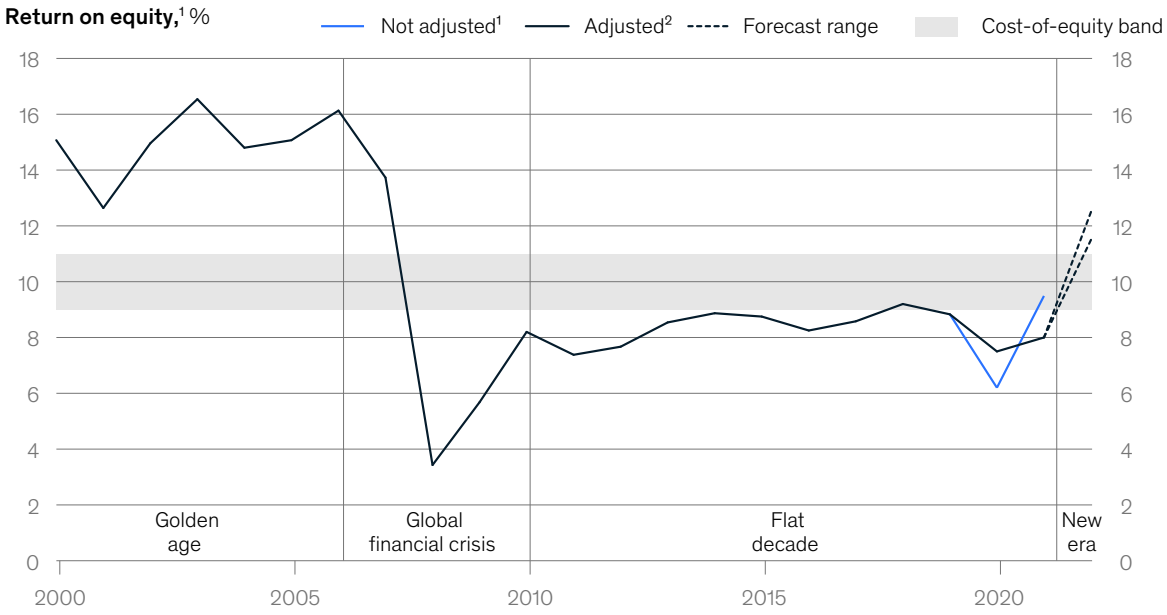
Revenue grew by $345 billion as growth rebounded, but profitability still lags

Bank profitability reached a 14-year high in 2022, with expected return on equity between 11.5 and 12.5 percent (Exhibit 2). Revenue globally grew by $345 billion. This growth was propelled by a sharp increase in net margins, as interest rates rose after languishing for years on their cyclical floors. Ample liquidity and relatively low risk contributed to the rise. In 2022, banking liquidity, measured as the ratio of loans to deposits, is about 90 percent, while COVID-19 provisions are still being written back. For now, the banking system globally is sitting comfortably on Tier 1 capital ratios between 14 and 15 percent—the highest ever.

Exhibit 2

After a decade of flat returns, 2022 represents a new era in banking.

Banking profitability through the eras



[1]Accounting ROE, including the full impact of provisions.
[2]For 2020 and 2021, ROE has been adjusted for cyclicity for provisions during the COVID-19 pandemic.
Source: S&P Global; McKinsey Panorama

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The improvement in margins, which rose from 252 basis points in 2021 to 262 basis points in 2022, accounted for 60 percent of the revenue gains. Almost all segments of banking have seen improvements—capital markets and investment banking was the exception (Exhibit 3). The strongest growth has been in wealth management, which recorded 8 percent growth in 2021–22, far higher than the 4 percent in 2019–21. The biggest turnaround has been in everyday banking—current accounts, deposits, and payment transactions—which posted growth of 7 percent in 2021–22 due to high money market rates, compared with a yearly 4 percent average decline in 2019–21.

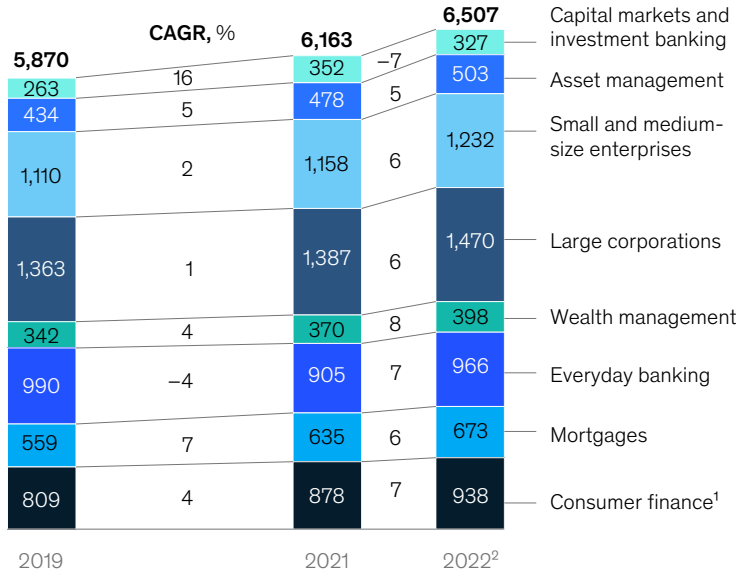
Behind this global picture are some important regional variations in bank performance, which we analyze in more depth later in this chapter—in particular, strong divergences within and among emerging markets, with individual banks and banking sectors in some countries experiencing rapid growth and rising profitability as others are seeing marked downturns.[1] The impact of inflation and interest rates is likely to accentuate this regional divergence, including that of advanced economies. The European economy is particularly exposed to rising energy prices and a possible GDP contraction that could heighten systemic risk and flatten demand for fresh credit.

[1] We capture an extended banking landscape that includes activities of traditional banks and of specialist finance players (for example, consumer finance and payments specialists, fintech companies, brokers/dealers, leasing companies, investment banks, financial exchanges, and asset managers). Insurance companies, hedge funds, and private-equity firms are excluded.

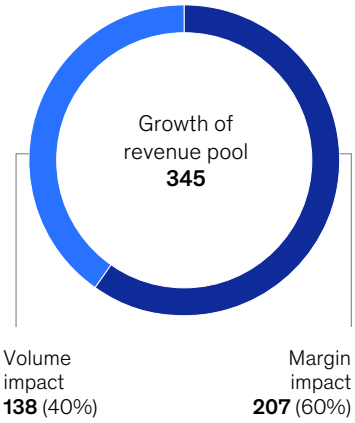
Exhibit 3

Margins are becoming a more important driver of growth in banking, compared to volume.

Revenue per segment, 2019–22, $ billion



Composition of the growth between 2021–22, $ billion



[1]Includes microloans and professional loans.
[2]Estimated.
Source: Global Banking Pools, McKinsey Panorama

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Banking's strongly positive revenue and profit growth also needs to be put into context. Profitability as measured by return on equity remains relatively weak when viewed over the longer term. Despite the post-COVID-19 bounce, return on equity remains far below where it was before the 2008 financial crisis, and on a global basis, it is only slightly above the cost of equity, as Exhibit 2 showed. Indeed, more than half the world's banks in 2022 continue to have a return on equity that is below the cost of equity. For the second half of 2022, our analysis suggests that margin increases delivered returns above the cost of equity for just 35 percent of banks globally. And less than 15 percent of banks are earning more than 4 percent of their respective cost of equity.

Lingering effects of COVID-19 and geopolitical tensions shook the global economy and are roiling the financial sector

The long-tail effects of the COVID-19 pandemic are still being felt, from supply chain disruptions to people's changing attitudes to employment. The Russian invasion of Ukraine in February 2022 and heightened tensions over Taiwan marked the rude return of geopolitics as a disruptive force after decades of relative stability—exacerbating pandemic-related effects and creating new shocks, notably including an energy supply crisis in Europe. This combination of disease and armed conflict proved toxic for the global economy. Together, they create a highly uncertain environment.

Five resulting shocks are affecting banks globally:

1. **Macroeconomic shock.** Soaring inflation and the likelihood of recession are sorely testing central banks, even as they seek to rein in their quantitative-easing policies started during the global financial crisis in 2008 and accelerated via unprecedented simultaneous stimulus programs during the COVID-19 pandemic.
2. **Asset value shock.** The shocks to asset values include steep declines in the Chinese property market and the sharp devaluation of fintechs and cryptocurrencies, including the bankruptcy of some high-profile crypto organizations. In addition, sanctions against Russia for the first time cut off a major economy from much of the global financial system.
3. **Energy and food supply shock.** Disruptions to the energy and food supply, related to the war in Ukraine, are contributing to inflation and putting millions of livelihoods at risk, especially but not only in Europe.
4. **Supply chain shock.** The disruption of supply chains that began during the first pandemic lockdowns continues to roil global markets.
5. **Talent shock.** Employment underwent major shifts during COVID-19, as people changed jobs, began working remotely, or left the workforce altogether to join the "great attrition."[2] These shifts show no sign of easing although the pandemic wanes in many places.

These shocks are not necessarily good or bad for banks, but they created a rise in volatility and big changes compared with the relative stability of the past 12 years. The shocks are interrelated. For example, rising prices for food, fuel, and commodities began as a global resource crisis as a result of the pandemic's impact on global supply systems and has now spread because of ripple effects of Russia's war on Ukraine. At the same time, they are playing out differently around the world. While Europe, China, and Developed Asia struggle the most, other regions, including in the Middle East, are benefiting from rising energy prices. The overall impact in North America is also more nuanced (Exhibit 4).

The reactions are accordingly different. For example, central banks in the United States and Europe have hiked rates assertively to choke off the inflation that partially resulted from the resources crisis—mitigating the spread between rates and inflation that reached its highest level in four decades (Exhibit 5). Meanwhile, in China, continuing COVID-19 lockdowns have slowed the economy and taken a toll on domestic consumer sentiment.

It is beyond the scope of this annual banking review to analyze these five shocks and their consequences in detail. That has been done and continues to be done by many others, including at McKinsey.[3] However, as one illuminating symptom of the volatile landscape, we focus on the Chinese real estate crisis and its effects on Chinese banking and on the global banking industry, not least given the size of the challenges that this crisis poses (see sidebar "China's property crisis and its implications for banking").

[2] Aaron De Smet, Bonnie Dowling, Marino Mugayar-Baldocchi, and Bill Schaninger, "'Great attrition' or 'great attraction'? The choice is yours," *McKinsey Quarterly,* September 8, 2021.
[3] See, for example, Chris Bradley, Jeongmin Seong, Sven Smit, and Jonathan Woetzel, "On the cusp of a new era?" McKinsey Global Institute, October 20, 2022.

Exhibit 4

The impact of shocks in 2022 varies across regions, with Europe likely to suffer most.

Impact of global shocks by region

Positive Mixed Negative

Country/region	Share of global GDP, [1] %	Overal impact	Energy and commodity prices	Asset and valuation correction	Supply chain disruption	Monetary and fiscal policies	Labor costs and availability
North America	27	Mixed	Negative	Mixed	Negative	Mixed	Negative
Europe	25	Negative	Negative	Negative	Negative	Negative	Negative
China	15	Negative	Negative	Negative	Negative	Positive	Mixed
Developed Asia	11	Negative	Negative	Mixed	Negative	Mixed	Negative
Emerging Asia except China	8	Mixed	Negative	Positive	Negative	Negative	Mixed
Latin America	7	Mixed	Negative	Mixed	Mixed	Negative	Mixed
Middle East	5	Positive	Positive	Positive	Mixed	Mixed	Negative
Africa	3	Mixed	Negative	Negative	Mixed	Negative	Negative

[1] Figures may not sum to 100%, due to rounding.
Source: McKinsey Global Institute; McKinsey Panorama

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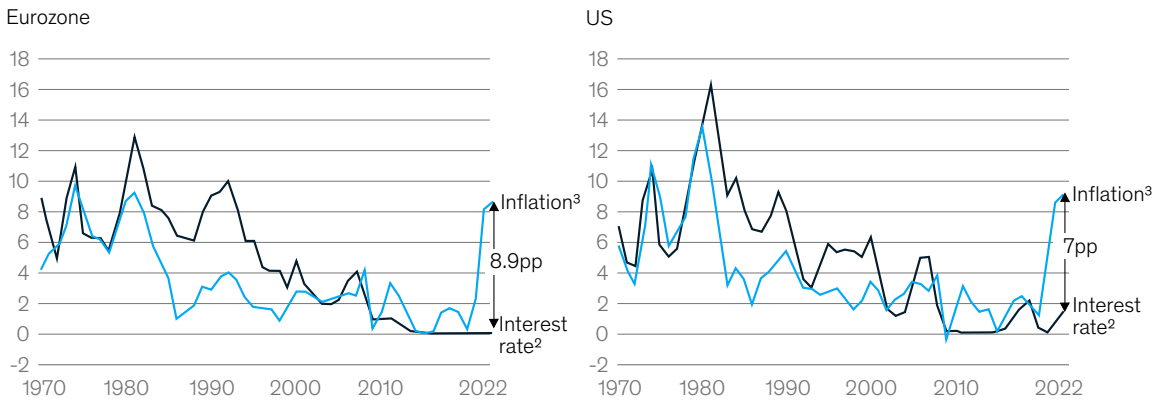
Exhibit 5

The spread between rates and inflation reached a 40-year high in the US and Europe in 2022.

Comparison of interest rate and inflation, Europe and US[1]



[1]To June 2022.
[2]Short-term interest rates (Federal funds effective rate for US and marginal refinancing rate for eurozone).
[3]Inflation rate is annual % change in consumer prices, US – CPI by Bureau of Labor Statistics, Euro area – HICP.
Source: ECB; Federal Reserve Economic Data; OECD statistics; World Bank

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China's property crisis and its implications for banking

China's real estate crisis has put growing pressure on Chinese banks. To what extent can the rest of the global economy remain insulated from the crisis?

Chinese real estate: The scale of the asset class

Valued at $60 trillion, the Chinese property market is the single largest asset class in history, about double the size of the US residential mortgage market and much larger than the US bond market. It also plays a major role in the economy, with almost 30 percent of value added linked to the property market, accounting for 45 percent of total Chinese debt and an estimated 54 percent of household debt.

Recent issues with the sector

However, real estate prices in China are out of sync with prices elsewhere, even in markets that have seen massive valuation increases in recent years (for example, the United States and the United Kingdom). A median apartment in China in mid-2022 cost the equivalent of 31 years of median disposable income, compared with eight years in the United States and nine in the United Kingdom.

The sector has been under stress because of inflated asset prices and the resulting impact on supply. About 30 Chinese real estate companies have missed foreign-debt payments. Last year, one major developer, Evergrande, defaulted on $300 billion in debt. The S&P ratings agency has warned that one in five rated Chinese developers could be insolvent.

