

Corporate & Investment Banks | Global

Steering Through the Next Cycle

As a global shock plays out in real time, we expect the CIB sector to weather the storm. What will it look like on the other side and how should banks transform over the next 3-5 years? Attack fixed costs, ramp up ESG, put consolidation on the table.



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Authors

MORGAN STANLEY

Betsy L. Graseck, CFA ¹

EQUITY ANALYST

+1 212 761 8473

Betsy.Graseck@morganstanley.com

Magdalena L. Stoklosa, CFA ²

EQUITY ANALYST

+44 20 7425 3933

Magdalena.Stoklosa@morganstanley.com

Ryan Kenny ¹

RESEARCH ASSOCIATE

+1 212 761 1664

Ryan.Kenny@morganstanley.com

Izabel Dobрева ²

EQUITY ANALYST

+44 20 7677 5006

Izabel.Dobрева@morganstanley.com

Vishal Shah ²

RESEARCH ASSOCIATE

+44 20 7677 2743

Vishal.Shah6@morganstanley.com

OLIVER WYMAN

James Davis

PARTNER

+44 20 7852 7631

James.Davis@oliverwyman.com

Dylan Walsh

PARTNER

+1 646 364 8676

Dylan.Walsh@oliverwyman.com

Mariya Rosberg

PARTNER

+1 646 364 8448

Mariya.Rosberg@oliverwyman.com

Marine Warsmann

PRINCIPAL

+44 20 7852 7483

Marine.Warsmann@oliverwyman.com

Valentin Mihov

+44 20 7852 7138

Valentin.Mihov@oliverwyman.com

Pablo Fernandez

+34 673 363 886

Pablo.Fernandez@oliverwyman.com

1 Morgan Stanley & Co. LLC

2 Morgan Stanley & Co. International plc

3 Morgan Stanley Asia Limited

4 Morgan Stanley MUFG Securities Co., Ltd.

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MORGAN STANLEY CONTRIBUTORS

European Banks / Diversified Financials

Alvaro Serrano ²	EQUITY ANALYST	+44 20 7425 6942	Alvaro.Serrano@morganstanley.com
Gregoire De Salins ²	RESEARCH ASSOCIATE	+44 20 7425 4695	Gregoire.De.Salins@morganstanley.com
Frederick Brennan ²	RESEARCH ASSOCIATE	+44 20 7425 4396	Frederick.Brennan@morganstanley.com

North American Banks / Diversified Financials

Manan Gosalia ¹	EQUITY ANALYST	+1 212 761 4092	Manan.Gosalia@morganstanley.com
----------------------------	----------------	-----------------	---------------------------------

Asean Financial Services & Banks

Nick Lord ³	EQUITY ANALYST	+65 6834 6746	Nick.Lord@morganstanley.com
------------------------	----------------	---------------	-----------------------------

Japan Financial Services & Banks

Mia Nagasaka ⁴	EQUITY ANALYST	+81 3 6836 8406	Mia.Nagasaka@morganstanleymufg.com
Daiki Kato ⁴	RESEARCH ASSOCIATE	+81 3 6836 5412	Daiki.Kato@morganstanleymufg.com

HK Financial Services & Banks

Irene Zhou ³	RESEARCH ASSOCIATE	+852 2848 6526	Irene.Zhou@morganstanley.com
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Global Sustainability

Jessica Alsford ²	EQUITY STRATEGIST	+44 20 7425 8985	Jessica.Alsford@morganstanley.com
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Executive Summary: Steering Through the Next Cycle

The good news on resilience. The wholesale banking industry was the epicentre of the last financial crisis. Now it has the chance to be part of the solution. Over the last 10 years the industry has built up capital and liquidity buffers that today put it in a position of sufficient strength to be able to play a vital role as a shock absorber for the economy, providing much-needed liquidity and risk capital into the system. To test the industry's resilience, we have sketched three scenarios of differing severity for the evolution of the Covid-19 pandemic, its impact on the economy and what this means for wholesale bank earnings over the next 3 years. In our most optimistic scenario (Rapid Rebound) 2020 global industry earnings fall by 100%, while in our adverse scenario (Deep Global Recession) earnings fall by 277%, with credit losses of \$200-300bn. While each scenario represents a painful blow, none is sufficient to seriously dent capital ratios. The economic pain may well be more deeply felt in other sectors and other parts of the financial system. The fallout of the pandemic is in its early phases, but the stronger and more agile wholesale banks could emerge with their standing improved through the process.

The bad news on resilience. The cyclical depression in earnings will reveal structural weaknesses that have developed in the business models of some wholesale banks. Global industrywide profitability and returns have never been lower entering a major stress event: average returns on equity across the industry have hovered around 9-10% over the past 5 years, with the lower quartile banks delivering 7-8%. In our central case, 2020-22 average returns drop as low as 4-5% for the industry – with lower quartile banks close to zero. We expect industrywide returns to recover by 2022 in most scenarios, but the performance gap will be wide and the earnings drought will be particularly challenging for some. Our analysis suggests that the biggest single driver of profitability is scale – within a clearly defined area of specialism, or across a broad set of related activities.

The main culprit is high fixed costs. Only 20-30% of the cost base is flexible today and we think only 5-10% can realistically be exited in the near term (vs. >20% in the Global Financial Crisis). The heavy skew to fixed costs today reflects the increased importance of technology, the growth in regulatory and control functions, and the shift

in performance compensation towards fixed vs. variable structures. Reflecting this, despite several rounds of cost-cutting efforts, costs for the industry have fallen less rapidly than revenues over recent years, leaving some banks with narrow operating margins, and limited capacity to absorb a downturn in earnings. In the midst of a public health emergency, banks are unlikely to pursue cost-cutting through imposing redundancies, and many GSIBs have pledged no layoffs in 2020. With limited room to manoeuvre in the near-term, some banks may be pushed into disposals, asset sales and/or exits to create breathing room.

Business model shifts can improve the economics. The corporate sector is on the frontline of the economic fallout from the pandemic. Thus, the corporate franchise for wholesale banks faces the most acute earnings pressure. Low interest rates reduce margins in transaction banking, and elevated volatility puts the brakes on corporate finance activity, while elevated credit losses drag on earnings. However, following a sustained period of growth we see ample room for optimizing the corporate business to drive up returns, through streamlining sales and coverage, improving pricing discipline, and delivering innovative solutions to tap into higher margin segments.

The institutional franchise, by contrast, is benefiting from record volatility and trading volumes, although this is likely to taper off and be tempered somewhat by adverse inventory movements and trading losses. Market share movements are likely to be significant in the near term. Beyond the next 18-24 months, the structural pressures that have weighed on revenues over the last 5 years are likely to reassert themselves. Banks will need to adapt their models in response to these shifts in client needs.

Collectively we think all the actions can deliver as much as 3 points of ROE uplift for the banks that come out on top.

Playing a proactive role in supporting the transition to a low carbon economy is a potential differentiator. Over the medium term, we believe the Covid-19 pandemic and its economic fallout will accelerate the demand for products promoting a more sustainable

economy. We expect this to be the defining issue of the next cycle, as ESG investing extends deeper into the market, and industries are reconfigured in response to shifts in consumer behaviour and government policies. Those banks able to position at the vanguard of this shift stand to win an outsized share of the \$100bn+ revenue pool. Moving too slowly means being left exposed to transition risk in the lending portfolio, as well as broader risks as investors and some regulators become increasingly focused on the important role banks can play in driving capital towards greener businesses.

Banks need to create operating leverage – which will require sustained investment. We estimate that 5-10% of infrastructure and controls spend can be removed through near-term actions, such as discretionary tech change, third-party spend, consolidation of firmwide processes, and organizational realignment. The real prize, however, is in structural change to the infrastructure and control functions. We believe a 15-20% reduction in these cost items is a realistic goal over 3-5 years. But such structural change requires sustained investment and is inherently complex and hard to deliver. We see considerable risk that some wholesale banks under near-term cost pressure fail to sustain investment in structural change and fall further behind the scale leaders.

Rapid growth in the service provider (fintech) landscape shows what's possible for the bold. Around \$50bn of equity value has been created as \$10bn of wholesale banks' cost base has moved from internal to third-party provision over the last 5-10 years. We estimate another \$60-120bn in equity value could be created by extending this trend into new areas. This is part of the puzzle for wholesale banks aiming to create operating leverage. But for the bold, there is more opportunity. Some may participate in the equity upside through seeding, scaling and likely spinning off new service propositions. Others may seek to use this growing network to more fundamentally redefine their role around a narrower set of core capabilities, assembling best-in-class services across an ecosystem of providers.

Consolidation may be the best answer for some. Taken together, we think the actions above offer a path back to >10% returns for nearly all wholesale banks. But for some, the near-term pressures and scale challenges could be too acute. The recent shift in tone among European policymakers, coupled with discounts to asset values, could finally trigger a new wave of consolidation or exits in the industry.

Actions for management

For the global powerhouses, pursue consolidation and operating leverage. They can build resilience through global scale. But the structural challenges facing wholesale banking will not disappear and we have seen significant shifts in market share in prior crises. Today's sector leaders must adapt to address the rapidly changing needs of clients to avoid opening the door to more nimble traditional and non-traditional competitors. Downside risks could come from their exposure to higher risk segments such as Energy, Transport, Hospitality, and Real Estate.

For the legacy full-service banks, take bold steps. These banks are in a race to build scale before the earnings power of their subscale businesses declines. Management teams will need to reinforce their resolve to sustain investments in structural change or risk falling further behind the leaders. The alternatives are a radical shift to deep specialization or consolidation. For European universals, their corporate franchise, as a key part of the wider banking group's role in providing sustainable financing for the economy, is more important than ever.

For the deep specialists, defend and disrupt. The deep specialists have the most to gain from the current market environment if they can defend their core and look for opportunities to seize beyond the core. The first priority is serving clients in the core, offering reliable access to credit, liquidity, and service. However, there will be opportunities to disrupt, particularly in areas where technology solutions can disintermediate incumbents that pull back during market stress.

Actions for policymakers

The current market stress has laid bare the fragile liquidity and operational resilience in trading businesses, challenges that have been compounded by capital rules that penalize banks for providing liquidity in periods of market stress and compliance rules that constrain remote trading. Focused study and revision of these rules could play an important role in supporting the orderly function of markets in future stress events.

The pro-cyclical effect of capital and accounting rules, in particular newly introduced IFRS9 and CECL standards that accelerate the recognition of credit losses, run the risk of exacerbating stress on the financial sector at the worst possible moment. The current market stress presents an opportunity to study how these rules (and efforts to introduce counter-cyclical capital buffers in the US and elsewhere) would and should actually impact the industry in a period of stress.

Our research suggests that despite strong capital buffers across the industry only a handful of wholesale banks are resilient to a protracted period of earnings stress – this is driven first and foremost by some banks' lack of scale and operating leverage in the business. Consolidation could offer a path to greater resilience for many smaller wholesale banks, but the door to consolidation has been closed by too-big-to-fail concerns or protection of national champions. Without the option of consolidation, we believe some players will exit the wholesale banking business.

Some regulators have started to experiment with climate-based stress tests, and these are emerging as a useful way to push banks to build the data sets and analytical techniques to understand the climate risks on their balance sheet, as well as to prompt useful debate at board and senior management level. Increasing expectations for disclosure by banks on scope 3 emissions (i.e. the emissions of the companies they finance) could be a powerful catalyst for further change, especially if made mandatory, and would arm investors with the information needed to evaluate banks' efforts.

Resilience in an Uncertain World

The resilience of wholesale banks is once again in focus. After more than a decade of steady and stable expansion, the global economy is now in a new period of uncertainty. Wholesale banks have a critical role to play as a shock absorber for the economy, providing much-needed liquidity into the corporate sector and financial markets. The sector has invested heavily over the past 10 years to build the resilience to allow it to play this role – reducing risk in the business, strengthening capital and liquidity buffers, and building the risk management infrastructure required to manage market stress. The Covid-19 pandemic is testing this resilience, as dramatic price movements and huge pressure on the corporate sector combine with the operational challenges of remote and multiple-site working, straining liquidity and the normal functioning of markets.

