



European Risk Management Council

Risk Landscape Review

June 2017



- Macroeconomic Climate Trends: Good, Bad and Ugly
- Political Risk: How Big Data Can Shed Light on Political Risk
- Cyber Risk: From the Board's Perspective
- Banking Culture: How It Can Be Measured
- Liquidity Risk: Building the Second Line of Defence for Liquidity Risk



DEAR READER,

I am delighted to present the Q2 edition of the Risk Landscape Review. This time the Review includes five articles which cover five “hot” risk topics.

Macroeconomic risks have been in CROs’ worry list for a number of last years. While overall global economy is improving, some concerns exist regarding a sustainability of the future growth and about emerging negative trends. In the Review, Arnab Das provides his assessment of “bright” and “dark” sides of the global economy.

Political risk continues shaping a risk landscape in Europe, US and globally. One of issues with political risk is that political risk events are difficult to predict due to their non-recurring and unique nature. However, new technologies provide some tools to reduce some uncertainty of the future political events. Ryan Shea describes how the Bid Data helps predicting future political events.

Another hot topic in CROs’ worry list is **Cyber security** which importance continue growing, especially in the light of recent WannaCry ransomware attack and hacking of UK parliament’s email system. Brandon Davies shares his view on how decision-makers can ensure that their organisations have a robust cyber protection.

Risk culture was named by many experts, regulators and policy-makers as one of the fundamental causes of the global financial crisis. Since the crisis, banks have made a substantial progress in improving their culture and this journey continues. The Banking Standards Board made a great effort to define and measure a banking culture. Mikael Down describes the BSB’s assessment framework and reveals assessment results of 22 UK banks.

Liquidity risk is another “hot” topics. Robustness of liquidity risk management depends to a large degree on efficiency of its governance framework. Dr Michael Eichhorn proposes a way of setting an effective governance framework for liquidity risk management within a traditional three lines of defence approach.

I would like to thank all authors of the Q2 Risk Landscape Review for their superb contribution. Enjoy the reading.

Yours sincerely,

Dr Evgueni Ivantsov

Chairman of European Risk Management Council



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Brave New World Order: Yield Starvation vs. (Geo-)Political and Policy Risks

By Arnab Das

After the US, French and snap UK elections is a good time to take stock of global prospects and risks. Key themes that stand out across geopolitics, key national economic policies and the financial market landscape across developed and emerging markets (DM and EM) range from a good cyclical story, through a bad structural outlook, to potentially ugly risks:

- **The good: Growth is up, inflation is low, monetary policy is easy – so risk appetite is strong:**

- o The world economy and markets have been repeatedly buffeted by national and geopolitical shocks, yet the current synchronised economic upswing across the large economies – the first since the Global Financial Crisis – is unscathed.

- o Growth is up but inflation is low, and major central banks remain accommodative amid normalization, rather than actual tightening, in the US.

- o The synchronised global cyclical upswing will likely continue – because low core inflation and generally below-target headline inflation, allows major central banks to slowly normalise monetary policy, to keep rates low and not tighten much.

- **The bad: Global nominal growth is weak due to trends and structural features in DM and EM:**

- o In DM, weak demographics and low productivity growth along with high debt burdens and structural economic rigidities that restrict growth;

- o In some large EMs such as China, Russia or Brazil, demographics also pose a challenge to maintaining or restoring high real growth because of fiscal risks;

- **The ugly: The key political and policy threats represent downside risks to the current cyclical upswing, to inflation and to potential global growth and require monitoring – even though they generally appear under control:**

- o President Trump's rhetoric may yet change US policies and threaten globalization;

- o China's monetary/credit tightening and structural reform may slow global growth;

- o The Eurozone (EZ) still lacks the political and fiscal union required to underpin the monetary union – even if fragmentation risks have improved as Brexit looms

- This cyclical backdrop and long-term outlook carries clear policy and market implications:

- o The combination of a decent but non-inflationary growth cycle and deflationary risks implies gradual, limited monetary policy normalisation by major central banks.



- o Beyond the current cycle, steady-state global interest rates will likely remain low against history in real and nominal terms, given low trend growth and inflation.
- o Low growth and “low-flation” translate into yield starvation, driving funds flows into risky assets, despite the event risks and eventual crises that almost surely lie ahead.
- o When and if event risks materialise, the next recession comes or financial shocks hit, central banks will very likely step in to save the day once again.
- o Even so, dislocations in financial markets are likely to be severe because heavy holdings of risky assets may well need to be unwound all at once.

The Good: First Synchronised Cyclical Global Upturn across Major Economies since the GFC
Invesco Fixed Income’s Now Casts* continue to signal synchronised cyclical recovery in the major economies – developed and emerging – as they have for many months. Our global economic and market outlook comprises three key global macro factors – growth, inflation and financial conditions.

While growth is perking up, inflation has been largely missing in action. While it is true that commodity prices have surged and driven up headline inflation, this only partly reverses the prior collapse during 2014-16. Thus, in the world’s largest economies, it is headline inflation that has moved significantly but in opposite directions over the last two years, as commodity price shifts and base effects worked their way through the inflation indices.

**Our Now Casts cover the G20, helping us take the pulse of growth and inflation in those economies and by extension the global economy. The G20 – the 19 largest DM and EM economies plus the EU – accounts for some 85% of global GDP and 80% of world trade. The Now Casts are driven by a combination of big data and high-frequency data and leading indicators – thus a combination of “soft data” such as sentiment and survey leading indicators; and “hard data” – actual, lagging activity data.*

Growth is perking up: Easy monetary policy has been working in the US for some time, and continues to support consumption. Easy ECB policy is still helping to drive growth above trend in the EZ. Easy money has helped support UK growth despite the risks from Brexit – though now, the UK economy is slowing. Japan is finally growing above trend, benefitting from both easy money and global recovery. China is the one large economy where easier policy has arguably worked too well, with growth and inflation running above target – hence the People’s Bank is actively tightening.

Inflation is subdued: Many other forecasters of the global economy have lately been revising up their growth forecasts, such as the IMF – but revising down their inflation forecasts, such as the Wall Street consensus.

With inflation expectations already subdued, labour productivity low and credit trends in many major economies modest after the housing bubble excesses, the risks are asymmetric: Inflation expectations are more likely to shift towards down – even toward deflationary – than to high/rising inflation.

