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Day of reckoning?

New regulation and its impact on capital-markets businesses

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Day of reckoning? New regulation and its impact on capital-markets businesses

Executive summary

- The capital-markets businesses of banks will be materially affected by regulatory reforms in Europe and the US. Using 2010 data as the baseline, we estimate that the postcrisis average return on equity (ROE) of about 20 percent across the top 13 global firms will be reduced to about 7 percent, before any mitigation actions. Those actions are likely to push ROE up to about 11 to 12 percent. Some expected changes in pricing and business models will likely boost ROE further, to about 12 to 14 percent, well below recent levels.
- The key driver of impact is the new market-risk framework issued by the Basel Committee on Banking Supervision, which raises capital requirements in many businesses by a factor of two to three. Other significant effects are increased counterparty-credit-risk charges, new minimum capital ratios, and liquidity and funding requirements.
- Impact will vary widely across businesses. Structured-credit and rates businesses are most adversely affected; their ROEs may fall by 80 to 85 percent, and could potentially fall below the cost of equity, even after mitigation actions. Foreign exchange (FX) and cash equities, with capital-light products of short duration, will likely remain quite profitable, after a relatively moderate decline in ROE of 40 to 45 percent. The profitability and viability of a business, after cost of capital, will be driven by its capacity to be capital efficient.
- Banks that deploy a full menu of immediate mitigation actions can rebuild ROEs, but only if they can organize a concerted response among several functions, including business, risk management, finance and treasury, IT, and operations. We see four categories of mitigation happening in the industry, two directly addressing capital-markets businesses and two that will help lift the entire bank: optimizing the trading portfolio; improving risk and capital models, and raising the bar for data quality; improving financial efficiency; and boosting operational efficiency.
- After mitigation, average ROEs across businesses will likely be 11 to 12 percent—but with considerable variation. Some of the worst-hit businesses with ROEs below the cost of capital may have to be disposed of, especially at banks with weak franchises.
- Out of necessity, in some cases, and to restore profits, banks will likely reprice and pursue more significant business changes:
 - In some businesses, a portion of the higher regulatory costs may successfully be passed on to customers. Banks will need to investigate price elasticity and decide the right time to move.
 - Some banks might consider further changes to the business model, such as transforming the front office, adjusting the product and services mix, reviewing their geographical and legal structure, and spinning it off or building partnerships with less regulated participants in the “shadow” banking system.
- We expect long-term structural changes to the capital-markets industry as a result of regulation. To compete successfully in the future, banks must build their capital-markets businesses around core competencies such as scale and operational strength, innovation skills and sophisticated product and structuring capabilities, or geographic reach and customer relationships.

Introduction

The financial crisis of 2008–09 has prompted a wave of banking reform. Massive new regulatory packages have been agreed upon in Europe and the United States, and regulators and bankers are now rolling up their sleeves to prepare for the next phase of compliance and implementation. Banking leaders are keen to understand the complexities of proposed reforms and their impact on different businesses. They are especially interested to know the effects on those businesses that are the subject of the stiffest reforms.

This paper seeks to answer these questions in relation to the capital-markets business. We studied trading and services in foreign exchange, rates, credit, and commodities (also called FICC, or fixed income, currencies, and commodities); cash equities and equity derivatives; prime services; and proprietary trading (Exhibit 1).¹ Our data set is the capital-markets businesses of the world's 13 largest investment banks and investment-banking divisions of universal banks, as measured by revenue.²

The regulations considered include Basel II.5, Basel III, the Dodd-Frank Act, and other regional regulations. (See “Summary of new regulations,” pp. 27–29, for a list of these regulations; “A closer look at new market and counterparty-credit-risk rules” on pp. 30–33 describes these in more detail.) We measure impact in terms of post-tax return on equity (ROE). “Methodology” on pp. 25 explains our approach to calculating ROE.

Our analysis builds on earlier McKinsey research, namely assessments of the broad impact of Basel III and Dodd-Frank,³ and McKinsey's annual Global Capital Markets Survey and Global Banking Pools.⁴ We have drawn on our experience, gained from several projects designed to implement the changes required by Basel III and Dodd-Frank at top investment banks and some next-tier banks, and on the insights we have obtained from participating in industry discussions and regulatory debates.

We assess the full impact of regulation, including new capital, liquidity, and funding requirements; product-specific restrictions; and structural changes to markets, for example, in securitizations, over-the-counter (OTC) derivatives, and proprietary trading. Several of the new rules will be phased in over time through 2019, but for the sake of simplicity we have calculated their impact as if they went into immediate effect.

We include in our model those requirements that have material and broadly similar impact on capital-markets businesses' profitability in any part of the world. We exclude from our quantitative analysis the impact of new rules that will have widely different effects on banks (such as capital deductions, whose impact depends heavily on the composition of the balance sheet, and changes to compensation, which vary considerably from bank to bank). Likewise, we do not focus on rules that pertain to specific regions (such as the Volcker rule in the US, and taxes and levies like those adopted in the UK and Germany).

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- 1 We break down rates, credit, and equity derivatives further, into flow and structured businesses. Investment-banking advisory services and primary businesses such as equity capital markets and debt capital markets are not in the scope of this paper, as these represent only 20 percent of the broader capital markets and investment banking (CMIB) business, are not capital intensive, and are much less affected by regulatory reform. Similarly, corporate-banking businesses, such as specialized finance, lending, and transaction banking are not in scope.
 - 2 Bank of America/Merrill Lynch, Barclays Capital, BNP Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase, Morgan Stanley, RBS, Société Générale, and UBS.
 - 3 McKinsey Working Papers on Risk, No. 26: “Basel III and European banking: Its impact, how banks might respond, and the challenges of implementation,” November 2010; McKinsey Working Papers on Risk, No. 25: “Assessing and addressing the implications of new financial regulations for the US banking industry,” March 2011, www.mckinsey.com.
 - 4 <https://solutions.mckinsey.com/globalbankingpools/cms/>.

Exhibit 1

We studied these capital-markets businesses.

Business	Products and services
Foreign exchange (FX)	Spot FX, forward FX, FX swaps, FX options, exotic FX derivatives, eg, digitals, barriers, baskets, knock-ins, knock-outs
Flow rates	Short-term interest rate and money market (eg, time deposits, interest-rate swaps, forward-rate agreements, commercial paper, asset-backed commercial paper), benchmark bonds (eg, government, agency), covered bonds, flow derivatives (eg, vanilla swaps and options)
Structured rates	Structured interest-rate swaps, correlation swaps, flow-inflation swaps, long-dated and structured FX, interest-rate hybrids
Flow credit	Corporate bonds, credit-default swaps, total-return swaps, credit-linked notes, corporate-bond futures and options, asset-backed securities, corporate and residential mortgage-backed securities, par loans, syndicated loans
Structured credit	Cash-collateralized debt obligations, synthetic collateralized debt obligations, baskets, tranche options, index tranches, correlation transactions
Commodities	Trading of flow commodities derivatives and swaps of structured products, trading of structured commodities derivatives, structuring of complex hedges (eg, formula hedges, spread hedging), commodities origination, complex-investment products (eg, turbos linked to commodity prices, index products, baskets), asset-backed trading
Cash equities	Full-service brokerage/secondary trading of single stocks, direct market access, portfolio trading
Flow equity derivatives	Delta 1 swaps, Delta 1 certificates, warrants
Structured equity derivatives	Structured swaps/options, certificates, hybrid derivatives, convertibles
Prime services	Security lending, ie, lending of equity or fixed-income securities; security financing, ie, borrowing equity and fixed income to provide client with cash for financing securities
Proprietary trading	Trading on institution's account rather than carrying out client business

Source: McKinsey Global Capital Markets Survey

Further financial reform is in process or under discussion. For example, the Basel Committee on Banking Supervision launched its consultation process on capital surcharges for systemically important financial institutions (SIFIs) in July of this year; moreover, the details of many new rules, especially those in the Dodd-Frank Act, have yet to be written. Because of the inherent uncertainty, we did not include the effects of any potential new regulation that could put further pressure on ROEs, but we discuss these new rules in “Summary of new regulations.”

To better understand the total impact of the new rules on capital markets, we distinguish between first-, second-, and third-order effects, each of which is discussed in subsequent chapters:

- First-order effects are the direct impact of regulation on business due to increases in capital required and expected effects on revenues (that is, declines in margins for products that must shift to central clearing, and increased liquidity and funding costs). We express these effects in terms of reduction in ROE.
- Second-order effects are banks' short-term responses: the impact on revenues, costs, and capital resulting from banks' likely mitigation actions, which are mostly efficiency and effectiveness gains in current businesses. We measure these as increases in ROE.
- Third-order effects are longer-term structural shifts, including changes in margins (repricing) and business models. We estimate the potential for repricing in each business and discuss other shifts in qualitative terms.

General notes

We assume in our assessment that trading volumes vary in line with historical precedents. We would like to note, however, that some industry observers expect unusual changes in trading volumes over the next few years as a third-order effect of new regulation. Our own recent research⁵ (focused on the developed European and US sector) suggests that trading volumes may increase or decrease by 20 to 30 percent from 2010 to 2013, depending on which of several scenarios takes hold. Current market sentiment suggests stagnant growth or a slight decline. Specifically, we expect a decline in FICC, a secular shift that is already apparent in banks' Q2 2011 results. This trend will be exacerbated by regulation, especially in structured credit and rates, where higher capital requirements will drive down trading volume. Indeed some markets, such as those for resecuritizations, collateralized debt obligations (CDOs), or credit default swap (CDS) indexes, may even cease to exist.