The deep shocks being felt in the real economy will inevitably flow through into depressed earnings for wholesale banks, as lower interest rates and rising credit costs outweigh the shot-in-the-arm that trading businesses have enjoyed from volatile markets in Q1. This will expose the structural weaknesses in the business models for some players, for whom weak underlying profitability reduces the capacity to weather a downturn and deliver attractive through-the-cycle returns. Addressing these structural weaknesses will require sustained investment to transform the business.

The path of the pandemic, the policy response to it, and the implications for the global economy are highly uncertain. Reflecting this we have sketched three scenarios for the next 3 years.

- Our central case, Global Recession, is anchored in 6 months or more of uncertainty and disruption around the Covid-19 pandemic, driving a global recession that extends into 2021. Trading businesses benefit from the heightened volatility driving wider margins and elevated client activity, but these gains are more than offset by depressed Net Interest Margin (NIM) in deposit-taking businesses and elevated credit losses. Unprecedented fiscal support in the major western economies helps contain the economic damage, meaning losses are concentrated in the most directly impacted sectors and the recovery is swift. Wholesale banking revenues drop 8% while earnings decline towards zero in 2020, and only begin to recover in 2021.
- Our bear case, Deep Global Recession, models a more acute shock to the real economy as prolonged disruption leads to a deeper global slowdown that fiscal interventions are not able to contain. Interest rates are lower for longer, dragging on the NIM-earning businesses, and lingering uncertainty dampens both corporate finance activity and trading volumes. Credit losses extend from the most directly impacted sectors into the wider economy and financial services companies that are heavily exposed to the problem areas. Revenues drop 16% while earnings become negative in 2020, and remain subdued in 2021.
- Our bull case, Rapid Rebound, is anchored in a rapid and effective policy response to the Covid-19 outbreak. The pandemic is contained in less than 6 months, with pent-up demand driving a “V shaped” recovery. Heightened volatility and client activity create a favourable environment for trading businesses in 2020. Credit losses are contained, corporate finance suffers only a temporary shutdown, and interest rates start to rise again through 2021. Wholesale banking revenues remain flat while earnings decline 10% in 2020, but grow 5-15% annually in 2021 and 2022.

To put this in historical context, in our central case the wholesale banking divisions of major financial institutions absorb losses equivalent to 5-6 quarters of earnings under normal conditions (i.e. pre-crisis average levels), which is slightly higher than the level of lost earnings experienced in the 2001 Dot-com bust. Wholesale banks today have tier 1 ratios of 12-14%, suggesting that they have buffers to absorb this level of earnings stress. However, returns entering this period of market stress are far lower than in prior cycles, meaning that the projected returns over the 1-2 years of the current downturn are lower than in any of the historical shocks we have profiled, with the exception of the Global Financial Crisis.

Exhibit 1:

Characterisation of past recessions and our forward-looking scenarios

	Length <i>Time (in quarters) until earnings returned to pre-recession levels</i>	Depth <i>Total industry earnings in the worst quarter as % of pre-recession earnings</i>	Severity <i>Earnings lost (in no. of pre-recession quarter earnings) during recession</i>	CIB Returns on Equity <i>Returns on equity delivered by CIB divisions 12m after the downturn hits</i>
Rapid rebound	2-3Q	-50%	0.5-1Q	8-9%
Global recession	6Q	-150%	5-6Q	<2%
Deep global recession	8Q	-200%	10+Q	-ve
Euro Crisis (2010-12)	6Q	-100%	2Q	~8%
Global Financial Crisis (2007-09)	6Q	-500%	14Q	-ve
Dot.com, Enron (2000-01)	7Q	-50%	4Q	~10%
Asia, LTCM and Russia (1997-99)	2Q	-150%	1Q	~14%
Mexico (1994-95)	4Q	-300%	5Q	~8%
Junk Bond (1989-90)	6Q	-400%	7Q	~7%
Black Monday (1987)	1Q	-500%	4Q	~9%

Source: Oliver Wyman analysis, Coalition proprietary data, Oliver Wyman proprietary data

Exhibit 2:

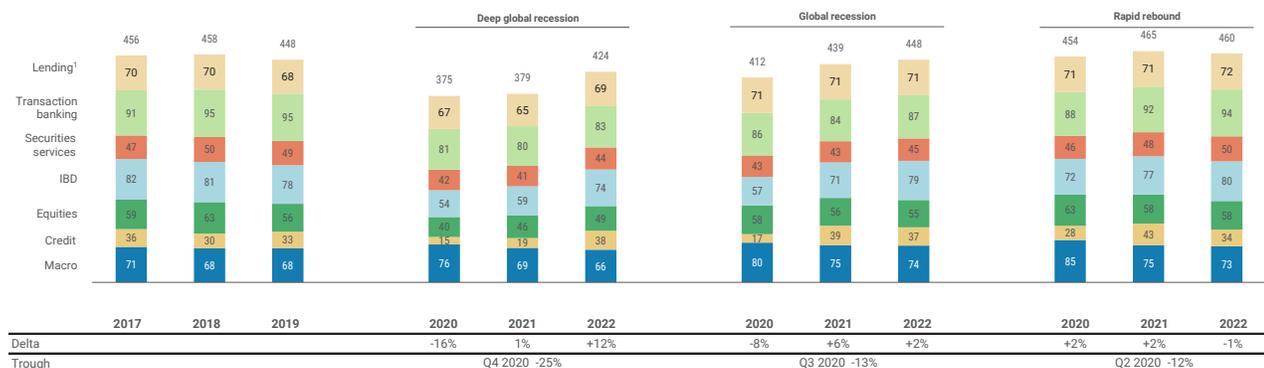
Scenario descriptions

	Deep global recession	Global recession	Rapid rebound	
Pandemic evolution	<ul style="list-style-type: none"> 12+ months to control pandemic, with no seasonal relief in summer months Countries unable/unwilling to take measures to contain outbreak 	<ul style="list-style-type: none"> 6-12 months to control pandemic, with some seasonal relief Countries effectively contain outbreak, but see spike of cases after lifting containment 	<ul style="list-style-type: none"> Outbreak suppression in 4-6 months with success of containment measures 	
Economic impact	<ul style="list-style-type: none"> Simultaneous demand and supply shock, sustained collapse in asset prices, global recession Global GDP falls 2% in 2020, with ~10% decline in Europe and US Recovery begins late in 2021 	<ul style="list-style-type: none"> Recessions in most western economies Global GDP flat in 2020; European and US economies contract 8-13% in Q2-Q3 Recovery begins in late 2020 	<ul style="list-style-type: none"> Economic impact contained to Q1-Q2 with isolated national recessions Global GDP rises 1.8% in 2020; European and US economies contract 4-6% in Q2 Strong rebound begins in Q3 2020 	
Policy measures	<ul style="list-style-type: none"> Government interventions fall short and quickly run out of resources required to defend global economy 	<ul style="list-style-type: none"> Coordinated government interventions successfully defend the global economy but fail to protect all sectors and markets 	<ul style="list-style-type: none"> Coordinated government interventions successfully defend the global economy and set the stage for recovery 	
Rates & Liquidity	<ul style="list-style-type: none"> Concerted monetary stimulus with negative interest rates, including the US Liquidity strained as pockets of the financial system face solvency issues 	<ul style="list-style-type: none"> Rates low with widespread QE in 2020, rates start to rise over 2021-22 Pricing dislocations across markets, but liquidity broadly maintained 	<ul style="list-style-type: none"> QE and low rates support liquidity in key funding markets Yield curve starts to steepen Q3-Q4 2020 	
Credit	<ul style="list-style-type: none"> Widespread corporate defaults and isolated financial sector failures Rapid increase in risk premia driving risk-off environment for 2020-2021 	<ul style="list-style-type: none"> Corporate defaults and financial sector failures contained to limited hot-spots Credit risk premia settle close to historical levels, provides incentive for banks and investors to return to market 	<ul style="list-style-type: none"> Government support effectively backstops corporate and financial sectors Flexibility on enforcement of pro-cyclical capital and accounting rules allows credit to continue flowing freely 	
Equities	<ul style="list-style-type: none"> 30-40% drop in global indices, with little to no recovery until late 2021 	<ul style="list-style-type: none"> 30-40% drop in global indices, with gradual recovery starting in late 2020 	<ul style="list-style-type: none"> Sharp rebound in equity indices, with heavy trading volumes as valuations rise 	
Industry revenues	2020 2022	-16.3% -1.8% CAGR	-8.0% 0% CAGR	+1.5% +0.9% CAGR

Source: Oliver Wyman analysis

Exhibit 3:

Wholesale banking revenue forecast for three modelled scenarios, \$BN



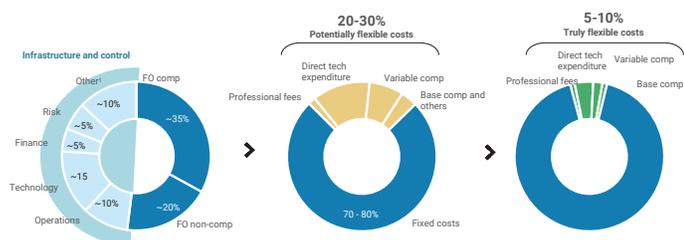
1. Lending represents net lending revenues generated by global CIB divisions from vanilla lending and structured finance activities; market size of \$135bn when incorporating revenue from local players Source: Oliver Wyman analysis, Coalition proprietary data

Attacking the high fixed cost base is key to building business resilience and improving valuations. We estimate that today 20-30% of the cost structure in wholesale banking is variable and only 5-10% can be reduced in a downturn without a major repositioning of the business. By contrast, in the aftermath of the global financial crisis, many banks managed to cut costs by >20% in a single year.

The heavy skew to fixed costs today reflects the increased importance of technology, the growth in regulatory and control functions, and the shift in performance compensation towards fixed vs. variable structures. It also reflects the fact that many banks have already been pulling hard on the most easily accessible cost reduction levers. In the midst of a public health emergency, banks are unlikely to pursue cost-cutting through imposing redundancies, and many GSIBs have pledged no layoffs in 2020.

Exhibit 4:

Cost structure for the IB + Markets department



- **Fixed costs** are a mixture of fixed contracts, such as in real estate and with third party technology service providers, and internal infrastructure and control processes, which can only be meaningfully reduced through more medium term and structural changes.
- **Potentially flexible** cost areas are incentive compensation costs, discretionary elements of the technology investment budgets and professional fees, as well as general belt-tightening measures (such as Travel and Expenses, hiring freezes etc).
- **Truly flexible** costs: only part of the potentially flexible cost base is assumed to be immediately addressable within a year without materially damaging the earning potential of the business.

1. Includes HR, Audit, Legal and Compliance, Corporate Services & Others; Note: BC&E considered as a contra-revenue and therefore not included in this breakdown

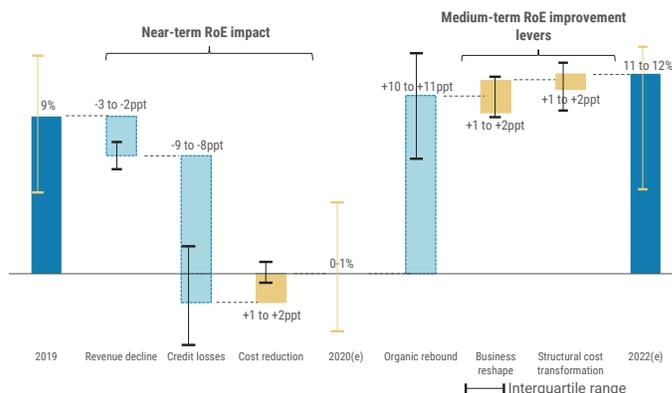
Source: Coalition proprietary data, Oliver Wyman proprietary data, Oliver Wyman analysis

This cost flexibility suggests only 1-2 percentage points of potential RoE improvement to offset earnings pressure, meaning RoEs could drop to 0-1% in 2020 in our base case. The path to higher returns requires medium-term action to:

- Reshape the business – making share gains in the markets franchise, tackling low returning areas of the corporate franchise, and positioning for growth in ESG and climate-related finance
- Re-engineer the infrastructure and control functions to drive down costs – there is some room for near-term belt tightening, but the bigger prize is longer-term transformation

Exhibit 5:

Return on Equity evolution in our central Global Recession scenario



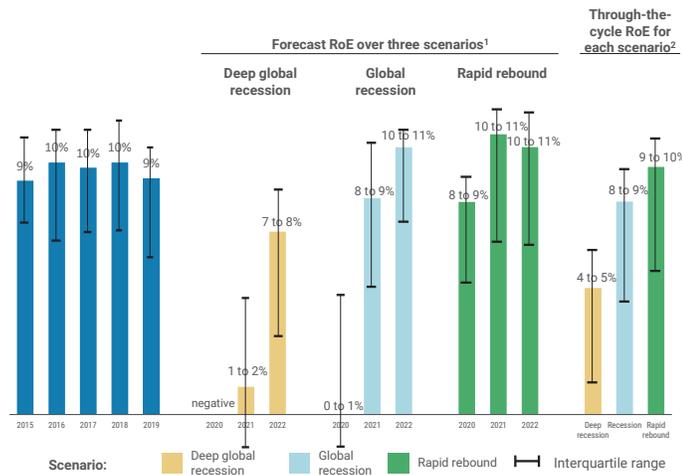
Source: Oliver Wyman analysis

For some banks this is a very challenging path, posing deeper strategic questions. For the sixth consecutive year, average returns across the major wholesale banks in 2019 failed to exceed 10% – the minimum target for most investors in the sector. While the upper quartile of banks touched 12%, the lower quartile achieved only 5%. And this was at the top of the cycle.