Output gaps are mixed across the major DMs. As output gaps close higher cyclical inflation results, requiring monetary tightening. Long-standing relationships between slack in economic resource utilization and inflation may have broken down or at least changed significantly – notably the “Philips Curve” trade-off between inflation and unemployment. The US output gap has closed – a major cause of the Fed’s normalization drive; yet wage inflation remains moderate. The EZ still has a very wide output gap that would allow for some 1-2 years of growth at current rates before closing – hence the ECB is very likely to maintain relatively easy even as it tapers ever so gradually in the coming year.

Financial conditions are likely to remain easy despite partial monetary policy normalization:
Low inflation means that major central banks



are duty-bound to maintain relatively loose monetary conditions – going slow in tapering quantitative easing, raising interest rates or reducing their balance sheets. This in turn should help maintain relatively easy financial conditions, with elevated asset prices supporting wealth effects and making it relatively cheap for those households, firms and governments that desire credit or need refinancing to get it at low nominal rates.

The current global cyclical upswing is therefore likely to continue. Growth does face a variety of downside risks – political and policy risks perhaps more than say the length of the US expansion per se. But because the risks entail inflation downside and threaten the stability of inflation expectations, extremely gradual and limited normalization of monetary policy suggests that the length of an expansion or periods of above-trend growth are unlikely to induce the major central banks to tip expansion into contraction.

The Bad: The Productivity Puzzle – Declining Trend Growth, and “Low-Flation”

The long-term outlook is not so bullish because both nominal and real potential GDP growth in the major DMs is declining. This in turn owes to weak labour force and productivity growth – and because inflation is likely to remain low, perhaps below target. There is as yet no convincing explanation or solution for the decline in productivity growth since the GFC, but it does seem to be a fact of life – as do deteriorating demographics. Indeed, both pre-GFC rapid productivity growth and its post-GFC slowdown may well be substantially explained by major changes in geopolitics and geo-economics.

Real growth boils down to two key factors – changes in the labour force and productivity. Holding productivity – output per unit of input – constant, it is intuitively clear that changes in the workforce will drive growth. Following the baby boom generation, labour forces across DM

have peaked or are already shrinking – imposing downward pressure on potential GDP growth.

Productivity is a catchall for “Total Factor Productivity” – the productivity of all the factors of production – land, labour and capital. Since the industrial revolution, productivity and labour force growth have driven up both the potential level of GDP and its potential real growth rates in most DM countries. “Capital accumulation” – growth in the capital stock – and technological progress – which drives productivity – enabled land and labour to be used more productively, empowering growth.

Over time, profits, income and capital gains have been recycled into the capital stock via re-investment. The result: As workers became more productive, they could be paid more without driving up unit costs. Equally, skilled/experienced workers or those with labour protection could seek out higher real incomes, while productivity gains moderated inflation and competitiveness pressures.

In the post-Cold War era, labour markets were opened up. Former communist countries and other EMs re-integrated themselves into the global economy, which itself had been opening up to trade and investment. DM firms and banks invested in emerging markets, helping to boost productivity and growth. Globalization thus meant a much wider pool of labour and a larger number of consumers.

Productivity and labour-force increases boosted both potential global GDP. Globalization and technological progress allowed real wages and capital asset values – land, physical and financial capital – to rise with limited cost pressure at the firm level, or inflation at the macro level.

The effects of globalization and innovation are comparable to the industrial revolution in that Asian agricultural labour moved into a burgeoning new industrial sector; and in that labour in the closed command economies of the Warsaw Pact moved into the global economy.



But there was no free lunch: Globalization enabled EM workers' productivity to rise by diverting demand for DM labour to lower wage countries. Rising overall wealth and income enabled those whose incomes didn't rise to live beyond their means through easy credit, eventually led to the Global Financial Crisis.

Today's challenges are even more serious. Most DMs have ageing populations. Japan already has a shrinking and ageing population and work force. Productivity growth has also slowed sharply since the GFC. It is no longer possible to substitute consumer credit for income. And several key EM labour forces or populations have already peaked or will soon do so (China, Russia and Brazil, respectively).

Furthermore, technological progress may damage labour productivity and employment, if modern automation replaces more labour than it generates new demand for – and across skill and wage levels: Both blue and white-collar roles are being automated. For the first time, the levels of and returns to financial and physical capital may rise at the expense of human capital.

If so, employment may grow more slowly or even decline. Labour may already be shifting from high-productivity and income sectors to lower productivity, lower wage occupations which innovation and automation have not affected (yet?). The macroeconomic effect could be still weaker growth and lower inflation, probably requiring central banks to be even more accommodative but increasing political pressures within and between countries to redress imbalances. And as weak growth limits income growth while innovation seems to be boosting inequality, political risks may well rise.

The Ugly: (Geo-)Political/Policy Risks Threaten DM Deflation and EM Inflation Expectations

Threats to the current cyclical recovery and the long-run outlook are skewed towards deceleration and deflation rather than

overheating, given already low potential growth and inflation. The resulting gradual, limited monetary policy normalization by major central banks serves as insurance against growth/inflation downside pressures – by encouraging yield-seeking. When and if risks materialise, market participants will be heavily exposed to risky asset classes. Exits or hedging will be costly, losses may be significant. So it's critical to be mindful of the risks especially in China, the US and the EU.

China monetary and credit policy tightening seems intended to prevent overheating and address financial excesses, but over-tightening could endanger the global upturn, especially in EM.

China has supported the current global upswing by addressing its growth and economic rebalancing challenges of 2015-16 that had threatened to export a deflationary shock by a sharp devaluation. In doing so, however, it has reflat growth through rapid credit growth which may have gone too far. So the People's Bank of China is now tightening monetary and credit policies, creating concern about over-tightening, given upward pressure on CNY and downward pressure on some base metals and minerals prices. In addition, supply-side and state enterprise reform might accelerate after the October-November National Party Congress, which might also slow global growth. These risks are worth monitoring very closely, though the likelihood is that the PBoC will ease up on the brakes if the economy starts to slow too rapidly, given the high priority on the 6.5% growth target.

US President Trump's radical campaign rhetoric seems to have been moderated by checks and balances and competing vested interests, but latent risks remain.