The effect of new regulation will differ significantly by region. US banks, for example, will need to address Dodd-Frank as well as Basel II.5 and III. Asian banks may not be directly affected for the next few years, depending on the timetable that Asian governments adopt for implementation of Basel III. National discretions such as the higher capital requirements that Switzerland has already implemented and the UK is considering and the differences in timing and depth of implementation of Basel III among countries will result in significantly differing impact. This may well create an unlevel playing field, which we discuss further in the final chapter.

5 "New but not yet normal: Corporate and investment banking in transition," June 2010, www.mckinsey.com.

The impact of new regulation

In our last paper on Basel III and its impact on European banking,⁶ we estimated that universal banks would see a significant decline in ROE of four to five percentage points, which would take them from a historical average ROE of 15 percent to a level near their cost of equity. We argued that capital-markets businesses would be much more adversely affected than retail or corporate banking businesses.

In this chapter we provide detail on this assessment. We quantify the first-order effects on capital-markets activity, outline the specific effects of each piece of regulation, and estimate the effects on specific businesses and products. We also provide a perspective on the impact on next-tier firms.

ROE impact

We calculate that the first-order effects of the new regulation we modeled will be to lower ROE of global investment banks from the baseline level of 20 percent to about 7 percent. (See “Methodology” on p. 25 for the calculation of the baseline.) Most of this dramatic drop of about 65 percent is driven by the new requirement to more than double Tier 1 capital in today’s capital-market businesses. To be sure, an industry ROE of 7 percent is a hypothetical figure, as we discuss below. Banks have already begun to carry out mitigating actions to restore profitability and will continue to do more.

For the top 13 investment banks, this 65 percent drop in ROE is the result of a decline in profit after tax to \$30 billion from about \$40 billion (25 percent) and an increase in Tier 1 capital requirements to more than \$400 billion from \$200 billion. The decline in profit is driven mainly by the higher costs for liquidity and funding that we expect to see as a result of regulation.

Drivers of impact

We estimate that about 75 percent of the ROE impact across all capital-markets businesses (10 points of the 13-percentage-point decrease) is driven by the new capital requirements for market and counterparty risk (Exhibit 2):

- New rules on market risk will lower ROEs by slightly more than seven percentage points.
- Counterparty-risk charges will fall heavily on OTC derivatives, driving ROEs down by about three percentage points. OTC derivatives will come in for two other effects: an increase of ROE as many OTC derivatives are shifted to central counterparties, all but eliminating counterparty risk; and a decline in ROE as spreads narrow on the shifted derivatives and trading revenues fall. The net first-order effect of all three derivatives rules is a loss of more than two percentage points of ROE.

The four new ratios (capital, liquidity, funding, and leverage) account for the remaining impact of about three percentage points.

The regulations that we modeled, which will have by far the greatest impact on capital-markets businesses, are:

- The new **market-risk framework** will more than double the current capital requirement to support market-risk RWAs (or RWA equivalents). The increase in RWAs comes from additional capital charges for stressed value at risk (VAR) for all products, as well as the incremental-risk charge (IRC), a new securitization charge, and the comprehensive-risk measure (CRM) for credit and rates products and proprietary trading. Some of these products, such as structured credit, may see as much as a sixfold increase in capital requirements. (See pp. 30–33 for more details on the market-risk framework.)

6 McKinsey Working Papers on Risk, No. 26: “Basel III and European banking: Its impact, how banks might respond, and the challenges of implementation,” November 2010, McKinsey & Company.

Exhibit 2

The decline in return on equity is driven by several new rules.

Impact on return on equity across all capital-markets businesses



1 The relative difference in the size of the effects in the chart is partly an artifact of the manner of representation (that is, listing market risk first makes it appear larger).

2 Credit-valuation adjustment.

3 Over the counter.

4 Risk-weighted assets.

5 Value at risk.

6 Counterparty-credit risk.

- The current **counterparty-credit-risk** charge will increase by a factor of about 2.5, driven by the additional credit-valuation adjustment (CVA) charge for OTC derivatives that are not centrally cleared, and an increase in asset-value-correlation multipliers for large financial counterparties. The CVA considers the extent of collateralization and the maturity and creditworthiness of the counterparty, resulting in higher charges for long-term contracts and low-quality counterparties (as are often found in structured rates, credit, and proprietary trading). (See more details on the new counterparty-credit-risk requirements on pp. 30–33.)
- The mandatory **shift of OTC derivatives to central counterparty (CCP) clearing** will have two major effects. On the one hand, the capital requirements for counterparty-credit risk and the new CVA charge are “transferred” to the CCP, increasing ROE. On the other hand, margins for centrally cleared products are generally about 40 to 50 percent lower. This will weaken revenues and reduce ROE. The net effect is slightly positive across capital-markets businesses, and higher for businesses such as flow rates and commodities whose products carry substantial counterparty risk and are likely to be included in the shift to central clearing. (Note, however, that with the CVA charge on noncentrally cleared products, the OTC derivatives business as a whole will see its ROE decline.)
- The target **capital ratios** will affect the entire bank and will have the most impact on risk-heavy businesses (such as credit, rates, and proprietary trading). We assumed an increase in target Tier 1 capital ratio, to 10 to 12 percent, reflecting a buffer above the minimum requirement, as is typically held by most banks. (New SIFI regulations, as discussed on p. 28, may drive the target Tier 1 ratio higher, to 15 to 16 percent, and core Tier 1 to about 9 to 10 percent.)

- We assume a **leverage ratio** of 30:1 (that is, a capital requirement of 3.33 percent of assets)⁷ across products. For capital-intensive products, the leverage ratio will be automatically fulfilled through the new target capital ratios. We estimate that only for prime services will the leverage ratio have material effects.
- The new **liquidity coverage ratio (LCR)** establishes requirements to ensure adequate short-term liquidity. The criteria for inclusion in the liquidity buffer exclude cash FX and cash-equities products. Only cash and government bonds are fully included; to a lesser extent, high-quality corporate and covered bonds are also eligible. On the other hand, some considerable net cash outflow is to be covered, especially for longer-term products. We assume that banks will be prudent and exceed the requirements of the LCR by a small margin; we assessed the impact of the LCR at a target level of 105 percent.
- Similarly, the new **net stable funding ratio (NSFR)** seeks to ensure adequate long-term funding. To comply with the NSFR, banks will need to shift from the current focus on short-term funding and raise more long-term funding. Short-term products such as FX and cash equities are much less affected by the NSFR than businesses with longer-term products, such as structured credit, structured rates, and proprietary trading. Here, too, we assume that banks will be prudent and exceed the minimum NSFR of 100 percent, granting themselves a cushion of 5 percent.

First-order effects on businesses

Direct impact will vary widely across businesses. Some products implicated in the financial crisis, such as securitizations and resecuritizations, OTC derivatives, and subprime products, are the subjects of specific regulation. Thus businesses that deal in these products will be most affected. We see three big stories:

- **FICC** will see a more significant decline in ROE than equities businesses. This is especially important, as FICC has historically accounted for as much as 70 percent of industry revenues.
- **Structured credit** and **structured rates** will be hardest hit, especially by the new market- and counterparty-risk requirements. Before second- and third-order effects, ROEs will fall to the low single digits. In some cases, it is conceivable that some of these businesses will not continue in their current form.
- **FX** and **cash equities** will, in our estimation, be least affected and will likely remain quite profitable.

Exhibit 3 summarizes ROEs for each business before and after regulation; the discussion below reviews the drivers of impact for each business. It should be noted that in almost every case, the first-order effects on ROE that we detail here can be substantially remediated by banks, through the actions described in the next chapter.

- **FX** is one of the least affected businesses; we calculate a postregulation ROE of about 16 percent, down from about 30 percent. To be sure, a decline of 14 percentage points is substantial but represents only a 45 percent decline, lower than for most other businesses. FX is a capital-light business characterized by quick turnaround and little overnight risk taking. However, it will still be affected by the market-risk framework and capital and liquidity ratios. It currently represents 15 percent of revenues (on average).

⁷ In the US, the Dodd-Frank Act may require an even tighter 15:1 debt-to-equity ratio—that is, approximately 6.67 percent capital per asset ratio, on top of ordinary capital requirements, for systemically risky bank holding companies with assets over \$50 billion and for designated nonbank financial companies.

Exhibit 3

All businesses are affected, especially structured credit and rates.

