

EMEA Banking Practice • Sovereign Risk Initiative



So many stress tests,
so little insight ...

How to connect the ‘engine
room’ to the ‘board room’

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I. Introduction

When we talk to senior executives about stress testing, many describe exercises that are cumbersome, yield limited insights and fail to move board members or business heads to action. Typical approaches, they add, overlook the most burning questions, such as how possible outcomes to the European sovereign debt crisis would affect not only their bank’s capital adequacy and liquidity position but also market dynamics and the competitive pressure in relevant markets, how the combination of regulatory trends and macroeconomic dynamics in different products or markets would impact margins and earnings and to which extent the outlook for market developments and asset prices across regions should trigger business adjustments or even a radical portfolio review.

The trouble is that many banks react to stress tests in a piecemeal way, for instance, adapting their hedging strategies or making marginal adjustments to their lending limits. In our view, they are missing the opportunity to use insights from the stress-testing ‘engine room’ to inspire and inform forceful board room risk management and strategic business decision making.

This will only be achieved if stress testing:

- Models the implications of scenarios, both on the macroeconomy and financial markets by country and product level
- Explores higher-order follow-on effects of an immediate stress situation on more midterm industry dynamics and industry structure
- Takes a comprehensive view of balance sheets and P&L, including banking and trading books, as well as off-balance sheet items
- Forecasts capital and liquidity outcomes that extend beyond the static one-year view, coupling asset and operating performance
- Makes actionable recommendations on core risk profile, financial and capital planning and broader business strategy

Taking the sovereign debt crisis in the Eurozone as a pressing example, this paper outlines a comprehensive, strategic scenario planning, stress testing and management decision-making framework that combines several traditionally isolated process elements into an integrated and flexible end-to-end approach. Critically, it highlights how the right stress-testing discipline can facilitate appropriate risk mitigation and strategic, financial and operational responses.

II. The challenges facing banks

Banks (and indeed the world economy) are beset by multiple challenges – many of them currently linked to the Eurozone sovereign debt crisis (see Appendix). However, while the stress-test guidelines provided by regulators and other authorities¹ typically focus on specific areas of concern, a comprehensive stress test should consider the full range of threats to the balance sheet, the income statement, as well as the business model:

- *Funding squeeze:* Economies and banks hit hard by the crisis (most notably Greece, Portugal and Ireland) have suffered a depletion of customer funds. Even in relatively more 'secure' markets, banks are feeling the pressure. Moreover, concerns about insolvency have pushed credit spreads to unprecedented levels, raising funding costs and restricting access to wholesale funding markets. The ECB has responded with 2 rounds of Long-Term Refinancing Operations (LTRO) that have bought some time, but in no way address the underlying counterparty risks that drive the funding squeeze
- *Capital shortfall:* According to the latest EBA stress tests, an estimated €106b of new capital is needed to meet requirements of 9% tier-1 capital ratio by the end of June 2012. Given the difficult environment for raising new equity, many banks will be forced to reduce their Risk Weighted Assets (RWA), also through outright deleveraging. Where and how to shrink the balance sheet remains a key strategic challenge for most European banks
- *Real economy stagnation:* Banks face a growing risk of further declines in revenue and profits in the form of falling interest income and rising defaults as deleveraging takes hold and austerity measures adopted by a number of European Union (EU) countries start to bite. Healthy, 'real' top-line growth in Europe is not expected even in the more optimistic scenarios
- *Farewell to the 'risk free' asset:* More than anything, the Eurozone sovereign debt crisis has shown there is no such thing as a 'risk free' asset anymore. The Private Sector Involvement (PSI) programme for Greece requires banks and other institutional investors to accept losses of more than 75% on their holdings of Greek debt, making the previously inconceivable notion of a Eurozone sovereign default practically a reality

The outlook for the Eurozone after the elections in Greece and France and in the wake of continuing and even increasing trouble in the banking sector, e.g., in Spain, is therefore gloomy. Banks should respond radically to these challenges, changing the way they think about their strategic options from a financial – i.e., P&L, liquidity, funding, capital and balance sheet – as well as a business perspective. By conducting a comprehensive stress test of the kind we propose in this paper, they will also find themselves significantly better positioned not only to defend against threats but also to capture emerging opportunities.

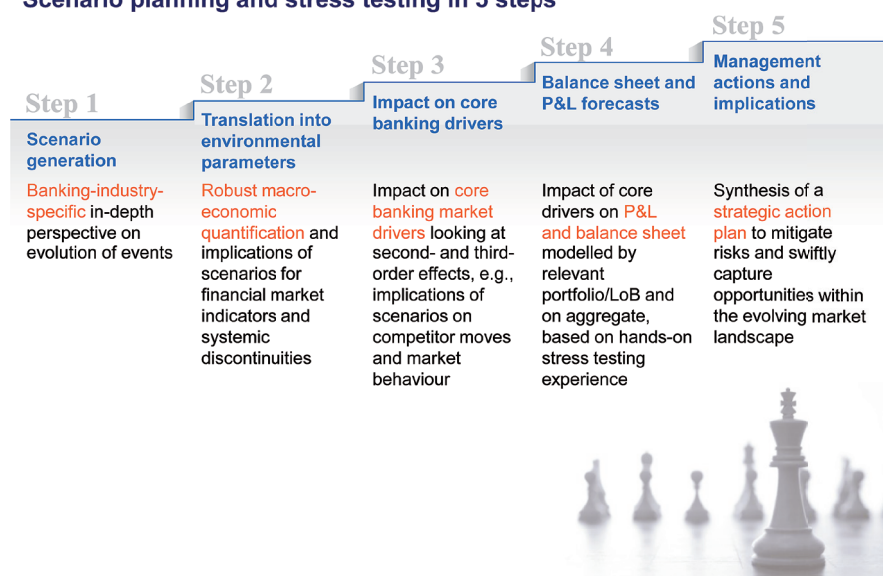
¹ For example, the EBA or the BIS

III. A holistic, strategic scenario planning and stress-testing approach

Besides quantifying immediate, financially relevant impact of stress, specifically on P&L, capital, funding, liquidity and the balance sheet, and providing financial metrics like additional capital or funding needs as a response, banks must use scenario planning and stress testing to develop a midterm business posture, including potentially crucial mitigating actions in the businesses and to evaluate alternative financial as well as business strategies and their impact on the viability and potential contingency plans of a bank in adverse scenarios.