In our Global Recession scenario the most impacted banks would see earnings turn negative for at least 2 quarters. These banks are well capitalized today (12-14% T1 capital ratios) so this scenario is unlikely to create solvency issues, absent broader financial contagion and liquidity breakdowns than we have considered in our scenario. But this means that for the lower quartile banks returns on equity through-the-cycle, measured from 2015 to 2022, hardly reach 5% across our scenarios. This may intensify calls for significant strategic change, potentially also acting as a catalyst for consolidation among European and tier 2 players.

Exhibit 6:

Wholesale Banking industry RoE, 2015-2022(e)



1 Based on revenue forecasts, writedowns impact and limited cost flexibility; does not include realized RoE uplift opportunities from management action

2 Through-the-cycle RoE is defined as the industry average RoE between 2015 and 2022(e)

Source: Oliver Wyman analysis

Breadth helps a little, scale helps a lot. The most powerful defence against an economic downturn is underlying profitability. The biggest factor driving the differences in profitability today is scale – globally, or within a subset of markets.

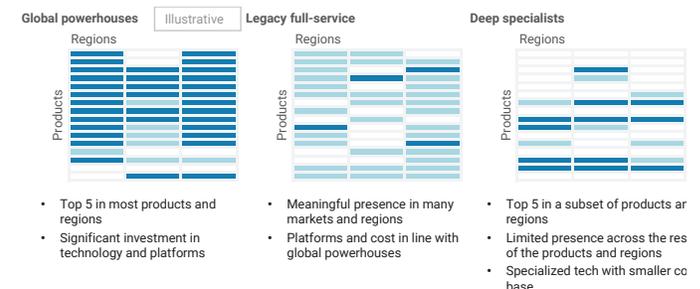
We have analysed bank market share across a grid of 16 products and three regions, and find three broad groups:

- The most profitable banks are the global powerhouses with broad and deep franchises. These banks have a material presence (defined as >3% share) across 55% of the market and average 8% share in these segments.
- The least profitable banks are legacy full-service banks with broad and shallow franchises. These banks have a material presence across only 35% of the market and average just 4% share in these segments. Partial exits from business lines and markets have seen revenues disappear faster than costs for these players, as cross-product infrastructure and processes have proven challenging to unwind.
- Somewhere in between are the deep specialists with dominant franchises in select products and markets – these players have completely stepped away from, or never entered, activities and markets that add significant costs to the platform.

Business mix and breadth by contrast offer only modest help to protect revenue streams against a downturn. Most major wholesale banks maintain a mix of more and less cyclical businesses and are operating in more than one region. Players with businesses that are highly focused on IBD and equities franchises show the greatest sensitivity to our downturn scenarios.

Exhibit 7:

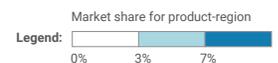
Illustrative view of bank archetypes by breadth and depth



	Global powerhouses	Legacy full-service	Deep specialists
Breadth ¹	55%	35%	25%
Depth ²	8%	4%	6%
Annual revenue	\$ 20-35 BN	\$ 5-15 BN	\$ 5-15 BN
CIR	61%	85%	74%

1. Percentage of market where bank has over 3% market share

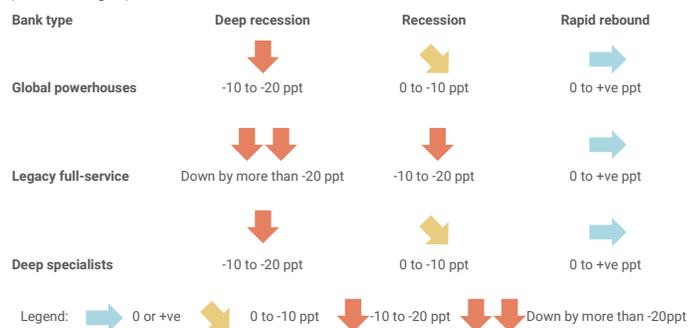
2. Average market share in areas with over 3% market share



Source: Oliver Wyman analysis, Coalition proprietary data

Exhibit 8:

Modelled impact of scenarios by bank archetype, RoE decline in 2020, percentage points



Source: Oliver Wyman analysis, Coalition proprietary data

Revenue Forecasts

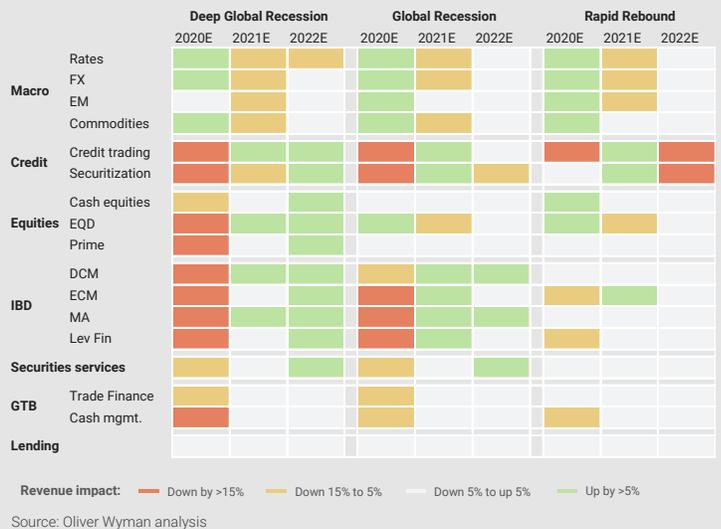
The unique nature of the Covid-19 pandemic, with a simultaneous demand and supply shock hitting most regions in the world at the same time, means economists are forecasting the most severe GDP contraction in the post-World War II period. To inform our view of the potential impact on wholesale banking revenue pools we have looked back at periods of recession and financial market stress over the last 35 years. Each episode is different, but some common themes stand out:

- Investment banking is highly cyclical, with revenues often dropping 30-35%.
- FICC businesses are mixed – macro businesses tend to do well as volumes and bid-ask spreads both rise, while credit businesses can get badly hit by trading losses; the overall balance of these effects has varied in different crises.
- Equities businesses have historically been highly cyclical, but this relationship has weakened in recent years as the business mix has shifted away from cash and towards prime and derivatives.

A key uncertainty is the length of the downturn and the pace of the recovery. Our scenarios make different assumptions about the path of the economy, and thus the profile of wholesale banking revenues over time.

Exhibit 10:

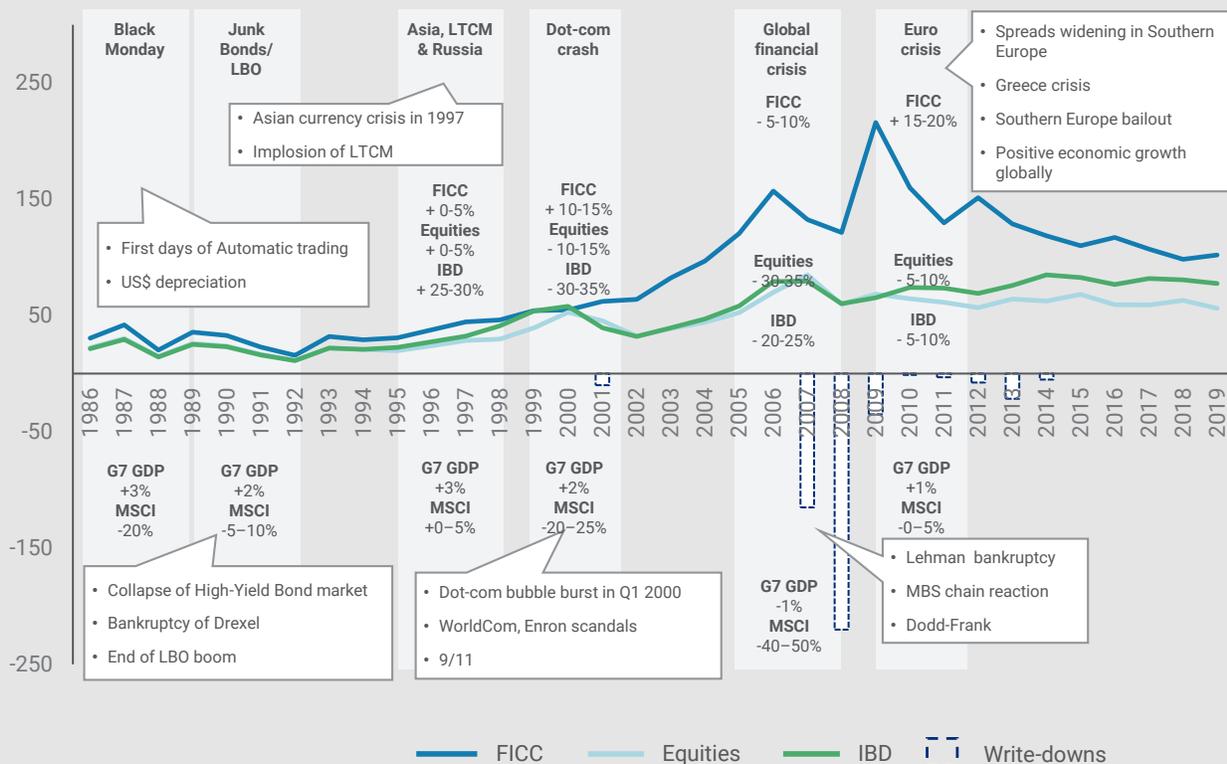
Revenue impact of modelled Global Recession scenario, year on year forecast changes



Source: Oliver Wyman analysis

Exhibit 9:

Historical revenues for FICC, Equities and IBD, 1986 – 2019, US\$ Bn



Source: Oliver Wyman analysis, Coalition proprietary data, Oliver Wyman proprietary data

Reshaping the Business for the Recovery

As we face one of the deepest economic shocks on record, wholesale banks must balance near-term priorities to support clients and steer the business through enormous uncertainty and volatility. At the same time, as the economy emerges from crisis mode, attention must be focused on the structural shifts that will define the winning formulas over the next cycle.

We profile three broad areas:

- **The corporate franchise:** Corporate clients are on the front-lines of the current economic shock. As a result the banks' corporate franchise sees the steepest revenues declines across our scenarios, hit by increased credit losses, declining deposit volumes, rate reductions, and reduced IBD and trade activity driven by GDP contraction. The corporate franchise has entered the current crisis without covering its cost of capital at the industry level, albeit with wide variation across banks. The good news is that following a period of expansion the corporate franchise is far from optimized, and there are levers management can pull to rebuild ROE as the economy recovers. Over the longer term the growing importance of scale presents a deeper strategic challenge for smaller players.
- **The institutional franchise:** The spike in volatility in Q1 is providing a welcome boost to the institutional franchise. Client activity is elevated and trading businesses have generally been able to capture execution spreads across products. Those banks that trade well through the volatile market conditions are likely to pick up considerable market share. Over the medium term, however, the structural forces that have pressured fee pools over recent years are likely to take hold again.
- **Climate change and ESG:** The increasing urgency among investors, consumers, companies and governments to address the threat of climate change looks set to be the defining issue of the next cycle. Wholesale banks have a critical role to play as enablers and accelerant to the transition to a cleaner economy, mobilising capital and managing risks. Those able to pivot their business to harmonize with this trend will capture an outsized share of the revenue upside, while managing down the financial and reputational risks. They will also benefit from growing investor and policymaker focus on the role banks are playing to proactively support the transition.