This has led to a vicious cycle seen typically in crises. As asset prices increase significantly above what is affordable, demand declines. Developers with significant leverage and higher exposure to external debt default on their debt obligations and are unable to deliver projects as promised. This scenario is playing out in China, which this year is additionally facing supply chain shocks related to raw materials and a tighter financing market locally and globally. This, in turn, has led to further reduction in demand and a consumer boycott of mortgage payments, which further exacerbates the situation.

For the Chinese economy, there is one additional major factor to consider. The growth of the economy over the last couple of decades has been investment led. Significant investments in infrastructure, including roads and highways, have been made by local governments that have used sale of land to property developers as a source of funding. Lower demand from property developers could have a further impact on economic growth over the medium term.

Potential implications for China and the global economy

In the short term, despite inflated asset prices and early defaults, the Chinese economy appears well equipped to avoid a crisis. The banking system as a whole is healthy; there are no signs of explosive growth in lending. The ratio of nonperforming loans is low. Exposure to external shocks also is low, with a low foreign-debt rate and stable international-portfolio inflows and outflows. This allows the government to step in as needed to help the financial intermediation system in case of shocks by leveraging its massive balance sheet. A very high household savings rate of 45 percent also will help this process.

In the medium term, the central challenge remains the extent and pace of economic growth. Given unfavorable demographics, lack of momentum, and high levels of debt in the system, the rest of the world likely cannot depend on China as a core growth engine. Global suppliers to China have been adversely affected. Already this year, other Asian economies have grown faster than China. This outlook is likely to change only if China's economy manages to pivot from investment-led to consumption-driven growth very quickly. While this seems to have featured in the policy agenda, it has not been as easy to implement on the ground. The evolving political environment and the extent of the pivot to consumption will define the course of the Chinese economy over the next few years.

These shocks are playing out in different ways across and within regions, notably including emerging markets

The banking story we have sketched so far is of a sector seeking to find new paths to longer-term profitability and growth and facing severe challenges even as it experiences a reprieve, thanks to higher margins. While that is the case for the sector globally, one of the striking characteristics of this period is that some banks in some geographies are doing very well indeed, growing robustly and posting buoyant and rising profits and revenues.

This far more upbeat picture is to be found in certain parts of the US and Canadian banking sectors—in particular, regional banking in the United States and top five banks in Canada. It is also to be found in some emerging economies, including India, Indonesia, and Mexico, where the largest banks by market capitalization are performing very well. Indeed, India's leading banks have among the highest valuations in the world (see sidebar "India's leading banks thrive on innovation").

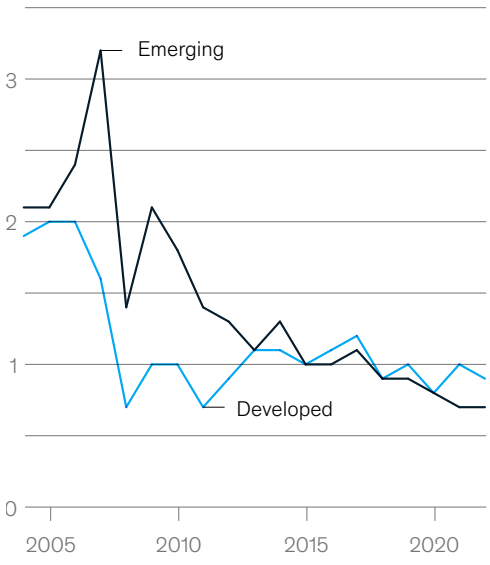
In previous years, there might have been a tendency to lump together these country and regional variations and describe them in classic terms as emerging markets versus advanced economies. This year, that division no longer holds—and indeed, it's possible to make the case that, in banking at least, the whole notion of "emerging markets" is dead (Exhibit 6). That's because the group of countries to which it refers is no longer monolithic: some of the best-performing and high-growth banks are to be found in Asia, as are some of the worst-performing and lowest-growth ones.

The divergence isn't just limited to developing nations but also applies to advanced economies, where healthy institutions in the US banking sector are at odds with languishing ones across Europe.

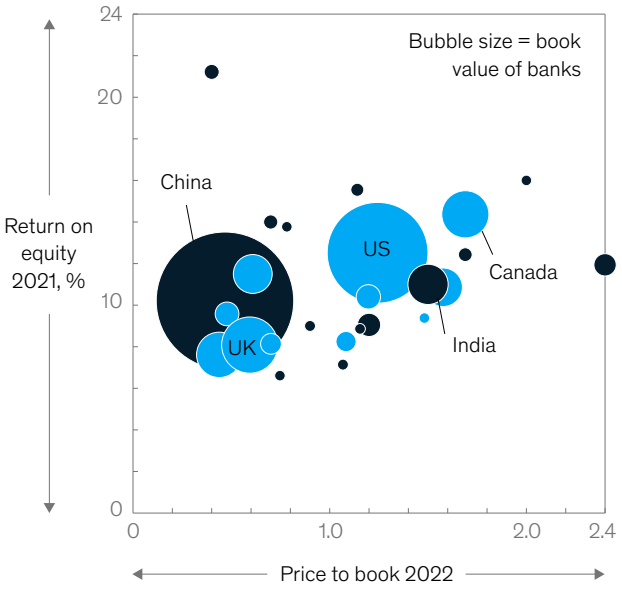
Exhibit 6

For banking, the distinction between developed markets and emerging markets has become blurred.

Price-to-book (P/B) value, by market type



Return on equity and P/B, by market type



Source: S&P Global; McKinsey Panorama

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India's leading banks thrive on innovation

Most Indian banks trade, on average, at only slightly higher than the global average. But the country's three largest banks stand out—not just in India but also globally for their consistent outperformance. They trade at a premium of 2.5 price to book (see exhibit). And the innovation that has helped them achieve this stellar performance can serve as a lesson to many other banks worldwide.

All three have pivoted strongly to retail customers since the early 2000s, moving away from corporate lending, which had lower margins. They focused on building a strong deposit franchise before acquiring new lending customers, and they took some counterintuitive bets, such as entering markets other banks were exiting. For example, HDFC Bank entered credit-card lending just after the global financial crisis. As these leading banks continue to focus on scaling their businesses, they are attempting to put in place prudent risk management systems. In addition, they are applying state-of-the-art analytics capabilities to constantly improve their decision making and risk management.

Innovation has been their strongest suit, with a focus on bringing market-first capabilities to customers. ICICI Bank made bold bets by establishing ecosystem platforms for retail, small-business, and corporate customers. This paid off immensely; retail banking customers of other banks preferred making payments via the bank's app, enabling significant new-to-bank customer acquisition and cross-selling. The state-of-the-art mobile-first digital offering for small businesses with integrated beyond-banking services led to significant deposit growth.

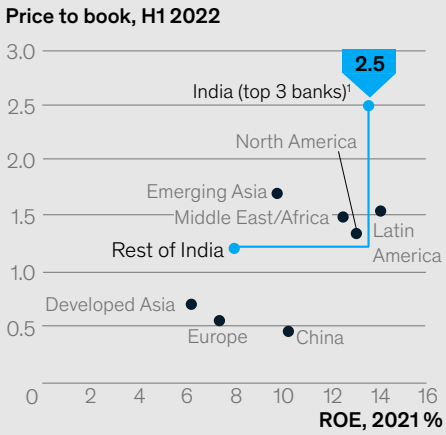
Digitizing corporate engagement has resulted in significant increases in engagement, volumes, and deposit balances.

HDFC Bank was among the first banks globally to offer loans that are preapproved in ten seconds. This bank also curates best-in-class offers for affluent consumers via a loyalty and rewards platform—for example, offering the best deal in the market for every new release of an Apple product. Moreover, the scale of growth seen in the market is enormous. State Bank of India (which is the largest of the three but trades at a lower multiple than the others, partly because it is state owned) acquired 1.7 million customers in June 2022 via YONO—its ecosystem offering for retail customers—nearly doubling numbers from the previous year.

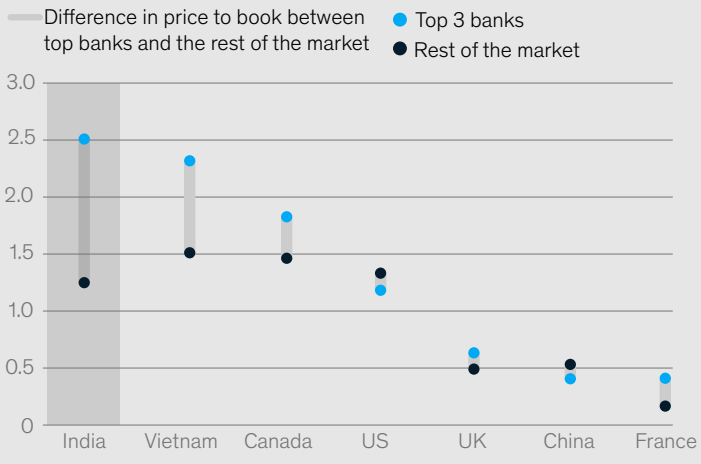
Exhibit

India's top banks outperform both globally and locally.

Price to book vs return on equity



Price-to-book spread: Top 3 banks[1] and rest of the market



[1]Top 3 banks by assets.
Source: S&P Global; McKinsey Panorama

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As the economy slows, the divergence between banks will widen further

The current uncertain macroeconomic outlook will affect banks in two ways, albeit to different degrees. First, there is likely to be a continuing boost to profitability from higher margins as interest rates increase—but this may only prove transitory. Second, banks face a long-term growth slowdown. Outcomes will vary considerably from bank to bank, depending on three factors: their funding profile, geography, and operating model. Banks whose key customer segments are vulnerable to macro shocks will feel the biggest impact.

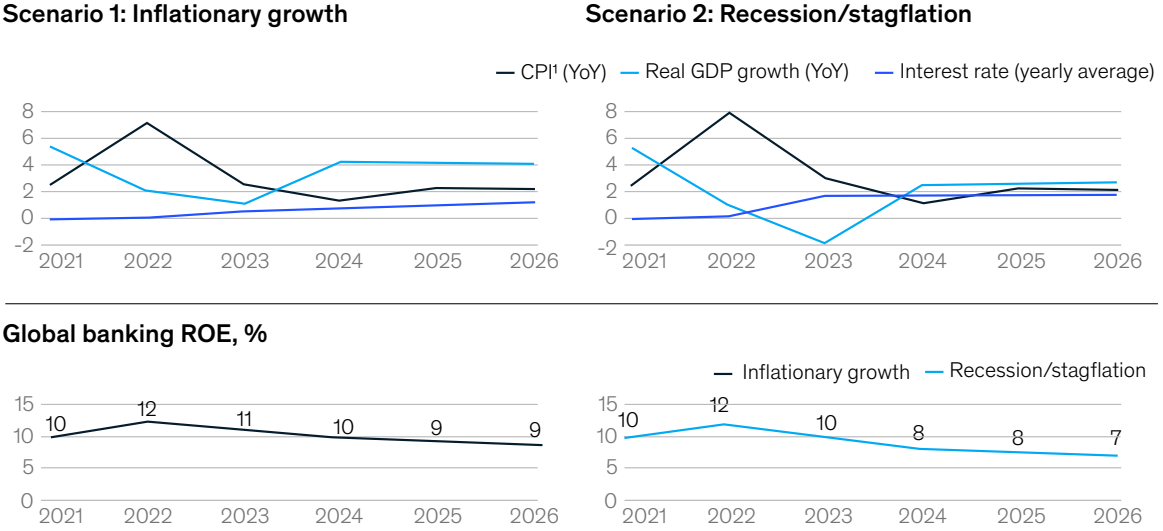
The net result of these pressures will be an increase in the "great divergence" trend among banks that we noted last year in our 2021 Global Banking Annual Review. Banks as a whole will continue to be undervalued compared with other sectors, but here too, the differences between banks will become even more pronounced, depending on geography and type of institution.

Two economic scenarios and their impact on banks: How bad (or good) might it be?

We have modeled the effects on banks of two possible macroeconomic scenarios created by our colleagues at the McKinsey Global Institute (Exhibit 7). The two scenarios are inflationary growth and stagflation. In the inflationary-growth scenario, the inflation rate remains higher over the next year but is kept in check by monetary policy: interest rates rise and continue rising through 2025. Economic fundamentals remain strong, and nominal GDP is not severely affected. In the stagflation scenario, monetary policy fails to keep inflation in check. Interest rates rise but not by enough to tame price rises. After falling into negative territory, real GDP growth returns but is muted, and there are persistent growth bottlenecks, such as inability to move to a new energy infrastructure.

Exhibit 7

The uncertainty on the state of the economy may unfold in two different scenario frames.



[1] Consumer price index.
Source: Expert interviews; McKinsey Global Institute in partnership with Oxford Economics

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In either scenario, we expect the initial stage to be positive for banks. Rising interest rates will lift net interest as short-term lending products such as consumer finance are repriced faster than liabilities. Global banking revenues are likely to see an increase of 5 to 6 percent in 2022. New mortgages may be offered at price points that anticipate rate increases before they have happened.

In this phase, both scenarios forecast that costs and risks remain under control; for example, 30 percent of banks in Europe still wrote back COVID-19 provisions in the first half of 2022. Talent costs have been rising, however, and that trend could continue. Global banking return on equity would rise to approximately 12 percent in 2022, two percentage points more than in 2021.

The big question is what will happen after the initial stage—that is, during a transition phase when economic growth deteriorates, followed by a phase when the full effects of the scenario kick in. Banks could see three effects—a slowdown in volume growth, higher costs, and greater delinquencies—which, depending on the scenario, could be small or large.

Start with volumes. Payments, transactions, saving, and investment will slow in a recession, and higher rates will likely deter auto loans, mortgages, new bond issuances, and IPOs. Costs will rise with inflation. Beyond talent, many other categories, such as technology and branch operations, will be affected. Finally, if recession bites hard, banks' customers will suffer. Some will default, and many others will need to restructure their loans. Markets are factoring in these uncertainties; valuations remained depressed in the first half of 2022 despite positive margin news from most banks.

The divergence story will continue to play out through these scenarios. Banks in Asia–Pacific may gain from a stronger macroeconomic outlook, whereas European banks may see the full effects of the scenario sooner and with more detrimental impact. In the event of a long recession, we estimate that return on equity globally could fall to 7 percent by 2026—and below 6 percent for European banks.

The net impact will likely be a further concentration of growth in Emerging Asia, China, Latin America, and the United States. We expect that these regions will account for about 80 percent of the estimated $1.3 trillion in global banking revenue growth between 2021 and 2025.

The type of bank will be another major differentiator. Deposit-rich franchises may gain most from higher rates leading to better yields on low-cost liabilities. By contrast, lending portfolios would have to endure the double impact of higher cost of funds and higher risk if economies fall into recession or are consumed by stagflation. After the transitory spike in 2022 from higher margins, some 60 percent of revenue gain in the following years is likely to come from wealth management services, deposits and payments, and transaction banking (Exhibit 8).

We expect Emerging Asia, China, Latin America, and the United States to account for about 80 percent of the estimated $1.3 trillion in global banking revenue growth between 2021 and 2025.