Return on equity before and after regulation

ESTIMATE

1	Market-risk framework	4	Capital ratio
2	Counterparty-credit risk	5	Leverage ratio
3a	OTC shift: RWA ¹ reduction	6	Liquidity and funding costs
3b	OTC shift: revenue impact		Most significant impact

Businesses	Preregulation %	Basel II.5 Basel III and other regulations							Post-regulation %	Delta %
		Percentage points								
		1	2	3a	3b	4	5	6		
Foreign exchange	30	-8	0	0	0	-4	0	-2	16	-45
Flow rates	19	-6	-5	4	-1	-2	0	-1	8	-60
Structured rates	15	-4	-6	1	-1	-1	0	-1	4	-80
Flow credit	18	-8	0	0	-1	-1	0	-1	6	-65
Structured credit	17	-9	-2	1	-1	-1	0	-1	3	-85
Commodities	20	-6	-3	1	-1	-2	0	-2	8	-60
Cash equities	25	-5	0	0	0	-3	0	-2	15	-40
Flow EQD ²	25	-8	-1	2	-5	-2	0	-2	9	-65
Structured EQD ²	27	-10	-4	1	-1	-2	0	-2	9	-70
Prime services	15	0	0	0	0	-3	-3	-1	8	-45
Proprietary trading	35	-22	-1	0	-1	-2	0	-2	7	-80
Total capital markets	20	-7	-3	2	-1	-2	0	-1	7	-65

1 Risk-weighted asset.
2 Equity derivatives.

- **Rates products** are affected both by increased counterparty-risk charges as well as new market-risk charges.
 - **Flow rates** will be substantially affected by both market risk and counterparty-credit risk (CCR). We estimate that the ROE for flow rates will decline from 19 percent to 8 percent (a 60 percent decline). CCR charges will be modulated by a significant shift of OTC derivatives to central counterparties; we estimate that 50 to 60 percent of OTC derivatives will move to CCP clearinghouses. While severe, the impact on flow rates is less than structured rates, as it relies on higher-quality securities and simpler products with shorter maturities. The flow-rates business accounts for 20 percent of revenues, making it an important capital-markets business.
 - The **structured-rates** business is substantially affected by the CVA charge as well as the market-risk rules. Because structured-rates products are rarely standardized, few will shift to central clearing. In total, we estimate that ROE will decrease from about 15 percent to 4 percent (an 80 percent drop). Structured rates account for approximately 5 percent of industry revenues.
- Credit products are most critically affected by the new market-risk framework.
 - **Flow credit** is less affected than structured credit; flow businesses rely on more standardized products with shorter maturities than their structured equivalents. We estimate the ROE for flow credit to decline from 18 to 6 percent (a 65 percent decline). As flow credit accounts for approximately 20 percent of revenues, this decline is still critical.

- As noted above, **structured credit** is the most affected of all products. We estimate a drop in ROE from 17 percent to 3 percent (an 85 percent fall). It will take the full blow of the new market-risk framework, coming in for stressed VAR charges, the incremental-risk charge (IRC), the securitization charge, and new requirements for correlation trading. Although structured credit only accounts for approximately 5 percent of revenues, material structural changes are expected in response to regulatory impact.
- ROEs in the highly volatile **commodities** businesses are expected to decline from 20 percent to about 8 percent (a 60 percent decrease on approximately 5 percent of revenues), again, mainly from new market-risk charges and counterparty-credit risk.
- **Cash equities** is one of the least affected businesses; we estimate that its ROE will decline from 25 percent to about 15 percent (a 40 percent ROE decline on approximately 10 percent of revenues), mainly driven by its market risk.
- We estimate that equity-derivatives businesses will be more significantly affected by regulation than is generally acknowledged. Like other derivatives businesses, they will come in for the new CVA charge.
 - **Flow-equity-derivatives** businesses can partially offset the CCR charges through the shift to central clearing. We estimate a net ROE decrease from 25 percent to about 9 percent (a 65 percent decline on 5 percent of revenues).
 - **Structured-equity-derivatives** contracts are usually bespoke and not eligible for central clearing; we estimate an ROE decrease from 27 percent to about 9 percent (a 70 percent decline on 5 percent of revenues).
- **Prime services** will likely continue to provide stable profitability, though at a much-reduced level; returns will fall from 15 percent to about 8 percent (a 45 percent ROE decrease on 5 percent of revenues). The business is not subject to market or major counterparty-risk charges but will be affected by capital and leverage ratios.
- **Proprietary trading** enjoyed an average preregulation ROE of 35 percent; it will be severely affected by market-risk requirements. ROE is estimated to fall to 7 percent (an 80 percent ROE decrease on 5 percent of revenues).⁸

Impact on next-tier firms

Our data set comprises the 13 largest capital-markets firms in the world. These firms represent about 60 percent of the market (approximately \$165 billion of the total \$280 billion in 2010 industry revenues). Hundreds of next-tier firms make up the rest of the market, and they are a highly diverse group, ranging from very small boutiques to full-service firms with multiregional reach. While it is difficult to generalize about such a group, in our experience, we can put a range to our expectations and say that the next-tier players typically have a lower baseline ROE, of about 13 to 18 percent, mainly because of the absence of scale effects. In equities, for example, the top 13 firms are more profitable than next-tier firms. Higher volumes are one factor; a business mix that emphasizes cash over derivatives is another; different geographies is a third. We expect that the first-order effects described above will be roughly similar for these firms, though with much greater variation. Some of the next-tier firms, for example, will be less affected because of their more conservative portfolio mix. Such firms focus on capital-light, highly standardized products, with less emphasis on structured products.

⁸ As mentioned before, this does not reflect the Volcker rule in the Dodd-Frank Act, which, in the final interpretation, might require banks to completely shut down their proprietary-trading businesses.

(For example, McKinsey's annual Global Capital Markets Survey and global banking research estimate that smaller firms derive about 40 percent of revenues from FX and cash equities, as opposed to about 25 percent for global banks.) In contrast, some of the biggest next-tier firms will likely be more affected because they do corporate business and more derivatives with second-tier financial institutions, driving high CCR charges. Some boutique firms may be much more adversely affected: a firm that specializes in structured credit might even be forced out of existence.

As a rough estimate, first-order effects for next-tier firms will lead to a decline in ROE of about six to eight percentage points—serious and substantial (a 45 to 50 percent decline), but not as bad as the 65 percent decline we estimate for the top 13 firms.

The response: Banks' mitigating actions

What must banks do to remain profitable? We see two imperatives: conserve capital and boost efficiency. All top players have already set up a program both to ensure compliance with the new rules and—the second-order effect of regulation—to make tactical changes to adapt capital-markets businesses to the new rules.

In this chapter, we outline the tactical responses we have seen from leading banks, in four categories:

- Optimizing portfolios, including improved hedging, sale of capital-intensive portfolios, and restructuring or unwinding of positions.
- Improving risk and capital models and elevating data quality, including amendments to the VAR model to calculate stressed VAR, and new modules to calculate the IRC, CRM, CVA, and expected positive exposure (EPE), a counterparty-risk measurement required by Basel III.
- Improving financial efficiency, including balance-sheet optimization and enhancements to current capital, liquidity, and funding stocks.
- Boosting operational efficiency, including both traditional cost-efficiency measures (reducing head count, shrinking IT costs) and driving greater use of electronic trading.

The first two dimensions are direct remedies: they are both highly specific to capital-markets businesses and can be implemented quickly. Improving financial efficiency is less direct: it is clearly a bank-wide effort with both short- and medium-term levers. Operational enhancements are usually medium- to longer-term efforts and include both bank-wide improvements as well as measures specific to capital markets.

Considered as a whole, it is clear that developing the bank's response will require a joint effort across the bank, involving business, risk management, finance, treasury, IT, and operations. These units are natural leaders of the four categories of mitigation actions. Both for this mitigation effort and for future stewardship in a more highly regulated industry, business strategy and risk strategy will need to be more closely connected. Banks whose organizational structures are heavily siloed will have difficulty with this mitigation agenda.

We estimate that implementing the full set of mitigation actions might restore four to five percentage points to ROE, to a profitable level of 11 to 12 percent:

- Portfolio-optimization measures address capital efficiency and will potentially boost ROE by 1.5 to 2 percentage points, making these the best source of gains, but will require significant changes in the bank's portfolio and processes.
- Model and data-quality improvements can help save capital and might add 1 to 1.5 percentage points; data-quality measures will have especially material impact.
- Financial efficiency focuses on conserving capital, liquidity, and funding; ROE increases of about 1 percentage point might be possible.
- Operational enhancements will reduce costs and potentially increase the ROE by about half a percentage point (as cost-reduction measures are usually less direct and less effective than capital-reduction levers).

Not all mitigation actions are relevant or even applicable to all businesses. Model improvements and portfolio optimization are highly relevant to rates and credit businesses. Operational enhancements are broadly relevant but will be less effective for businesses that have already been worked on extensively, such as cash equities and flow credit. Other cash and flow businesses that thrive on scale, such as FX and flow rates, can benefit from further electrification and improvements in processes.

Exhibit 4 shows our calculation of the improvement in ROE that each business can expect from the mitigation actions described in this chapter. The joint impact of regulation and mitigation actions will likely bring the ROEs of most businesses closer together, around an average of 11 to 12 percent. FX and cash equities will have higher returns than average, and structured credit and rates will have lower.

Portfolio optimization

In general, this is the most effective measure for reducing capital wastage. The effort is usually jointly led by divisional risk management and the business and aligned with the corporate strategy. Broadly speaking, businesses should consider the sale, restructuring, or rebooking of disadvantaged positions; some improvements to hedging; and administrative levers.

One typical quick win is the **sale of capital-intensive positions**, especially in noncore assets. The bank may have to record a loss, depending on the market and the price it can achieve. But the capital savings may well make the sale worthwhile. Such savings can be achieved quickly, but selling assets may raise the more profound question of future trading focus. A discussion of the bank's business model and targeted portfolio mix is the natural next step to pursue this question; see the next chapter for more on this.



Restructuring or unwinding positions is another option. For example, it may be more capital intensive to hold certain securitizations than it would be to unwind the securitization and place the underlying securities on the book. There are further options to restructure the securitization or underlying securities in a different way with very similar economics and a more beneficial regulatory treatment.

Under Basel II, the treatment of securitizations was more favorable when they were carried on the trading book rather than the banking book. Basel III reverses that. **Rebooking asset-backed securities (ABS) portfolios into the banking book** will avoid VAR and stressed VAR charges; only the banking-book equivalent of the MRSA will apply. Banks must be cautious, however. Accounting restrictions must be considered; any rebooking must follow clearly defined criteria. Here, too, the decision on what to hold, and where to hold it, leads inevitably to a larger discussion of the business model.