The threat of restrictive trade and immigration policies, which could have severely undermined globalization, has moved from a central scenario during the transition and early days of his term, to a risk scenario. Even so, conversations with senior US, IMF and other national policymakers point to persistent doubts that he would give up so



quickly and quietly on beliefs he has espoused since the 1970s. Furthermore, the President will need to recast much of the Federal Reserve's Open Market Committee in the coming year. Hard-money advocates among Republican Party Senators would like a more hawkish, rules-based Fed, but other Senators and the Administration might want easier policy and a weak dollar to encourage investment and hiring in the manufacturing sector as they eye the 2018 mid-term elections. In all likelihood, the difficulty of radical policy change in the US political system suggests there is more noise than signal. Indeed, equities had been priced for deregulation, tax reform, fiscal stimulus and bonds and currencies for low inflation and no real change in trade policies, so the risk is that any new radicalism could disrupt this consensual complacency.

EZ event risks have been sharply reduced by the French election, but incomplete integration and inadequate reform are still major challenges. The balance of these risks points to sub-par growth, rather than event risk or disintegration from say Italy's upcoming election. The election of Emmanuel Macron as French President on a pro-EU/EZ and open economy platform and his large majority in Parliament significantly reduces short-term event risk. Even more bullishly, it points to rejuvenation of the Franco-German axis around which the EU and EZ revolve. Macron is likely to make meaningful progress, though it will likely be difficult to radically restructure the labour market or reduce the French state, which spends an outsized 56% of GDP. In any event, significant structural reform points to slower

growth and lower inflation at least in the short term, because of reduced public or private spending and the initial loss of jobs. Furthermore, Italy will probably resist radical reform and may yet represent an existential threat to the euro. In this context, Germany is likely to maintain a preference for harmonization of budgetary, social security and financial-sector policies instead of full integration. This policy outlook suggests continued EZ stability amid low inflation and the continuation of easy ECB policies, allowing scope for a degree of normalization. Here again the risk is that markets are lulled into yield-seeking, raising the risk that the EZ is not robust enough for the next shock or slowdown.

The UK election surprise raises the chances of a soft Brexit but also the risk of delays in negotiations due to domestic political instability, in turn raising both the hope that Brexit might not happen after all, and the chance of the most negative scenario – that the UK crashes out of the EU with no deal or transition period. This risk is mostly UK-specific, though there might be some spill-over to the rest of the EU and some fear of global risks should there be acrimony in the talks, or hints of trade war.

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Political Risk – A Big Data Perspective

By Ryan Shea

“Brexit” and “Trump” – two words that dominated the financial world last year. Despite extensive polling and all the political analysis in the run-up to these two votes, both outcomes surprised investors and were responsible for significant gyrations in global asset markets.

Two lessons need to be learned from the political tumult witnessed over the past 12 months. First, among the myriad of risks that financial institutions monitor and assess, political risk has become increasingly important. Second, existing methods cannot always be relied upon.

Big data analytics provides a fresh approach to monitoring political risk – one complementary to existing methods. At Amareos we monitor crowd-sourced sentiments automatically extracted from millions of online posts – mainstream and social media – published every day. As we will demonstrate in the following three case studies, these sentiment indicators have proved robust tools for analysing key political events.

Case-Study 1: UK EU Referendum

Throughout the duration of the referendum campaign, neither Remain nor Leave secured a commanding poll lead meaning the final outcome was always uncertain. However, several warning signs were detected in our UK crowd-sourced sentiment indicators that the vote would not go the way Remainers hoped.

From the very beginning Remain adopted a negative campaign strategy, one focused on the detrimental economic impact of leaving the EU.

Indeed, the campaign was so negative it quickly became known as Project or Operation Fear. Fear, the perception of danger or threat, is one of eight primary emotions that the natural language processing (NLP) algorithms are designed to detect in online posts. When aggregated up across the media types, it is possible to generate a crowd-sourced Fear indicator¹. By monitoring changes in this indicator, we were able to track the effectiveness of the Remain campaign².

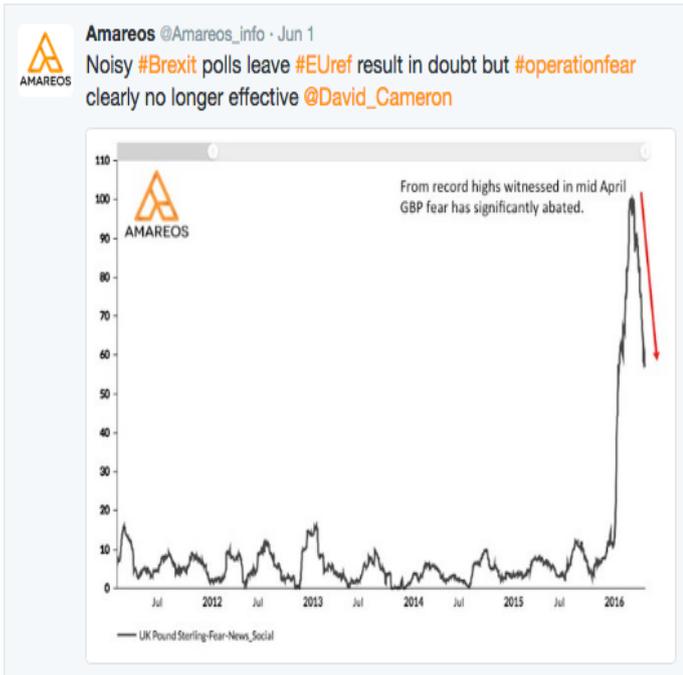
For the first few months of the campaign Remain’s scare tactics were extremely successful: the UK Fear indicator surged to a record high (the indicator is calibrated to lie between 0 and 100). But from mid-May onwards something unexpected happened. Project Fear continued but UK crowd fear declined.

One possibility was that Remain’s scare tactics had convinced increasing numbers of UK voters to back continued EU membership - think Turkey’s not voting for Christmas - removing the underlying source of the fear (Brexit). Another possibility was the Leave campaign had counteracted the negativity of Remain’s messaging by adopting a very positive campaign focused on the benefits of leaving. Neither of these occurred.

¹There have been numerous attempts to generate Fear indicators using market prices as inputs. However, inferring the collective emotional state of a market in this manner is flawed because prices are not “clean” - they can be influenced by many unrelated factors ie. market liquidity etc.