Exhibit 8

As banking growth shifts to new geographies and with higher interest rates, liabilities become more profitable.

Banking revenue historical growth (2017–21),[1] $ billion

CAGR <0% 0–3% 3–6% >6%

Country	Retail banking				Wholesale banking		
	Consumer financing	Mortgage	Deposits and payments[2]	Brokerage[3]	Transaction banking	Financing[4]	Total[5]
North America	40	74	–16	28	–2	52	176
Western Europe except UK	3	13	–11	8	10	27	49
United Kingdom	–1	5	3	–1	–4	15	16
Japan	1	3	–10	–2	–10	–2	–20
Developed Asia except Japan	0	6	–6	3	0	11	14
Emerging Asia except China	22	9	1	6	7	21	65
Latin America	25	10	4	2	11	13	66
Africa	4	1	3	0	5	6	18
Middle East	1	2	0	0	1	5	9
China	67	62	14	29	99	167	438
World	160	185	–19	74	116	316	832

Banking revenue forecast growth (2021–25),[1] $ billion

CAGR <0% 0–3% 3–6% >6%

Country	Retail banking				Wholesale banking		
	Consumer financing	Mortgage	Deposits and payments[2]	Brokerage[3]	Transaction banking	Financing[4]	Total[5]
North America	70	20	82	37	60	31	300
Western Europe except UK	5	6	23	10	22	4	68
United Kingdom	–4	0	5	1	9	–4	7
Japan	3	2	0	1	2	3	11
Developed Asia except Japan	4	3	13	4	21	10	55
Emerging Asia except China	25	8	39	5	31	19	128
Latin America	32	5	22	5	24	8	96
Africa	5	1	4	1	8	8	27
Middle East	1	3	3	0	5	3	16
China	76	43	91	36	207	100	554
World	218	90	282	99	388	183	1,261

[1]Revenues after risk cost, estimated change. [2]Includes revenues for CA deposits. [3]Includes distribution of mutual funds, insurance, and pension funds. [4]Includes specialized finance. [5]Totals do not include CMIB, micro lending, and asset management.
Source: McKinsey Global Banking Pools; McKinsey Panorama

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What didn't change in 2022: Banks continue to trade at a growing discount to other sectors

Banking as a sector is valued substantially below other industries, a reflection of the stark legacy challenges that traditional banks face. About half of all banks are net destroyers of value, and many of the others are weighed down by prospects of slow growth and low expectations for profitability.

Total global market capitalization peaked in 2021 at $16 trillion and dropped back to $14.5 trillion by May 2022. Half of this valuation is represented by traditional banking institutions, while specialists and fintechs represent the other half—up from a 30 percent share five years ago.

The gap in valuation between traditional banks and fintechs remains large, even if the 2022 downturn in crypto and BNPL brought fintechs down from their highs. Prices factor in both the recovering margins and the risks to banks if the global economy goes into recession.

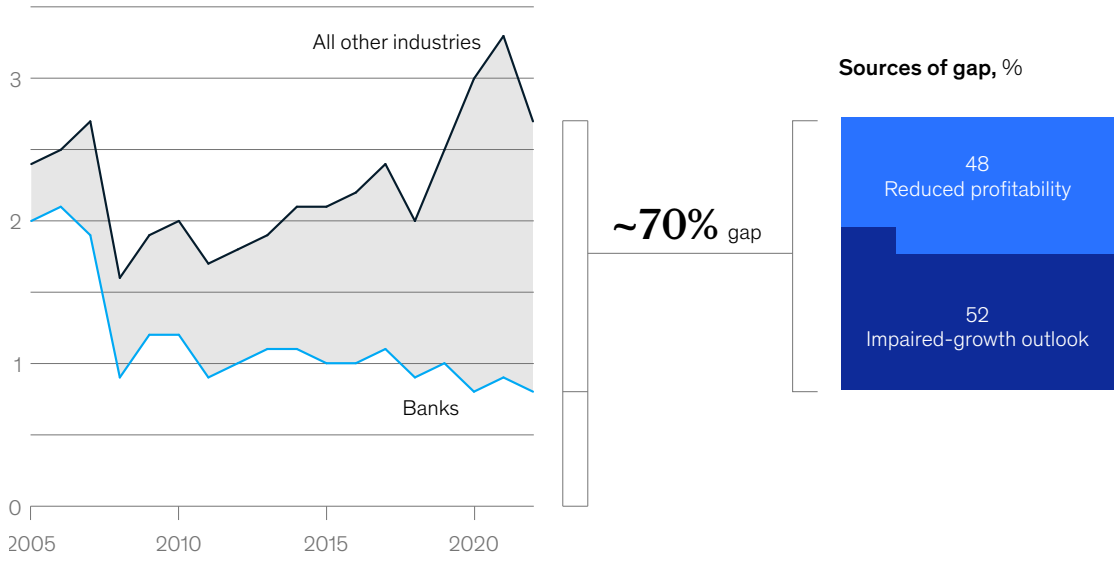
Between banking and other sectors, only about half of the valuation gap is a reflection of the banking industry's low profitability (Exhibit 9). The other half reflects the expected lack of future growth, demonstrated by banks' low P/E ratios. Banks have P/Es of about 13, compared with an average of 20 for other sectors—and the discount has been growing. Banks lack systematic growth perspectives for the sector overall, leading investors to discount the sector, which lacks the growth premium observed in other industries.

Within this overall gloomy picture are some much brighter spots. Indeed, in looking at banking in 2022, we can fit banks into one of three categories. First are the ones we are calling the North Stars (Exhibit 10).

Exhibit 9

The valuation gap between banking and the whole economy widened, with half driven by profitability, the rest by low growth outlook

Price-to-book ratios



Source: S&P Global; McKinsey Panorama

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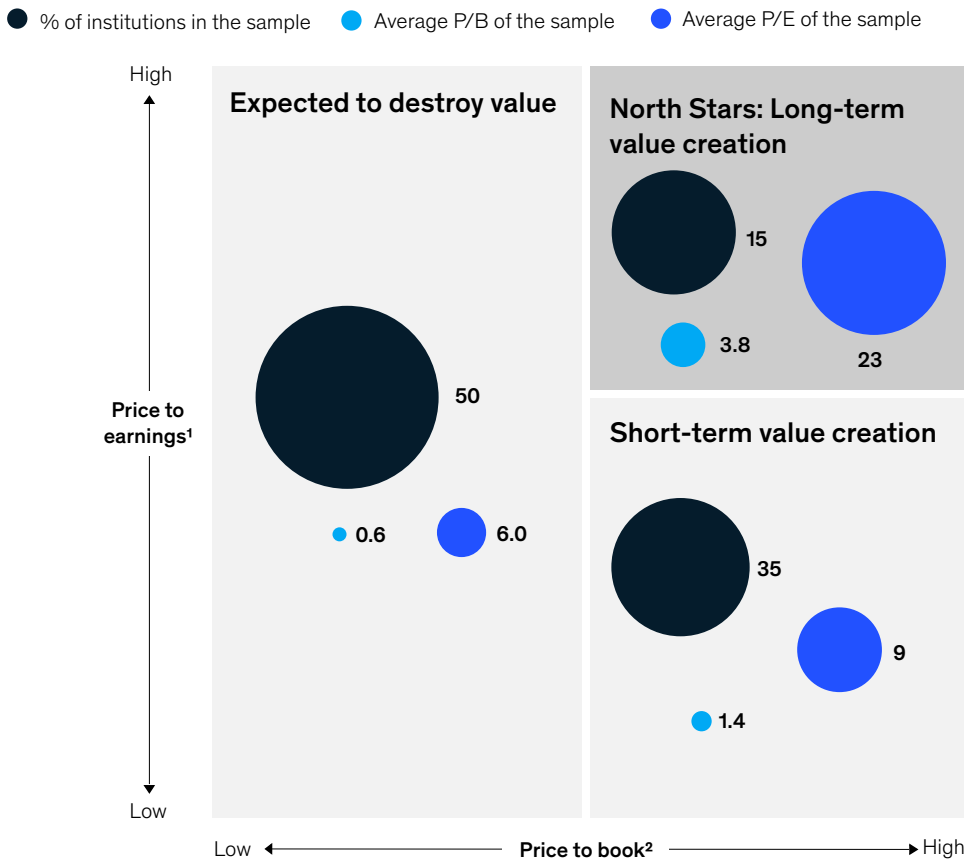
Exhibit 10

Only one out of six financial institutions demonstrate potential for long-term value creation.

Financial institutions ranked by price to earnings vs price to book



Note: Analysis based on a sample of more than 1,000 institutions.
¹Price to earnings of 15 defined as the threshold for differentiating high and low.
²Price to book of 1 defined as the threshold differentiating high and low.
Source: S&P Global; McKinsey Panorama

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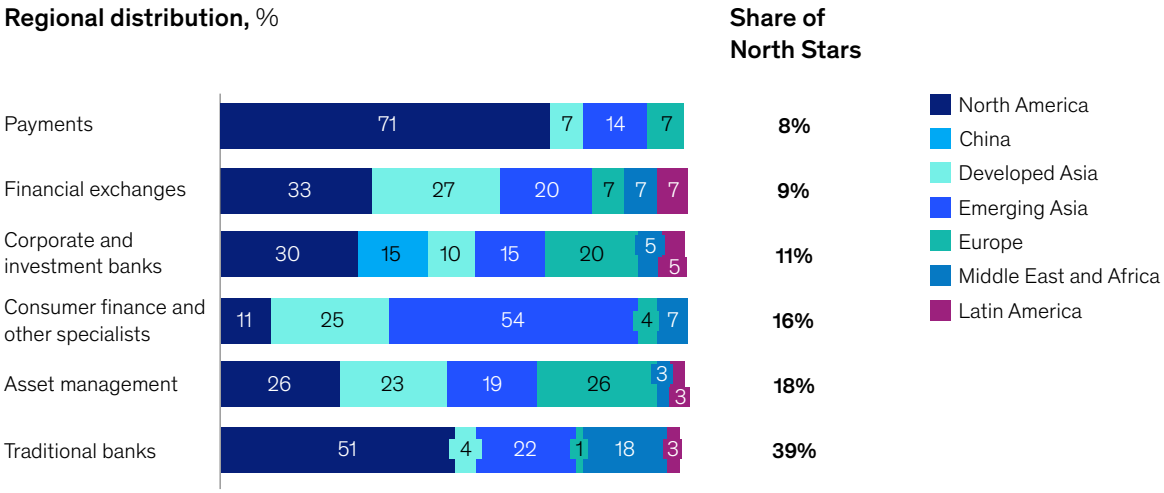
These banks perform well in terms of both high returns today and future growth. Their high P/Es imply high expectations for long-term growth, while their high price-to-book ratios (P/Bs) reflect risk-adjusted short-term profitability. These banks are a relative rarity: globally, only about 15 percent of banks qualify as a North Star. Their valuations are two to five times higher than others.

Traditional banks represent just 39 percent of all the banks we call North Stars, and they are concentrated in North America, Emerging Asia, and the Middle East and Africa (Exhibit 11). This means that the majority of North Stars are specialists with a focused business model. These institutions are more geographically diverse, with concentrations for certain sectors; for example, North American payments providers and consumer finance and other specialists from Emerging Asia demonstrate both high growth and high profitability.

So much for the good news. In our annual banking review last year, we identified about half of banks as value destroyers. This year, by looking not just at profitability but also at growth, we find that in addition to this 50 percent, which are destroying value now and are expected to continue doing so in the future, another 35 percent are currently creating value but are not able to grow sufficiently to ensure they will continue doing so. These are banks with high P/Bs but low P/Es. In other words, they are profitable now, but over the longer term, the expectations for future growth are not bright. These banks, which include many of the largest in the world, must radically reinvent their business model to find systematic growth opportunities in banking (or beyond), in order to build up a growth premium and protect their future sustainability.

Exhibit 11

Traditional banks represent only 39 percent of North Star institutions.



Source: S&P Global; McKinsey Panorama

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Four dimensions differentiate banks' performance: Geography, specialization, customer segmentation, and scale

To understand why and how banks end up where they do in Exhibit 10, we looked at them across four dimensions: geography, specialization, customer segmentation, and scale. This more detailed analysis is a refresh of the analysis in our annual banking report for 2021, in which we highlighted the importance of business model as a way to understand the growing divergence in bank performance.[4]

Geography is a key factor. For this report, we analyzed the deviation in banks' P/Bs across the last decade, using a standard regression model to estimate the key drivers behind variation in P/B, either from banks' primary business location or because of other factors, including management, operations, and all the other levers that banks command. This analysis clearly highlights geography as one of the key factors in a bank's valuation (Exhibit 12). Overall, we find that a bank's primary business location now accounts for 68 percent of its valuation, a share that has been rising consistently since 2014. At the same time, as we have seen in the India example, bank performance can also diverge strongly within a country or region.

Last year, many banks in Europe were already unprofitable; only 25 percent of the 300 largest European banks were valued above book in 2021. In the months ahead, they face intensified pressure from a potential recession.

By contrast, many Asian banks have higher valuation premiums. About 25 percent of Emerging Asia banks are valued at 1.5 times their book value or above, in part because of fast-growing economies and their innovative practices. P/B and ROE are also strong in the Middle East, Africa, Latin America, and North America.

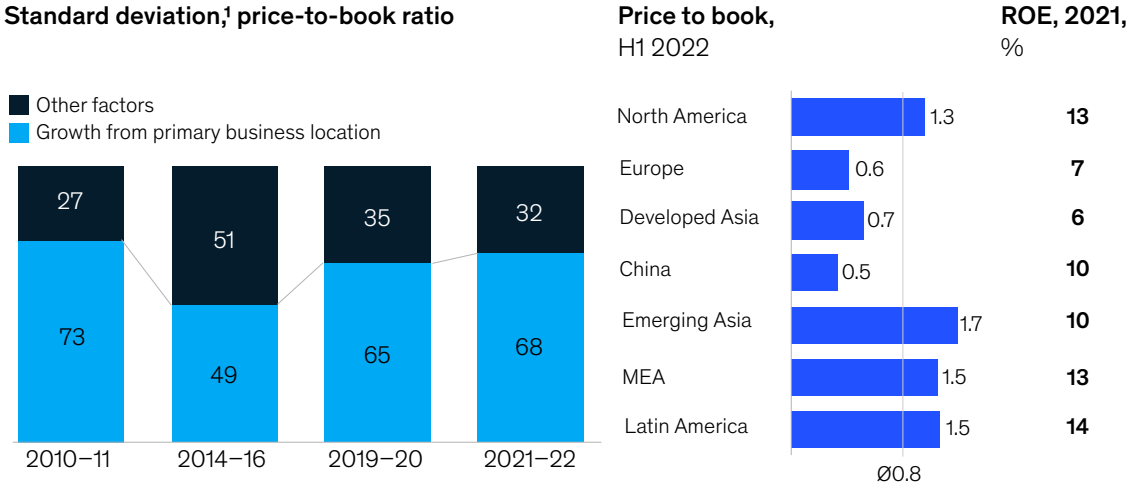
Specializing can be profitable. The second dimension we focus on is a bank's specialization. The analysis here shows that well-valued specialist players and fintechs are—not surprisingly—active in banking products that generate profits, including deposits, payments, and consumer finance. The result is a two-speed system in which traditional banks are left behind (Exhibit 13). This was still true after the market correction in 2022, which did not change the order or magnitude of difference.