Corporate franchise

Wholesale banks have a critical role to play in helping corporate clients through the current crisis. Many sectors are facing unprecedented pressures on their businesses – and are looking to their banks to step up with liquidity and strategic support in this time of need. These are the moments upon which deep and lasting client relationships are built. It is also a moment for the industry to support society more broadly, having received so much help in the last crisis.

Yet this comes with risks. Banks have already seen widespread drawdowns on liquidity facilities as corporates bolster their balance sheets. While the huge government support packages that have been announced in many countries will soften the blow, credit markets are already pricing in a significant increase in expected credit losses in the corporate bond and loan markets. Drawing on current market pricing, historical loss rates and supervisory stress exercises, we estimate that credit losses for wholesale banks to multi-national corporates could increase to 2-2.5ppt of loans in 2020 in our central Global Recession scenario, equivalent to \$100-150bn in credit losses. This assumes losses are concentrated in corporate sectors most impacted by the pandemic. This rises to \$200-300bn in our Deep Global Recession scenario, as defaults extend into the broader economy and the financial sector. Our Rapid Rebound scenario models a much more contained impact with \$30-50bn in losses.

The most urgent priority then is balancing these trade-offs - between the need to do what is right for clients and society and the need to protect the bank's balance sheet and appropriately price for increased risk in the current environment.

At the same time, management must start to respond to the mounting pressure on the top line as the growth drivers of the last cycle go into reverse. The corporate franchise fee pool fell 3% in 2019 as interest rates trended down. This was the start of a reversal of fortune after total revenues from corporate clients climbed from \$225bn in 2010 to \$244bn in 2018. There are now substantial headwinds across the business. For the CFO-up activities, such as M&A, ECM and Leveraged Finance, deal activity has dried up amidst volatility and uncertainty, and the question is how rapidly this recovers. For the CFO-down activities, such as debt financing, payments and trade, interest rates and declining cash balances will pressure net interest margins in the wholesale payments banking business, while supply chain disruptions and a slowdown in observed trade flows impact trade finance.

- Our Rapid Rebound scenario models revenue declines of ~2% or ~\$5bn driven by reduced IBD activity, GTB and Lending.
- Our Global Recession scenario models an ~8% or \$20bn decline in revenues.
- Our Deep Global Recession scenario foresees ~14% or ~\$34bn coming off the top line.

Scenarios for Credit Losses

Much is uncertain about both the scale of the economic impact of the pandemic, and the effectiveness of the major stimulus packages that have been announced globally. As such we have sketched very different loss rates across our three scenarios. We have grounded our estimates with reference to historical experience and regulatory stress tests, and calibrated bottom-up against sectoral composition.

- Rapid Rebound: matching the rate of corporate defaults observed during the 2001 Dot-com crisis
- Global Recession: corporate default rates equivalent to the loss rates implied by current market expectations, based on movements in equity markets and CDS spreads
- Deep Global Recession: expected corporate credit losses similar to those observed in severely adverse scenarios from US CCAR and EU AQR stress tests

We have also made an allowance for potential counterparty risk in the trading book, as pockets of the financial system come under stress in our more adverse scenarios.

Exhibit 11:

Scenarios for Credit Losses

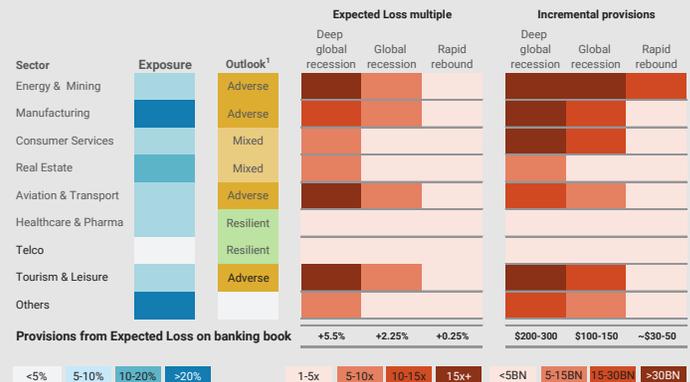
	1. Banking book		2. Trading book	
	Additional loss rate	Provisions \$BN	Additional loss rate (Markets balance sheet)	Provisions \$BN
Rapid rebound	0.50%	30-50	<10 bps	<5
Global recession	2.25%	100-150	10-50 bps	15-25
Deep global recession	5.50%	200-300	50-100 bps	50-70

Source: 1. Outlook based on CDS spread and equity indices evolution. Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Sectoral dynamics differ widely across our three scenarios. In the Rapid Rebound scenario, the unprecedented levels of policy support – notably underwriting salaries, making direct payments to individuals, government-backed lending and bailouts for businesses, and the resumption of large-scale quantitative easing measures – are effective in containing losses. The energy sector faces the twin pressure of low oil prices and a collapse in demand, which results in material stress, but other sectors see only limited loss rates.

Exhibit 12:

Banking book losses – what you'd need to believe, *estimated loss levels by sector*



1. Outlook based on CDS spread and equity indices evolution. Source: Oliver Wyman proprietary data, Oliver Wyman analysis.

An important dynamic is the leniency being given banks in the interpretation of the new accounting treatments for provisions, which otherwise could cause increased expected losses to flow more rapidly into the P&L through the provisions line. In the US, under Current Expected Credit Losses (CECL), banks are now required to provision for expected losses over the life of the loan, informed by historical loss rates and macroeconomic conditions. A provision giving banks the option to delay

the implementation of CECL has been included in the US CARES Act stimulus package, while the Federal Reserve has announced some capital relief from CECL impacts. In Europe, where IFRS9 is now in place, banks will have to move to Stage 2 impairment on large proportions of their loan portfolios, requiring recognition of lifetime expected credit losses. Regulators have given banks some flexibility in incorporating expected credit loss estimates in the near-term given the current uncertainty of economic impacts from COVID-19.

Beyond the immediate impacts to provisions from declining corporate credit quality, the current crisis is straining financial markets in ways that could overburden some participants, in turn creating counterparty risk for wholesale banks. These second and third order impacts are inherently hard to anticipate; potential watchpoints include:

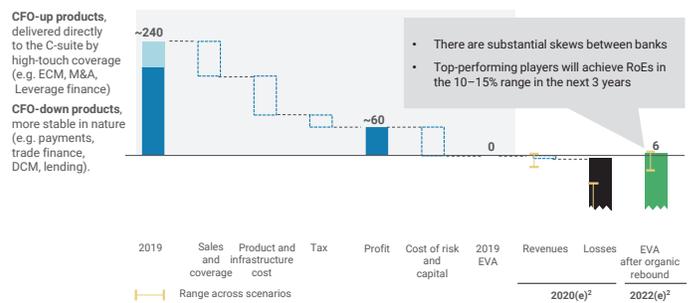
- A freeze in the leveraged loans market as falling prices for loans result in a loss of investor appetite for new loans, a reduction in origination by banks, and a withdrawal of credit for already indebted companies
- Credit funds selling assets at distressed prices to meet demand for investor redemptions; where funds are unable to meet margin calls brokers have been seizing and liquidating bonds putting further pressure on prices, particularly in the mortgage market
- Pockets of the banking and specialist lending sector, for instance institutions that are particularly exposed to SME and retail customers in the most impacted areas

This will impact wholesale banks through losses in CVA books and direct counterparty losses that go beyond the product-level revenue dynamics we have modelled elsewhere. In the global financial crisis CVA losses alone were \$30-50bn of the total \$400bn in credit write-downs, but since then the market has changed substantially. Banks have reduced the size of their balance sheets in OTC derivatives, and margining and clearing of trades is more widespread. We have made an allowance for these potential losses across our three scenarios informed by stress testing exercises and historical experience.

There is much that can and should be done to boost the underlying profitability of the business through the recovery. Despite strong recent revenue growth, the business of serving corporate clients did not cover its cost of capital for the industry as a whole in 2019. Set against total industry revenues of \$239bn are the substantial cost structures embedded in product manufacture and client service organisations, as well as the significant capital supporting the lending books, much of which is loss-leading. Of course there are wide skews in performance, and for many banks these activities are a crown jewel. Leading players are producing RoEs in the mid-teens while laggards are in the low single digits. Some of these differences reflect factors management teams can do little about – for example, some markets such as the US and Canada are structurally more profitable than others. But much of this is also down to strategic choices and management skill.

Exhibit 13:

The corporate client franchise was value-destructive for the industry in 2019*



* Only includes revenues from corporate clients with an annual turnover of more than \$1.5bn. Smaller clients tend to generate higher returns; 2. Expected EVA for the Global Recession scenario
Source: Coalition proprietary data, Oliver Wyman proprietary data, Oliver Wyman analysis

Exhibit 14:

Optimisation levers for corporate franchise, *RoE uplift by lever, with variability between players*

Optimisation lever	Description	RoE uplift in ppt
Capital and pricing discipline	<ul style="list-style-type: none"> Improved capital allocation through better client selection Pricing uplift on lending portfolio through improved analytics Originate to distribute 	+0.5
Client service	<ul style="list-style-type: none"> Reduce coverage matrix duplication across regions and products Streamline operating model 	+1.0
Innovation and new markets	<ul style="list-style-type: none"> Share growth driven by product innovation e.g. RTP capabilities, B2B2C payment solutions, procure to pay vendor management and trade solutions, etc. 	+0%

Legend: ■ Industry uplift potential | Range impact range for leaders and laggards

Source: Oliver Wyman analysis

We see three priority areas to boost returns over the next cycle:

- Client service.** Client-facing activities like sales and coverage currently account for ~50% of costs. Yet corporate client satisfaction with their bank providers is low. Clients are increasingly demanding the kind of real-time digital service they experience in their personal lives, yet few banks are delivering this. There is significant potential to both take share by improving the client experience and take out cost through moving to more technology-driven service models and delayering of overlapping and duplicative sales, coverage and client service organisations. The disruption to normal ways of working due to the Covid-19 outbreak is only likely to accelerate the shift towards digital forms of interaction.
- Capital and pricing disciplines.** There are large skews in value capture and profitability across client accounts. Some of this is natural as a corporate client’s needs wax and wane over time. But some is due to slippage and lack of discipline. Banks have perennially struggled to optimize and monetize resource allocation decisions, and fee and deposit pricing could be much more integrated and reflective of the value and behaviors of individual clients. Advanced analytics can strengthen discipline around both: for example, within a single client risk rating level, we see interest rates for short-term lending differing by over 100bps based on idiosyncratic client factors.
- Innovation and new markets.** Leading banks are looking to take market share and to tap higher margin or faster growing markets, often through lower cost digital delivery models. For instance, several banks have been pushing into the mid-cap space, which is less heavily competed and structurally higher margin. Others are looking to gain share through new innovative features such as virtual accounts and analytics solutions, real time liquidity management, RTP and B2B2C payment solutions, and procure-to-pay trade platforms.