Another set of effective measures concerns the optimization of hedging:

- At many banks, current hedging strategies reflect an economic and accounting perspective but do not consider the regulatory perspective on **eligibility of hedges**. A book that the business views as risk neutral might still bear high capital charges. For example, long and short positions in derivatives of the same asset can be completely offset only if they share the same maturity and currency; hedges must pass the liquidity test to be included in the CRM model; CDOs can be netted only if their structures (pool, maturity, currency, and so on) are identical. Banks should revisit their hedging strategy, incorporating insights on key drivers and sensitivities from their capital models.
- Appropriate **timing of the hedge** is of increased importance, as a delay in executing a hedge will incur capital charges. Businesses should try to avoid holding unwanted open positions for too long (overnight for some short-term business).
- A **comprehensive approach to hedging** across the bank can help reduce capital charges. For example, some large banks are centralizing the function of monitoring the CVA books to ensure optimal hedging of counterparty-credit risk. Centralized hedging usually leads to a certain level of “overhedging,” given the technical challenges in synchronizing the hedge and front-office books. Many banks are aware of the increased hedging costs and are mostly willing to pay them in light of the reduced capital charges. Similarly, market risk can be monitored centrally, and risk groups can provide guidance to businesses on further hedging opportunities.

Finally, banks should consider two administrative levers. Businesses can make a point of preferring counterparties with which strong **collateral and netting agreements** for derivatives are already in place; this will reduce the counterparty risk and CVA charge. And increased use of **CCPs** will likewise help to reduce counterparty-credit risk. In addition to the mandatory shift of financial-institutions derivatives to central clearing, banks can also decide to move some standardized derivatives contracts with corporates to CCPs. In the extreme case, we are seeing some smaller banks planning to clear their complete derivatives business via CCPs.

Portfolio-optimization levers are widely seen as the most effective measures and are communicated as such. For instance, only recently a large bank committed to its investors to reduce the anticipated 100 percent increase in market and CCR RWAs by 40 percent by 2013, mainly through sales, unwind and roll-off, and hedging. It expects further RWA relief from the exit and roll-off of other capital-intensive assets, which will mitigate another 30 percent of the anticipated increase over the next few years.

For these portfolio optimizations to be effective on a sustained basis, it is essential that they be derived from a strategic decision on the bank's overall portfolio and supported by changes in business processes.

Model and data-quality improvements

Each of the new calculations of market and counterparty risk has several starting points for optimization.

For **stressed VAR**, for example, a systematic analysis of the historical drivers of VAR across inventories is crucial. Banks need to isolate the most important drivers, exclude outliers, and identify opportunities for hedging. Businesses may want to sell all or part of some positions to smooth their profile and eventually reduce stressed VAR; increasing the transparency and granularity of VAR results and conducting analyses of the impact on individual positions can support that decision-making process. The optimization of VAR models has always been about improving capital measurement, but it is now even more focused on supporting trading decisions in order to reduce capital requirements.

The **IRC** is based on an internal model that calculates the default and rating-migration risk of portfolios. The IRC is driven by correlation and concentration effects in the portfolio; as correlations and concentrations increase, so does the IRC. Gaining transparency into potential diversification effects and the optimal portfolio composition can support the business in managing the portfolio in an IRC-conscious way. Developing a sensible level of detail at which to model each asset class is another optimization lever; many banks may be hindered in this by the unavailability of data, especially in low-default portfolios such as sovereigns.

For securitizations, mitigation is achieved more by ensuring that the data required for input parameters are available, rather than refining the methodology. The **market-risk standard approach (MRSA)** is applied, featuring standard formulae with clear input parameters. In the ratings-based approach, external ratings of the securitization are used to derive capital weights; if external ratings are not available, they can instead use the supervisory formula approach, which requires risk assessment of all underlying securities. Data quality is critical for the MRSA; most important, banks must ensure the availability and timeliness of external ratings for the securitization of the risk parameters of all the underlying securities. If the data cannot be obtained or are outdated, the securitization is treated with capital deduction, which is tantamount to a 100 percent capital weight.

A simple diagnostic of the bank's top 50 RWA consumers can reveal these gaps. For example, at one bank, several securitization positions were treated with capital deductions, as external ratings did not feed through from external data sources—even though they were publicly available. Applying the actual ratings (AA, which has about 1 percent capital weight) immediately saved €100 million capital.

The **CRM** can be applied to portfolios of correlation trading securitizations and “nth-to-default” baskets as well as their hedges, if they fulfill the eligibility criteria—especially with respect to liquidity. A systematic, automated liquidity test ensures timely and correct eligibility for CRM. Banks should also develop a comprehensive set of models to cover all products that can be treated under the CRM. This is critical; if a position is not CRM eligible or the bank has not yet developed an adequate model for the specific product class, it is treated with the MRSA, which might increase the capital charge as much as tenfold. Special focus should be given to hedges; the risk teams should identify the eligible hedges and communicate them to the business.

For the **CVA** charge, banks must choose the optimal calculation approach, advanced or standard, for their particular circumstances. The advanced approach usually leads to lower capital charges but requires banks to maintain internal models for both interest-rate market risk (measured in VAR) and counterparty-credit-risk exposure (measured in EPE).

The advanced approach is suited to banks with a low or negative exposure; moreover, it allows cross-product hedging. On the other hand, the standard CVA approach is less sensitive to some drivers. For example, market volatility is not considered, nor is the duration of the portfolio. In both approaches, collateral can be used to lower the charge.

In all these new modules, as well as in the ongoing calculation of other established requirements, risk and capital models should ideally encompass all the bank's positions. As noted, **data quality** is essential to realizing this vision. Models are usually fed by disparate front-office systems and must be able to cope with high volumes and frequent changes. Availability, quality, and timeliness of parameters are essential to minimize capital charges, especially parameters such as unique product and instrument identifiers, links between trades and their hedges, current external ratings for securitizations, timely liquidity tests, and so on.

Banks will also have to become more diligent about the classification of trading products and apply the correct approach to each trade (for example, correctly identifying an asset as a securitization to apply the MRSA, rather than the IRC, which would be the wrong approach in this case; meanwhile, other assets should be classified as eligible for CRM instead of the more capital-consuming MRSA). This will require the business to know and use the regulatory product categories, as well as changes to IT to reflect these categories. Current books of business must be cleaned and classified, and robust controls for future classification installed. Banks are well aware of the significance of data quality and many have undertaken numerous initiatives to improve it.

Financial efficiency

Basel III establishes strong links among capital, liquidity and funding. Banks will need to adjust their current capital-planning process to account for the new capital ratios and to optimize as much as possible the triangle of capital, liquidity, and funding. Banks should consider the following short- and medium-term levers:

- **Net offsetting positions.** Banks can optimize their netting to be more comprehensive, and inclusive of all possible offsetting positions. This should include netting across geographies, products, and currencies, where possible. Difficulties that arise from inconsistent data architecture or differences among systems, regions, and legal entities in the calculation of capital should be addressed.
- **Optimize capital usage.** Capital management must be refined to account for the new requirements on capital deductions and quality. A review of the portfolio should reveal opportunities to minimize deductions and improve capital quality, for example, by reducing unconsolidated investments below the regulatory thresholds defined by the regulator or by buying out minority stakes. Banks should also consider both the economic and accounting implications of some moves to steer capital (such as reclassifying financial instruments according to the new rules or switching the hedge accounting model from current value to fair value). Finally, banks should replace current mezzanine capital instruments that might not be recognized in the future as Tier 1 capital with new and innovative securities that require a lower return (for example, contingent convertible securities, or CoCos, though the July 2011 consultation document of the Basel Committee on SIFs suggests that CoCos may not be accepted as regulatory capital; they may continue to be relevant in certain jurisdictions, such as Switzerland).
- **Use stock of liquid assets efficiently.** Assets eligible for the liquidity buffer, a core component of the LCR, include government bonds and high-quality corporate and covered bonds (AA- and above). Financial-institution bonds, by contrast, are not eligible. Centralizing liquidity management is a key lever; monitoring liquidity risk across the bank and coordinating access to the market will help to utilize liquidity more efficiently.

- **Use eligible funding efficiently.** A long-term debt and deposits of more than one year as well as retail and small and medium enterprise (SME) deposits of less than one year are counted as stable funding for purposes of the NSFR. Funding from financial institutions, however, does not count toward the NSFR. Best-practice banks have centralized funding management, closely monitoring alternative funding plans and quickly reacting to changes and opportunities for saving costs.
- **Utilize excess capital.** Banks have raised considerable capital in the past two years, both in reaction to the crisis and in view of upcoming regulation. They are engaged in a delicate process of raising capital while and when they can, while also funding normal business growth. Banks should put to work any excess capital that they may have accumulated for the future or that may be clogging up balance sheets in some subsidiaries, sometimes even as other entities are looking to add capital. All such moves should be made with an eye to ensuring that target capital ratios are achieved.

In our experience, it is critical to understand the impact of any of these actions on the bank's capital, liquidity, and funding positions and to identify the mix of levers that will optimize the bank's portfolio of these three vital elements.