²Our crowd-sourced sentiment indicators are available daily on thousands of assets – currencies, equities (index level and single entities), commodities and key macro/socio-economic topics.

Having excluded these alternatives, the most plausible explanation for the change was the crowd “switching off” to the negative messaging of Project Fear. It was, in short, no longer an effective campaign tactic. We highlighted this conclusion in a tweet³ published three weeks prior to the June 23rd vote – see exhibit below.



Other Brexit warning signs in the crowd sentiment indicators included escalating worries about the UK’s financial stability - unwarranted in the event of a Yes outcome - and on the eve of the vote UK country sentiment slumped, a downtrend that continued until late July when Brexit pessimism peaked, in marked contrast to the last rally in UK risk assets⁴.

Case-Study 2: US Presidential Election

In analyzing the US election, we deployed a different crowd sentiment, one that identifies negativity - specifically anger - towards the government. Our approach was premised on the observation that Clinton was about as “establishment” a candidate as one could ever

hope for, whereas Trump - unusually for a billionaire – was considered the “anti-establishment” candidate⁵. Hence, rising crowd negativity towards the government would tend to favour Trump over Clinton, whereas falling government anger would be more beneficial to her.

Validating this approach, US government anger sentiment correctly anticipated shifts in the opinion polls, including the “Clinton Comeback” seen during the summer. Where it proved most effective was in the final days of the campaign after the FBI unexpectedly announced it was reopening its investigation into Clinton’s use of private email servers.

The weekend before election day the FBI reiterated its conclusion that Clinton had not committed any criminal wrongdoing. Following this announcement, the pollsters estimated Clinton’s probability of victory at over 90%. Yet, what we observed on social media⁶ was government anger in the US surged following the news, leading us to the opposite (correct) conclusion – see exhibit below.

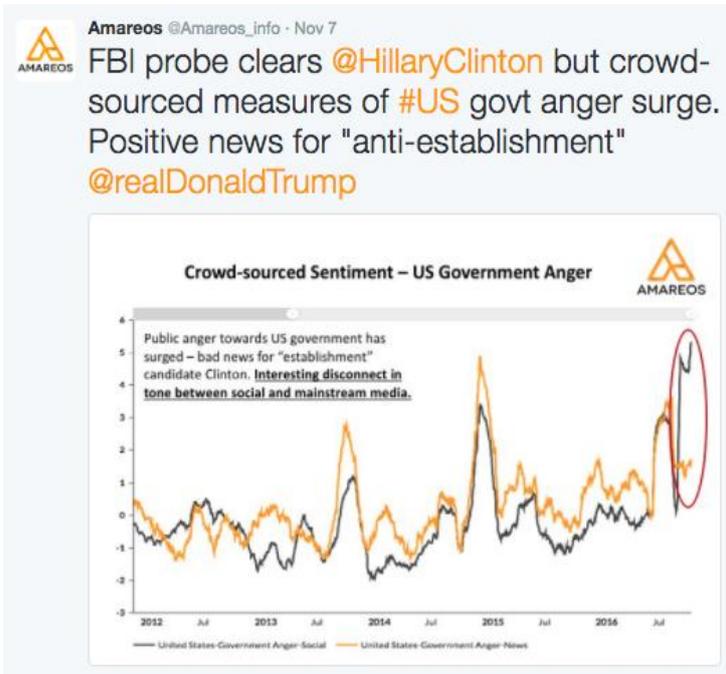
³ We use Tweets because they are publicly timestamped and hence clearly demonstrate that these were ex ante observations and not ex post rationalizations.

⁴ In our view, this late rally in UK risk assets was attributable to investors anticipating a repeat of the 2015 Scottish independence vote when earlier fears that Scots would back a break-up of the union proved unfounded.

⁵ As the sentiment data are on pre-defined assets or socio-economic topics it is important to understand how to interpret the indicators.

⁶ As we note in the tweet there was a significant disconnect in the emotional tone of the two media types at this time, not inconsistent with the perception of many that US news organizations were generally pro-Clinton.

Exhibit 2: Amareos Tweet on US Presidential Election



Source: www.amareos.com

One important feature of the crowd-sourced sentiment data is that it is currently limited to English-language sources. In countries where there is considerable online commentary in another language, this could potentially undermine the reliability of the sentiment indicators. Therefore, last December’s Italian constitutional referendum and this year’s Dutch general and French presidential elections were key litmus tests.

In all three we utilized government anger sentiment to anticipate correctly the final results, confirming that the sentiment data can accurately reflect crowd thinking even in countries where English it is not the predominant language.

For the sake of brevity, and because it was the European political vote where investor anxiety was greatest, the third case study will concentrate on the French presidential election.

Case-study 3 – French Presidential Election

Of all the candidates in the 2017 election, the one that was most concerning for investors was Front National leader, Le Pen. Her party’s opposition to French participation in the Euro meant victory would have constituted an existential threat to the entire single currency project.

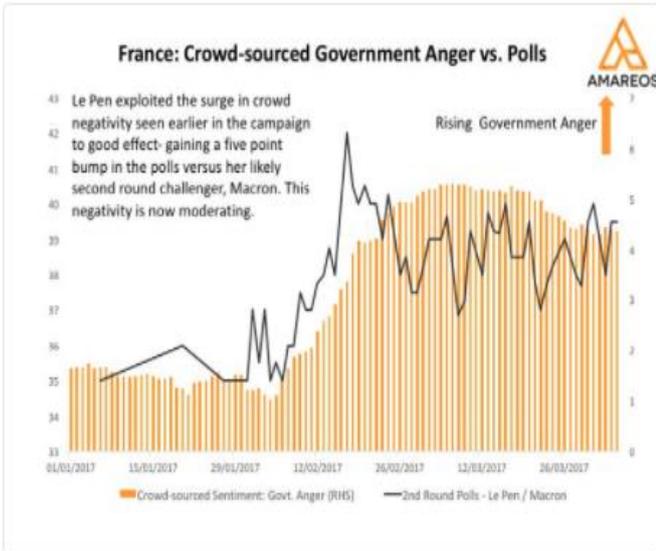
According to the first round polls, Le Pen was one of the main contenders and her party was well-positioned to exploit the wave of nationalist-populism that was widely viewed as having contributed to the earlier Brexit and Trump surprises. Moreover, there was a strong sense of public malaise towards mainstream politicians in France, a perception reinforced when Republican nominee, Fillon, became embroiled in a scandal during the campaign.