Exhibit 16:

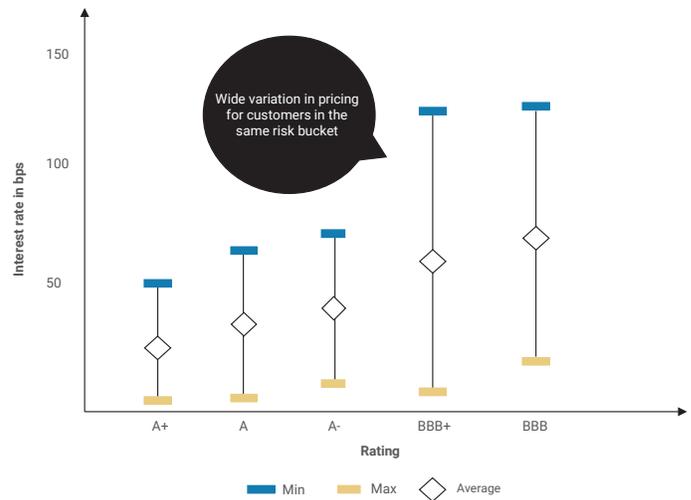
Payments franchise CTB spend and opex. 2019, globals vs regionals



CTB = Change The Bank
 Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Exhibit 15:

Price levels by risk: short-term lending rates for a leading wholesale bank, large corporates segment



Source: Oliver Wyman analysis

Over the longer term, the growing role of scale in the business is a challenge for smaller and mid-sized players. Smaller players have historically been able to retain a stronger footing with corporate clients than with institutional clients, through tailored local capabilities and strong relationships. This is now changing. The wholesale payments business is in the vanguard, as efforts by a handful of established global transaction banks to re-platform piecemeal payments infrastructure are helping drive much more significant scale advantages. The largest wholesale payment businesses globally generated 1.9x times as much revenue for every dollar of operating expense in 2019, compared to mid-sized players. This discrepancy is only likely to become more pronounced over time, as the large players invest further, aiming to drive down costs and improve service quality, and to develop new propositions to fend off incursions from FinTech, BigTech and greenfield challengers. We estimate that in 2019 major scale players spent 5-10 times as much on technology innovation as mid-sized providers.

Scale advantages are also increasingly apparent in investment banking, although primarily squeezing the middle rather than the tail. Mid-tier players, or those ranked 5-10 in fee-based products, have lost 9 percentage points of share to the top 5 and boutiques, pressuring returns and the ability to retain talent. And worryingly for regional and domestic players, the largest players are increasingly turning their sights to mid-market clients in both investment and commercial banking, given the higher returns available in these segments.

These growing scale dynamics pose deeper questions. For smaller players, the next cycle may require more structural responses – such as product exits or acquisitions, or more radical shifts in how they think about their role as part of an ecosystem of providers.

The institutional franchise

Turbulent markets provide a near-term shot in the arm for institutional sales and trading businesses. Elevated client activity and widening bid-offer spreads have created a positive environment for trading in Q1. In our central Global Recession case, we assume volatility persists for at least two full quarters and supports >10% growth in client facilitation and risk management businesses. The volatility spike will be offset partially by mark-to-market inventory losses in credit and securitized products businesses, and reduced balances and leverage from hedge funds. The net impact on our 2020 revenue projections ranges from +\$10bn (+5%) in our Rapid Rebound case to -\$40bn (-20%) in our Deep Global Recession case.

This translates into very different forward-looking revenue dynamics across products:

- Equities trading:** The elevated volatility and client activity in the market today will support strong revenue growth in cash equities and flow derivatives, similar to the performance spike experienced in 2018. But there has been a structural shift in the equities business away from cash trading and toward prime services and equity derivatives since 2000 – cash equities represented 60% of equities revenues in 2000 and just below 30% in 2019. This will make the longer-term revenue outlook for the business highly dependent on (a) the persistence of volatility and client activity and (b) the levels at which equity valuations settle, given the tight relationship between hedge funds AUM and prime services revenues. Our central case projects normalization from 2020-22, leaving 2022 revenues flat on 2019 and adding further pressure on the business.
- Macro trading:** Rates and FX businesses have historically been strongly countercyclical, with the highest recorded periods of growth in severe market dislocations (e.g. Asian Financial Crisis, Global Financial Crisis) and the recoveries that followed. Revenues have been driven by elevated client activity, wider bid-ask spreads, and risk positions held by dealers. Dealers have reduced risk positions (or leverage) in macro books by around 60% across the industry since 2009, in response to higher capital charges associated with new regulations and stress testing projections. However, the first two factors are still very much in play and we expect annual revenue growth of at least 10% in 2020 (vs. 40%+ in the Global Financial Crisis).
- Credit trading:** Credit and securitized products are the most pro-cyclical businesses across the institutional franchise. These businesses absorbed the heaviest losses in the financial crisis (net negative revenues in 2008) and also faced significant stress during the Euro sovereign debt crisis (with Credit trading revenues down 60% in 2011 and 30% in 2015). Dealers have significantly reduced risk positions in credit trading in response to higher capital charges, so the revenue impact will be more contained than in prior cycles. We project 2020 revenues to be down 40-50% in our central case with significant uncertainty in the forecast given the high potential for prolonged credit stress (Deep Global Recession) or a quick recovery in asset prices (Rapid Rebound).
- FIG investment banking:** FIG advisory and underwriting will face intense near-term pressure as banks, asset managers, and insurers take stock of the situation and chart a course for the future. But the Global Financial Crisis provides a playbook for the post-stress needs of FIG clients, which will range from optimizing financing to offloading distressed assets. This recovery may differ to the last, with greater appetite for consolidation from regulators.
- Securities Services:** As a utility-like business with high operational intensity, Securities Services has generated relatively stable revenues even during substantial market swings. However, changing values in assets under custody and interest rates playing through to NIM both have a significant impact on performance, with up to 10% of revenue fluctuating over the last decade off these drivers. The last cycle has also seen continued fee compression even as market players have introduced a range of new services into their offerings to attempt to subsidize pressures in the core business. For example, custody banks have rolled out packaged data services, execution outsourcing and middle office cost-reduction solutions – but in many cases with challenging commercial upside. Looking forward, while the largest custody banks may see modest offsetting benefits from deposit flight-to-quality, we project 2020 revenues to be down 10-15% in our central case. Headwinds will come from lower interest rates, reduction in the value of assets under custody, and continued margin contraction combined with commercial pressure on newly introduced services. The need for cost action in this business will be particularly intense given high operational costs combined with challenges in monetizing top-line initiatives.

Exhibit 17:

Institutional franchise – revenue forecast for three modelled scenarios

Product	CAGR 2014-2019 ¹ (S\$B change)	Immediate and structural trends	2022 Outlook	2020(e) Rev. ¹ Diff to '19	2022(e) Rev. ¹ Diff to '19
Macro trading	-2% (-\$1 BN p.a.)	<ul style="list-style-type: none"> Wider margins and strong client volumes drive near term growth; reduced capacity caps upside Continued structural pressure on business from ALPs and electrification 	↘	+15 to +20% +15% to +25%	+5 to +10% -5% to +5%
Credit trading	-5% (-\$2 BN p.a.)	<ul style="list-style-type: none"> Near term mark-downs on inventory Massive recovery opportunity across public and private assets, offset somewhat by reduced risk 	↗	-50 to -40% -55% to -20%	+10% +15% to Flat
Equities trading	-2% (-\$1 BN p.a.)	<ul style="list-style-type: none"> Short-lived spike in revenues driven by high volumes and volatility; some losses in derivs books Continued pressure and consolidation around technology and balance sheet 	↘	+5% -30% to +10%	Flat to -5% -10% to +5%
FIG Investment banking	-2% (-\$0.5 BN p.a.)	<ul style="list-style-type: none"> Significant near-term pressure on FIG banking as market stress plays out Massive recovery opportunity comparable to 2009, especially if consolidation takes hold 	↗	-25% -30% to -5%	Flat to +5% -5% to +5%
Securities services	+1% (+\$0.5 BN p.a.)	<ul style="list-style-type: none"> Low to negative rates environment poses massive challenges for business Traditional asset servicing business likely to face continued pressure given buy-side stress 	↘	-15 to -10% -15 to -5%	-10 to -5% -10% to +5%
Total	-2% (-\$4 BN p.a.)		↘	-10 to -5% -20% to +5%	Flat -5% to +5%

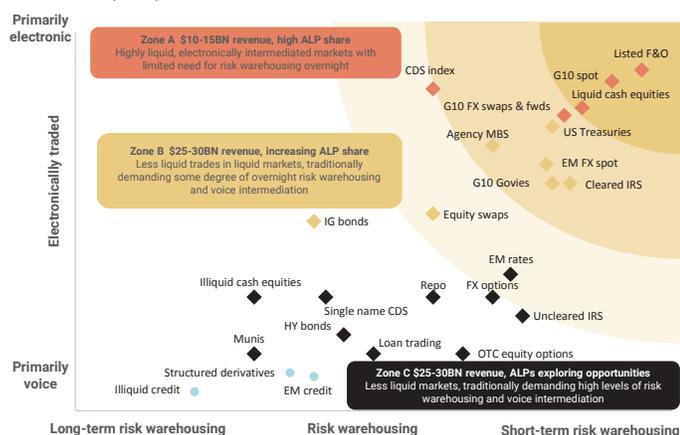
Base Bear to Bull

1. This only includes revenues by institutional clients

Source: Coalition proprietary data, Oliver Wyman analysis

Exhibit 18:

Product trading characteristics and coverage by Alternative Liquidity Providers (ALP)



Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Over the longer term, the winning strategies will be those that reimagine the client service model in response to these structural trends. There is still opportunity for dealers to deliver differentiated client service that institutional clients will pay premium prices for, but the industry has generally struggled to reinvent the business in response to these evolving client needs. Instead, we have seen (a) an effort to “monetize” bank infrastructure and capabilities that institutional clients may or may not need and (b) a defensive posture that fails to provide reliable liquidity to investors when they need it most.

A mindset shift will be required, to one that starts from the true needs of the buy-side, including:

- Deep market insight and asset sourcing that allow buy-side clients to deliver alpha
- Deep and reliable liquidity provision in all market conditions (in areas of specialization)
- Electronic trading capabilities and technology solutions that solve client problems (vs. add costs)
- Integrated front-to-back services that release cost and complexity for clients

We see three potential models emerging that could serve these needs:

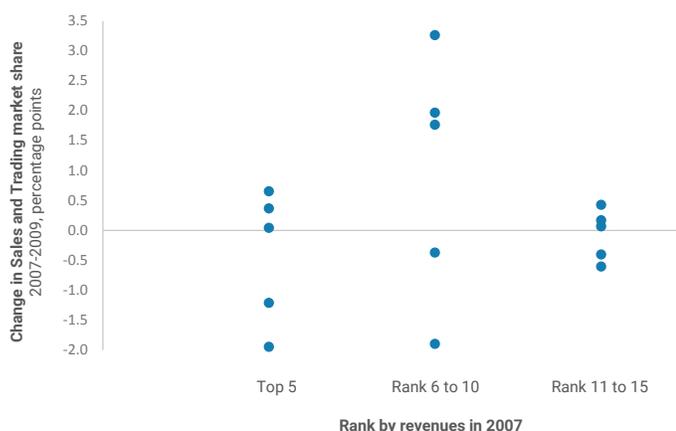
- **Supermarkets:** These are the handful of dealers with the depth and breadth to deliver the front-to-back capabilities that buy-side clients need now and in the future. The model will need to evolve to offer a more integrated package of services that seamlessly links internal – and select external – capabilities across analytics, execution, investor services. Supermarkets help clients deliver alpha and reduce the cost and complexity of their business.
- **Specialists:** These are the handful of dealers with the depth to deliver differentiated insights, reliable liquidity, and leverage in specific asset classes. This model needs to evolve least, but there is room for innovation to align incentives across dealers and investors (e.g. premium pricing for preferential access to liquidity in a range of market conditions) and technology innovation to provide real-time liquidity through algos, for example. Specialists help clients deliver alpha and manage risk.
- **Gatekeepers:** These are the handful of players (not necessarily dealers) with the tools to provide market access and analytics across asset classes, with point-of-service insights that leverage the volume of data flowing through the “gate”. This model exists today but remains in the early stages of development and is delivered most effectively by non-dealers (e.g. Blackrock, Bloomberg, Refinitiv). Gatekeepers help clients deliver alpha, manage risk, and improve the economic performance of the business – principally through technology and data, rather than capital and high touch service. This means they can enjoy much higher valuations than dealers and we see gatekeepers capturing an even larger share of the value created by the institutional franchise over time.

Strategic optionality is not yielding sufficient benefit. The majority of wholesale banks today offer some measure of each of the models above, which often amounts to a subscale full-service institutional franchise. The lack of focus compared to a specialist model creates too costly an operating model, dragging on profitability. Ultimately this makes the business less resilient to a downturn in revenues, and less able to fund the innovation that will drive future success. This lack of technology budget and culture, and the residual capital tied up in the trading books, keeps the gatekeeper model out of reach. The winning strategy in institutional sales and trading over the medium term will make clear choices anchored in these archetypal models and focus resources aggressively to deliver against this.