Operational enhancements

Banks should consider several improvements to processes and risk IT systems. Some examples include:

- **Adjust front- and back-office head count.** Especially for businesses with crisis- or regulation-induced declines in volumes and revenues, banks can adjust resources in both front- and back-office functions. Weak markets have prompted a wave of job cuts in the banking industry, including at Credit Suisse, Goldman Sachs, and UBS, which have announced plans to reduce their workforces by between 3 and 8 percent.
- **Improve efficiency in execution.** Especially in high-volume businesses, banks need to improve process execution and realize efficiencies to further reduce operational costs. This will be a key advantage for banks that are building scale in flow businesses. A bank can achieve even greater scale by processing other firms' business, such as by offering CCP services to smaller banks.
- **Revise compensation framework.** People are often the biggest cost in capital-markets businesses. As regulators lay out new compensation rules, the time seems right to review the compensation framework generally. Risk-adjusted compensation sets the right incentives and compensates to some extent for increased capital costs. Retention of talent is the binding constraint for revisions to the framework.
- **Increase use of electronic trading.** Electronic trading, already dominant in some businesses, such as FX and cash equities, continues to spread. E-trading in FX is expected to grow from about 60 percent of total flows in 2010 to 80 percent by 2013; similar growth is expected in government bonds and interest-rate swaps. Other businesses, such as CDS and many commodities, are only starting to adopt e-trading. E-trading changes the economics of products by increasing efficiency and price transparency; spreads are narrowed by increased competition. As various businesses shift to e-trading, banks should invest in the appropriate infrastructure.
- **Improve risk systems.** To ensure data quality, as mentioned in the discussion of model improvements, robust risk systems must support an optimal capital calculation. Some steps that banks can consider include consolidating trading systems across front offices, geographies, and legal entities; enhancing feeds from various source systems or external providers; establishing a consistent data taxonomy of trades, instruments, and products; and so on.

These steps and others will help capital-markets businesses reduce or eliminate manual reconciliations, a sore point with regulators. They will also allow the bank to generate faster internal RWA reports; these can help the bank to timely, risk-sensitive steering and quick reactions to exogenous change. IT change programs at most banks are substantial affairs. For example, programs under way today include major front-office IT consolidation and the design and development of central clearing and collateral-management platforms. In some areas we also see a trend toward greater use of vendor solutions.

- **Optimize IT investments.** To address all IT infrastructure changes in the most capital-efficient way, banks should set up both a clear action plan and a schedule that prioritizes core businesses, enables flexibility in their business model, and articulates the impact on capital.

We have analyzed industry best practices across these topics. In June 2011, McKinsey published jointly with the Institute of International Finance a report on the status and future of risk IT and operations.⁹ Three main findings emerged from the survey of 44 banks around the world: first, after addressing the most serious shortcomings exposed by the crisis, firms now have a much more detailed understanding of the risks they incur and are better able to manage them. Second, firms agree that the job is far from done, and there are significant opportunities to improve risk IT/ops, in which they are already investing. Third, firms believe that risk IT/ops needs sustained organizational focus, including the active engagement of the chief risk officer, the chief information officer, and the board, as well as stronger capabilities.

Summary and a note on next-tier firms

Exhibit 5 provides a summary of the potential moves banks can take to lessen the impact of regulation in each of the four dimensions discussed above.

Mitigation actions and their potential impact have to be considered in light of the potential for significantly reduced volumes (as is already happening in the most affected businesses). Sinking volumes and pressure on profitability will likely be the trigger for some consolidation of business, as some of the smaller players refocus their activities.

The options for next-tier firms, especially the smaller ones, are slightly more limited than the options for global banks. Smaller firms will have less flexibility to restructure the portfolio or to optimize the balance sheet; they cannot use scale effects and have limited capacity to invest in model development. We estimate that, with immediate mitigation actions, next-tier firms might only be able to achieve ROE around the cost of equity (about 9 to 11 percent). Accordingly, these firms may be more dependent than their larger cousins on positive market developments to retain profitability; they may be at risk of more severe changes to their business.

⁹ "Risk IT and operations: Strengthening capabilities," June 2011, Institute of International Finance and McKinsey & Company, www.iif.com.

Exhibit 5

Four elements must come together for a comprehensive program of mitigation.

EXAMPLES: NOT COMPREHENSIVE

<p>Portfolio optimization</p> <ul style="list-style-type: none"> ▪ Sell capital-intensive positions ▪ Restructure or unwind positions ▪ Rebook ABS¹ portfolios into banking book ▪ Optimize hedging (eligibility, timing, comprehensiveness) ▪ Improve collateral and netting agreements ▪ Increase use of central counterparties 	<p>Model and data-quality improvements</p> <ul style="list-style-type: none"> ▪ Revise internal stressed VAR² model ▪ Optimize IRC³ model ▪ Enable more beneficial MRSA⁴ approaches (RBA,⁵ SFA⁶) ▪ Enhance CRM⁷ model ▪ Develop internal CCR⁸ models (EPE,⁹ CVA¹⁰) ▪ Increase data quality in the trading book
<p>Operational enhancements</p> <ul style="list-style-type: none"> ▪ Adjust front- and back-office head count ▪ Improve efficiency in execution ▪ Revise compensation framework ▪ Increase use of electronic trading ▪ Improve risk systems ▪ Optimize IT investments 	<p>Financial efficiency</p> <ul style="list-style-type: none"> ▪ Net offsetting positions where possible ▪ Optimize capital usage ▪ Use stock of liquid assets efficiently ▪ Use eligible funding efficiently ▪ Utilize excess capital

1 Asset-backed securities. | 4 Market-risk standard approach. | 7 Comprehensive-risk measure. | 10 Credit-valuation adjustment.
 2 Value at risk. | 5 Ratings-based approach. | 8 Counterparty-credit risk.
 3 Incremental-risk charge. | 6 Supervisory-formula approach. | 9 Expected positive exposure.

Implications for market structure

The mitigation actions discussed earlier can help retain most capital-markets businesses' ROEs at a level above the cost of equity. But it will not be enough to save all businesses: even after mitigation, structured credit and structured rates will likely have ROEs below the cost of equity. Several other businesses, notably flow credit, would appear to be only on the cusp of returning their cost of equity. Proprietary trading is also in jeopardy, but for slightly different reasons; in light of the Volcker rule, many US banks have already made moves to shut down proprietary-trading units (Goldman Sachs), or spin them off as independent firms (as planned by Morgan Stanley). It may also be the case that some proprietary activity is drifting to client desks.

In businesses whose economics have been rendered marginal, banks will pursue additional, more material actions—what we call the third-order effects of regulation. Two of these are of particular interest: the transfer of higher costs to banks' customers via repricing and shifts in business models that will lower regulatory costs. How feasible and effective are these options, and how will they reshape the capital-markets landscape?

Repricing

On the face of it, pushing some of the regulatory burden on to the customer would be an easy step. But banks are unsure about how much the customer is willing to take on and about the competitive dynamics that might result from a price hike. Hence we consider repricing a third-order effect and not an immediate mitigating action.

Exhibit 6 shows the potential impact of regulatory costs on current average price margins paid by the customer. We calculate these breakeven rates as if the bank were to assume a target ROE, absorb and mitigate costs up to that threshold, and shift any excess regulatory costs to the customer. The analysis assumes no change in revenues; if revenues were to decline (which we believe likely, in many cases), these breakeven rates would move higher.



For structured credit and structured rates, the hardest-hit businesses, to reach a target profitability level of 12 percent ROE, this would mean a price increase of 30 to 50 percent. As the margins for these products are already wide and their pricing generally opaque, customers might be willing to accept these higher prices. On the other hand, for products with tight margins such as those sold in FX, cash equities, and flow-equity-derivatives businesses, price rises would likely be rejected by customers. In these businesses, banks will need to carry the entire burden, making the thorough mitigation described earlier even more important.

Before raising prices, banks should seek to build a deeper understanding of customers and their price sensitivity. Banks should already have in place a customer strategy that distinguishes various segments and designs appropriate sales and support for each; that strategy should be reviewed in light of the findings of the pricing-sensitivity review. Banks may find, for example, that it might be more profitable to raise prices and lose some less essential customers than to keep prices flat and attempt to retain everyone.

When is the right time for banks to reprice? In view of the current fierce competition for customers and market share, we anticipate that banks are more likely to move once they feel the pinch of regulation, beginning in 2012 and 2013 with the introduction of market and counterparty risk charges. Even then, success in repricing will depend to some extent on an increase in demand or a decrease in supply (that is, some capacity leaving the industry), neither of which is observable in the current market. Accordingly we believe that repricing will be only a partial success and will take several years to achieve.

Business-model changes

Besides tactical improvements and repricing, a further option for a bank to recover profitability is a change in business scope or business model. For some banks with franchises in the hardest-hit businesses, such changes will be necessary. Others might not have to move from necessity but will do so from choice, seeing an opportunity to increase profits further. Already we see some moves along these lines, such as the proposed spinoff of proprietary-trading groups.

We see several potential moves:

- **Transforming the front office** can be an effective step. Several banks are reviewing how their front-office activities can be optimized for increased productivity and agility in an environment of high uncertainty. Such projects require a detailed review of full front-to-back costs, as well as a qualitative assessment of teams' functioning. Sales and coverage teams are a particular focus for transformation. Typical improvements are inspired by those used in operational transformations and include enhancing performance-management tools, upgrading the team manager's coaching skills, and working on team mind-set and behaviors. These measures are considered quite effective—some firms are targeting around 10 percentage points of improvement to the relevant cost-income ratio (C/I).¹⁰
- **Adjusting the product and service mix** to reflect new realities might include, for example, a senior-management decision to shift toward more standardized flow products and higher-quality securitizations or stepping back from some parts of the business system, such as distribution, while committing to others, such as structuring. Transparency into the financial performance of businesses, products, and client relationships is the basis for a focused portfolio strategy. The strategy should reflect the bank's core competencies (as we discuss below in "Developing a strategic agenda"). Such a strategy might include some "loss leading" products whose returns fall short of cost of equity but are useful as anchor products for cross-selling.