Overall, the banking system destroyed about $120 billion in economic value in 2021, with a return on equity that failed to match its cost of capital. But the divergences were very large across areas of banking specialization. Capital-heavy businesses, including mortgage lending and corporate banking, earned returns on equity of less than 7 percent, whereas everyday banking, payments, and wealth management earned returns exceeding 20 percent.

[4] See also, "The chessboard rearranged: Rethinking the next moves in global payments," McKinsey, October 7, 2022; "Reshaping retail banks: Enhancing banking for the next digital age," McKinsey, October 12, 2022.

Exhibit 12

Geography is back as a major driver of valuation.



[1]We analyzed the deviation in banks' price-to-book ratio (P/B) across the last decade, using a standard regression model, to estimate the key drivers behind variation in P/B, from either primary business location for banks or other factors, including management, operations, and all the other levers that banks command.
Source: S&P Global, McKinsey Panorama

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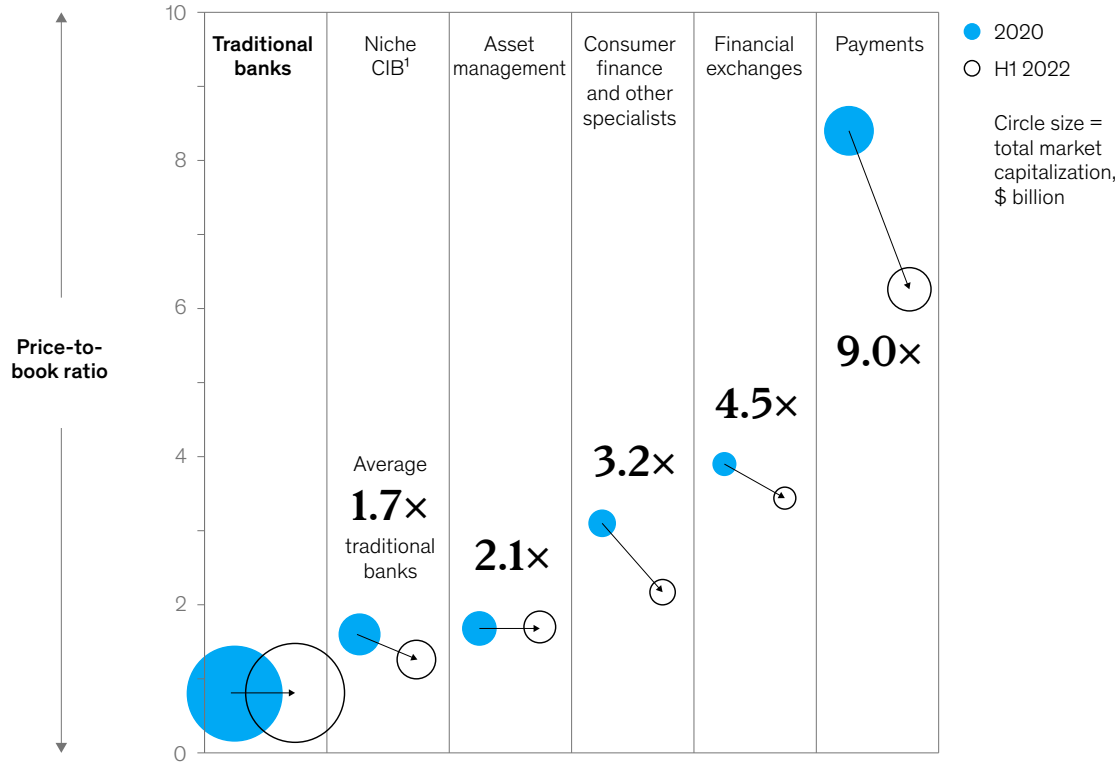
Exhibit 13

Specialized players continue to trade at a premium relative to traditional banks.

Market capitalization and price-to-book ratio, by banking sector



[1]Corporate and investment banking.
Source: McKinsey Panorama; S&P Global

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Nine of the ten largest bigtech and fintech players are focusing on these high-profit segments. For many years, fintechs tended to be rather subscale, but today we see multiple scaling success stories, including Revolut (with a $33 billion market cap and more than 20 million customers) and Nubank ($45 billion valuation and 70 million customers), to name two. Building on success in their home markets and using a digital banking model that covers multiple products, these fintechs have now expanded regionally or even globally, following a step-by-step approach to prioritize markets for international expansion.

Take a fresh look at customer segments and demographics. For customer segmentation, the third differentiating dimension, most universal banks without a specific segment focus can end up with a client profile that matches the demographic distribution. However, our analysis suggests that, in retail banking, disproportionate revenues tend to be locked in specific segments. One notable feature of this analysis is the gap between the demographic distribution of the population and the age at which they generate banking revenue. For example, in the United States, banking revenue peaks among people between the ages of 60 and 70, which is about 40 years after the demographic peak. In China, the trend is reversed: the revenue peak arrives 20 years before the demographic peak (Exhibit 14). The takeaway for banks is that there is no generic formula for how sociodemographic trends such as demographics affect financial needs and business potential. Banks thus need to take a hard look at their customer segments—since traditional cuts such as mass versus affluent can be overly simplistic—and develop a granular segmentation that takes into account age, income, and other social or behavioral aspects, such as digital fluency.

Scale matters. The fourth and final dimension is that of scale. About 70 percent of market capitalization is held by banks that have a P/B of higher than 1 (which is about half of all banks)—even though they account for only 30 percent of assets. Only 10 percent of these banks are already at scale, and they represent a market share of at least 10 percent; the rest of these "value-creating" banks could benefit from M&A to increase their scale.[5] Such marriages can also help improve the performance of the other 50 percent of banks, those that are destroying value, which control some 70 percent of assets.

The dual challenge: Managing the present while preparing for the future

What can banks do in the face of these dual short- and long-term challenges? The current macroeconomic volatility and uncertainty seem unlikely to dissipate anytime soon. Over the next five to ten years, market pressures and shifts expected in banking, including technological changes that disrupt traditional banking, will amount to fundamental structural breaks. It is critically important for banks to improve their short-term resilience and invest in the long term in order to innovate and prepare the path for future profitability, increased growth, and higher valuations. Several actions can equip banks for the short-term challenges and the longer-term imperatives.

Take bold steps now to build short-term resilience
Resilience in the short term is the key to emerging from the current volatile period in a strong enough position to ensure future growth and profitability. That means putting a strategic focus on four objectives.

The first objective is financial resilience. To navigate tumultuous macroeconomic and geopolitical conditions, banks should pursue an optimized balance sheet and capital positions by collecting deposits and by reallocating and repricing loans. The best-performing banks will have a net income structure with low sensitivity to interest rates and risk costs, and should target a cost-to-income ratio of 35 to 40 percent.

Second is operational resilience. That means reducing or eliminating a presence in high-risk countries and building exceptional risk management practices.

Third, banks need digital and technological resilience. Cyberattacks remain a serious risk, and the best banks have a well-protected and future-proof technology infrastructure, and superior data security.

Fourth is organizational resilience. How agile is the decision-making process and the enterprise as a whole? Banks that perform best will have rapid reaction times and invest in attracting, reskilling, and retaining the best talent.

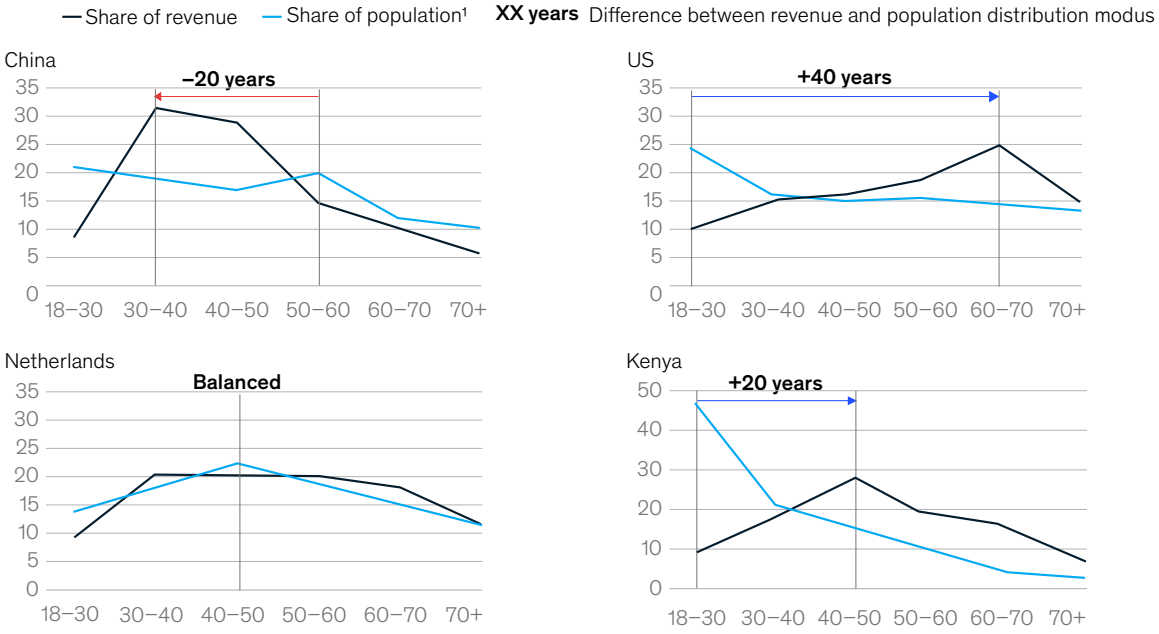
Lay the groundwork for long-term growth
Facing a complex and fast-changing environment, and a relatively higher return on equity in 2022, now is the time for banks to invest in addressing the structural issues in their business models, and in revitalizing long-term profitability and valuations.

[5] Clara Aldea Gil de Gomez, Robert Byrne, Sean O'Connell, and Igor Yasenovets, "Strategic M&A in US banking: Creating value in uncertain times," McKinsey, November 8, 2022.

Exhibit 14

Population demographics diverge from banking sources of revenue, indicating the importance of segment-focused banking propositions.

Share of revenue and population by age group, 2022, %



[1]Having an account at any type of financial institution or using a mobile money service with minimum age 15.
Source: McKinsey Panorama

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In our annual banking review last year, we posed a set of questions aimed at stimulating banks' thinking as they craft a strategy for a world of growing divergence. The past few volatile months have shown just how necessary such a strategy is. Banks will need to move from traditional business models to more future-proof platforms, potentially decoupling different business units such as everyday banking and complex financing or advisory services. There are several key approaches to consider:

— *Fostering highly differentiated customer relationships* with a strong focus on establishing a deep emotional connection. One way to measure success here is to determine how many customers are using value-added services beyond banking—banks should aim for a figure greater than 60 percent. Customer satisfaction scores are also a good indicator, and a top ranking in a bank's market should always be the goal.

— *Developing proprietary data and insights on sets of customers.* Banks have an abundance of data about their customers and most can do more to leverage their data. Advanced analytics can play an important role here, but data management systems will need to be mature enough to provide the foundation for a robust data analytics operation. In our experience, leading banks have a clear data and analytics strategy and a good data architecture with strong governance; true leaders go further, to the point where business decisions are fully based on data—with fully 40 percent or higher of the employee base dedicated to analytics and digital, frequently by reskilling existing employees.

— *Making substantial and clear bets when allocating resources and capital,* with an eye on managing economies of scale. Leading banks reallocate more than 10 percent of their capital every year—and the deal value of acquisitions can exceed 40 percent of their banking net income.

— *Creating new customer access and revenue sources.* Successful banks focus on value-added services that generate deep customer involvement and sustainable fee revenues, such as subscription

fees, payments fees, and distribution fees, that do not involve the balance sheet. To truly stand out from competitors, banks should aim to derive more than 50 percent of banking income from these fee sources. For banks, the opportunity is to leverage their massive customer base, go beyond traditional banking offerings, and increase revenue by providing value-added services via digital platforms. Leading banks, in fact, will derive more than 20 percent of revenues from nonbanking sources.

— *Focusing on innovation* with the goal of instilling a truly entrepreneurial culture and attracting and retaining the talent needed to contribute within such a culture. That will require staff dedicated to advanced analytics and digital and an enterprise-wide agility enabling a time to market for new releases of two to four weeks, for true leaders.

— *Developing a strategy around environmental and social transformations.* The next chapter focuses in depth on this topic, but measures banks should track and improve in this area include ESG ratings across the board, ESG issuance volumes, and ESG product coverage across a wide range of banking segments.

Some of the leading banks mentioned in this chapter are already excelling in these areas. Among them is DBS Bank in Singapore, which is successfully achieving a high return from serving digital customers and revenue growth, including from M&A in growth markets. In 2022, DBS committed to achieving a cost-to-income ratio close to 40 percent. Royal Bank of Canada, which trades at about 40 percent above its market price to book, successfully built beyond-banking platforms for multiple ecosystems, including mobility, housing, education, health, wealth and protection, and public services. The bank also launched a loyalty program that connects deeply with customers. In Europe, one of the best-performing banks over the last decade is Hungary's OTP, with a price to book consistently higher than the average for banks in the region. It has excelled in building beyond-banking offers and new revenue sources via a payments application and has expanded throughout Central Europe. Besides these banks, many local fintechs are developing applications and marketplaces at scale; two examples are Kaspi in Kazakhstan and Yape in Peru.

Whether they are large incumbents or up-and-coming fintechs, all banking institutions are looking for new, scalable growth opportunities. Only one out of six banks—the North Star banks we describe here—have high growth and profitability outlooks. However, in many cases, these banks have achieved this status by gaining market share from lower-performing banks in market that is broadly stagnant. What systematic opportunities exist that can radically transform the growth outlook for the overall banking industry? In the next chapter, we look at one candidate: the burgeoning field of sustainable finance, where the next era is dawning.

Successful banks focus on value-added services that generate deep customer involvement and sustainable fee revenues.

The next era for sustainable finance

Sustainable finance is now a major topic for banks, and one that is wide in scope. In this chapter, we describe how the market not only has grown robustly but also is entering its "next era." Originally, sustainable finance primarily involved financing renewable energy. In this next era, it encompasses almost all business and industry sectors as they begin the profound and capital-intensive transformation needed for a low-emission future.

The term sustainable finance is often used loosely in the context of the push to integrate ESG goals into corporate reporting. In this chapter, we use this broad, aggregated (and sometimes opaque) category to describe market trends and the current state, since it is the most readily available. But in discussing the outlook for the next era, we focus more narrowly on climate financing opportunities.