The best-positioned banks post crisis may not be the usual suspects. There is evidence from prior cycles that market dislocations drive the greatest opportunity for market share gains – this is intuitive. What is more surprising is that the banks that came out on top in prior cycles were not necessarily the market share leaders entering the crisis. The only dealers that gained more than 1% market share in sales & trading during the 2007-09 period were ranked between #6 and #10 by revenues entering 2007. On average, these three banks gained 2.33% market share over that period. While all banks will benefit from increased volatility and wider bid-offers up to a point, extreme moves in asset prices can have an amplified impact on derivative books and bond inventories, and the breakdown in historical correlations can easily wrong-foot even the wary. The efficacy of banks' hedging and wider risk management processes are being tested to the limit, with the task made all the tougher by the challenging operating conditions. Those who trade well through volatile markets will buy precious time and investment capacity to reshape the business for the medium term. Those who come up short may face deeper questions.

Exhibit 19:

Markets revenue market share gain during GFC, *Number of banks, 2007-09*



Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Climate change and ESG

Climate change and the broader rise of ESG investing will be a key driver of financial performance and an increasingly important factor for many investors evaluating bank stocks. The last 12 months have seen a step-change in focus on climate change, with a growing appreciation from investors, policymakers, corporate leaders and consumers of the profound shifts in the economy that are needed. While the focus today is on the humanitarian response to the Covid-19 pandemic and the actions needed to revive the economy, we believe that the momentum on climate change will be maintained as the economy recovers. The pandemic provides direct experience of an event seen as tail risk becoming a reality that requires a collective response. While it is too early to draw conclusions, the evidence so far is that ESG funds have performed relatively well through 1Q (see Morgan Stanley's [How Does ESG Fare In Current Market Conditions?](#)).

For these reasons we believe climate change and sustainability will be the defining trend of the next cycle, just as digital disruption dominated the last. Growing numbers of savers and investors will choose products that offer sustainable investing credentials without sacrificing financial performance, driving capital towards those companies leading the charge on climate change, and away from those in the rear. Wholesale banks are in the thick of it all:

- Fundamental changes to portfolio and business decisions are likely for banks and asset managers. The value of a large range of existing assets will need to be reassessed to factor in the potential for changes in policies, investor appetite, and underlying physical risks. The development of Green infrastructure will require private-public partnerships and new ways to mobilise private financing – whether through 'green bonds', sustainable investment funds, or green crowd-funding.
- New risk management practices and requirements will need to be digested. The methodologies for assessing climate-related risks are still emerging, as is the work for banks to embed these in their risk management and origination processes. Some supervisors have started to force the issue by conducting stress tests that incorporate physical and transition risks, but implications for capital requirements are as yet unclear.
- Finally, the sector's role in supporting the climate transition is set to become an increasingly important factor in determining wholesale banks' own ESG performance. While existing governance scores are relatively straightforward to assess, the wider environmental footprint of individual bank's financing activity is not. Banks sit at the heart of the global economy allocating capital and risk, and ESG frameworks will need to reflect this.

Taken together we estimate that positioning within these trends could drive a 2-3 percentage point RoE difference between banks. This will also be an increasingly important factor in its own right for a growing number of investors, as well as many regulators and supervisors.

Exhibit 20:

Impact of ESG growth on banks, *Impact on RoE, percentage points*

	Leaders	Laggards
Risks <i>Gradual reduction in revenues from energy sectors; increase in cost of risk</i>	↓ - 0.5ppt	↓ - 0.5 – 1ppt
Opportunities <i>Transition financing, green financing, ESG investing products, analytics and advisory</i>	↑ + 1ppt	↓ ↓ - 1.5ppt
Total impact on RoE	+1 ppt RoE	-2 ppt RoE

Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Revenue Opportunities

We estimate that the sustainable finance market, broadly defined, could grow to \$150bn+ across the financial system.

Underpinning this is further growth in ESG investing, which has grown 30-40% over the last 2 years, coupled with the huge need for new financing to support the transition, which is predicted by the New Climate Economy* to be up to \$6 trillion over the coming years. Not all of these revenues will be captured by wholesale banks – some will accrue to asset and wealth managers as well as market infrastructure and data providers. Much of this new revenue will effectively be substituting existing businesses, as corporate and institutional clients pivot to new lower carbon footprint models. For wholesale banks then, it is a question of orienting the bank to capture an outsized share of the revenues as they shift. *The New Climate Economy is a major international initiative and the flagship project of the Global Commission on the Economy and Climate.

Exhibit 21:

Key ESG opportunities in the next 5-10 years

	Sub-areas	Revenue potential	
Savings and investing	Impact investing		• Asset and Wealth Management solutions and funds
	Sustainable investing	\$70-90 BN	• Distribution opportunity to meet consumer demand
	Integrated ESG investing		• Product opportunity to expand into alternative structures focussed on new investment propositions
Financing	Green bond		• >\$5 TN of financing required per year to meet the investment needs of climate change and energy transition
	Green lending	\$20-40 BN	• Much of this will be public, but huge opportunity for businesses and infrastructure providers to both adapt the existing and grow the new
	Transition finance		• Green bonds already growing rapidly; emerging opportunities in dedicated transition finance structures and (high margin) lending
Content and risk transfer	Data and analytics		• Hedging opportunities for exposed companies and investors (both financing and climate linked)
	Advisory	\$10-20 BN	• Support in thinking through implications on the business and strategic mitigation (e.g. M&A, divestments)
	Insurance and risk transfer		• Use of data and analytics to inform a richer client discussion

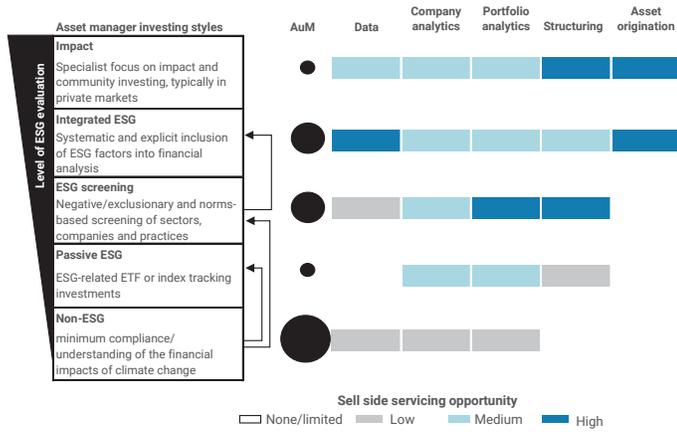
Source: Oliver Wyman proprietary data, Oliver Wyman analysis

As institutional clients shift into ESG, they will demand new services from the sell side.

Further growth in ESG will be driven as much by the growth in investor appetite reflecting underlying consumer attitudes, as by the efforts of asset and wealth managers to develop their propositions and make them more easily accessible. For active managers this represents a way for them to defend against the relentless march of passive investing and the fee pressure that comes with it. Many are shifting from simple exclusionary and compliance-driven approaches towards so called “integrated” approaches that put ESG at the heart of the investment process. At the same time passive managers are also developing a range of lower cost propositions, and quant funds are exploring analytical approaches. Money managers of all flavours are keen to understand the financial impact of climate change on their portfolio. These different groups will have different demands from wholesale banks – from proprietary data and analytics, through to product structuring, and origination of new green and transition financing assets.

Exhibit 22:

Asset managers' ESG needs



Source: Market interviews, GSIA reports '12, '14, '16, '18, Oliver Wyman analysis

At the same time there will be major opportunities in helping corporates transition to cleaner business models. Narrowly, banks can help corporate clients access green and transition financing pools, and improve their ESG ratings. More broadly, the shift to a lower carbon model will require a profound re-ordering of many industries, driving investments, divestments, restructuring and acquisitions – all of which will require financing and advisory services from wholesale banks. While much attention is naturally given to energy and transportation, the opportunities are broad based across sectors. For instance, recent research by Oliver Wyman and the Carbon Disclosure Project found that companies from the European cement, steel, metals & mining and chemicals industries collectively were responsible for over a third of emissions but only one twentieth of low-carbon investment.

Financial and reputational risks

Financial risks from climate change are highly complex. Growing physical and transition risks in the economy will in future drive credit and market risks for banks, shaped by the cumulative decisions of many years around credit origination and risk management. What the banks (and regulators) are trying to do is to manage an orderly transition to a low carbon economy, as a too rapid transition could materially damage financial stability.

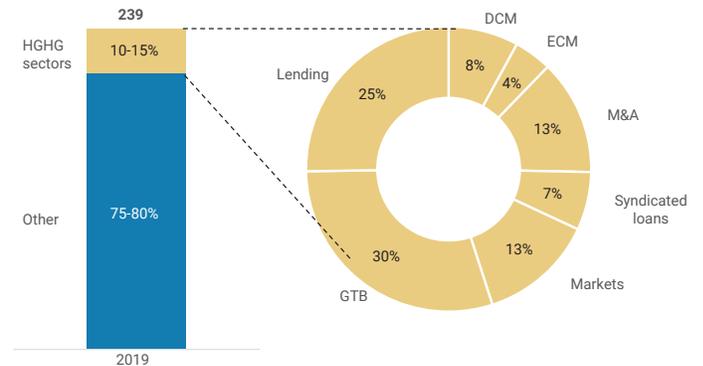
Many day-to-day risk management tools are calibrated using historical data. To capture the potential future effects of climate change and the possible policy responses to it, banks need to expand their approach to the use of scenario modelling. We have analysed a scenario in which a broad-based carbon tax is rapidly introduced, and

found that the aggregate credit losses on outstanding debt could be as large as \$1 trillion (see "Climate Change: Three Imperatives for Financial Services", Oliver Wyman, 2020). While some of this relates to bonds and loans held by investors, as much as half of this could hit wholesale bank balance sheets. Such risks are highly differential across individual borrowers, based on their financial strength, and the steps to date to diversify towards more carbon-neutral activities. The danger for banks is that unless they build the apparatus to assess and quantify these risks at a counterparty level, they could be originating the business that others do not want, and storing up material financial risks on the balance sheet.

Reputational risks are growing in importance. Fossil fuel sectors are worth around 10-15% of wholesale banking sector revenues today. US banks represent some of the largest financiers to the highest greenhouse gas sectors in absolute terms, although many European, Canadian and Japanese banks derive a greater proportion of their revenues from these industries. Banks are already being targeted by activists and some investors for their role here. Most management teams would argue that divestment is not appropriate as these companies continue to play a role in the energy mix of many countries. They would rather emphasise the role banks can play in supporting companies in transitioning their business to a lower carbon model. But for investors to accept this argument, banks need clear plans to engage meaningfully with these companies on these terms, and to demonstrate that banks are indeed shrinking the carbon footprint of their portfolios over time – their "scope 3 emissions" in the language of the Task Force on Climate-related Financial Disclosure (TCFD).

Exhibit 23:

Wholesale banking revenues from Corporates* in HGHG emitting sectors**



* Corporates includes companies with turnovers over \$1.5bn per year

** Brown sectors defined as High Green House Gas emitting sectors (HGHG), including Utilities & Energy, Oil & Gas, Metal & Steel, Mining

Source: Coalition proprietary data, Oliver Wyman analysis, Dealogic

Carrot and Stick: Regulatory approach and investor pressure

In Europe, the process to begin managing transition opportunities and risks has started to change banks’ strategic and stakeholder thinking. Boards are embracing their responsibility for oversight of the financial risks of climate change and overall responsibility for setting strategy, targets, and risk appetite. Yet this wave has not yet crested in other regions, and globally there is much to do to embed transition management into the business.

Investor scrutiny is an important catalyst for action, yet ESG ratings for banks are in their infancy, and do not adequately reflect banks’ role in allocating capital. Furthermore, ESG considerations do not impact banks’ valuation now. But this will change. And fast we think. As allocators of capital in the economy, the role of banks in transitioning to a low carbon economy is profound. A more complete analysis of an individual bank’s positioning on the climate change agenda must take into account the extent to which it is proactively steering its exposure towards greener companies, how it is managing the risks in its balance sheet, and the role it is playing in building the sustainable finance marketplace. We suggest a 10-point evaluation framework for assessing progress, aligned with the four pillars of TCFD.