¹⁰ McKinsey has launched a survey that aims to establish detailed cost benchmarks and other measures that firms can use to conduct a front-office-excellence diagnostic and develop a qualitative assessment of teams.

A transparent categorization of the portfolio into core and noncore assets can be combined with the customer strategy to help make choices; the customer strategy would be based on a comprehensive analysis of regulatory impact and profitability from a customer perspective across all products (including capital-markets products, investment-banking businesses such as debt issuance, and corporate-banking products such as deposits and cash management). Banks should also develop mechanisms to enforce their choices, such as changes to business processes, lest businesses drift back into old habits.

Development of new substitution products is another option to address high capital charges on the current portfolio. For example, companies might now find it cheaper to hold more interest-rate risk rather than hedge the first-loss piece with the banks, which will likely want to charge more to cover their new capital requirements. Another example would be the introduction of new deal structures, with economics similar to those for products most affected by regulation, but which are not captured by the regulatory definition.

- **Reviewing the geographical and legal structure** to understand any differences in the application of new regulation, and to build advantageous partnerships:

- **Geographical shifts:** the differences in national adoption of Basel III requirements and the additional country-specific regulations create an unlevel playing field. Multiregional and global banks are currently exploring differences in capital, liquidity, and funding requirements and might want to consider shifting business, assets, and capital among their legal entities. However, the home-regulator principle, the Pillar II requirement to conduct an Internal Capital Adequacy Assessment Process for every local entity,¹¹ and the willingness of business leaders and staff to change location are limiting constraints.

An unlevel playing field seems to be a given in many cases, such as among Europe, the US, and Asia, where Basel III will be implemented at different times and in different forms. Even within Europe, there are different national transpositions of EU legislation, with some countries going beyond the requirements of EU directives or global standards. Such “gold plating” can be seen in the UK, which is applying stricter capital and liquidity requirements to UK-domiciled banks. In another example, non-US banks with US business fall under their home country’s regulation but are also subject to certain Dodd-Frank requirements, including, potentially, new requirements for systemically important institutions (enhanced supervision by the Federal Reserve and higher capital requirements), and the Volcker rule.

- **Shifts in legal structures:** banks might also spin off activities into the “shadow” banking system (to asset managers, hedge funds, and so on) to retain access to these profit pools while avoiding bank-specific regulation. Many firms are doubtful that repricing can make certain structured products profitable again and believe that clients might turn to the shadow banking system for solutions. Similarly, new rules on compensation might also drive more talent and client activity to hedge funds and the like. Capital-markets banks will likely seek to develop partners from the shadow banking system with whom to coordinate a comprehensive client offering. For example, Morgan Stanley intends to spin off its vaunted Process Driven Trading unit as an independent advisory firm; the bank will be allowed to buy preferred shares in the spinoff so that it can continue to reap some earnings with greatly lowered risk.

Other shifts are also possible. For example, in recent months, two major banks altered their corporate structure by deregistering the bank holding companies through which they conduct much of their US business. We expect,

¹¹ For more, see McKinsey Working Papers on Risk, No. 27: “Mastering ICAAP: Achieving excellence in the new world of scarce capital,” May 2011, www.mckinsey.com.

however, that regulators will seek to close any loopholes left open in the recent phase of regulation, through greater international alignment of banking rules.

- *Informal partnerships*: a third option is to develop informal business relationships with less regulated partners—that is, institutions in less regulated geographies or nonbanks. Both sides of the partnership stand to gain from their joint business. To allow for flexibility, banks are aiming to put these informal partners at arm’s length rather than form a fixed alliance.
- **Exiting a business completely**, through sale or a wind-down of all assets, is the most severe measure but may be reasonable if regulatory costs cannot be adequately mitigated or shared with customers, if the business’s market position is weak, or if the business is not among the group’s core competencies. For some smaller banks, structured-credit businesses may meet these criteria. In the worst case, the whole market might dry up for a certain product, such as CDOs, CDO-squared, or CDS indexes. In another example, several smaller banks are withdrawing from the cash-equities business; though it has not been hit too badly by new regulation, demand has fallen steeply. The global market for cash equities has fallen by 30 percent from 2007 to 2010; with its high C/I ratios of up to 90 percent, the business now appears unattractive to these smaller firms.

Naturally, each bank must develop its own specific business strategy, typically drawing from the various moves laid out above. Such a strategy must address some tricky questions. For example, can the bank still maintain the suite of products it needs to deliver on its customer value proposition if it concludes that it must shrink the capital-markets business and exit some businesses? How can it adjust the fixed part of the cost base to cope with both shrinking revenues and higher capital costs?

Not everyone will be heading for the exits; some brave banks that believe strongly in a strategy based on scale and efficiency might even choose to invest heavily in some of their businesses. To do so requires a rapid buildup of market share and the confidence that few competitors will follow the same strategy. Otherwise, such a move will destroy margins and leave the bank with a large unprofitable business.

Developing a strategic agenda

Banks will reprice and make changes to the models of their most affected businesses, depending on their core competencies and competitive advantages. After regulation, we expect four major and more strongly differentiated business models to dominate. Each model will follow a different strategic thrust drawing from one of three sources of value creation (Exhibit 7). Those sources of value, and the business models they drive, are:

- **Scale.** Flow-driven universal banks with true scale and operational and technological strengths will exploit their advantage to provide high liquidity at low prices. These firms will continue to provide a broad offering with, most likely, an even greater focus on flow business and electronic trading. They may seek to adjust the product mix in some businesses even further toward capital-light, short-term products. In 2010, the top 13 global banks already accounted for 50 percent of global flow-rates revenues, a degree of consolidation that is likely to rise. To achieve this, banks will continue to invest in technology while expanding their client franchises among top-tier institutional investors, in particular hedge funds and asset managers. Integrated offerings of prime services, clearing, and collateral management will help secure client flows. Banks such as these can also utilize their extensive structure of legal entities.

Exhibit 7

Capital-markets business models will likely move in these directions.

Source of value	New business model	Initiatives
Scale	Flow-driven universal bank	<ul style="list-style-type: none"> ▪ Improve business economics through platform scale ▪ Provide broad product offering for clients, with aspiration to a top position in flow products ▪ Expand and leverage Tier 1 institutional client franchise
Franchise	Franchise bank	<ul style="list-style-type: none"> ▪ Develop deep corporate and institutional (Tier 2/Tier 3) client franchise in large home or multilocal markets ▪ Penetrate client franchise with standardized but comprehensive product set (with some white labeling) ▪ Develop selected lighthouse product offering for Tier 1 institutional clients based on local expertise (eg, local credit)
	New corporate bank	<ul style="list-style-type: none"> ▪ Provide product offering based on corporate client needs ▪ Increasingly leverage infrastructure provided by industry utilities or global banks
Risk	New investment bank	<ul style="list-style-type: none"> ▪ Differentiate through risk-management capabilities and offer innovative, tailored solutions ▪ Build leading-edge risk-management/product-structuring capabilities ▪ Target top global institutional clients

- **Franchise.** Banks with a more regional footprint will likely opt out of the race for scale and instead focus on deep customer relationships with a strong regional and sector competence. Franchise banks, with their wide geographic reach and prototypical franchise structure, will continue to offer a broad product range and full services and will likely leverage the depth and quality of those relationships to gain greater share of wallet. In addition, these houses will use their access to local products and their information advantage to position themselves among certain top-tier institutional investors.

We expect that banks with a more local presence and a greater contribution from corporate-client business (“new corporate banks”) will be even more selective about the breadth of their capital-markets offering. They will likely focus on products that meet the core needs of their clients (flow rates, FX, and so on). For these banks, we expect some more disruptive changes along the value chain. For instance, many local banks are currently evaluating whether to build their own derivative clearing and collateral-management offering or to purchase one from a vendor or a global bank.

- **Risk.** Finally, we expect a small number of banks with a strong risk-management profile and highly sophisticated product offering to continue to develop these strengths. Structured products, the core capability of the “new investment bank,” can be made profitable again through innovation to maximize the profitability of these products within the new regulatory regimes, and by repricing to push margins higher. To be successful in this model will require a strong appetite for market risk and superior access to institutional investors. Note, however, that while several firms can succeed at this model, a sizable part of this business will move off balance sheet to specialist, less regulated institutions.

This differentiation in strategy is not necessarily all encompassing but rather business specific: a bank can act as a flow-driven universal in its flow businesses while maintaining its sophistication as a risk-driven “new investment bank” in structured credit. However, to follow each of these major strategic thrusts, a comprehensive change in business model, operations, and culture will be required.¹²

□□□

Irrespective of which strategies banks pursue, a clear view of the core competencies and strategic options, a strong management action plan, and timely planning of mitigation and repricing will be key success factors. The industry is in a period of change and renewal; business dynamics and developments in the next few months could very well define the market structure for years to come. Accordingly, for every potential move, banks must consider the implications for profitability under the new wave of regulation.

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¹² For more detailed discussion of the changes in business models, see “New but not yet normal: Corporate and investment banking in transition,” June 2010, www.mckinsey.com.