In today's volatile environment, banks should adopt the following 5 steps from scenarios to management actions through stress testing (Exhibit 1).

Scenario planning and stress testing in 5 steps



SOURCE: McKinsey

Exhibit 1

Step 1: Develop scenarios for a series of events

Banks can define scenarios to describe a range of outcomes for many different events, from developments in regulation to rapid changes in interest and currency rates as well as oil and metal prices. They should be flexible enough to consider wider economic and political events and to accommodate the personal views of executives about how the future may unfold.

In the Euro crisis, for instance, the principal and differentiating way banks should think about the evolution of the Eurozone is as a series of events, rather than as a single-point outcome. With this in mind, we have developed a plausible scenarios on the future of the EMU that are relevant for the banking industry (Exhibit 2).

Scenarios for the Eurozone sovereign debt crisis

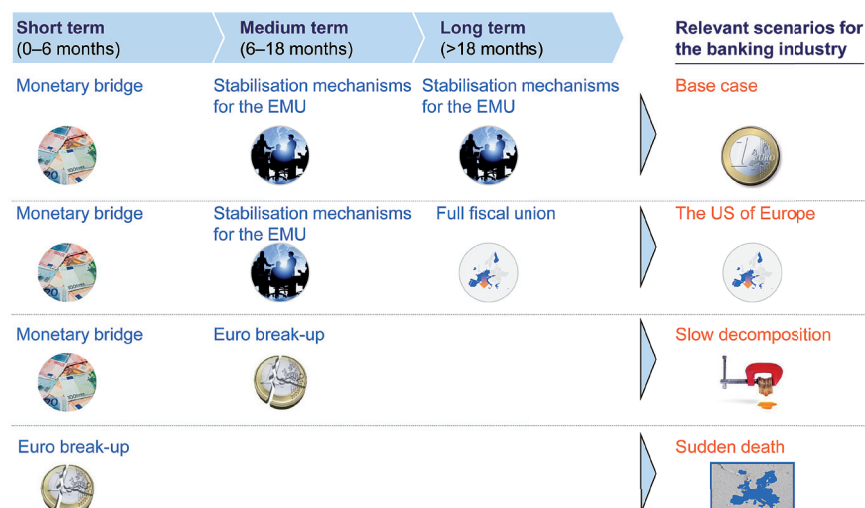


Exhibit 2

SOURCE: McKinsey

- *Base case:* Events unfold without further significant EMU integration. In the short term (0–6 months), liquidity support vehicles (e.g., EFSF, ESM, ECB LTRO) continue with the potential for an expanded ECB mandate. Greek debt has already been restructured without triggering major turmoil in capital markets; and European banks manage to recapitalise themselves without setting off a major deleveraging wave that stalls growth. In the medium term (6+ months), EMU's economic governance enforces the fiscal pact agreed in December 2011, while IMF-style monetary support and economic programmes advance the structural reform agenda
- *The US of Europe:* Political dynamics and/or concern over the prospects for sustained growth and continued turbulence in capital markets create more fertile ground for fiscal integration in the Eurozone. In the short and medium terms (0–18 months), developments unfold as with the base case scenario. Ultimately, however, the Eurozone moves decisively towards a full fiscal union (18+ months) with fiscal policy and governance taking stage at EMU level
- *Slow decomposition:* While immediate solvency threats recede in the short term (0–6 months), fiscal adjustment in Southern Europe and a broader elimination of imbalances in the Eurozone remain elusive. In the medium term (6–18 months), some combination of Northern European resentment and Southern European reform fatigue trigger secessionist politics and eventually a Euro break-up, causing significant turmoil in financial markets
- *Sudden death:* Insolvency finally becomes a reality. It could be a disorderly Greek default, Portugal requiring a second support loan, Spain's fiscal balance deteriorating beyond projections or Italy failing to roll over debt at some point without a

credible safety net in place. Macroeconomic conditions deteriorate rapidly, severely undermining adjustment programmes in troubled economies. As a result, events lead to a hurried Euro break-up.

Each of the above scenarios will have its own implications for the macroeconomy and developments in financial markets, and thereby the major drivers of banking performance. For example, the base case and the US of Europe scenarios would produce similar results in the short to medium terms; however, the US of Europe scenario would hasten the recovery of economies, at the periphery of the Eurozone.

We expect developments with regard to EMU however benign or painful to be the dominant influence on the fate of banks with high exposure to Eurozone markets. What happens in the rest of the world represents another important dimension. For example, Asia could slow down if an asset bubble bursts in China, an escalation of conflict in the Middle East could have a knock-on effect on other regions or a fiscal crisis could trigger a double-dip recession in the US. Indeed, we are currently developing – and will shortly publish scenarios regarding the future of the US economy.