In early March, crowd anger towards the French government hit an eleven-year high indicative of a large reservoir of public negativity that the polls suggested Le Pen had been effectively tapping into. However, as the first round vote neared, government anger sentiment in France started to subside. This suggested that while Le Pen had enough support to get to the second round, she did not have sufficient momentum to overtake Macron in the final run-off.

Exhibit 3: Amareos Tweet on French Presidential Election



Amareos @Amareos_info · Apr 5
 Le Pen failed to shine in last night's #LeGrandDebat but that is not the only issue she faces in her bid to become the next French President



Source: www.amareos.com

Given the way the French options markets traded ahead of the first round vote it is clear investors were aggressively hedging the downside risk of an unfriendly market outcome. In contrast to the rise in implied volatility in French equities⁷, crowd-sourced Fear for the CAC40 peaked in late March before steadily declined to around 60 just prior to the first round vote. Still elevated by historical standards but nevertheless significantly lower.

⁷ Implied volatility is often an input in price-based fear indicators (see footnote 1 above).

This reduction in crowd fear towards French equities mirrored the fall in government anger sentiment.

Such divergence between market prices and crowd sentiment strongly suggested investors were unduly bearish going into the French election, either by overestimating the odds of a market unfriendly outcome or by overestimating the impact of a market unfriendly outcome.

Following the “surprise” Brexit and Trump outcomes, this is not that surprising – it is human nature to avoid previous errors. But, overestimating political risk associated with the French election is just as much a mistake as under-estimating the political risk associated with last year’s British referendum and US election was a mistake. Monitoring crowd sentiments could help lower such forecast errors, making them a useful complementary “Big Data” input into a risk management approach.

Ryan Shea is Head of Research at Amareos



Managing Cyber Risk - the Board's perspective

By Brandon Davies

All board directors and most notably the NEDs that chair the board Audit and Risk Committees are looking to execute their responsibility by:

- Seeking Assurance that the institutions systems, processes and procedures represent “best practice” appropriate to the risks the institution runs.
- Providing a Challenge process to the management and executive to ensure that there is not simply acceptance of the status quo in respect of the existing processes and procedures.
- Ensuring that the standards established are Defensible. This has become especially important, as the Senior Manage Regime has come in to operation. Should bad outcomes in any area of the business occur it is important in respect of NEDs personal liability to ensure that processes and procedures represent standards acceptable in the industry as a whole.

Many board directors will find meeting their challenge and assurance obligations in IT and Cyber is especially difficult not least because when it comes to challenge and assurance they often do not have a clear understanding what constitutes a reasonable answer to their challenge questions and what therefore constitutes reasonable assurance that the measurement and management methodologies being pursued are appropriately for their organisation.

At a recent “round table” arranged by the European Risk Management Council between risk professionals in New York and London I asked IT professional for an example of what

sort of an assurance answer I should expect from my IT executives.

The answer did make me think and the result is set out below, any further thoughts or comments would be gratefully received.

Hardware

First and foremost I believe the assurance I am looking for needs to cover the robustness of the hardware architecture of the business. In particular I believe I should seek assurance that the physical architecture can withstand attack, that simulations of known attacks are being carried out and the system architecture is such that there is no single point of failure in the system. Indeed I think any system should be able to withstand the failure of several “hubs” within the system before the system as a whole is compromised.

I was much influenced in this area of assurance by looking at the difference between military grade systems and commercial systems after 9/11. My son who studied IT at Cranfield University (a military college) made the observation at the time that commercial bank systems assumed any failure was modelled as a random event whereas the military “never forget the enemy is out to get us” and structured their systems is designed to be resilient against attack assuming the enemy will to some extent get through.

It seems to me we need to accept the same view of the world in which we operate and structure our systems accordingly, looking for a high degree of physical robustness in the face of attack.



Software

The second level of assurance should I think relate to our software and particularly access to our data stores, payments systems and our code. The problem here is access. Who gets access and how?

I believe I should be looking for assurance that the systems are self-policing. What I mean by this is that no code can be amended, added or subtracted in any system without specific authorisation and without testing after and amendment, addition or subtraction.

On access I am looking for similar assurance that access cannot lead to any code amendments, additions or subtractions. Also that access is limited to a specific system for a specific purpose.

As of today I believe that few systems can self-police, either in terms of code changes or access.

Information Exchange

Should any form of attack on our hardware or software take place I believe it should be mandatory for all businesses to report this, as it happens, to a central authority that can log and analyse the attack.

It is only through a mandatory system that we can establish a comprehensive view of the attacks being mounted against the financial system as a whole. We are then more likely to establish a response that can meet the threat as it evolves, establish the source of any particular attack and any pattern to the origin and nature of such attacks in specific and in systemic terms.

I do not believe that this should be a function of any current regulator but rather the most

appropriate candidate would be the Communications-Electronics Security Group (CESG), the Information Security Arm of the Government Communications Headquarters (GCHQ).

I am aware of various voluntary initiatives in this area notably the Cyber Security Information Sharing Partnership as well as the BBA's Financial Crime Alerts Service (FCAS) and other banking industry-sponsored information-sharing schemes do provide a valuable channel for managing evolving and emerging cyber threats.

None, however, creates the level of mandatory reporting I need to feel really comfortable with any assurance I am given. Whilst no great supporter of ever more regulation, this does seem one area where mandating is in the interests of all participants in the system as any breach can rapidly spread as any new form of attack that is successful against one may quickly be deployed against others.

In this area therefore I cannot have the level of assurance I would ideally wish for, though for defensibility, participation in a broadly used and well regarded voluntary system would be acceptable.

Reaction Function

If there is one thing that is more or less certain it is that some attacks are likely to get through our IT systems defences no matter how good they are, this places a lot of emphasis on how we structure our reaction function and what its objectives are.

It is once again an area of assurance where what I would ideally like to see is not available and what I will accept is a defensible position.

When a breach occurs the objective is to ensure it is "plugged" as soon as possible that the source of the breach is logged and as far as



possible traced and that the service to our customers is, securely, restored.

A dedicated team needs to be bought in to operation and any skills required but not within the team seconded to it. At the same time as soon as the breach is known it should be reported both within the business and to the information exchange (see above).