If the industry doesn’t move fast enough, there is the risk that policy-makers will intervene more strongly. Indeed some regulators have already started to require banks to develop climate risk management capabilities:

- In Europe, for example, several regulators, including France’s ACPR, the Bank of England and the Dutch National Bank, have already started to conduct climate risk stress tests for their domestic institutions, while the EBA will perform sensitivity analyses this year.
- In Asia, the People’s Bank of China, the Bank of Japan, the Reserve Bank of India and the Monetary Authority of Singapore have all signaled their intention to look at climate risk in their jurisdictions.

Given the regulatory focus, banks have progressed in building the capabilities and data sets needed to understand the risks on their balance sheet and have shifted climate risk discussion to the board level. Some regulators are also pursuing other mechanisms. For example, the Prudential Regulation Authority in the UK has incorporated sustainability into its senior managers’ regime, while the European Banking Authority has published a roadmap for incorporating climate and other ESG factors into its regulatory framework by 2025. One area where policymakers could go further would be to mandate disclosure on the carbon emissions of the companies they finance – so-called “Scope 3 Emissions” in the language of the framework set out by the widely accepted (but currently voluntary) TCFD. This would give investors and other stakeholders the information they need to assess banks’ progress in allocating capital towards cleaner companies. The banking system has been asked to play a central role in the response to the Covid-19 pandemic in many countries, and it could well be seen as an important component of the policy response to the societal challenge of climate change.

Exhibit 24:

Assessing wholesale banks against the climate change agenda: 10-point evaluation framework

TCFD pillar		Weaker	Stronger
Governance	1 Leadership	Various working groups and committees	Clear leadership from an empowered senior executive; C-suite and board incentives aligned to outcomes
	2 Capacity building and scenario analysis	Limited internal capability and reliance on third party data and analytics	Capacity to run climate stress tests, drawing together risk and business stakeholders to identify risks and opportunities
	3 Disclosure	Signed up to TCFD, but little / no progress on meeting recommendations for disclosure	Comprehensive TCFD report including granular disclosures on the composition of the balance sheet
Strategy	4 Commercial initiatives	Active across a wider range of initiatives - green bonds, ESG advisory, etc	Thought leadership, innovative product structures matching investor demand with transition financing opportunities
	5 Exclusion	Some exclusion on a case by case basis, based on environmental policy	Complete exclusion of key problem sectors, e.g. thermal coal, arctic oil, tar sands, fracking
Risk management	6 Risk measurement	Heatmap style understanding of risks	Systematic risk identification and quantification, with output reflected in counterparty credit rating
	7 Risk management	Some ad hoc adjustments to risk assessment	Climate risk embedded in credit evaluation and decision, portfolio management processes and risk appetite
Metrics and targets	8 High carbon sectors	Business as usual support for companies at the heart of the transition	Clear terms of engagement for high carbon sectors – e.g. preferential terms linked to success in transition; potential for divestments if terms not met
	9 Green finance commitments	1% of balance sheet committed to green financing	>10% of balance sheet committed to green financing, clear mechanism for steering balance sheet in support of this
	10 Balance sheet carbon intensity	Aspirational statements, e.g. expressing support for Paris alignment	Commitment to measure the carbon intensity of financed activities and to move this down over time

Note: TCFD = Task Force on Climate-related Financial Disclosure
 Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Structural Cost Reduction

To address the high fixed cost challenge banks will need to make more progress on reshaping the infrastructure and control functions over the coming cycle. These functions account for 50% of the cost structure in wholesale banks, so a 10-15% reduction here could drive 1-1.5% in ROE improvement.

- We estimate only 5-10% of infrastructure cost can be trimmed through near-term levers such as discretionary IT change, third-party spend, consolidation and reorganization of teams.
- Medium-term actions to tackle structural complexity and move to modern technology could release 10-20% of infrastructure costs – but this will require sustained investment and prioritisation from senior leadership.
- We also see potential for step change through leveraging the growing universe of third-party providers – as an enabler for structural change in the cost base, but also an opportunity to participate in \$60-120bn in equity value creation.

Near-term work on portfolio optimization and rationalization

The Covid-19 pandemic is first and foremost a humanitarian crisis. As such the immediate focus for management teams is supporting staff through difficult and uncertain times. Some of the traditional levers used to manage costs in the near term, such as delayering management structures and thinning headcount, have thus rightly been taken off the table in 2020 by many banks. Yet as earnings are pressured, management teams will be keen to find efficiencies.

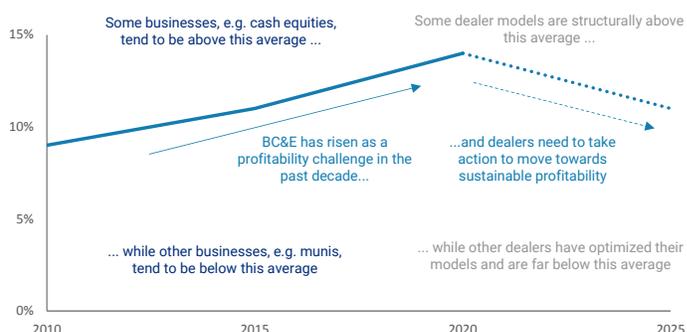
One of the most immediate levers is rationalizing the technology change portfolio. IT change spend is typically in the region of 5-10% of the total cost base, so cutting here has a material impact. But this must be done carefully. Often some of the projects that have the largest potential benefits over the longer term are the first to go, as the benefits do not accrue immediately. Cuts and changes in accounting can deliver near-term cost saves but cannot deliver the structural changes that create longer-term profitability.

Another near-term cost lever is third-party spend. Across all categories, this can easily account for 20% of costs. A particular pain-point is brokerage, clearing and execution charges (BC&E) within Markets

businesses, which has grown as a proportion of revenues as dealers rely more on external venues, and as execution revenues themselves have stagnated. Optimisation initiatives in this space can yield cost savings worth 5-10% of revenues. There are often processes that can have a material impact on the fees paid out, but simply have not been reviewed through this lens.

Exhibit 25:

Optimising brokerage costs is a near-term cost lever, *BC&E costs as % of revenues for markets businesses*



1. Includes both contra-revenue and expense

Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Medium-term structural work to reduce the infrastructure and controls cost base

The complexity of banks' operating models today means that the potential prize from eliminating structural inefficiencies in the infrastructure and control functions is huge. All banks have multiple instances of different applications across regions and products and often even different versions of the same application. To support this creaking infrastructure, banks employ hundreds if not thousands of people to manage the processes of cleaning data, reconciling information, producing reports, and applying fixes and patches across systems. Many of these activities need not exist if the underlying data structures were rationalized and the technology modernised. A reduction of 50% of the headcount in these areas over time is a realistic ambition.

These actions have the potential to not only reduce costs but also address the structural, 'fixed' component of costs that is often considered too hard to tackle. Focus areas include:

- Radically upgrading data management. Although hard to quantify we believe the direct and indirect benefit from having clean, consistent and automated data management could be 2-4% of costs (not to mention the other benefits). Leading banks have focused on creating authoritative data stores and decommissioning local databases, introducing API-based data transmission, and instilling discipline, incentive mechanisms and governance over data ownership and consumption to minimize manual processes and errors.
- Migrating to cloud-hosted consolidated technology platforms. In 10 years' time, it is not unrealistic that 60%+ bank applications and services could be cloud hosted. Cloud offers huge potential for banks to materially reduce their overall technology budget, typically 15% of costs could become 10% of costs given the reduced cost of computing, the replacement of point-to-point interfaces and the increased ability to develop and automate release management. Those with the investment budget could pursue initiatives to replace legacy piecemeal technology with global, cross-asset/cross business platforms (e.g. single trade risk management, global collateral platforms).
- Redesigning and automating processes. Workflow automation and end-to-end process modernization around, for example, collateral management and onboarding have driven observed savings of over \$100MM at some banks.

many institutions and deliver results over a multi-year time horizon. It is easy for management to instead prioritise investments that seek to deliver marginal improvements in client-facing functionality. Yet the prize in tackling the infrastructure and control function cost structure is surely larger, for those up to the challenge of execution.

Larger and more profitable players with the scale and earnings power to invest these kinds of initiatives over the medium term certainly have an advantage. But size also brings complexity, making the execution challenge all the harder. The management teams most likely to succeed on this will have:

- The business leading on the issue, in partnership with technology
- Clear targets on the cost take out over multiple years
- Explicit commitments on the how: which outcomes are being pursued – what processes, systems etc are actually changing, and how does this link to the economic results achieved?
- Stage-gated investment: funds released in stages as value is proven
- Goal-alignment: teams in multiple functions all measured against the same success outcome

Step change actions to leverage the growing ecosystem of providers

Exhibit 26:

Cost reduction opportunity in the infrastructure cost base

Lever	Description	Cost reduction			Timeframe	Required investment
		Markets	IBD	Corp. banking		
People and org	<ul style="list-style-type: none"> • Reorganize support functions and reduce headcount as greater automation is achieved • Rationalize management matrix duplication 	●	●	●	1-2 years	Low
Data	<ul style="list-style-type: none"> • Optimising data management • Rationalise and create accountability for data 	●	●	●	1-3 years	Medium
Technology	<ul style="list-style-type: none"> • Migrating to cloud-hosted consolidated technology platforms • Global cross-asset and cross-business platforms • Standardise applications 	●	●	●	3-5 years	High
Processes	<ul style="list-style-type: none"> • Redesigning and automating processes e.g. in post-trade processing 	●	●	●	3-5 years	Medium
Delivery model	<ul style="list-style-type: none"> • Vendor consolidation and greater outsourcing • Off-shoring of low value-add tasks 	●	●	●	1-2 years	Low

● Below 2% ● 2-5% ● More than 5%

Source: Oliver Wyman analysis

While few doubt the benefits and broad applicability of these opportunities, the challenge is the investment and duration of work required to deliver these changes. It is not uncommon for the above initiatives to have an ROI of <1/3, i.e. invest \$100 to save \$30 in run rate costs. Furthermore, management will often heavily discount these business cases when they are evaluated: these initiatives are complex and hard to implement, have a track record of failure in

Embracing the rapid growth of the service provider landscape can help drive more radical restructuring. Capital has surged into a range of fintech providers serving wholesale banks, and the high multiples they enjoy reflect expectations of further growth. Over the last year revenue multiples for these fintechs have typically been in the 5-7x range. By contrast, wholesale banks themselves are valued at revenue multiples of 2-3x at the group level, with sum-of-the-parts analysis suggesting even lower levels for the CIB divisions.

This poses a challenge to wholesale banks of how to engage. Most fintechs are ultimately seeking to compete with wholesale banks at some level – they are all vying for a share of the same revenue pool. And all banks have struggled with difficult vendor relationships. But the stark advantage that fintechs enjoy in funding investment and attracting talent is likely to drive a growing wedge between the quality of service they can provide and that provided by banks' in-house teams. For the bold, engaging with this rapidly developing landscape is not just an opportunity to reshape the cost structure, it is also an opportunity to participate in the equity value that is created. Wholesale banks have a unique vantage point at the centre of the wholesale markets from which to seed, test, scale and ultimately spin off new service propositions.

Exhibit 27:

Revenues and implied EV for the Markets business



Source: Oliver Wyman proprietary data, Oliver Wyman analysis

Much of the activity has been in the capital markets fintech space. Capital markets service providers have raised over \$25bn in equity over the last 5 years and the majority of this funding has flowed into post-trade service providers such as those offering clearing and settlement services, confirmation and reconciliations. Beyond this, in the execution space, OEMS and trading technology providers have raised significant funding and there has been inorganic activity as private capital has started to consolidate some of these assets. Wholesale banks' spend on such providers represents 20% of total costs today, worth \$15-25bn in revenues for service providers in the capital markets space alone. We estimate this could increase by a further \$10-20bn over the next 3-5 years, potentially driving an additional \$60-120bn in equity creation.