Step 2: Translate scenarios into macroeconomic and market variables, including potential discontinuities

Banks should quantify the impact of scenarios on the macroeconomic and financial market outlook in different countries using regression models² and combine the results with expert insights and the historical experience of 'non-linear' events such as bank runs or currency crises. This approach allows a granular and broad-based understanding of the links between key macroeconomic and financial market indicators, the structure and competitive situation of specific markets and the likelihood of some sort of systemic discontinuity.

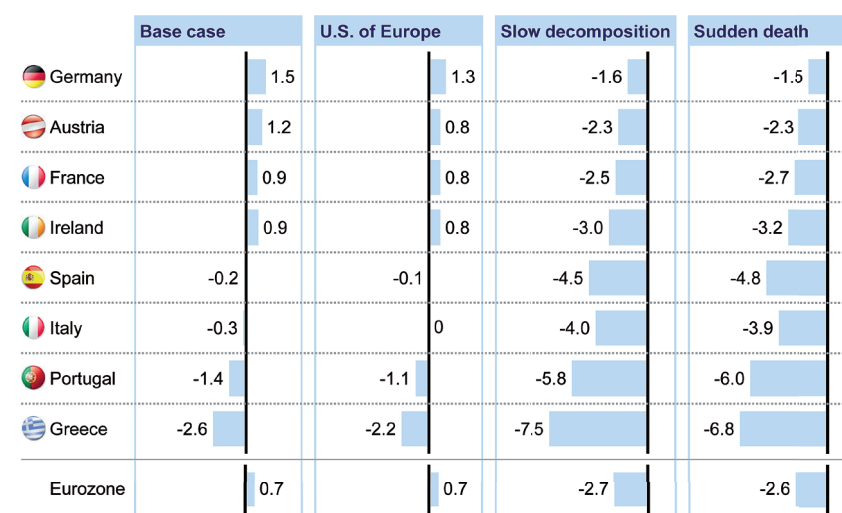
Our analysis of the macroeconomic parameters³ (depicted for the example of GDP growth in Exhibit 3) shows the most favourable outcome under the US-of-Europe scenario – while GDP growth in this scenario is expected to still average a yearly 0.6% in the EMU over the next 3 years, it would be almost -3% in the sudden-death scenario. Similarly, when it comes to financial market factors⁴, our econometric models show, for example, that under the EMU base case, the EUR/USD FX rate would stay relatively flat at 1.3, whereas under the sudden-death scenario, it would rise to over 1.5 for the 'North Euro'. For market factors that are harder to quantify under different scenarios, it might be appropriate to engage bank-internal experts from functions such as risk, strategy, macroeconomic research and treasury to arrive at specific consensus forecasts after multiple iterations⁵.

On top of these macroeconomic parameters and market implications, history shows systemic discontinuities to be a particularly relevant influence on the performance of banks, especially in crisis scenarios. It is imperative for banks to systematically think through what happens in the event of a bank run, a currency shock, a technical sovereign default or a political shock. The appropriate model can help in reducing some of the complexity of real life and in focusing on some key metrics with high relevance for the banks' business performance and financial resilience.

- 2 A model we developed in collaboration with Oxford Economics tracks the impact of the 4 scenarios for the evolution of the EMU on 12 Eurozone countries, the UK, the US, and China (as well as the Eurozone as a whole and the EU region). The model forecasts some 20 key macroeconomic and financial market indicators semi-annually over a period of 3 years (which can be extended to a period up to 10 years)
- 3 Including GDP growth and its sub-components; inflation, current account, government balance/debt; unemployment; productivity; house prices; disposable income/income tax
- 4 Including sovereign 10-year bond yields and CDS spreads; liquidity indicators (ECB interbank position, bond issuances); FX rates of major currencies (EUR, USD, CHF, GBP, Yen); Euribor (3 months, 2 years, 10 years) and Libor rates; equity markets' performance and volatility
- 5 We have found it useful to apply the Delphi methodology for this. In each round, experts reply anonymously to specific questionnaires providing their forecasts and reasons behind them. After each round, a facilitator summarises results and experts are encouraged to revise their forecasts based on replies of others. Following multiple rounds, forecasts tend to converge around a narrower range

Comparison of GDP growth rates under different scenarios

Eurozone GDP growth, annual average growth rate, 2012–14, %



SOURCE: Oxford Economics

Exhibit 3

For instance, in any of the adverse scenarios that end up in a currency break-up, the impact of concurrent bank runs across southern European countries should be modelled explicitly, together with the risk of substantial markdowns in the value of assets where the counterparties reside in economies expected to revert to a currency 'weaker' than the Euro. Even in the more benign scenarios that end up with tighter EMU integration, a series of changes and reforms in regulatory framework and market conduct should be anticipated.

Banks should be clear on the implications of different scenarios beyond the key macroeconomic and financial market factors of conventional forecasts. In the current environment of extreme uncertainty and volatility, thinking about more extreme yet plausible events such as the discontinuities described above, is essential in any stress-testing exercise.

For example if the mortgage market is severely stressed in the short term, that will lead to the exit of some marginal players, often the most aggressive ones with regard to credit quality standards and pricing. Thus, in the midterm, such a shake-out can turn into a more favourable market conduct and better margin perspectives for the remaining players.

Step 3: Develop an analytical 'engine' that links banks' performance drivers to scenarios

For a stress-testing exercise to be truly insightful, banks must develop a strong understanding of how scenarios drive core revenues and earnings in their domestic and regional banking markets. In effect, they need to build a bank performance 'engine'.