All the above is achievable but in my ideal world the exchange would, if the breach is serious and especially if the source of the attack is new, take over responsibility for the reaction. It should have access to resources from other reporting institutions and from its own dedicated resources. These resources would include those dedicated to national defence and most controversially should, in my view, include offensive capability.

This reflects my view that we as a nation are not taking IT security and Cyber defence seriously enough.

National Defence

It is, I think, as well to regard ourselves as in the front line of what looks increasingly like the wars of the 21st century. Something else I learned from my son.

In WWII we sent young men in bombers to take out enemy dams, of 133 aircraft crew sent 53 men never returned and two dams were temporarily breached. At war today we would surely send a piece of code to infect their operational systems and to shut down all their electricity generation and none of the attackers lives would be put at risk. Indeed the above form of attack has happened in respect of Iranian nuclear reactors in 2010

with the injection of the Stuxnet worm into their machine control processes.

Think it cannot happen here, do you have a smart meter for your gas and electricity? Indeed I understand GCHQ helped with the security design of the new smart meters.

Yes I am serious, welcome to the wars of the 21st Century. Think I am exaggerating ask anyone in the industry about APT28.

Just as nations and criminals are plotting to attack our physical infrastructure for commercial and strategic gain we are being naive if we believe nation states are not plotting attacks on our financial system. Defending against such potential attacks requires national co-ordination and international co-operation. I suggest that the co-ordination should start with addressing the assurance deficiencies I have outlined above. The co-operation should, I believe, start between London and New York, the worlds leading finance centres and two allied countries that are used to co-operating in national defence and especially in intelligence sharing.

Some may say that on a limited scale big financial institutions and their central banks are working on this problem. Yes they are but the system is only as secure as its weakest link, Cyber risk is potentially a systemic risk but you do not have to be a SIFI or GSIFI to be a source of it.

Brandon Davies is a Non-Executive Board Director at Lintel Bank



An Outcomes-Based Approach to Assessing Culture

By Mikael Down

Organisational culture is not a new topic, but it is increasingly being used to understand the underlying causes of organisational failings. Postmortems of major recent high profile failures, whether from the private, public or voluntary sector, often come back to the issue of culture. This has attracted the interest of policy-makers, regulators, investors and even customers, and this interest has sparked a whole industry around culture ‘measurement’ as boards and executive teams grapple with this issue.

But what do we really mean when we talk about culture, and what are the things that we can and can’t measure? This article, taking as a case study the work that has been done within the UK banking industry, argues that culture most usefully be understood by working back from positive end outcomes, and advises against approaches that seek to shape culture solely around an absence of bad conduct.

Culture in the banking industry

In 2011, in the wake of the Libor-rigging scandal, a Parliamentary Commission was established to examine the underlying causes of this and other widespread failings in the UK banking industry. Having taken evidence from a wide range of sources, the Commission concluded that:

‘The weakness in standards and culture that has contributed to the loss of public trust in banks has not been confined to isolated parts of a few sub-standard banks. It has been more pervasive. Trust in banking can only be restored when it has been earned, and it will only have been earned when the deficiencies in

banking standards and culture, and the underlying causes of those deficiencies, have been addressed.’ (Parliamentary Commission on Banking Standards, 2013¹)

In the light of this report, the Banking Standards Board (BSB) was founded in April 2015 by the UK banking industry. We are a voluntary, non-statutory membership body open to all banks and building societies operating in the UK, and governed by an independent Board². Our purpose is to help raise standards of behaviour and competence across the UK banking sector, in particular through examining and assessing the culture of our member firms.

To help us do this, we have developed what we call our ‘Assessment framework’. This framework does not seek to ‘measure’ culture, per se. Arguably, culture itself is too complex to be measured in any meaningful way – attempts to do so invariably measure something that is much narrower, or generate a confusing array of metrics that can’t easily be used to inform decision making.

¹ *‘Changing banking for good’. Final Report of Session 2013-14. Parliamentary Commission on Banking Standards. Paragraph 51, page 104.*

<http://www.publications.parliament.uk/pa/jt201314/jtselect/jtp/cbs/27/27ii.pdf>

² <http://www.bankingstandardsboard.org.uk/meet-the-board/>



Equally, some other approaches that look at culture primarily as a means of mitigating conduct risk focus overly on controls and written processes and procedures, and therefore miss what is unwritten or unspoken yet can have a significant influence on behaviour.

Instead, the approach that we have used works back from outcomes to establish the things that really matter, and to develop quantitative and qualitative measures for these.

Why do we care about culture?

Culture is a fascinating topic. But from a practitioner's perspective, beyond any academic interest, we must ask: why should we care?

The answer is because culture has a significant bearing on an organisation's success in pursuing the outcomes that it cares about. An organisation's culture can be a tremendous asset and competitive advantage; it can also be a hindrance. To figure out what aspects of culture we should care about, therefore, we need to consider the outcomes that are most important and work back from these.

This is why, from an individual firm perspective, culture is inextricably linked to organisational purpose, business model and strategy. This will differ to a degree from firm to firm. But from an industry perspective, we can identify some outcomes that are universally important: outcomes for customers/clients, outcomes for employees, and outcomes for society. It would be difficult for any organisation to argue against the importance of any of these outcomes, not least in the banking industry, which has been our focus at the BSB.

The BSB Assessment Framework

Our Assessment framework takes these broad outcomes as a starting point. It then considers the qualities that banks or building societies need to exhibit in order to ensure that they are best placed to achieve these outcomes: to serve the needs of their customers/clients/members, employees and broader society.

Having reviewed the numerous studies on bank culture, taken input from academics across multiple disciplines, and conducted our own field research, we identified nine characteristics that should be associated with a 'good' culture, and therefore be predictive of an organisation's willingness and ability to serve the needs of its customers, staff and society. These nine characteristics, which encompass a range of ethical and professional aspects of behaviour and competence, and are described in Figure 1.

This framework is applicable to any firm in the banking sector irrespective of size, business model, market segment, age, ownership structure, location or customer base. While it has been designed with banking in mind, the characteristics in this framework should be equally desirable in pretty much any industry.