Exhibit 28:

Overview of service provider landscape and value across the trading lifecycle

Trading lifecycle		Funding raised over the last 5 years	Service provider revenue p.a.	Incremental revenues from banks	Potential additional value creation ³
Pre-trade ¹	Research				
	<ul style="list-style-type: none"> Pricing/structuring/ analytics Pre-trade risk management 	\$5 - 7 BN	< \$5 BN	\$2 - 5 BN	\$6 - 30 BN
Trade-execution ²	Trade order management				
	Trade execution and smart order routing	\$10 - 15 BN	\$5 - 10 BN	\$3 - 5 BN	\$18 - 30 BN
	Trade capture				
Post-trade	<ul style="list-style-type: none"> Confirmation & reconciliation Clearing Settlement Corporate Actions 	\$10 - 15 BN	\$8 - 12 BN	\$5 - 10 BN	\$30 - 60 BN
	<ul style="list-style-type: none"> Position mgmt. & reporting Portfolio mgmt. Risk mgmt. Compliance & limit mgmt. 				
	<ul style="list-style-type: none"> P&L analysis Accounting, audit & control Cash mgmt. Collateral mgmt. 				
	Total	\$25 - 37 BN	\$15 - 25 BN	\$10 - 20 BN	\$60 - 120 BN

High inflow of funding over last 5 years Moderate inflow of funding over the last 5 years

1. Does not include market data, 2. Includes client and venue connectivity 3. Based on revenue multiples of 5-7x observed in industry

Source: Company websites, Oliver Wyman analysis

The landscape is also rapidly evolving in the corporate banking business. The growing technology arms race in global transaction banking has spun off an ecosystem of providers focused on payments, payables / receivables, and supply chain finance. While some providers focus on enabling incumbent innovation, such as blockchain consortia, others are more disruptive and could threaten banks' business models.

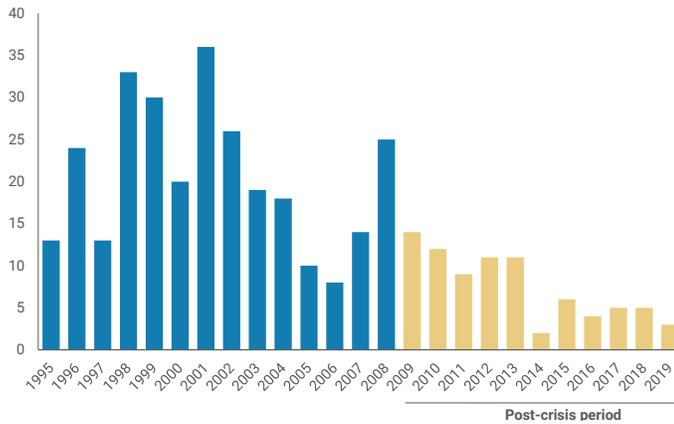
The disruption to supply chains experienced in 2020 has laid bare the operational risks embedded in many of them. This is likely to further favour the shift to technology-based service providers, rather than business process outsourcing and offshoring. Together these developments are enabling some banks to launch bolder innovation initiatives. This could mean using the network of third-party providers to launch into new markets with "greenfield" propositions assembled from best-in-class, modular components. It also opens up the prospect of smaller banks reimagining their role as part of an ecosystem of providers, focusing on a narrower set of core client-facing capabilities while sourcing capabilities from third parties, as a way to fight back against the scale disadvantages they are increasingly facing.

Consolidation

For some players, organic transformation may be too slow, and consolidation may be the better path. Europe is the primary area of attention today, given the challenging market environment, low returns among banks, and a spate of upcoming CEO successions. The wholesale banking industry has regularly turned to consolidation in the past: there were 20 deals per year over 1995 to 2009 in EMEA, but the last 10 years have only seen seven deals. Regulatory concerns over too-big-to-fail and the difficulties of cross-border tie-ups in Europe have been major obstacles. But policymaker attitudes in Europe have now signalled a clear willingness to accommodate deals. Additionally, the current climate of profound change and disruption could create the conditions for things to move rapidly.

Exhibit 29:

Number of M&A deals between corporate and investment banks, *target is headquartered in EMEA*

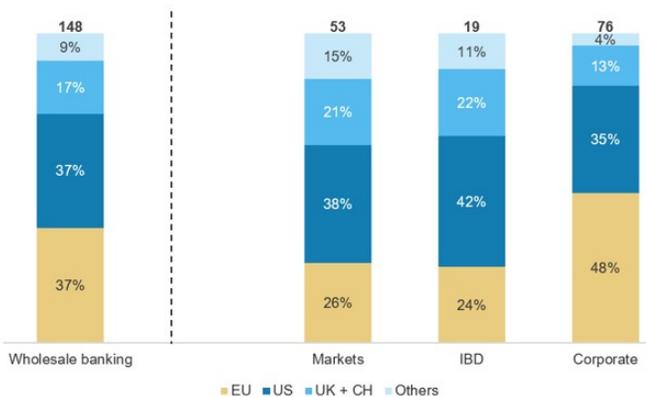


Source: Dealogic, Oliver Wyman analysis

US banks now dominate European capital markets. EU banks (including smaller players) control only 26% of EMEA revenues in capital markets. This means that European large corporates are increasingly dependent on US/foreign banks for access to capital markets and funding. It also means that there is a high dependency on US banks in markets core to the functioning of the financial system: for instance in government bond and repo trading European players broadly defined account for only 53% of the market. There is debate among policymakers and industry leaders over whether this should be a matter of concern. Some see it as a matter of strategic importance to have locally owned and regulated institutions playing a major role in these critical markets, particularly in times of stress.

Exhibit 30:

EMEA market share by bank group, 2018, Totals in US\$ BN



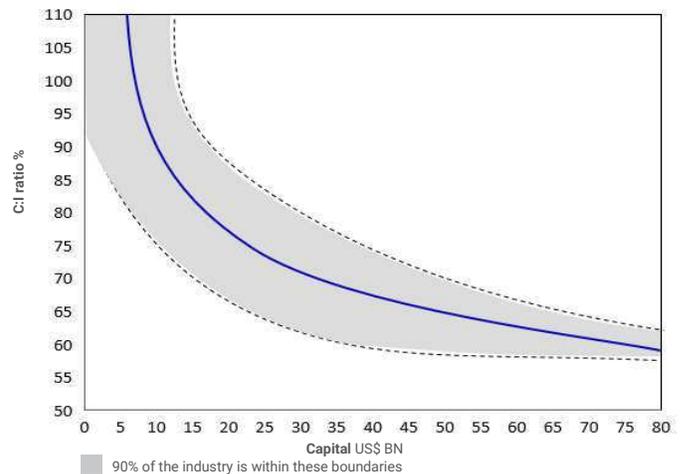
Source: Coalition proprietary data, Oliver Wyman proprietary data, Oliver Wyman analysis

European banks are vulnerable to a downturn – and consolidation could help.

European wholesale banks have restructured heavily to shrink their balance sheets to adapt to new regulations and improve their capital positions – we estimate 30-40% of balance sheet has been taken out in the last 10 years. But capital and revenues have fallen faster than costs, eroding ROE. There is now a strong link between the level of capital deployed in a CIB business and the overall profitability of the business. European banks are on the wrong end of this effect. The top 7 European banks on average currently have \$3.8bn of capital for every \$1bn of fixed cost base, compared to \$5.1bn for the top 5 US players. Adding marginal capital to the platform explains up to 12 of the 16 percentage point difference in CIR between the two groups. This in turn means the European players are more vulnerable to a prolonged recession, which could start depleting capital. With bank equity valuations a fraction of book value in many cases, it may also be difficult in an adverse scenario for banks to access traditional capital markets to bolster their capital position.

Exhibit 31:

CIB Cost:Income ratio versus CIB Capital, *largest CIB players, 2018-2019*



Source: Oliver Wyman analysis

The strong skews in European banks' franchises add to the economic rationale. Past experience points to the potential for consolidation to drive cost release: the absorption of Bear Stearns, Lehman Brothers and Merrill Lynch into other players over 2008-09 helped drive \$15-20bn of cost out of the industry, equivalent to 50-70% of the cost base of the acquired companies. While no integration of two major wholesale banks is straightforward, one consequence of the steps that European banks have taken to focus their business around their own areas of strength is that there is less overlap between banks' business footprints. This increases managements' ability to make clean choices over which product stack will be retained in each region and rapidly move to wind down the weaker platform, thus increasing the chances of realizing major cost release rapidly.

For mid-sized European globals, consolidation could create meaningful scale. These banks typically generate only around 50% of their revenue in products and regions where they are in the top 5. By contrast US banks generate 90% of their revenues in businesses where they are in the top 5. However, even accounting for revenue attrition following a merger, most combinations of two large European players would in theory have 70% of revenue in the top 5 at the product / region. As well as improving profitability and operating leverage, we would also expect there to be capital and funding synergies, and wider benefits from a broader franchise and more diverse earnings base.

Tie-ups between smaller European wholesale players could also create value. Many European universal banks maintain CIB divisions with revenues in the \$0.5bn to \$2bn range, with franchises heavily skewed towards corporate clients and their own home market, with a product set anchored in DCM, Rates and FX. The deal rationale for these players hypothetically combining rests in realizing synergies in the middle and back office, building greater scale in European (primarily fixed income) markets, and achieving capital optimization.

Exhibit 32:

Hypothetical consolidation scenario in the European wholesale banking landscape

Bank type	% of revenue in the top 5 for the two entities	CIR ratios of the two entities (range)	Deal rationale	% of revenue in top 5 post merger	CIR post merger	EVA creation post merger (\$MM)
Small Universals – European domestic full service CIB	7%	60–70%	<ul style="list-style-type: none"> • Clearer narrative for clients and ability to fully benefit from synergies within the CIB • Funding benefit to the new CIB vs. a narrower entity • Increased diversification of lending book and VaR • Clear scale in the business 	11%	60–70%	150
Large regional CIBs – European CIB wide product centre	50%	70–90%	<ul style="list-style-type: none"> • Increase the potential scale advantages across the platform (realizing cost synergies) • Provide a one-stop shop for CIB clients with full product suite • Strengthen links between the two divisions 	70%	70–80%	1,000
Cross-regional CIBs – Global full service CIB	US: 87% EU: 50%	60–90%	<ul style="list-style-type: none"> • Strengthen client footprint and diversify geographic footprint further 	92%	60–80%	1,500

Source: Oliver Wyman proprietary data, Oliver Wyman analysis

For most banks the question of CIB consolidation is tied up with a broader debate about wider group level consolidation. That said, in some situations a merger of the wholesale divisions into a co-owned entity could be more expedient. Even then, no such deal would be straightforward. Getting alignment across investors, management and regulators on the strategic and financial profile of the new entity, not to mention its home location and regulatory framework, would be a complex task. Policymakers, however, have become increasingly positive about the prospect, and have publicly announced they would support reasonable propositions and offers being put on the table.

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	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
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Equal-weight/Hold	1437	45%	322	46%	22%	702	48%
Not-Rated/Hold	2	0%	0	0%	0%	2	0%
Underweight/Sell	543	17%	72	10%	13%	212	15%
Total	3,210		700			1459	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

Analyst Stock Ratings

Overweight (O or Over) - The stock's total return is expected to exceed the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.

Equal-weight (E or Equal) - The stock's total return is expected to be in line with the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.

Not-Rated (NR) - Currently the analyst does not have adequate conviction about the stock's total return relative to the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U or Under) - The stock's total return is expected to be below the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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EMEA

55 Baker Street

London

W1U 8EW

United Kingdom

Tel: +44 20 7333 8333

Insights.emea@oliverwyman.com

Americas

1166 Avenue of the Americas

29th Floor

New York, NY 10036

United States

Tel: +1 212 345 8000

Insights.na@oliverwyman.com

Asia Pacific

8 Marina View

#09-07 Asia Square

Tower 1 018960

Singapore

Tel: +65 6510 9700

Insights.apr@oliverwyman.com

Morgan Stanley

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The Americas

1585 Broadway

New York, NY 10036-8293

United States

Tel: +1 (1) 212 761 4000

Europe

20 Bank Street, Canary Wharf

London E14 4AD

United Kingdom

Tel: +44 (0) 20 7 425 8000

Japan

1-9-7 Otemachi, Chiyoda-ku

Tokyo 100-8104

Japan

Tel: +81 (0) 3 6836 5000

Asia/Pacific

1 Austin Road West

Kowloon

Hong Kong

Tel: +852 2848 5200