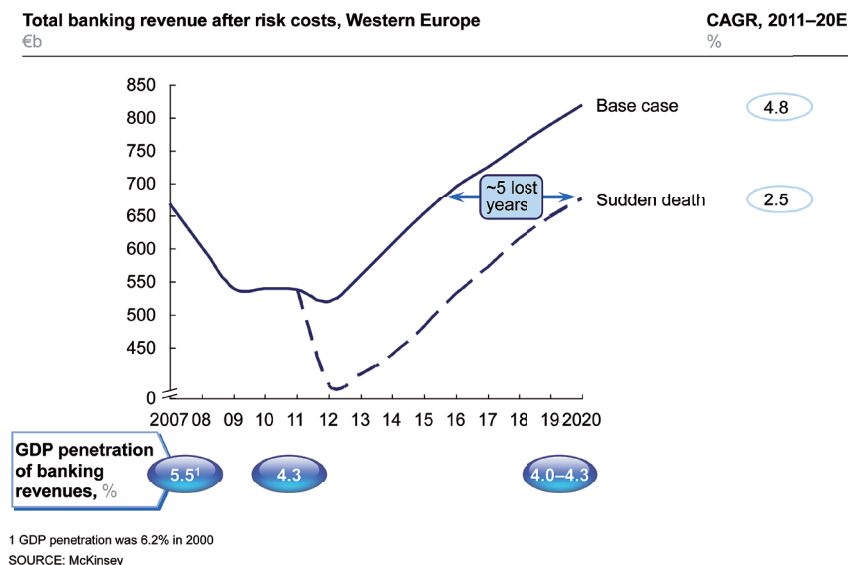
Building such an engine is not easy. Only a true and deep understanding of individual drivers and complex bottom-up mechanisms makes it possible to model the crisis impact and future revenue evolution.

Allowing a granular view on how various markets and individual products behave under certain scenarios may be very insightful, as besides direct macroeconomic impact (e.g., via interest and refinancing rates), the different degrees of maturity of a banking market, behavioural characteristics, access of local banks to capital markets and other factors driving revenues may lead to very different outcomes. A 'double layer' model, which accommodates long- and short-term horizons, represents the optimal approach, by simulating long-term trends using historical analytics and regressions on macroeconomic variables, and by predicting the impact on short-term cycles of financial market factors – such as stock exchange performance and the risk appetite of customers.

In any case, statistical analyses of long-term trends can just serve as one input into such a modelling exercise. It is insight into business and market dynamics as well as judgement about future evolutions and impacts that need to be triggered in a stress-testing exercise and to be explicitly leveraged in order to adjust the statistics-based modelling assumptions.

Under the base case scenario for the European sovereign debt crisis, for example, our preliminary findings suggest that annual growth of banking revenues in Western Europe over the next 10 years will be 4.8% in nominal terms – in real terms, any increase will be very low. Under the sudden death scenario, about 5 years will be 'lost' and nominal average annual bank revenue growth is expected to amount to just 2.5% (See Exhibit 4).

Banking revenue growth in Western Europe



While the troubled markets in Europe's periphery accounted for 75% of banking revenue growth in Western Europe in the period between 2000 and 2007, we calculate that under the base case scenario, they will only contribute 24% of growth in the next decade, or a mere 12% under the sudden death scenario.

The only exception is Ireland, where banks should rebound strongly from a very low post-crisis base. We expect the UK market to be the other strong performer in the region – our projections show that, after a decade in which aggregate revenues actually dipped in Euro terms, the UK is expected to account for 33% of any European-wide revenue growth under the base-case, and as much as 57% in the sudden death scenario (Exhibit 12 in the Appendix).

Our analysis reveals some surprising results. For example, we expect deposit revenues in UK and Ireland to grow faster than other products during the next few years, and to stay relatively resilient or even improve further under the more pessimistic scenario (Exhibit 5).

The sudden death scenario would make selective, but serious hits across markets and products

Revenue after risk cost, difference between the 'base case' and 'sudden death' scenarios, 2020
%, €b

Legend:
 Above 0%
 Between (10)–0%
 Between (20)–(10)%
 Between (30)–(20)%
 Below (30)%

	Total Western European Union	Germany	France	U.K.	Greece	Italy	Spain	Portugal	Ireland
Total	-17%	-17%	-19%	-8%	-38%	-23%	-27%	-27%	-25%
Retail banking	-16%	-17%	-15%	-3%	-49%	-23%	-30%	-26%	-13%
Consumer finance	-23%	-22%	-19%	-6%	-51%	-39%	-54%	-34%	-30%
Mortgages	-17%	-19%	-6%	-5%	-55%	-29%	-49%	-31%	-18%
Deposits and payments	-11%	-15%	-18%	7%	-44%	-10%	-15%	-13%	7%
Investments and insurance	-18%	-18%	-12%	-19%	-52%	-27%	-27%	-37%	-31%
Capital markets ¹	-16%	-23%	-21%	-15%	-19%	-16%	-11%	-17%	-11%
Corporate banking ²	-22%	-18%	-26%	-11%	-21%	-25%	-29%	-32%	-50%
Financing and loans	-31%	-22%	-34%	-22%	-13%	-29%	-40%	-40%	-85%
Cash management (deposits and payments)	-10%	-14%	-19%	3%	-3%	-11%	6%	-7%	-19%
Asset management	-8%	0%	-14%	-11%	-44%	-25%	-17%	-30%	-25%