The market for sustainable instruments has been affected by the broader global slowdown, and numerous challenges remain. They include perceived and real greenwashing regarding the ultimate impact of capital deployed, an uncertain economic outlook, the current energy-security and cost-of-living crises, and the pace of the transition to a lower-carbon economy. Regardless of these challenges, we find that policy shifts, technological advances, and the growing focus of companies and financial institutions on a sustainable future are combining to unlock large value pools. We estimate that globally, debt-focused investment supporting the transition could offer banks revenue potential of at least $100 billion annually by 2030.[6] Sizable revenues are also expected from equity capital markets and advisory services, transaction banking, and sales and trading, including in nascent carbon markets.

Sustainable finance has become a meaningful share of bank business

The market for sustainable finance is growing, and for banks, it now represents a meaningful share of business (see sidebar "A growing menu of sustainable-finance opportunities"). As sustainable instruments gain acceptance, scrutiny of how they are labeled also increases. In particular, sustainability-linked loans and bonds need to establish their credibility. More broadly, there is a need to disaggregate ESG categories in order to distinguish and track climate finance separately. Credibility and tracking will improve with increasing standardization and transparency in baseline performance and progress against targets, including emissions, energy mix, and resource impact.

[6] For more information, see "The net-zero transition: What it would cost, what it could bring," McKinsey Global Institute, January 2022. Estimates based on McKinsey Transition Finance Model, McKinsey Global Banking Pools. Investment includes loans, bonds, and project finance in low-emission assets.

A growing menu of sustainable-finance opportunities

Sustainable finance—including lending, M&A, and capital market products used for ESG purposes—has expanded in recent years to include a wide range of instruments. At times, these are not clearly defined, which can make standardized measurement difficult. Tracking and reporting tend to focus on the following categories of debt instruments:

Green bonds/loans. Proceeds from these debt instruments are applied to climate and environmental projects.

Sustainability bonds. Proceeds from sustainability bonds are applied to environmentally sustainable outcomes of a combination of green and social projects.

Transition bonds. Transition bonds are issued by carbon-intensive organizations with the intention to support decarbonization.

Social bonds. Proceeds from social bonds are applied to social projects, such as promoting social welfare and creating a positive communal impact.

Sustainability-linked bonds/loans. The terms of these fixed-income securities are aligned with the issuer's or borrower's sustainability performance targets to improve the company's sustainability profile. (Key performance indicators for these securities have not yet been standardized.)

Clean-energy project finance. These non- or limited-recourse loans finance clean-energy projects, including low-emission generation, sustainable fuels, and grid-scale storage, among other low-emission technologies.

Issuance of sustainable debt instruments, which was close to zero five years ago, has seen substantial year-on-year growth through 2021 (Exhibit 15). The volume of sustainable bonds, including green bonds, sustainability bonds, social bonds, and sustainability-linked bonds, reached $965 billion, up by 80 percent from 2020. The volume of sustainable syndicated loans, including green loans and sustainability-linked loans, totaled $683 billion in 2021, up by more than 200 percent from 2020.[7] Sustainable financing activities related to the capital markets—including M&A, equities, and carbon trading—also have expanded over the past few years.[8]

The momentum slowed in 2022 amid the broader market declines: sustainable debt instrument volume fell 17 percent between 2021 and 2022.

Still, sustainable debt capital markets and lending fared better than the debt market overall. For example, syndicated loan volume overall declined by 16 percent between the first half of 2021 and the first half of 2022, while sustainable syndicated loans declined by just 2 percent in the same period.

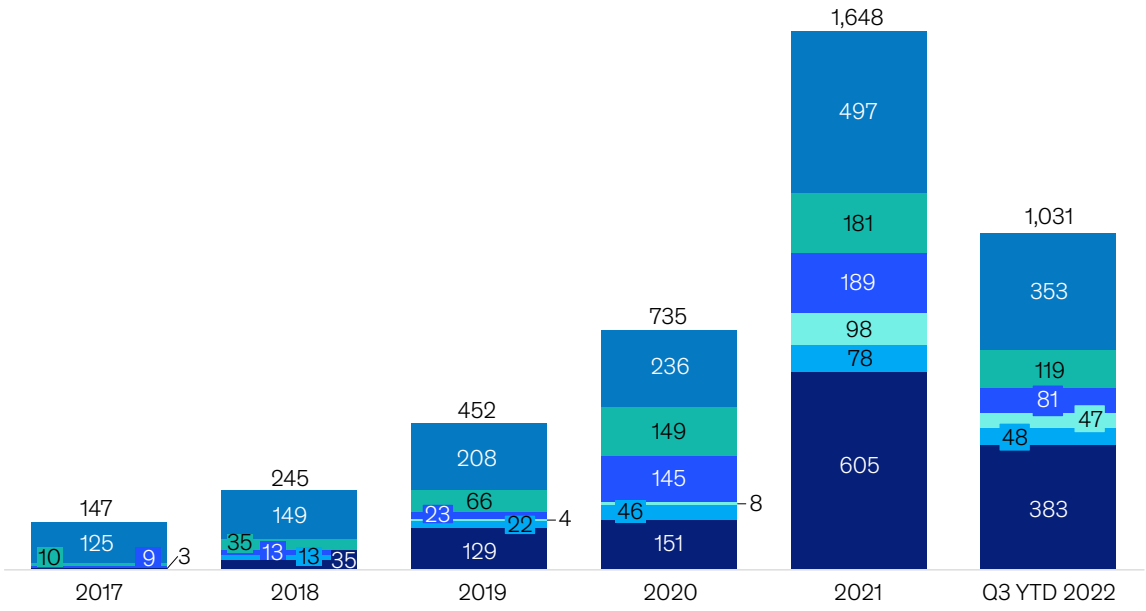
Issuance of sustainable bonds currently accounts for about 12 percent of total bond market volume, while sustainability-related syndicated loans are about 13 percent of the volume for global syndicated loans (Exhibit 16). The sharpest rise in issuance came during 2020, primarily driven by growth in sustainability-linked loan volumes, which tripled between 2020 and 2021, and green loans, which grew 71 percent between 2020 and 2021.

[7] The lack of standardized definitions for what constitutes a "green" financial instrument may result in overcounting. For a list of instruments we include, see sidebar "A growing menu of sustainable-finance opportunities." Data from Dealogic database and McKinsey Global Banking Pools.
[8] Data from Dealogic and IIF Taskforce on Scaling Voluntary Carbon Markets. Capital markets are not explored in depth because data availability and transparency are limited.

Exhibit 15

Sustainable debt instruments saw significant growth through FY 2021, but growth slowed during the first nine months of 2022.

Volume of global sustainable debt instruments,[1] $ billion



	CAGR, % 2017–21	Year-over year change, % Q3 2021–Q3 2022
Green bonds	41	–6
Sustainability bonds	111	–20
Social bonds	107	–52
Sustainability–linked bonds	N/A	–30
Green loans[2]	265	12
Sustainability–linked loans[2]	290	–9

[1]Includes green bonds, sustainability and sustainability-linked bonds, social bonds, green loans, and sustainability-linked loans.
[2]Sustainable syndicated loans.
Source: Dealogic as of Oct 12, 2022

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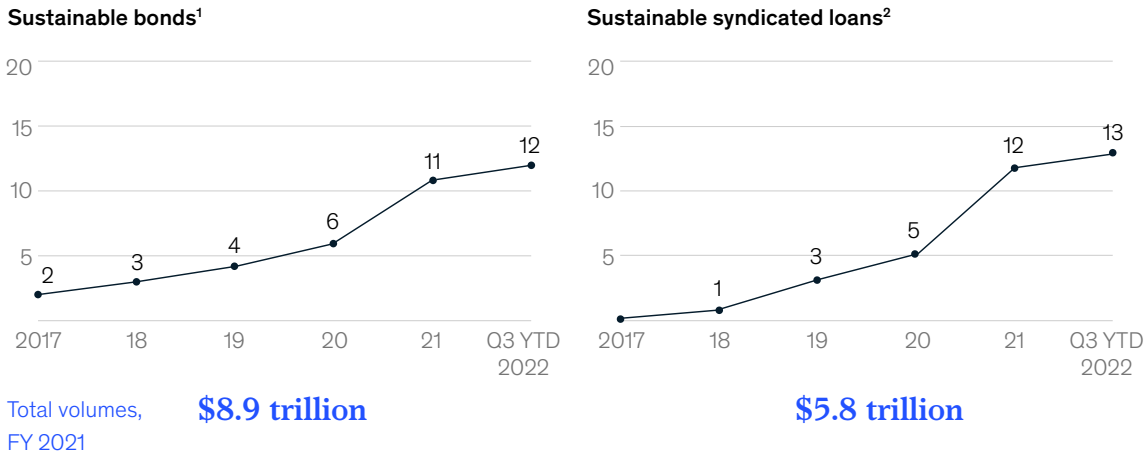
Exhibit 16

Sustainable debt instruments are a rapidly expanding portion of global debt issuance.

Sustainable debt instrument market share, % of total volume



[1]Includes green bonds, sustainability bonds, social bonds, and sustainability-linked bonds, as well as securitization products (ABS and MBS), which contribute <5% of sustainable bonds' total volume.
[2]Includes green loans and sustainability-linked loans.
Source: Dealogic as of Oct 12, 2022

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Sustainable debt is catching on

Initially, green bonds dominated the sustainable debt market. In 2018, they accounted for 37 percent of total sustainable debt issuance, and from 2017 to 2021, they grew at a compounded annual rate of 41 percent. However, sustainability-linked loans (SLLs) rose even faster from 2017 to 2021, growing by an average annual 290 percent and surpassing green bonds as a share of the sustainability debt market in 2021.

SLLs are performance-based instruments that tie interest rates to the achievement of defined sustainability targets. Challenges remain in setting goals, including incentives for meeting the targets set and penalties for failing to do so. They provide more flexibility than "use of proceeds" instruments like green bonds, which can only be used for specific earmarked projects that are aligned with guidelines such as the Climate Bonds Taxonomy.[9] If standards for setting high-impact metrics and assessing SLL performance are rigorous, these could be the instruments that draw and direct significant capital toward the transition.

Europe has historically led issuance of sustainable debt instruments; in 2018, it issued more than 80 percent of sustainable syndicated loans, including sustainability-linked loans. Since that time, North America has gained an increasing share of the market for sustainability syndicated loans and sustainable bonds (Exhibit 17).

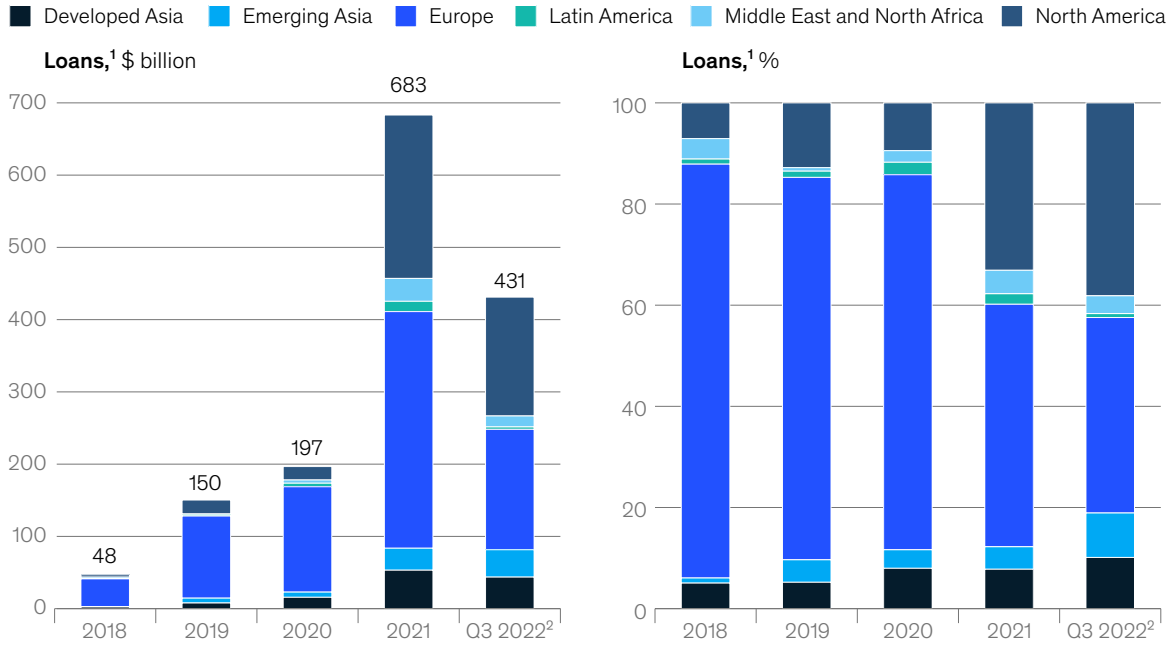
SLLs are already being used in high-emissions sectors for power producers and industrials. For example, the Asian Development Bank will provide $150 million toward an SLL to decommission coal plants in Indonesia,[10] and JPMorgan and ING acted as structuring agents for US Steel's $1.75 billion asset-based sustainability-linked credit facility.[11]

[9] "Climate Bonds Taxonomy," Climate Bonds Initiative.
[10] CIF Accelerating Coal Transition (ACT): Indonesia Country Investment Plan, Government of Indonesia, October 3, 2022.
[11] "US Steel extends sustainability-linked ABL credit facility," Business Wire, June 1, 2022.

Exhibit 17

Sustainable debt instruments emerged in Europe before proliferating globally, most notably in North America.

Total sustainable syndicated loans



[1]Includes green loans and sustainability-linked syndicated loans, with sustainability-linked syndicated loans making up 75–90% of each year's total volume.
[2]Year to date.
Source: Dealogic as of Oct 12, 2022

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Financing for clean-energy reached record highs in 2021, then slowed

Strong and sustained growth in solar energy projects sent the volume of clean-energy project finance to record highs of $164 billion in 2021, of which $77 billion came from solar projects alone.[12] For overall clean-energy project finance, the annual average growth rate since 2017 has been 19 percent (Exhibit 18).