Our Assessment exercise asks how far the nine elements of the Assessment framework are demonstrated within a firm. It does so by gathering evidence in a number of ways:

- **BSB Employee Survey:** the Survey consists of 37 questions, set out in Figure 2. 36 of these relate to one of the nine elements of the BSB framework, and final question asks respondents to describe their firm in 3 words. The Survey is run in each firm on a consistent, stand-alone basis to avoid firm-specific framing effects that might bias answers, and uses statistically representative results across different business lines and functions. The results are then used to calculate scores out of



100 for each characteristic of the Assessment framework. In 2016, the Survey was sent to c.82,000 staff at all levels across 22 firms, and more than 28,000 responses were received.

- **Qualitative evidence:** the quantitative output of the Survey is complemented by seeking qualitative views and perspectives from all levels of the firm, including through written submissions by board, interviews with NEDs and executives, and focus groups with junior and middle ranking staff. 140 such interviews and 104 focus groups were conducted last year.

Each firm receives its own Survey results, including comparisons of its scores on each characteristic and each question against a benchmark made up of all participating firms. These comparisons are provided at the firm level, and, in addition, individual business lines and functions are benchmarked against their equivalents in other firms. This is complemented by an analysis of the qualitative evidence, to give boards an independent, external, evidence-based report on their firm's culture. Done in this way, it allows boards and executive teams to see specifically where they are performing well against their peers, and where there is room for progress. Repeating this annually, using the same methodology, allows them to also gauge progress over time. And by being linked to outcomes, the feedback that firms receive is focused on the things that really matter.

Results of the 2016 Assessment

While we do not publish firm-specific data, we do publish aggregated data from across the firms that participate in the Assessment. Figure 3 shows the overall results for 2016.

In our 2017 report³, we highlighted three areas of challenge for the banking industry, drawing on all of the data gathered:

- understanding and helping to address an apparent mismatch in many firms between the values espoused by firms and the way that some employees see business being done;
- helping to develop a culture within the banking sector of responsibility and accountability rather than of blame – and one in which mistakes are learned from, ideas encouraged, professionalism prized and a diversity of views valued and fostered; and
- identifying practical steps to help promote personal resilience and well-being among employees, so that employees working in UK banks and building societies are able to serve their customers, members and clients well.

Next Steps

We are using the 2017 Assessment to develop a deeper understanding of the key themes from 2016, and to gauge progress against last year's baseline. Where relevant, and working with others, we will identify and champion good practice to help the banking industry overcome some of the barriers to higher standards. In doing so, we hope to be able to positively impact the end outcomes identified earlier in this article.

Finally, we are planning to pilot this approach outside of the UK – which will be particularly important for firms that are part of large global groups – and explore the possibilities of applying it outside of banking. In doing so, we hope that the initiative taken by the UK banking industry can act as inspiration for other businesses and sectors that are seeking to aim for high professional and ethical standards that are supported by good organisational cultures.

³ <https://www.bankingstandardsboard.org.uk/annual-review-2016-2017>

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Figure 1: The BSB Assessment Framework

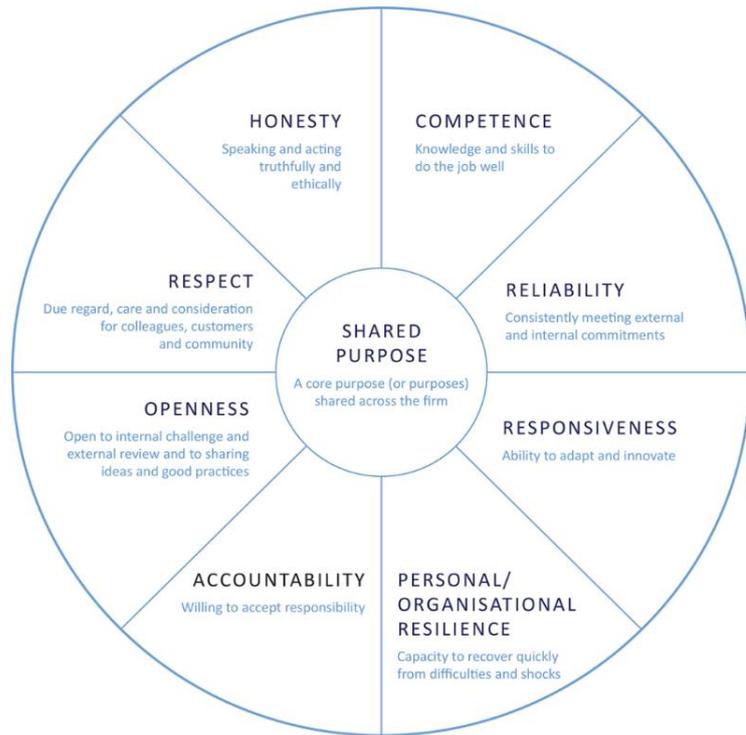
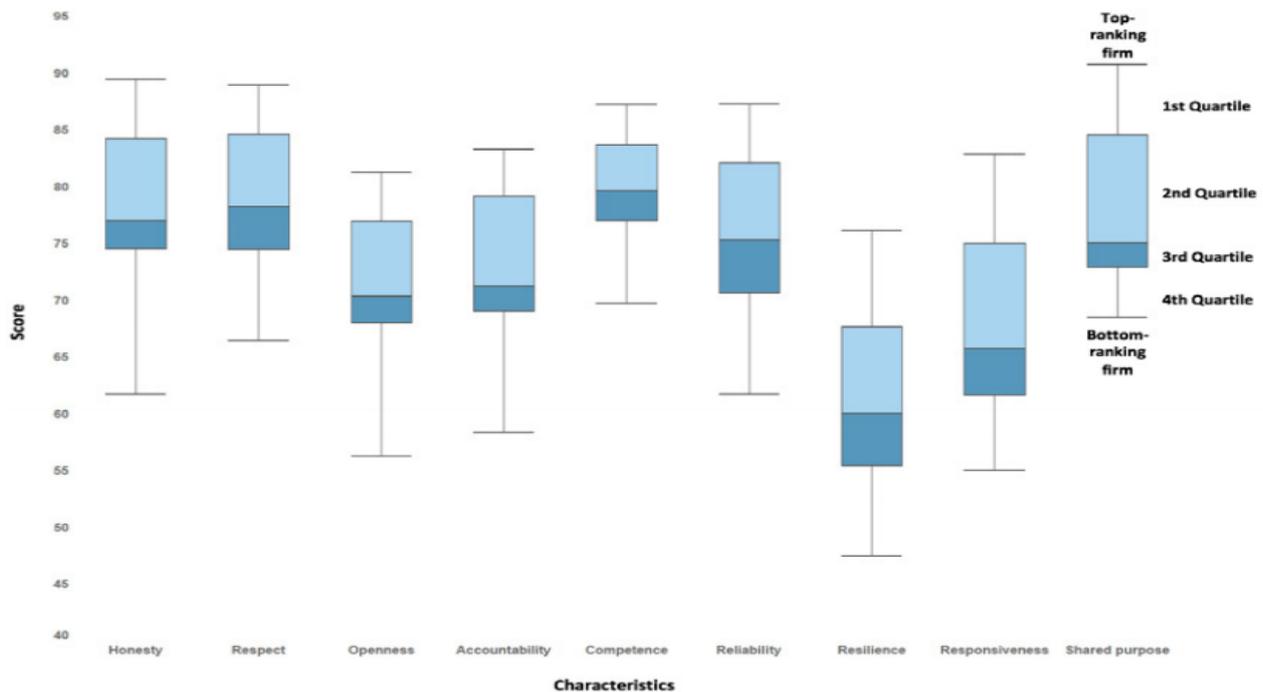