¹ Includes investment banking, sales and trading and securities services

² Includes non-bank financial institutions and public sector

SOURCE: McKinsey

Exhibit 5

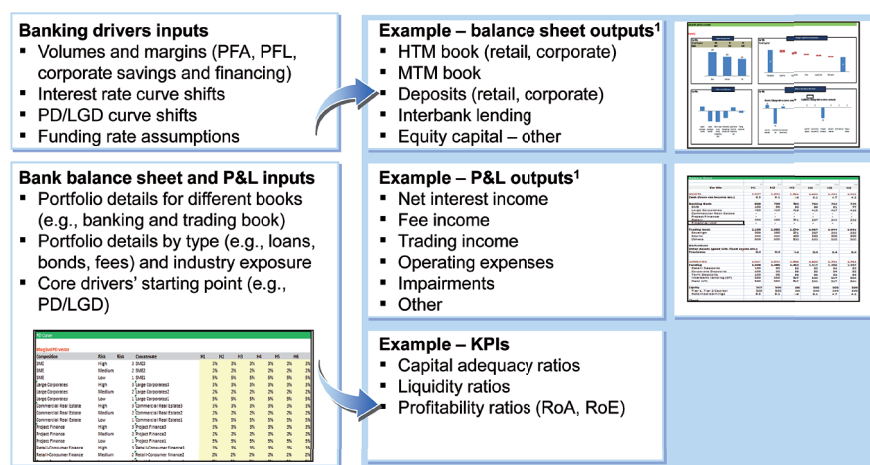
Using this engine, banks can deepen their understanding of how key performance drivers (including customer-driven volume flows, yields, margins, risk costs and cost-to-income ratios) will evolve for individual product groups within specific banking markets. See Exhibit 13 in the Appendix for a detailed example on Italy.

Step 4: Model the balance sheet and P&L

Having established how each scenario affects the bank's core drivers, the next step is to test the resilience of the asset, liability and capital side of the balance sheet, understand the implications for their off-balance sheet positions and calculate the likely impact of different scenarios on the P&L.

To illustrate our approach, we put forward a hypothetical European universal bank. The bank has total assets of €400b and capital of €38b. The bank is subject to default risk in its banking book due to worsening macroeconomic conditions in its core market, and also has exposure to bonds of crisis-hit economies in its trading book.

Balance sheet and P&L line items are forecasted by a stress testing model, based on changes of core banking drivers



¹ For the next 3 years with half-yearly granularity

SOURCE: McKinsey

Exhibit 6

The model is set up for key P&L variables such as interest, fee and trading income (Exhibit 6). It also includes off-balance sheet items that affect capital requirements (via RWA) and the P&L statement.

Exhibit 7 illustrates the impact of 2 scenarios (base case and sudden death) on various P&L components, funding and capital ratios of the hypothetical bank. Clearly, credit risk and market risk are significant drivers of capital erosion in the sudden-death scenario. Importantly, the model should also allow granular transparency at the level of impact from individual (material) exposures in the banking book and the trading book. Such granularity can inform truly insightful mitigation actions and business decisions (e.g., with respect of wind-down or exit from specific trades or businesses).

Example: Breakdown of capital requirements for a hypothetical European bank

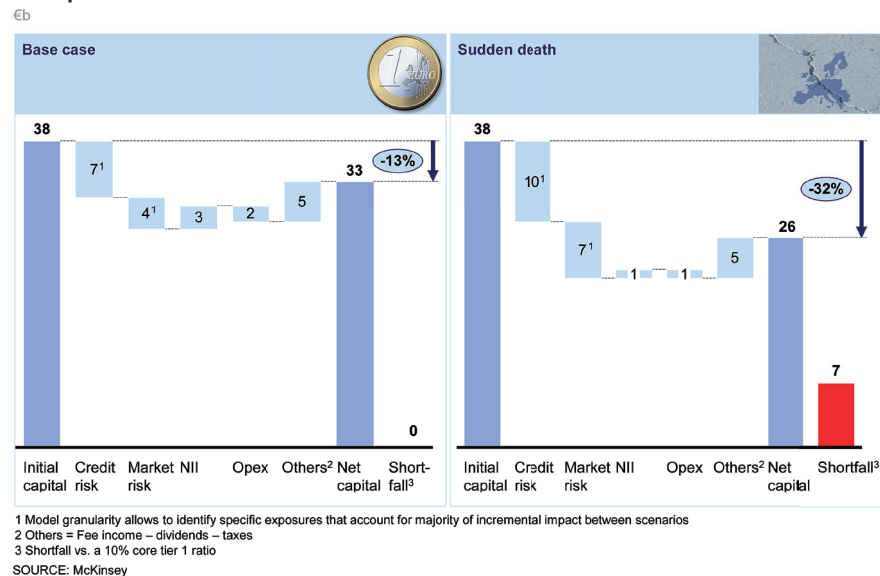
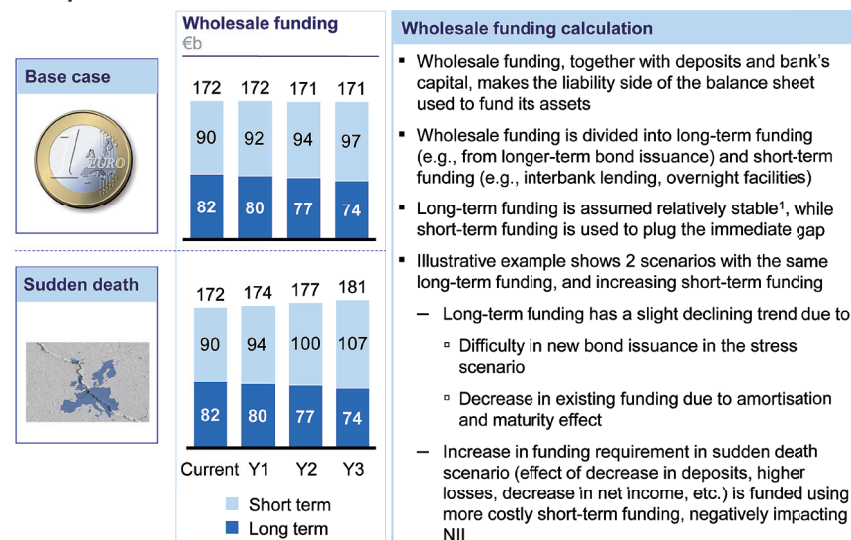