Solar and wind financing dominate the market globally. Both onshore wind and solar financing were strong in Europe and North America relative to other regions between 2017 and the first half of 2022, together representing more than 60 percent of solar and onshore wind markets. While renewables financing has risen globally, Latin America and the Middle East appear slower to embrace the trend than Asia.[13]

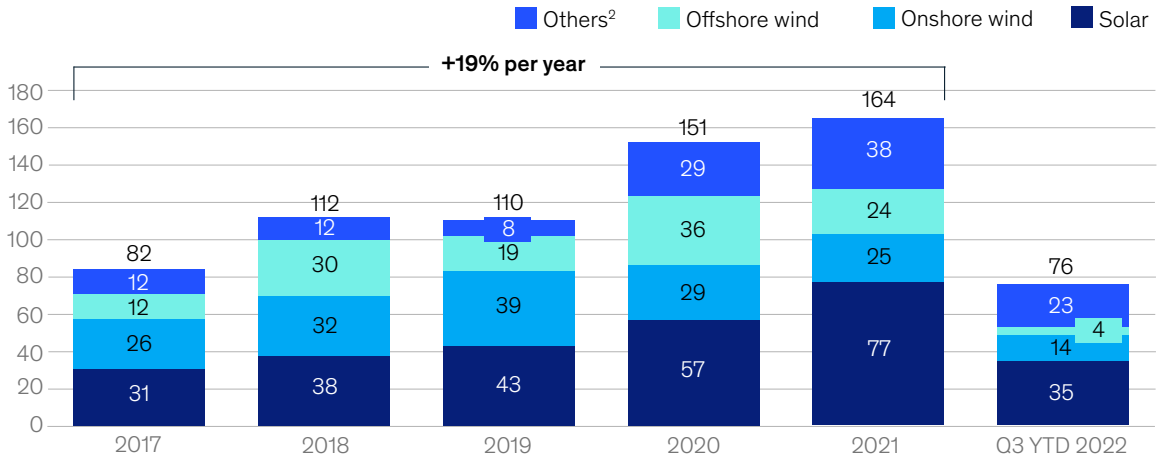
Banks saw a 38 percent decline in clean-energy project finance volume in the first half of 2022, largely because of declines in solar and wind projects. However, sustained growth in clean-energy project finance is expected to close the gap between current renewable generation and the amount needed for the energy transition, because the decline was likely the short-term result of a confluence of external factors, rather than a reflection of changing sentiment among financiers. Factors noted in chapter 1, such as the broader economic slowdown, supply chain disruption, and the energy crisis triggered by the war in Ukraine, affected renewable project finance, as did the threat of US antidumping and anti-circumvention tariffs on solar goods from Southeast Asia.[14]

[12] Clean-energy project finance includes project finance for solar, wind, batteries, biofuels, biomass, carbon capture utilization and storage (CCUS), energy storage, electric vehicles, geothermal, hydrogen, hydro-water, waste management, and other renewables.
[13] IJ Global Project Finance & Infrastructure Journal database as of October 10, 2022.
[14] One study found that global loan spreads for solar PV were 20 percent lower in 2015–20 than in 2010–14. See Xiaoyan Zhou, Christian Wilson, and Ben Caldecott, *The energy transition and changing financing costs,* Oxford Sustainable Finance Programme, University of Oxford, April 2021.

Exhibit 18

Clean-energy project finance slowed in the first nine months of 2022, after sustained growth.

Clean-energy project finance, funding volumes,[1] $ billion



[1]Funding volumes include total value (debt and equity) of transactions closed in the given year.
[2] "Others" include a variety of transition technologies, eg, batteries; biofuels; biomass; carbon capture, utilization, and storage; energy storage; electric vehicles; geothermal; hydrogen; hydropower; waste management; and other renewables.
Source: IJ Global Project Finance & Infrastructure Journal database as of Oct 10, 2022

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Financing for clean energy is also becoming more competitive as a diverse and well-capitalized set of players, including asset managers, infrastructure funds, and institutional investors, pile into the market. Private-equity firms invested $76 billion in renewable energy, sustainable mobility, and carbon technologies in 2021, more than doubling investments since 2017. Venture capital firms nearly quadrupled investments in the same technologies during the same period.[15]

Banks are shifting how they finance clean energy

As transition technologies like solar and wind mature, developers are refining how they bid to account for different risks and durations of contracts. Banks must change as a result: they are lending for shorter periods, aggregating project portfolios to increase ticket size, and playing a structuring role to earn incremental fees. With this greater involvement, banks are exposed to more volatile wholesale electricity markets, as long-term power purchase agreements become scarcer. [16]

Banks are also beginning to explore emerging technologies such as hydrogen and storage. For now, investors are providing most capital flows for new climate solutions, but as these projects scale, banks will be increasingly involved. Ensuring sufficient government support, demand, and contracted offtake for projects—that is, agreements to sell the power—is critical for the feasibility and continued expansion of bank financing for emerging technologies.

Funding for clean energy through the equity capital markets continues to see steady growth, mostly in the power and utilities sector. The total volume for IPOs, follow-ons, and convertible bonds has risen by an annual average of 33 percent through 2021, from $11.2 billion in 2017 to $34.7 billion by 2021.[17] Merger and acquisition activity has remained on a lower growth trajectory of about 5 percent annually.[18]

Banks are also financing clean energy through their retail businesses. For example, McKinsey has estimated that the residential solar financing pool

[15] PitchBook data for venture capital and private-equity deal transactions as of the first half of 2022.
[16] "Merchant tails on renewable assets a growing concern for power finance sector," S&P Global, February 14, 2020.
[17] Clean-energy equity market volume is calculated using keyword search in the Dealogic database. Keywords include renewable, sustainable, biomass, waste management, clean energy, biofuel, cleantech, sustainability, clean water, EV.
[18] Dealogic M&A database.

for banks was around $40 billion in 2021, up from $14 billion in 2017.[19] Banks are also packaging loans through securitizations; for example, Goldman Sachs securitized $459 million of solar loans from Loanpal in 2020.[20]

Sustainable finance is entering a new era

In the past decade, efforts at reducing emissions have centered on decarbonizing power generation, and investment has focused on renewables. By the end of 2021, around 30 percent of global electricity generation was from renewable energies.[21] In this next era of transition, we will see continued focus on capital deployment for sustained growth in low-emission power generation. But we will also see many new aspects of the global energy transition being pushed as priorities—and requiring financing. These include growth in electrification, the build-out of energy transmission and distribution infrastructure (including grid-scale storage), emission reductions in high-emission and energy-intensive sectors such as steel and cement, and natural climate solutions. All these efforts will require financing.

Worries about energy security and potential fuel shortages caused by Russia's invasion of Ukraine amount to a setback for the energy transition in some countries, especially in Europe, but the longer-term outlook remains unchanged. Indeed, the war is likely to have accelerated adoption of renewables by highlighting the risks of overdependence on imported fossil fuels, especially from Russia.

Signs of a next era include national net-zero plans and bank engagement in innovative green financing

Signs of a next era for sustainable finance are already visible, including continued investments in power generation and shifts to other decarbonization enablers. In Germany, for example, the government is expediting power decarbonization, setting a target of 80 percent renewable energy generation by 2030—a goal that will require significant capital investment. Developing markets also are reckoning with capital-intensive transitions. The World Bank estimates that China needs a $14 trillion investment in power and transport to meet its net-zero 2060 goals.[22] Increased funding for emerging technologies also is a harbinger of change. The historical growth of hydrogen and grid-scale storage, albeit from a low base, shows that project finance for emerging technologies is growing quickly (Exhibit 19). The growth in energy storage is notable in that it has been sustained even in the face of spiking raw-material prices.

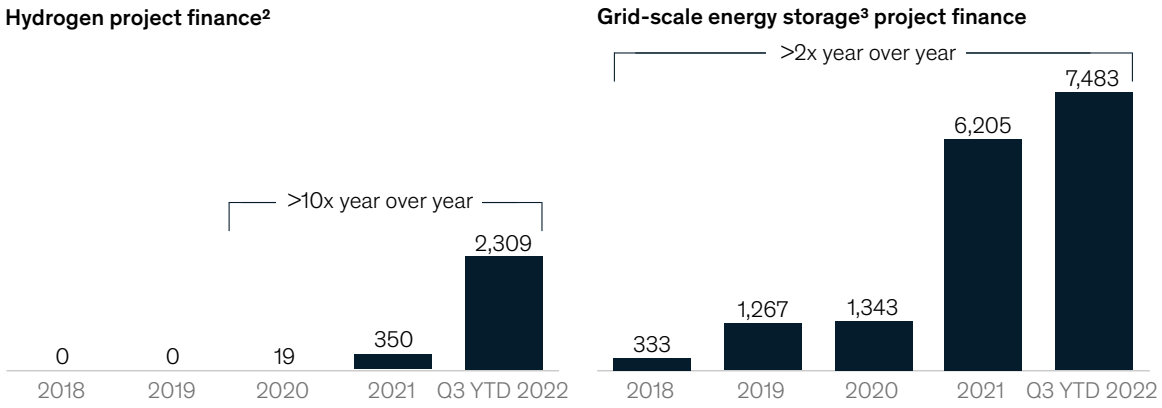
Finally, the new era is reflected in bank innovations aimed at financing the low-carbon transition (Exhibit 20). Leading global banks and smaller local banks alike are developing new products, platforms, and in some cases, separate financing entities across sectors.[23] For example, Rabobank partnered with UN Environment and created AGRI3 Fund, which aims to mobilize $1 billion of investment by providing credit enhancements and technical assistance to popularize low-emission agriculture.[24]

[19] Wood Mackenzie, NREL, IRENA. Includes direct bank and TPO financing.
[20] "Goldman Sachs pledges to buy $320M of loans from Loanpal," S&P Global, June 10, 2020.
[21] "Global Energy Perspective 2022," McKinsey & Company, April 26, 2022.
[22] *China country climate and development report,* World Bank, October 2022.
[23] "Sustainable banks in the US: What they are and a list of eco-friendly options," Mighty, 2022.
[24] "AGRI3 Fund launched with Dutch government and Rabobank as anchor investors," UNEP, January 27, 2020.

Exhibit 19

Despite broader slowdowns, project finance for emerging technologies remained resilient.

Annual funding volume,[1] $ million



[1]Funding volumes include total value (debt and equity) of transactions closed in the given year.
[2]Growth in the first 3 quarters of 2022 driven by 2 large publicly supported projects in the US and the UK.
[3]Predominantly includes lithium-ion battery storage systems and projects with combined generation and storage.
Source: *Infrastructure Journal*

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Exhibit 20

Banks have already started to build innovative green businesses.

Business type		Examples
Products and services Tailored offerings for sectors, technologies, or customer groups	Lending	**Retail banking:** Electric-vehicle (EV) loans, green mortgages **CIB[1]:** Sustainability-linked loans, green loans, securitized loans (eg, residential solar), supply chain financing
	Capital markets	**CIB:** Green-bond issuance, equity issuance for cleantech companies, M&A advisory
	Investments	**Retail banking and CIB:** Green deposits **Wealth and asset management:** Climate technology funds, climate transition funds, decommissioning funds, blended finance funds
	Other innovative services	**Retail banking:** Car subscription, reverse leasing of rooftop solar **Wealth and asset management:** Proxy voting choice, climate-based security selection and portfolio modeling
Platforms Dedicated advisory or trading platforms for a wide range of customers	1-stop shop advisory platforms	**Retail banking:** EV education, purchasing, and financing resources for retail customers **CIB:** Energy-efficiency education and financing resources for customers that are small and medium-size enterprises
	Asset placement platform	**CIB:** Originate-to-distribute platforms for green assets (eg, renewable-infrastructure assets)
	Carbon markets	**All:** Carbon footprint tracking, carbon offset solutions

[1]Corporate and investment banking.

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Growth has been fueled by policy shifts, new technologies, and growing corporate momentum

Policy changes, declining transition technology costs, and broader demand for decarbonization will continue to shift transition-investment risk profiles and project economics, creating investable value pools. Here we give some examples of the trends making sustainable finance more bankable.

Policy shifts

Government subsidies, tax credits, and guarantees, among other interventions, are unlocking bankable value pools to enable the low-carbon transition. In the United States, for example, extensions of and changes to tax credit programs under the Inflation Reduction Act could almost double new solar and wind capacity by 2030, compared with a scenario in which previously established tax credit programs expire.[25] The modeled capacity increase would require an additional $450 billion investment by 2030.[26] The UAE has announced plans to invest $163 billion in projects to generate almost half of the nation's power needs from renewables by 2050.[27]

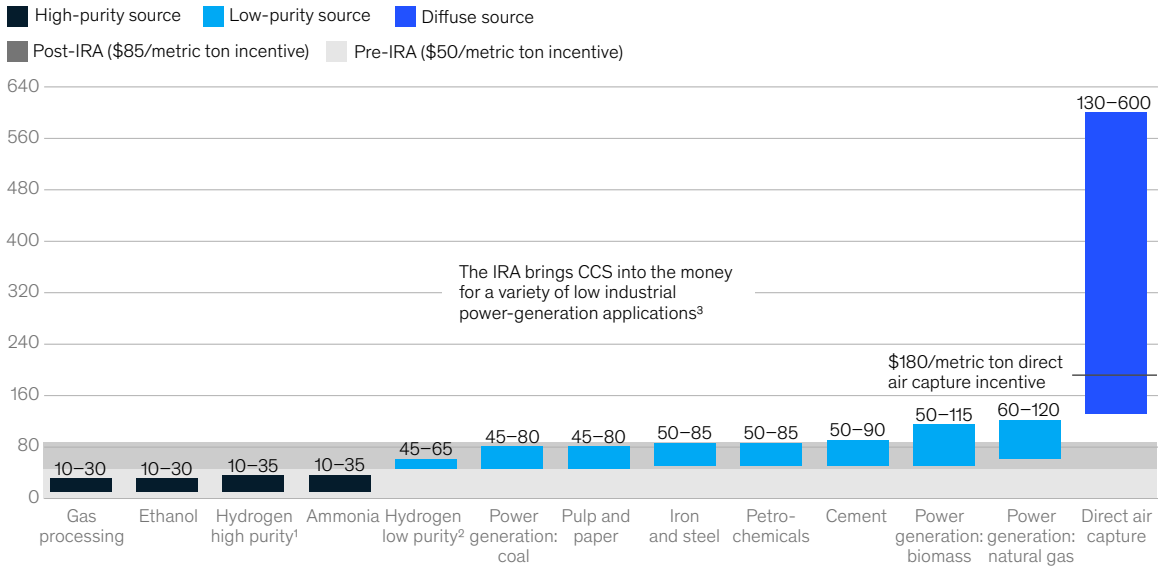
The European Union and United Kingdom have carbon emission trading schemes—known as cap-and-trade policies—that effectively set a market price on emissions. The EU saw record carbon prices just shy of $100 per metric ton in 2022. More than 80 percent of projects in advanced stages of development globally are in the United States, the United Kingdom, or countries governed by the EU trading scheme.[28]

Some countries, including the United States, are providing government support to derisk hydrogen and are looking to incentivize carbon capture and storage (CCS). In the United States, for example, the 45Q tax credit subsidy for CCS was recently expanded from $50 per metric ton to $85 per metric ton under the Inflation Reduction Act. That makes CCS viable for a wide range of industrial applications domestically (Exhibit 21).

Exhibit 21

The Inflation Reduction Act (US) dramatically improves the projected economics for a wide range of CCS applications.