Appendix

Methodology

We define baseline return on equity (ROE) for the 13 banks analyzed as:

$$\frac{\text{revenues} - \text{operating expenses} - \text{taxes}}{\text{allocated Tier 1 capital}}$$

Revenues are for 2010, as determined by McKinsey's Global Capital Markets Survey and Global Banking Pools, which draw on publicly available information and industry interviews. We analyze the top 13 banks because they provide consistent and precise breakdowns of revenues by product, region, and client type. We estimate capital-markets revenues for the 13 firms at approximately \$165 billion (out of \$280 billion for all banks).¹ Industry revenues in 2010 were well down from 2009 but were in line with historical trends for the years leading up to the crisis.

- Operating expenses are derived from typical cost-income ratios (C/I) for each business, ranging between 55 and 90 percent. We estimated the ratios based on interviews with industry and McKinsey experts and several recent analysts' reports. At the high end, cash equities and prime brokerage services have a C/I of about 90 percent; at the low end, businesses such as rates and equity derivatives have a C/I of 55 to 60 percent.
- The tax rate is set at 30 percent across all businesses.
- To determine the Tier 1 capital allocated to each business, we used typical revenues to risk-weighted asset (RWA) ratios of between 5 and 15 percent for fixed income, currencies, and commodities (FICC), and 10 to 30 percent for equities businesses, prime services, and proprietary trading. RWAs per business were multiplied by a cross-bank target Tier 1 capital ratio of 10 percent, preregulation, reflecting a buffer or cushion usually held by banks above the minimum ratio. Precrisis, Tier 1 capital reserves at most institutions ranged from 7 to 10 percent. As banks have already adjusted their Tier 1 capital postcrisis and expanded their cushion in anticipation of regulatory change, we use 10 percent in our calculation. Using this method, we estimate allocated regulatory Tier 1 capital at approximately \$200 billion.²

We estimate a baseline ROE for capital-markets businesses of 20 percent. As noted, 2010 costs and revenues were in line with historical averages prior to the crisis, so we consider this baseline ROE representative of the top 13 banks' performance both pre- and postcrisis. Some businesses such as foreign exchange (FX) and proprietary trading have higher ROEs, 30 percent or more; some, such as flow rates and credit, are lower, at 15 to 20 percent. Next-tier banks that deal mainly in standardized, lower-margin products and operate at less than scale have a lower baseline ROE that we estimate at 13 to 18 percent.

These baseline ROEs describe industry averages and can vary significantly among banks, given differences in size, geography, portfolio mix, risk appetite, productivity, and so on. The extent of regulatory impact will similarly vary according to these characteristics. However, these industry averages provide meaningful guidance in their own right, and our methodology can be used with knowledge of a bank's individual situation to provide more precise insight.

¹ Revenues do not include credit-value adjustments (CVAs) or debt-value adjustments (DVAs).

² We use Tier 1 capital in our model, in line with common industry practice. With core Tier 1 capital becoming the more important resource, we also calculated the allocated core Tier 1 capital at approximately \$160 billion, using a target ratio of 8 percent preregulation.

Summary of new regulations

Regulations included in the model are the new market-risk framework (Basel II.5); capital target ratios, leverage ratios, liquidity and funding requirements, and counterparty-credit risk (Basel III); and the mandatory shift of over-the-counter (OTC) derivatives to central clearing (Dodd-Frank and EMIR).

Additional regulations relevant for capital-markets business that we did not include in the model but that will have an additional negative effect on return on equity (ROE) are fourfold: (i) bank-specific effects such as capital deductions and compensation rules; (ii) geography-specific effects such as the Volcker rule, taxes, and bank levies; (iii) indirect effects such as the securitization-retention requirement for new issuances;³ and (iv) regulation still in process or in discussion, such as systemically important financial institution (SIFI) capital surcharges (which now appear very likely, after the release of the July 2011 consultation paper of the Basel Committee on Banking Supervision (BCBS)⁴), and subsidiarization requirements.

Basel II.5

We use the term “Basel II.5” to describe two papers published by the BCBS: *Proposed enhancements to the Basel II framework* (January 2009) and *Revisions to the Basel II market-risk framework* (July 2009; revised December 2010).⁵ These papers describe changes to the **market-risk framework** that will take effect by December 31, 2011. Changes include an increase in capital requirements for trading-book positions through the introduction of a new “stressed value at risk (VAR)” charge (on top of the current VAR), and new capital charges for products with default and migration risks (the incremental-risk charge, or IRC); a new charge for securitizations by means of the market-risk standard approach (MRSA); and a charge associated with the comprehensive-risk measure (CRM) approach. (See “A closer look at new market and counterparty-credit-risk rules” on pp. 30–33 for more details.) It also includes increased capital charges for resecuritizations in the banking book.

Basel III

Basel III comprises the regulations introduced in the BCBS papers *Basel III: A global regulatory framework for more resilient banks and banking systems* (December 2010; revised June 2011) and *Basel III: International framework for liquidity risk measurement, standards and monitoring* (December 2010). These documents amend the earlier Basel capital accords and introduce several new elements. Here are the most significant rules for capital-markets businesses:

Basel III specifies new **capital target ratios**, beginning with a core Tier 1 requirement of 7 percent (further specified as a minimum of 4.5 percent of core Tier 1 capital and a capital-conservation buffer of 2.5 percent). The broader requirement for all Tier 1 capital is set at 8.5 percent; this includes the core Tier 1 minimum of 7 percent and a minimum of additional noncore Tier 1 capital of 1.5 percent. The total capital ratio is set at a minimum of 10.5 percent. All capital ratios will be introduced stepwise from 2013 until full implementation in 2019.

³ This will have a direct capital effect on investment-banking-origination business and thus an indirect effect on capital-markets businesses, likely through increased margins and potentially decreased volumes and investment opportunities.

⁴ “Global systemically important banks: Assessment methodology and the additional loss absorbency requirement – consultative document,” July 2011, www.bis.org.

⁵ www.bis.org.

Basel III's rules for **capital quality** deduct a number of forms of capital, such as capital held by insurance subsidiaries, defined-benefit pension fund assets, investments in unconsolidated financial institutions, and deferred-tax assets.

Basel III introduces a **leverage ratio** as a supplementary measure to the Basel II risk-based framework. The committee agreed on a Tier 1 leverage ratio of 3 percent, which effectively limits banks to lending 33 times their capital. This will only be introduced in 2018, but banks will need to monitor and report their leverage to the regulator beginning in 2013 and disclose their leverage ratios to the market beginning in 2015.

Basel III also sets new standards for short-term funding and sketches out requirements for long-term funding, embedded in two regulatory metrics.

- The **liquidity coverage ratio (LCR)** is the stock of highly liquid assets, divided by net cash outflow over a 30-day period. The LCR must be greater than 100 percent. The LCR is designed to ensure that sufficient high-quality liquid assets are available to meet short-term needs.
- The **net stable funding ratio (NSFR)** is the available amount of stable funding (capital, long-term debt, some deposits, and so on, all assigned various weights) divided by the requirements (receivables, loans, bonds, and other assets, again variously weighted). The NSFR must also be greater than 100 percent. The NSFR is designed to promote more medium- and long-term funding of assets.

For **counterparty-credit risk (CCR)**, the three main changes in the Basel III framework are: (a) increased assumptions of correlations among "systemically important" financial intermediaries, (b) increased risk weightings of CCR for banks using an internal model (expected positive exposure, or EPE), and (c) an additional new Pillar I capital charge, which captures the potential increase in credit-valuation adjustments (CVAs) during one year due to the widening of counterparties' credit spreads (CVA charge). "A closer look at new market and counterparty-credit-risk rules" on pp. 30–33 provides additional detail.

Dodd-Frank

The Dodd-Frank Wall Street Reform and Consumer Protection Act consists of more than 200 new regulations, which fall into five broad categories: expanded regulatory oversight of financial firms; new operating restrictions on some financial activities (including proprietary trading); increased mandates for firm governance; higher prudential regulatory standards; and greater firm contributions to regulatory costs. The act applies broadly to financial activities conducted in the US, whether by domestic or international firms; foreign firms' US activities will be subject to Federal Reserve oversight of the domestic bank holding company or "designated" nonbank financial institution.⁶ A good many of the new rules have yet to be detailed; that process is ongoing and may take some time. The new rules that are most relevant for capital-markets businesses are:

- A mandatory **shift of certain over-the-counter (OTC) derivatives** with financial counterparties to exchanges or central clearinghouses. For deals struck with nonfinancial counterparties, there is an end-user exemption for derivatives used for hedging or mitigating commercial risk. For swaps and other derivatives that

⁶ The Federal Reserve will have the ability to terminate the US activities of any foreign financial institution "that presents a risk to the stability of the United States financial system."

remain bilateral (that is, those that are not shifted to a clearing facility), the act raises reporting requirements and sets higher margin and capital requirements for swap dealers and major swap participants.

- The **Volcker rule** prohibiting purely proprietary trading activities for banks, with significant exceptions for facilitating client business. The rule also stipulates that private-equity and hedge fund stakes cannot be larger than 3 percent of the bank's Tier 1 capital; further, banks cannot hold a controlling stake or a board seat. Exceptions have been proposed to draw broader support for implementation, such as proprietary dealing in US obligations or assets issued by quasi-government agencies (Ginnie Mae, et al.).
- The **retention requirement for securitizations** in the Dodd-Frank Act requires issuers of new securitizations to retain 5 percent of the issue, to keep some "skin in the game."

Other regional regulations

The requirements in the European Commission's **European Market Infrastructure Regulation (EMIR)** for OTC derivatives, currently being finalized, are similar to the Dodd-Frank rules for OTC derivatives. EMIR will require more derivatives to use central clearing, new exchanges, and swap execution facilities, and will set higher reporting requirements.