Exhibit 7

Besides capital, funding is an integral part of the operations of any bank, and especially important in stress situations. Any decline in the appetite for bank debt, anticipated in the scenarios, will affect the bank's liquidity and funding position, as will further tightening of the interbank market, deposit withdrawals by customers or tougher collateral conditions on ECB borrowing (see Exhibit 8). The funding effect will be more pronounced in a bank depending on short-term liquidity instruments for its financing needs, as compared to one which has secured long-term funding at reasonable rates.

Example: Wholesale funding implications for a hypothetical European bank



SOURCE: McKinsey

Exhibit 8

Nevertheless, the above effects would lead to higher funding costs and squeezed margins, and the bank's long-term profitability will also depend to some extent on how quickly it is able to reprice its loans.

How the model works

The model estimates the impact of each scenario on the bank's lending and trading portfolio. It looks at sub-portfolios and directly links their performance to the core banking drivers (e.g., PD, LGD, market risk shocks, funding cost) of relevant markets. Financial statements are drawn up for several different periods to illustrate how the projected scenario could erode the bank's capital position through higher losses, squeezed margins and lower income from fees over time. The projected scenario would also lead to higher RWA. As a result, the bank would require more capital to maintain the regulatory tier-1 capital ratio requirement, assumed in this case to be 10%.

The value of the bank's balance sheet – in other words, its trading and financial assets and funding – would be undermined in the event of potentially more aggressive economic developments. In our hypothetical example, an upward shift in the default LGD (PD–LGD) curve by sub-portfolio (e.g., consumer, SME, corporate loans) would lead to asset impairments and increased loan loss provisions. The value of financial assets is further subject to regulatory or accounting changes – for example, a requirement to recognise the impairment of sovereign bonds. The model incorporates a discounted cash flow approach to reflect the fair value of these HtM assets.

Movements in underlying market parameters, such as index levels and volatility, also affect the bank's trading book under scenarios such as the base case or the sudden death. This sensitivity is modelled using a Taylor expansion methodology (the 'Greeks', delta, gamma, vega and theta), incorporated for various asset classes and geographical exposures. Counterparty credit risk for derivatives in the trading book is calculated by subjecting the bank's exposure numbers – expected positive exposure (EPE) and regulatory exposure – to shifts in the PD and LGD curves.

Step 5: Turn the stress test into a strategic action plan

The mix of actions appropriate for each bank will ultimately depend on the anticipated impact of the most likely scenarios on the performance and growth prospects for their different business activities, and on the possible threats they may face from unexpected events or discontinuities. Banks must be ready to respond to the risks and embrace the new opportunities – implied by the capital, liquidity and earnings projections. They should prioritise the most relevant, high-impact, short- and medium-term actions of the kind we have seen work at leading global institutions (Exhibit 9).

Indicative suite of actions to mitigate risks and capture opportunities

Communication with public bodies

- 1 Ally with industry bodies and peers to shape discussions on sovereign debt and banking regulation nationally and EU-wide

Governance

Emergency actions

- 2 Set up dedicated high-level task force and process for 'CEO morning meeting' to ensure swift reactions to market turbulences and alignment on communication

Medium- to long-term strategic actions

- 7 Potential adaptations of existing committee structures and frequencies (board meetings, ALCO, ...) to foster discussions on potential strategic repositioning

Tactical and strategic mitigation

Ensure short-term resilience

- 3 **Liquidity:** Secure short-term funding, particularly deposit strategy, review FX funding strategy, cut credit lines
- 4 **Capital:** Adjust limits and lending activities to challenged countries; move trading to centrally cleared exchanges; rebook assets (trading vs. banking); increase monitoring
- 5 **Profitability:** Review customer service requirement, adjust bank's hedging strategy, assure that provisioning approach yields accurate coverage levels
- 6 **Client franchise shielding:** Protect asset management customers' wealth; advisory on limiting exposures and restructuring of trade finance activities

Adjust longer-term strategy

- 8 Set up resilient long-term funding and capital strategy, including Basel III effects; evaluate potential of innovative hybrid instruments (e.g., CoCos)
- 9 Revise portfolio composition and limits, business strategy (divest low-ROE business), performance logic (by ROE), and improve efficiency/cut costs
- 10 Systematically scan for M&A opportunities with banks with compressed valuations in current market environment

Detailed actions by banking type
(e.g., retail, corporate, IB) available

Exhibit 9

SOURCE: McKinsey

Actions can be broadly divided into communication, governance and tactical and strategic mitigation (including a review and potential adaptation of the bank's underlying business model).

In the current, fast-moving regulatory environment, it is vital to join forces with peers and industry bodies to try and shape thinking at national and EU levels. The present volatility requires governance frameworks to be more robust so that resources can be mobilised and decisions made quickly. In the medium term, organisation and reporting structures should be aligned with any changes in overall strategy.