Carbon capture costs,[1] $/metric ton of CO_2



[1] Figures exclude transport and storage costs. These costs can vary dramatically from project to project and will affect project economics.
[2] Hydrogen emissions can range from isolated high-purity streams (low cost) to lower-purity combined streams (higher cost), depending on facility design.
[3] Project economics must be valuated based on capital structure and project-specific capture, transport and storage costs.
Source: EU DPO Emission Baseline Database; EU ETS Data; Global CCS institute; Langholtz et al. (2020); NPC; Santos et al. (2021)

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[25] McKinsey Power Model. Capacity additions and incremental capital spending may be overestimated.
[26] Data from McKinsey Power Solutions and the National Renewable Energy Laboratory. Base case projections with expiration of ITC and PTC were compared with IRA, including utility-scale solar and onshore wind, given no change for residential solar, commercial and industrial solar, and offshore wind.
[27] "United Arab Emirates to invest $163 bn in renewables," BBC, January 10, 2017.
[28] McKinsey CCS Tracker.

Technological innovation is enabling lower costs and increased readiness

As sustainable technologies scale, prices and perceived risk decline, leading to expanded commercialization and financing opportunities. In renewables, costs for solar-powered energy have declined by 80 percent in the past decade (although macroeconomic factors and supply chain disruptions, among other factors, still cause prices for end customers to fluctuate).[29] Renewables now make up the bulk of new generation capacity.[30]

Financing opportunities created by these cost declines include scaling strained mineral supply chains, equipment manufacturing, and retail financing for consumer purchases. As an example, the costs of lithium-ion batteries have dropped sharply—by 97 percent since 1991[31]—although their cost will likewise continue to fluctuate with rising demand and supply constraints in lithium-ion. Adoption of electric vehicles (EVs) has accelerated globally because of declining production costs, customer preferences, and extensive subsidies; rising sales will create financing opportunities across the value chain, including for vehicle purchases, battery manufacturing, and the construction of charging infrastructure. EV loan volumes for banks have already quadrupled since 2017 and are expected to grow 24 percent annually to more than $800 billion through 2030.[32]

The increase in demand for clean-energy technologies such as EVs also increases demand for raw materials such as critical minerals. Similar value-chain-wide implications will arise across multiple climate solutions as technology risks and costs decline.

Companies move from commitments to action to accelerate decarbonization

By the end of 2021, more than 1,800 companies had put in place science-based decarbonization targets.[33] Some companies are already funding pilots and projects initially through their own balance sheet, but many are looking to lenders and the capital markets to fund bigger operational and strategic initiatives. For example, the Swedish steel company H2 Green Steel recently announced support from European financial institutions for €3.5 billion of debt and equity financing for a sustained hydrogen-powered "green" steel plant in Sweden. BNP Paribas, ING, KfW IPEX-Bank, and UniCredit are leads in the deal.[34] Even companies in low-emission sectors are looking at opportunities to achieve organic and inorganic growth by creating businesses that are relevant for a low-carbon future.

The financial services industry pivots toward sustainability

Multiple factors—including competitive pressures, client and investor demands, and regulatory requirements—are leading the financial services industry to incorporate climate change and low-carbon transition factors into decision making. Leading institutions in each region have set explicit targets for sustainable finance. However, differing definitions of what constitutes "sustainable" make it difficult to compare progress on these commitments. Many recognize that they may face challenges in accounting for the impact of capital deployed or facilitated.

The focus of net-zero financed emissions commitments also is evolving. Banks are maturing from a simple understanding of the baseline to exploring with clients the levers to finance reduced emissions in the real economy. In sectors where low-emission alternatives are not readily available or not at sufficient scale, banks are working through the challenges of increasing exposure in order to support efforts to reduce emissions over time.

As McKinsey noted in a recently published article, banks' goals for financed emissions are likely to create a consequential shift, as these targets impose constraints on banks' balance sheets, much as other internal or regulatory constraints apply to capital, leverage, or liquidity. For example, to shift incentives and behaviors so they support transition finance, institutions are changing objectives for "reducing financed emissions" into objectives for "financing reduced emissions." Meeting these objectives may require more nuanced methodologies for measuring financed emissions or setting targets.

[29] "Documenting a decade of cost declines for PV systems," National Renewable Energy Laboratory, February 10, 2021.
[30] *Electricity market report,* International Energy Agency, January 2022.
[31] David L. Chandler, "Study reveals plunge in lithium-ion battery costs," *MIT News,* March 23, 2021.
[32] McKinsey Center for Future Mobility.
[33] Science Based Targets Initiative (SBTi), data as of September 2022.
[34] "Sweden's H2 Green Steel gains support for $3.45 bln debt funding for fossil fuel-free plant," Reuters, October 24, 2022.

Regulatory focus on climate and sustainability

Regulatory requirements for climate risk management and financial disclosure will further infuse rigor and transparency into the banking industry's approach to sustainability. Prudential regulators globally have defined requirements for climate risk management, including expectations for banks to integrate climate impact into strategic planning and business decision making.

Disclosure-focused regulations and standards will also create increased rigor and transparency for climate finance. Even more importantly, they will create more potential for banks to identify financing opportunities. For example, in March 2022, the International Sustainability Standards Board (ISSB) circulated draft global climate-related and sustainability-related disclosure standards incorporating both climate risk and opportunity reporting.[35] The standards apply to climate-related disclosures for banks but also create transparency into borrowers' climate-related exposures and transition plans, helping banks identify opportunities for financing their clients. The European Union and United Kingdom also have introduced new reporting requirements.[36]

A large, untapped value pool for banks

Financing the energy transition will require a massive reallocation of capital. Banks are on the front line to provide financing and advisory support for a wide range of opportunities.

Funding needs for a net-zero transition could exceed $4.4 trillion annually through 2030

Various estimates of the required investment needed for the net-zero transition exist; according to an analysis by the McKinsey Global Institute and McKinsey's Sustainability Practice, the transition will require at least $4.4 trillion annually through 2030 (see sidebar "Sizing the investment needed for the net-zero transition").[37] Clean-power investment, for example, will need to be at three times 2020 levels by 2030, while investment in the electrification of road mobility will need to increase to ten times 2020 levels by 2030.

Sizing the investment needed for the net-zero transition

McKinsey Global Institute has developed an economy-wide model based on the Net Zero 2050 pathway from the Network for the Greening of the Financial System (NGFS).[38] This model suggests that transition to a net-zero economy by 2050 will require significant front-loaded spending across the economy in sectors that account for approximately 85 percent of global emissions. Financing low-emission assets over the next decade will require some $4.4 trillion annually, comprising $2 trillion continued investment and $2.4 trillion new investment. The biggest spending needs include those in the power, building, and transport sectors (see exhibit, next page).

Heavy investments in sectors that provide critical inputs or safeguards for the economy, such as clean power and nature restoration, will be needed before 2035 to establish a foundation for the transition to net zero. Specifically, the NGFS Net Zero 2050 scenario assumes large, up-front investments in afforestation to capture maximum CO2 sequestration benefits. For the rest of the economy, some sectors, such as mobility, have large, sustained capital-spending needs through 2050. Other sectors, such as sustainable fuels, have fast-growing investment potential.

These estimates of the cost of the transition do not take into account heightened physical risks and commensurate adaptation costs, which could lead to higher spending estimates.

[35] "Climate-related disclosures," IFRS Foundation, n.d.

[36] See "Corporate sustainability reporting," European Commission, n.d.; and "Climate-related reporting requirements," UK Financial Conduct Authority, updated June 10, 2022.

[37] *The net-zero transition*, January 2022. The report estimates an average of $9.2 trillion annual capital spending on a combination of low-emission and high-emission physical assets between 2021 and 2050. In this chapter, we focus on the investment need in low-emission assets only, which is where the model suggests most opportunities will be found before 2030.

[38] *NGFS climate scenarios for central banks and supervisors,* Network for Greening the Financial System, June 2021.

Exhibit

Transition to a decarbonized economy will require significant capital expenditures across sectors.

CAGR >5% Maximum capital expenditure by 2030

Sector	Project type	Capital expenditure need trajectory[1]	Minimum, $ billion	Maximum, $ billion	CAGR,[2] %	Relevant volume for banks,[3] %	Financing implications
Clean power	New facilities for renewable generation, transmission & distribution, and storage		1,080	2,520	2	~45	Decarbonizing the power sector requires significant up-front capital expenditures in the next decade and sustained investment through 2050
Sustainable fuels	New facilities and production plants for hydrogen or biofuels		40	370	7	~45	Capital expenditure need will grow significantly over the next 3 decades, creating incentives to invest in business building now to prepare for future growth opportunities
Building de-carbonization	Insulation, heating, and cooking[4]		870	1,850	2	~60	Decarbonizing the building sector will consistently require substantial capital expenditures through 2050 to achieve net zero, creating a stable opportunity for banks
Electrification of road mobility	New battery electric vehicles, fuel-cell electric vehicles, and supporting infrastructure		230	3,490	9	~55	Low-emissions road mobility requires large capital expenditures and may grow significantly through 2050, making it a hard-to-ignore opportunity for banks
Agriculture	Crop and livestock production and emissions measures		410	620	1	~65	A stable increase in investment need for sustainable agriculture will create an attractive opportunity for some investors
Nature restoration	Land purchases for afforestation and avoidance of deforestation		10	150	N/A[5]	~25	Heavy investment in nature restoration is required between now and 2030 to have sufficient forest stock for net-zero by 2050[6]
Green industry and manufacturing	New low-emissions cement or steel facilities and equipment		20	130	6	~35	Capital expenditure need will grow significantly over the next 3 decades, creating incentive to invest in business building now to prepare for future growth opportunities

[1]Average annual capital expenditure requirement under the NGFS Net Zero by 2050 scenario from 2021 to 2050. [2]Calculated using annual capital expenditure required for 2021 and annual capital expenditure required for 2050. [3] Percentage of capital expenditure investments accessible for commercial financial institutions and corporations, 2021–30. [4]Accounts for increase in number of buildings; upgrade pricing did not distinguish between new builds and existing buildings. [5]Maximum capital expenditure needed for investment now. [6]Insufficient investment in the next decade will lead to higher capital expenditure needs than illustrated for 2030–50.
Source: "The net-zero transition: What it would cost, what it could bring," McKinsey Global Institute, 2022

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Diversity of opportunities

Based on the McKinsey model's $4.4 trillion capital spending estimate, we estimate that commercial financial institutions have an annual direct financing opportunity of about $820 billion. Beyond that, banks could facilitate an additional $1.5 trillion of investments for corporates between 2021 and 2030 (Exhibit 22).

Banks can continue to increase investment in comparatively mature technology such as renewables or EVs by partnering with large corporate clients or cultivating relationships with new and less-established companies operating in the sustainability space. For example, banks are expanding into utility-scale solar while addressing margin contraction by bundling solar and battery storage in a single deal.

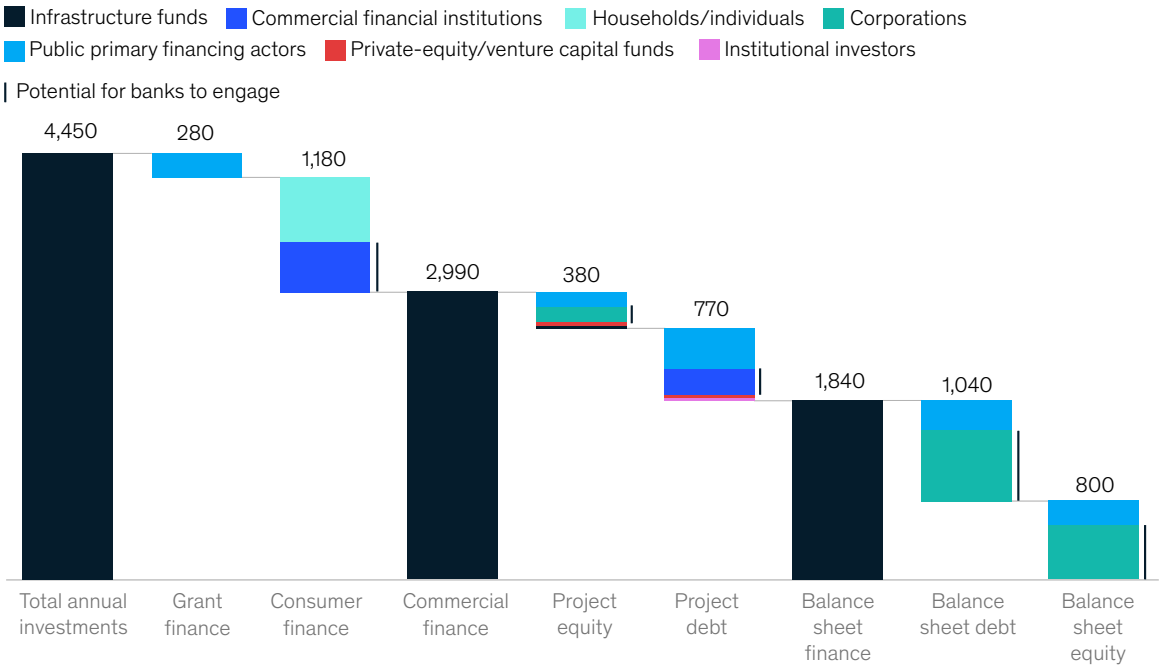
Further, banks can address a more holistic set of capital needs across value chains. For example, hydrogen requires renewables, electrolyzers, storage, and distribution infrastructure; it also has broad applications in services, including ammonia production and steel. [39]

Decarbonizing emission-intensive assets will be capital intensive and will require banks to work closely with customers on capital deployment.[40] These efforts are often technically challenging and come with the credit and reputational risk of financing carbon-intensive assets, institutions, and sectors. However, if banks are to finance the lowering of emissions, engagement with carbon-intensive sectors is critical. This could include guiding and helping utility clients through coal plant decommissioning, financing the application of CCS to cement production, or offering tailored solutions for building retrofits. Banks can leverage existing instruments, offer new products, or spin off new entities to address this challenge.

Exhibit 22

Banks have a variety of possible ways to finance the low-carbon transition.

Annual investment requirement,[1] 2021–30, $ billion



[1]Numbers in the chart may not sum to totals, due to rounding.
Source: "The net-zero transition: What it would cost, what it could bring," McKinsey Global Institute, 2022; McKinsey Transition Finance Model

McKinsey & Company

[39] *Global hydrogen review 2021,* International Energy Agency, October 2021.
[40] *Net zero by 2050: A roadmap for the global energy sector,* International Energy Agency, October 2021.

Finally, since carbon offsets will be an important lever for companies to use in meeting their emission reduction targets in the near term, especially in hard-to-abate sectors, banks can play a role in financing offset projects. Some global banks have acted as the lead arrangers of investments in scaled carbon projects or have directly financed them. For example, JPMorgan served as the placement agent for the latest $650 million equity round of Climeworks, a leading direct air capture start-up.[41]

A role beyond debt-focused climate finance

Clients will need support to navigate the complexities of the end-to-end transition journey in the most capital-optimal way. Within corporate and investment banking (CIB), M&A opportunities emerge as large corporates in carbon-intensive sectors restructure, transition, or acquire new low-carbon businesses. As new climate-tech markets mature, banks will also play a role in facilitating the consolidation of fragmented markets.