In the **Capital Requirements Directive 2 (CRD2)**, the EU Parliament and Council have introduced a 5 percent retention requirement for securitizations. CRD2 came into effect on January 1, 2011, after European nations transposed it into national law. In contrast to the similar Dodd-Frank requirement, the European version puts the burden on investors to check the retention of the 5 percent by the originator or sponsor prior to investing. The laws also vary with respect to timelines and various exclusions, which in our view will create an unlevel playing field.

Several countries have introduced **bank levies**, mostly in the form of taxes based on the bank's balance sheet, to create an insurance fund, which can bail them out in any future crisis. The UK and Germany, for example, introduced bank levies effective January 2011; the levies are expected to raise about £2.5 billion and €1 billion annually.

New **compensation rules** are presented in CRD3 and are also set at a national level. Some of the new rules include requirements that part of the bonus must be deferred over time (for example, three years), and that part of the nondeferred bonus must be paid in shares or securities linked to the banks' performance. As a result, cash bonuses are capped.

Regulations in discussion or in the process of being finalized

In addition to the Basel reform, the Dodd-Frank Act, and further country-specific rules, which are now mostly fixed, politicians, regulators, and the industry continue to debate further regulations. Over the past year, two of the most intensively discussed "known unknowns" that might have an effect on capital-markets businesses are:

- **Capital surcharges for SIFIs.** These surcharges for systemically important financial institutions are about to be introduced in major markets around the world. In July 2011, the BCBS released a consultation paper that spelled out staged capital surcharges for SIFIs ranging from 1 to 3.5 percentage points (depending on

the category to which the bank is assigned), on top of the regulatory minimum.⁷ Some countries may enact even higher capital requirements for SIFIs. Switzerland has already moved to require SIFIs to hold a capital conservation buffer of 8.5 percent (in addition to the Basel III core Tier 1 minimum of 4.5 percent), and a 6 percent progressive systemic surcharge, resulting in total capital requirements for these institutions of 19 percent of RWAs.

Recovery and resolution plans for SIFIs are increasingly likely. The Financial Stability Board has also released a consultation document (“Effective resolution of systemically important financial institutions,” July 2011). Some countries, such as the UK, Germany, and Switzerland, have already enacted or are in the process of enacting national bank resolution regimes. International harmonization of SIFI rules thus appears unlikely, leaving substantial deviations from jurisdiction to jurisdiction.⁸

- **Subsidiarization.** Proponents of subsidiarization see a need for rules to restrict risky activities to well-defined parts of the bank (for example, separating capital markets from retail) and within national boundaries as well. Foreign offices would be made to function as subsidiaries, with their own pools of capital and funding; the idea is that when risk materializes, the damage will be contained. The trend is not new; already many jurisdictions have raised their capital and liquidity requirements for foreign banks, using the Internal Capital Adequacy Assessment Process (ICAAP) and Individual Liquidity Adequacy Standards. In this context, the Independent Commission on Banking (ICB) in the UK should be mentioned. The ICB will deliver its final report in September. In its interim report,⁹ it suggested that some form of “ring fence” separating the retail bank from other banking activities may be a solution.

7 At present, no bank is subject to a surcharge of more than 2.5 percentage points. The highest surcharge, of 3.5 percentage points, is intended to deter banks from growing and becoming more systemically important.

8 The most likely scenario is that the Financial Stability Board will come up with minimum recommendations, which will leave substantial degrees of freedom for individual jurisdictions.

9 “Interim report: Consultation on reform options,” April 2011, bankingcommission.independent.gov.uk.

A closer look at new market and counterparty-credit-risk rules

Exhibit 1 provides an overview of the calculation of risk-weighted assets (RWAs) under Basel II and the new requirements under Basel II.5 and III. Regulatory capital requirements under Pillar I are driven by three kinds of risk: market, counterparty-credit, and operational risk. The first two are specifically addressed by the new rules; no changes have been made for the calculation of operational risk.

In many capital-markets businesses, such as foreign exchange, flow credit, and equity derivatives, products carry mainly market risk; counterparty-credit risk can be easily hedged for standardized underlying of derivative contracts. This is not the case for bespoke products such as those used in structured rates and credit; hence, the main risk in these businesses tends to be counterparty-credit risk. Exhibit 2 shows a typical breakdown of the risks that drive RWAs in each capital-markets business.

The **new market-risk framework** has two major objectives, both representing key “lessons learned” from the financial crisis: to strengthen the trading book for times of stress, and to account for some previously unaddressed default risks inherent in some asset classes.

Exhibit 1

These are the risk-weighted-asset requirements in new regulation.

ILLUSTRATIVE



1 Risk-weighted asset or equivalent. 2 Value at risk. 3 Incremental-risk charge. 4 Comprehensive-risk measure. 5 Internal Model Method. 6 Credit-valuation adjustment. 7 Over the counter. 8 Advanced modeling approach.

Exhibit 2

Capital-markets business models will likely move in these directions.



Changes include:

- Stressed value at risk (VAR):** this new calculation, overlaid on top of Basel II's ordinary VAR, is calculated as VAR of the current portfolio (10-day, 99th percentile, one-tailed confidence interval), with parameters calibrated to historical data from a continuous 12-month period of significant financial stress relevant to the bank's portfolio. The stressed time period should adequately reflect a continuous period of financial stress, for example, a 12-month period covering the 2008-09 financial crisis. The stressed VAR capital charge is calculated as the maximum of either (i) the average of the preceding 60-day stressed VAR times a regulatory multiplier, or (ii) the most recently calculated stressed VAR. The regulatory multiplier is set at a minimum of 3, but could rise to 4 if the back-testing performance of the VAR model is deemed of insufficient quality.
- Incremental-risk charge (IRC):** the IRC estimates the default and migration risk for unsecuritized credit products over a one-year horizon, at a 99.9 percent confidence level. The model must appropriately reflect issuer and market concentration and can include hedging and diversification effects, but it must also reflect mismatches, such as maturity mismatches.
- Securitization charge:** the market-risk standard approach (MRSA) is applied to noncorrelation trade securitizations and nth-to-default baskets. Securitization is a financial technique to pool contractual debt such as mortgages or loans, divide the complete structure into tranches that behave like bonds (with regular repayments of principal and interest), and then to sell these tranches to investors. To be classified as a securitization in the regulatory sense, a transaction must consist of at least two tranches that are exclusively linked to the counterparty-credit risk of the portfolio, where payment and loss allocation are governed by a

subordination “waterfall,” and where the senior tranche survives loss allocation to a junior tranche. Nth-to-default baskets are credit derivatives in which the payout is linked to one in a series of defaults (such as first, second, or third to default), with the contract terminating at that point.

The capital charges are the same as the banking-book-securitization charges, which include increased requirements for resecuritizations. In case of an available external rating, banks can apply the ratings-based approach (RBA), where a capital weight is derived from the external rating, the granularity of the underlying pool, the status as resecuritization, and the seniority of the tranche. If external ratings are not available or not eligible, banks can instead use the supervisory-formula approach (SFA), which requires ratings and loss given default of all underlying securities as input parameters (along with the effective number of exposures of the underlying assets, the credit-enhancement level, and the “thickness” of the tranche). If the SFA cannot be applied (because the bank has no approved model or parameters cannot be sourced, for example), the securitization is treated with capital deduction.

- **Comprehensive-risk measure (CRM):** subject to regulatory approval, banks can include their correlation portfolio in an internal model that captures not only incremental changes in the risk of default and migration (that is, the risk that a counterparty’s rating will “migrate” to another, typically lower level) but also price risks. If a bank does not have an approved model, the correlation trading portfolio will be treated under the MRSA and therefore be subject to a significantly higher charge. If a CRM model is available, the capital charge is based on the maximum of either (i) the CRM or (ii) a floor, which is 8 percent of the relevant MRSA charge. This maximum is calculated over several time intervals. The final capital charge is calculated as either the average of this value over the past 12 weeks or the most recent value, whichever is higher.

Stressed VAR, the IRC, and the CRM and floor should be calculated weekly. The securitization charge must be calculated quarterly.

The **revised counterparty-credit-risk framework** that will take effect on January 1, 2013, includes changes to expected-positive-exposure (EPE) calculations and a new CVA charge:

- **EPE** is the average expected exposure of a position or portfolio to a counterparty over a period of time, weighted for the proportion the chosen period represents of the entire time interval. This approach is supposed to capture “wrong way” risk, which occurs when exposure to a counterparty is adversely correlated with the credit quality of that counterparty. Basel III mirrors the concept of stressed VAR, discussed earlier in relation to market risk, in its treatment of counterparty-credit risk. Banks that use the Internal Model Method (IMM) must calculate the potential exposure amount of a derivative—the EPE—using data that includes a period of stressed market conditions.
- **Credit-valuation adjustment (CVA)** is the difference between the hypothetical value of an over-the-counter derivatives portfolio with no credit risk and the true portfolio value that takes into account the possibility of the counterparty’s default (that is, the expected counterparty risk). Basel III requires banks to hold capital in reserve for the CVA, which is subject to mark-to-market losses. Depending on the methodology used for interest-rate risk and counterparty-credit-risk assessment (the Internal Model Method, the standard approach, or current exposure), the CVA charge is calculated with either the advanced or standardized approach.

- The advanced approach is used if both interest-rate and counterparty risks are assessed with specific internal models. The advanced approach is based on an internal VAR bond model and treats CVA as a bond.
- The standardized approach is applied in all other cases and consists of simplified formulas provided by the regulator; these formulas use input parameters such as exposure at default and maturity and regulatory coefficients.

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