Banks facing pressure on their capital or liquidity should, under more adverse economic outcomes, consider contingent actions to improve their position. Ideas might include precautionary sales of assets, drastic operational expense reductions, delaying or postponing planned distributions of capital, the wider utilisation of longer-term central bank borrowing facilities, the refinancing at national central banks instead of the ECB (in order to prepare for a potential re-emergence of national currencies) and the pre-emptive issuance of capital or term debt as long as domestic market dynamics allow it. The latter point underlines the significance of effective scenario planning – access to capital markets, after all, is only possible when capital markets are 'open' and not pricing in distress.

Stress testing may also strengthen the case for revised capital management practices and a review of the balance sheet. For example, banks might focus on measures such as the strategic pricing of deposits to counter an anticipated reduction in liquidity, or launch campaigns to reduce RWA and the capital requirements attached to them.

Such a stress test enhances foresight and can provide the focal point for more forceful actions that go beyond recovery plans to ultimately create value. Several banks have already been successful in translating aspects of stress-testing results into value-adding actions for their business. In other cases, though, banks are basing their key strategic and business decisions on piecemeal exercises, leading to marginal results or even destroying the value of their franchise. We have seen one bank panicking into selling off its high-margin businesses prematurely, another implementing iterative rounds of cost-cutting measures that fell short of what was required and another one completely undersizing its 'bad bank' and therefore having to repeatedly transfer additional assets to it, which led to huge uncertainty among shareholders and employees.

Concluding thoughts

Banks may be unable to hedge fully against some of the more extreme stress scenarios: a sudden death for the EMU, for instance, combined with growth shocks in Asia and the US. That said, those that install strategic scenario planning and stress-testing capabilities at the heart of their risk management 'engine' will be better prepared than others to address the ongoing threats, weather the storm and capture the opportunities that will eventually emerge. We believe all banks should aim to embed stress testing deep into their culture and management processes.

In the short term, banks may need to increase their modelling capacity so as to ensure that their models are sufficiently flexible to incorporate exogenous short-term shocks as well as related management judgement about bank and market reactions to these shocks, modify scenarios in light of unfolding events and translate stress-test results into appropriate actions. Regular stress-testing exercises should monitor the capital and liquidity position, taking into account the probabilities of sovereign defaults and unexpected losses.

Banks will benefit in the medium to long term, if they add more sophisticated macroeconomic analysis into their stress-testing capabilities and ensure they grasp the interdependencies between the domestic and regional economies, and the banking sector. Most importantly, banks should link the 'engine room' to the 'board room', by directly tying decisions on portfolio composition, funding, overall strategy and other important topics to the results of stress-testing exercises. It is unrealistic that such tests are carried out monthly, but in the current volatile environment, we believe that they should take place at least twice a year.

The prize is a big one. It is more than just clarifying and quantifying the most likely impact of a series of events that may or may not happen. It is more rewarding even than devising measures to sustain the bank's capital and liquidity position and creating a robust operating model for changed times. It is, in a nutshell, laying new foundations to take advantage of the day when new opportunity beckons for those strong and confident enough to grab it.

Appendix

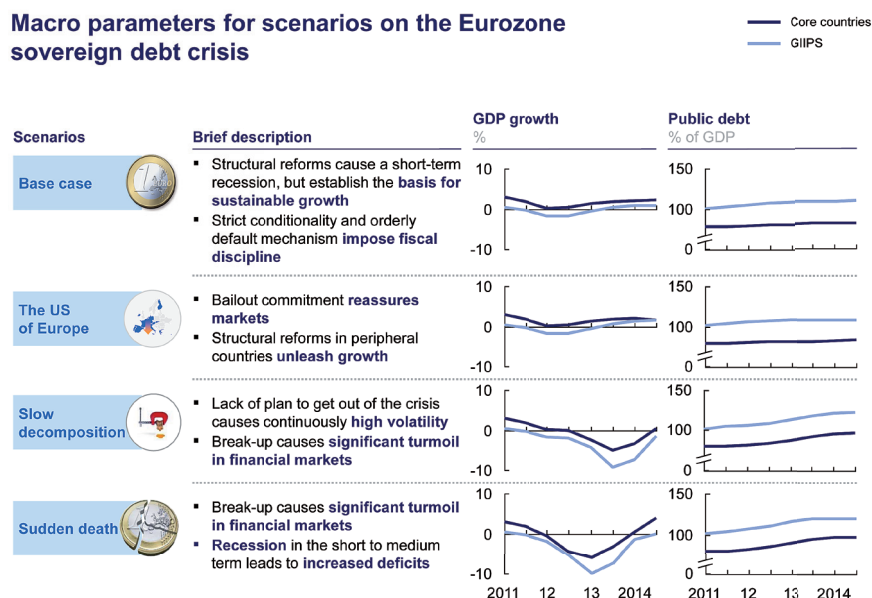
The Eurozone sovereign debt crisis at a glance

Phase I – Inception and underestimation	Phase II – Contagion and 'fragmented' intervention	Phase III – Running against the clock
Late 2009 to mid-2010	Mid-2010 to early 2011	Mid-2011 to February 2012
<ul style="list-style-type: none"> Upward revision of Greek fiscal deficit from 6% to nearly 13% in 4Q 2009¹ awakened markets to the possibility of a Greek default Failure of Greek government measures to restore investors' confidence led the 'Troika' (EU, ECB and IMF) to bail out Greece Spreads on sovereign debt of peripheral Eurozone economies reflected the markets' concerns of possible contagion 	<ul style="list-style-type: none"> Broadly acknowledged threat of contagion led the Troika to set up bailout plans for Portugal and Ireland Bailout funds deemed insufficient and markets questioned the Eurozone's resolve to deal with the crisis European response to address the concerns by <ul style="list-style-type: none"> Increasing availability of bailout funds Easing repayment burden on Greece, Portugal and Ireland Establishing the European Financial Stability Facility (EFSF) Soundness of banks in question fuelled by official acknowledgement that private investors may incur losses 	<ul style="list-style-type: none"> Deleveraging and austerity measures in Europe's periphery deepened regional recession Initial Greek sovereign debt restructuring programme – Private Sector Involvement (PSI) abandoned as insufficient Much higher Greek PSI and higher core tier 1 capital ratio agreed, leaving banks having to close a €106b shortfall by June 2012 EFSF funds agreed to be leveraged 4–5 times to reach €1tr with participation of non-EU capital 'Fiscal compact' for EMU members introduced, the European Stability Mechanism (successor to the EFSF) launched and ECB liquidity injected into the market Greek PSI finalised, with NPV losses on Greek debt escalating to above 70%