Banks can serve as advisors and intermediaries for a wide range of companies, from large corporates to rising start-ups, on services such as transition advisory, asset placement, and carbon market facilitation.

In the carbon market space, many banks have already started building businesses across the value chain, from supply to intermediation and demand. Some global banks have set up carbon credit trading desks and developed financial products around carbon credits, including indexes, funds, and certificates. Banks have also been acting as demand aggregators by developing digital tools to help corporate clients purchase and use offset solutions.

Opportunities also beckon in retail banking. Banks can provide green services across multiple business lines, such as advisory platforms (for example, a one-stop shop for home retrofits); green consumer lending, including for EVs; green asset vehicles; and climate-focused funds.

Within asset management, banks already manage a significant capital pool that can facilitate the climate transition. Globally, the top 30 bank-captive asset managers in 2021 held more than $26 trillion in assets under management—more than 20 percent of the global asset management market. And institutional investors, which together contribute about 60 percent of the global asset management market, increasingly use environmentally focused topics to search for their investments.[42] In doing so, many are narrowing their focus from the broader ESG category as a catchall investment thesis to a more specific and substantiated strategy focus on climate financing, which is being driven by both demand and regulatory pressure.

Significant demand for debt

Based on the roughly $4.4 trillion of capital required to meet net-zero targets and the share of that capital likely to come from bank lending, we estimate that the revenue potential for banks from debt investment will average roughly $100 billion annually through 2030.[43] This represents approximately 5 percent of total global banking revenue pools (Exhibit 23).[44] It does not include the sizable revenue potential that exists beyond debt-focused investments.

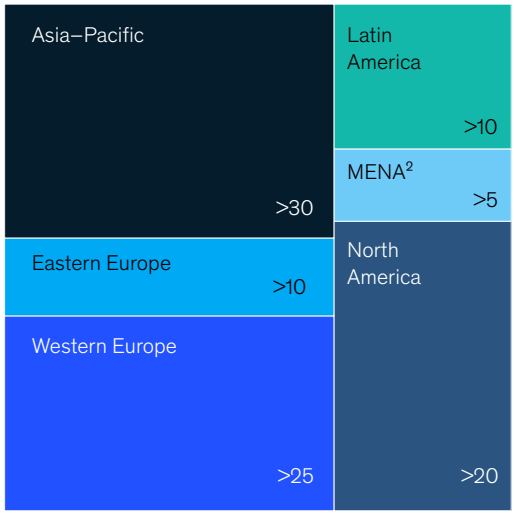
Revenue potential for banks from debt investment could average $100 billion annually through 2030.

[41] "Climeworks raises CHF 600 million in latest equity round," Climeworks, April 5, 2022.
[42] eVestment; McKinsey Global Growth Cube.
[43] Interest-related revenues from the main bank product categories, including balance sheet debt (consumer finance and corporate loans) and project finance were modeled with different maturities by product categories and margins by regions. The analysis does not include underwriting fees for capital-market-related transactions and fees for M&A or related revenues from sales and trading, transaction banking, and ESG investment products.
[44] McKinsey Global Banking Pools; McKinsey Transaction Finance Model (TFM).

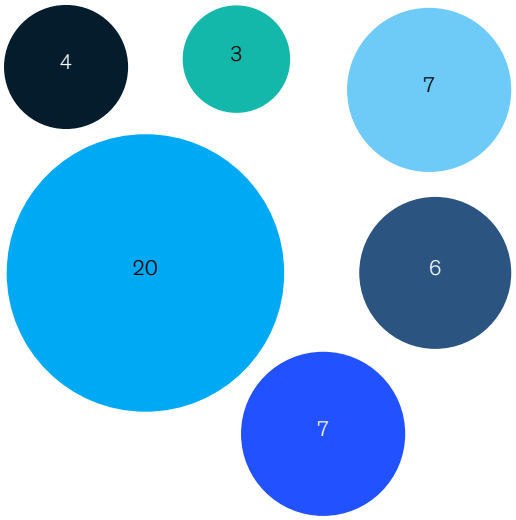
Exhibit 23

Based on investment requirements in low-emission assets, the total global banking revenue potential is about $100 billion per year thorough 2030.

Average annual revenue pools for banks from debt-related investments in low-emission assets,[1] 2022–30, $ billion



Retail- and wholesale-lending banking revenues for financial year 2021, %



[1]Regional revenue potential is calculated based on the bank-accessible portion of investment needs in low-emission assets for each region by 2030. Investment needs are modeled using the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario. Interest-related revenues from the main bank product categories (consumer finance, balance sheet debt, and project finance) are modeled with different maturities by product categories and margins by regions. Underwriting fees for capital-market-related transactions and fees for M&A, as well as related revenues from sales and trading, transaction banking, and environmental, social, and governance investment products, are not included in the analysis.
[2]Middle East and North Africa.
Source: McKinsey Global Banking Pools; McKinsey Transition Finance Model; "The net-zero transition: What it would cost, what it could bring," joint report from McKinsey, McKinsey Global Institute, and McKinsey Sustainability, Jan 2022

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Navigating the next era

Banks will face some key challenges and need to take measured actions to seize the significant opportunities in the new era of sustainable finance.

Critical challenges to scaling the business

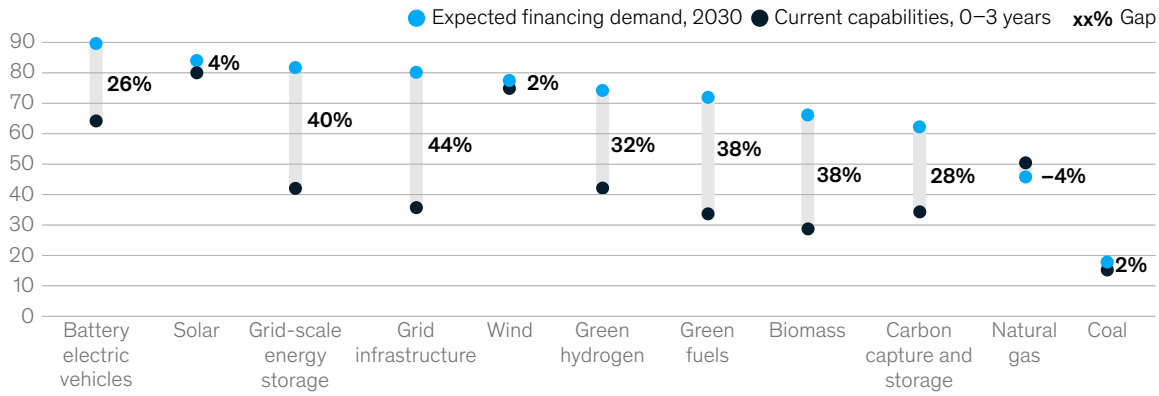
While banks are increasingly active in sustainable finance, success in scaling the business will depend on how well they address some critical challenges. In a McKinsey survey of bank executives with active roles in sustainable finance in their organization,[45] responses highlight the importance bank leaders are giving to sustainable finance and reveal gaps in banks' capabilities to capture the emerging opportunities. Some 70 percent of bankers indicate that financing the climate transition is a top-five CEO priority for their bank, and they predict a significant increase in attractiveness and reduction in risk in transition technology financing over the next eight years. However, bank leaders report a significant lack of needed capabilities outside of solar and wind. Respondents predict that climate solutions—including grid-scale storage and infrastructure, green hydrogen, green fuels, biomass, and CCS—will see rising demand for financing. At the same time, a much smaller percentage of bankers say their banks have near-term capabilities to finance each of these areas (Exhibit 24).

[45] Survey conducted in Q3 2022 including 50 bank executives with active roles in sustainable finance, including head of business, head of sustainability, and credit or climate risk executives.

Exhibit 24

Banks are underinvesting in the capabilities needed to meet expected transition financing demand.

Financing capability and expected demand gap,[1] % of total respondents



[1]Respondents ranked capabilities and expected demand 1–5 (1 = very low, 2 = low, 3 = neutral, 4 = high, 5 = very high). The graph displays % of respondents who ranked each as 4 or 5.
Source: McKinsey survey of global bankers (n = 50)

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Lack of expertise is not the only challenge. Several others are significant:

Project economics. Some nascent or rapidly evolving technologies have high up-front capital requirements combined with uncertain cash flows. Long payback periods for certain technologies may increase risk and diminish returns, while the front-loaded capital required for the transition across sectors may discourage lenders from committing capital.

Market conditions. Margins have been contracting for some bankable technologies, including utility-scale solar. Merchant tail exposure has grown in mature markets, limiting the predictability of project cash flow. Some natural climate solutions, like conservation and ecosystem restorations, have relied on carbon markets for monetization, but these markets are still nascent, and pricing uncertain.

Credit risk. Many deals, especially in newer technologies, currently fall outside banks' risk appetite, for reasons that include lack of historical performance data; uncertainty in future cash flows, caused by price uncertainty or regulatory reliance; longer-tenor, unconventional legal structures; and lending to newer or smaller companies. Although bankers are developing solutions to mitigate some of these risk factors, some deals may not get past credit committees.

Building the precision of credit risk management approaches could enable the scaling of sustainable finance. That would mean, at the transaction level, building expertise and precise risk measurement to understand the economics and sources of uncertainty at the deal level. At the portfolio level, managing exposure limits by underlying technologies, sponsors, and geographies can enable banks to grow in sustainable finance while maintaining a diversified credit portfolio and avoiding concentration risk.

Scalability. Many green projects depend on permits, supporting infrastructure, and supply chains, all of which can delay scaling. Some do not have enough certain demand or are not bankable without policy stimulus.

Standardization and disclosure. For now, there are no established standards for sustainability-related financial products or performance metrics. This is an impediment to efficiency in product scaling and heightens the risk of greenwashing—although, as noted earlier, the regulatory environment is evolving. Indeed, heightened disclosure requirements and scrutiny may require additional data, tracking, and reporting for sustainability-related capital deployment, resulting in higher transaction costs.

Banks can establish and evolve controls on climate statements and disclosures to meet these rising regulatory requirements and investor demands. It will be important to demonstrate the decarbonization impact of sustainable financing activities, especially where commitments are made.

Reputational risk. A factor that could affect sustainable finance in the future is reputational risk. In particular, brown-to-green financing may create reputational concerns, given the profiles of clients, including fossil fuel companies.

Forging a path forward

Sustainable finance will require a strategic approach as banks decide not only what they will finance but also how they finance. They will need a nimble approach to assessing a rapidly changing market and should adjust their stance as they prioritize the value pools they want to access, based on factors such as existing client base, institutional strengths, and geographic footprint. In this final section, we offer a starter list of ideas to consider.

Corporate and investment banking. Among banking businesses, CIB institutions have made the most progress. However, many opportunities remain for them to capture:

— Build on the progress made in renewable energy over the past decade. This includes scaling the financing capabilities to close the gap for solar, wind, and hydro while simultaneously developing capabilities for new clean energy such as green hydrogen and enabling infrastructure such as storage.

— Capture transition financing opportunities with the existing client base. Changing market conditions may unlock some commercial opportunities through direct incentives; other opportunities may require creative partnerships and the development of solutions with clients directly. Many opportunities will require new credit capabilities and, possibly, a "credit sandbox."

— Expand capabilities for advisory to support clients as they try to navigate the complexities of the transition in the most capital-optimal way, whether it be through M&A, spin-offs, hedging, using carbon offsets, or implementing other strategies.

— Work with climate-tech companies in early growth stages. With the speed at which technologies and markets are moving, companies may move from venture capital and private-equity rounds to IPO faster than expected. CIB institutions that build expertise in specific emerging technology areas will be best prepared to capture a growing share of the market while also supporting clients in the full financing life cycle. Some banks have started to invest as principals in venture capital funds or launched their own funds to gain exposure and access to early-stage climate-tech companies.

— Capitalize on the rapid growth of carbon markets. These markets present opportunities across the value chain, from supplier financing, carbon trading, and intermediation to advisory and buyer financing. Depending on strategic capabilities, banks can build businesses to address opportunities in any or all parts of the value chain.

Commercial and small-business banking. Midsize and small businesses are in much earlier stages of sustainability. Growth for banks serving these markets will be rooted in scalable financing solutions for commercially viable products and services, as well as in providing expertise and capabilities. Where clients are retrofitting buildings and shifting their energy mix, banks can provide equipment finance for energy-efficiency measures (such as HVAC, building management systems, electric machinery, and solar panels) or financing for retrofits. They can also finance vehicle fleets as companies transition to electric and fuel-cell vehicles.

For small businesses, banks can advise clients about the economic case for decarbonizing—for example, information on tax credits and grants or the financial case for specific measures aimed at increasing energy efficiency. Banks also can give access to tools and analytics for tracking carbon emissions. These capabilities can be developed either in-house or through partnerships with vendors or nonprofits.

Retail banking. Retail banks can create portfolios of solutions to help households decarbonize. The largest decarbonization opportunities on the consumer side will be in making homes more energy efficient. In addition to mortgage options for energy-efficient homes, banks can provide financing solutions for retrofitting, home appliances, and rooftop solar panels. In addition, banks can capture the sizable opportunity in auto finance, where the transition to EVs will require financing of vehicles and EV chargers—either home EV charging or subscriptions to EV charging networks.

Retail banks can also support customers through innovative platforms or a one-stop shop that provides a single point for all sustainability-related financing. Finally, retail banks can explore partnership options—for example, with solar developers and EV networks—to enable the scaling of these solutions.

Wealth and asset management. Wealth and asset management firms can develop thematic investment options with targeted climate-forward investment theses to meet the demand from institutional and retail investors. Institutions and retail investors alike are increasingly shifting their focus from general ESG themes to the low-carbon transition: over the past five years, total global assets under management in climate funds grew more than eight times, reaching $408 billion in 2021.[46]

As we enter the next era of sustainable finance, banks are already finding different ways to participate and capture the opportunities. The revenue and growth prospects are evident and likely to grow. These institutions are critical to facilitating access to the capital needed to support the transition to a sustainable future. While we're still in the early stages of this transformation, accomplishing it already requires forward-looking leadership in the banking sector.

[46] *Investing in times of climate change 2022: Assets in climate funds double as product development accelerates*, Morningstar, 2022. Climate funds are mutual funds and exchange-traded funds with a climate-related mandate, including low-carbon, climate-conscious, green bond, climate solutions, and clean-energy/tech funds.

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Acknowledgments

The authors would like to thank the following colleagues for their contributions to this report: Faraz Ahmad, Zsofia Balogh, Debopriyo Bhattacharyya, Sarika Chandhok, Kevin Xi Chen, Deirdre Collins, Joseba Eceiza, Nuno Ferreira, Ruying Gao, Somesh Khanna, Suruchi Khurana, Mekala Krishnan, Cindy Levy, Daniel Mikkelsen, Milana Mukiyeva, Marie-Claude Nadeau, Hamid Samandari, Aaron Schifrin, Simone Schoeberl, Joydeep Sengupta, Vishnu Sharma, Marcus Sieberer, Daniel Stephens, Adam Toth, Weige Wu.

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December 2022