¹ The figure was eventually revised to 16%
SOURCE: McKinsey

Exhibit 10

Macro parameters for scenarios on the Eurozone sovereign debt crisis

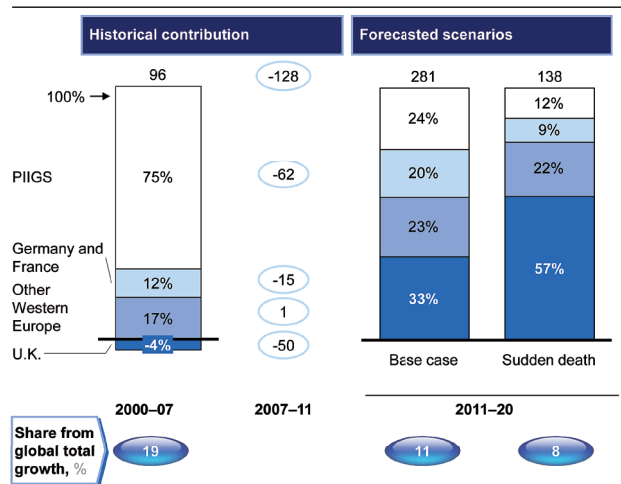


SOURCE: McKinsey

Exhibit 11

Shift of revenue growth contribution within Western Europe

Absolute revenue growth in forecasted FX
€b, %

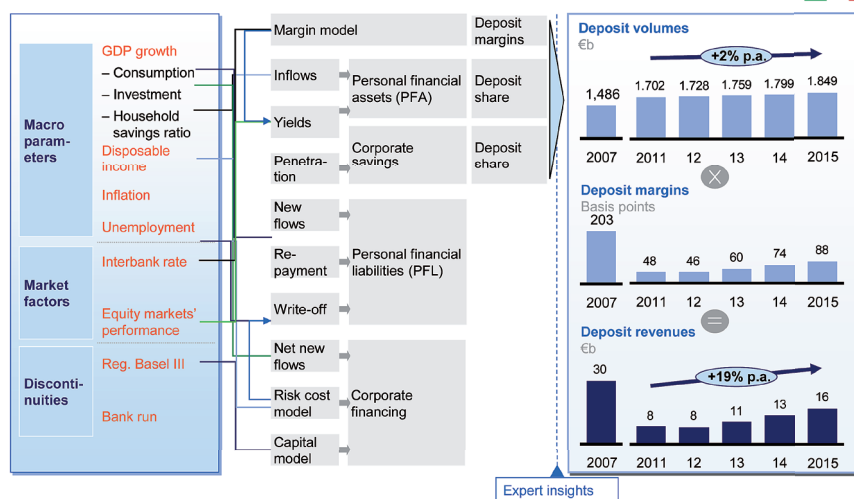


SOURCE: McKinsey

Exhibit 12

Translation of 'environmental' parameters to core banking market drivers

Example – deposit revenues, Italy



SOURCE: McKinsey

Exhibit 13

Stress testing modelling hierarchy

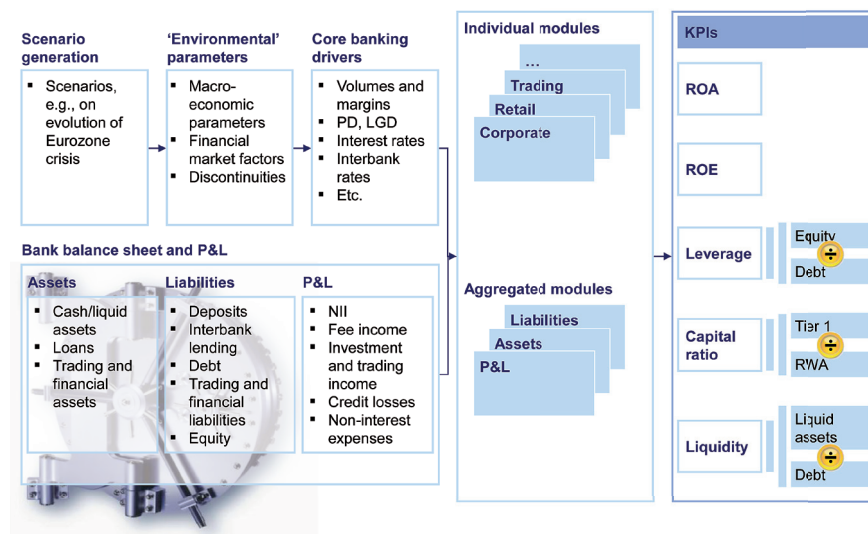


Exhibit 14

SOURCE: McKinsey

So many stress
tests, so little
insight ...

How to connect the
'engine room' to the
'board room'

Authors:

Miklos Dietz
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