Figure 2: BSB 2016 Employee Survey Questions

| HONESTY | RESPECT | OPENNESS | ACCOUNTABILITY | COMPETENCE |
|---|---|---|---|---|
| <p>1. I believe senior leaders in my organisation mean what they say</p> <p>2. In my organisation I see instances where unethical behaviour is rewarded</p> <p>3. My colleagues act in an honest and ethical way</p> <p>4. It is difficult to make career progression in my organisation without flexing my ethical standards</p> | <p>5. At my work I feel that I am treated with respect</p> <p>6. At my work people seek and respect different opinions when making decisions</p> <p>7. In my organisation Risk and Compliance are both respected functions</p> <p>8. In my organisation we are encouraged to follow the spirit of the rules (what they mean, not just the words)</p> <p>9. I believe my organisation puts customers at the centre of business decisions</p> | <p>10. In my experience, people in my organisation are truly open to review and feedback from external sources</p> <p>11. In my organisation people are encouraged to provide customers with information in a way that helps them make the right decisions</p> <p>12. In my experience, people in my organisation do not get defensive when their views are challenged by colleagues</p> <p>13. In my organisation I am encouraged to share learnings and good practices with others</p> <p>14. If I raised concerns about the way we work, I would be worried about the negative consequences for me</p> | <p>15. I clearly understand the behaviour that is expected of me</p> <p>16. I believe senior leaders in my organisation take responsibility, especially if things go wrong</p> <p>17. I see people in my organisation turn a blind eye to inappropriate behaviour</p> <p>18. I see people in my organisation try to pass responsibility to others in case things go wrong</p> <p>19. I feel comfortable challenging a decision made by my manager</p> | <p>20. In my experience, people in my organisation have the skills and knowledge to do their jobs well</p> <p>21. In my role, I am encouraged to continually learn new skills and improve my role-specific knowledge</p> <p>22. I feel confident in my ability to identify risks in my area</p> |
| RELIABILITY | RESILIENCE | RESPONSIVENESS | SHARED PURPOSE | FREE TEXT QUESTION |
| <p>23. When my organisation says it will do something for customers, it gets done</p> <p>24. I see the people I work with go the extra mile in order to meet the needs of our customers</p> <p>25. When people in my organisation say they will do something, I can rely on them getting it done</p> | <p>26. In my experience, people in my organisation are good at dealing with issues before they become major problems</p> <p>27. My organisation focuses primarily on short term results</p> <p>28. I often feel under considerable pressure to perform in my work</p> <p>29. Working in my organisation has a negative impact on my health and well-being</p> | <p>30. I believe that my organisation responds effectively to staff feedback</p> <p>31. Our internal processes and practices are a barrier to our continuous improvement</p> <p>32. I believe that my organisation responds effectively to customer feedback</p> <p>33. I believe that my organisation encourages innovation in the best interests of our customers</p> <p>34. I have observed improvements in the way we do things based on lessons learnt</p> | <p>35. My organisation's purpose and values are meaningful to me</p> <p>36. There is no conflict between my organisation's stated values and how we do business</p> | <p>37. What 3 words would you use to describe your organisation?</p> |



Figure 3: BSB 2016 Survey results: overview of responses



Three Lines of Defence Model in Banking: How to build an effective second Line of Defence for liquidity risk?

By Michael Eichhorn

“Liquidity does not matter, until it matters then it is the only thing that matters.”

A Risk Manager

Liquidity is widely understood as the ability of a bank to fulfil its payment obligations as they fall due. Liquidity risk can be considered as an impairment of this ability (e.g. due to sudden outflows, the inability to roll existing or raise new funding, or losses in the value of the liquid asset buffer).

Prior to the financial crisis many banks considered liquidity risk as a less material risk. For this and other reasons, the application of the Three Lines of Defence Model to liquidity

risk is still a relatively new topic. At first sight the application seems straightforward. Treasury can be considered as the first, Risk as the second and Internal Audit as the third line.

However, when you take a closer look a number of questions arise, especially with regard to the delineation between the first and second line. Is Treasury not frequently described as the “guardian of the balance sheet” and “shepherd of financial resources”,



in particular liquidity resources? Does Treasury not already act as a control function and perform control tasks for the business?

Case study: Northern Rock

The case of Northern Rock may help to illustrate why the introduction of a second line of defence for liquidity risk is increasingly debated. The first run on a UK bank in over 125 years was not only the consequence of poor credit and capital management decisions with Loan to Value ratios of more than 100% offered and excessive leverage taken. It was also the result of an inherently risky funding strategy.

The left side of Exhibit 1 illustrates how the funding mix became increasingly more risky (while the balance sheet more than quintupled within less than a decade). As shown the bank did not grow its retail deposits (as a rather sticky source of funding). Instead it became increasingly reliant on securitized notes and other forms of non-retail funding, including interbank deposits.

The right part of Exhibit 1 depicts the aftermath of the 2007 bank run. The securitized notes market came more or less to a standstill. Due to credit, capital and other concerns wholesale clients withdrew their funding. Retail clients followed. Eventually Northern Rock needed an emergency loan from the Bank of England (circled on the far right).

These points are well known. The point here is a different one. Imagine you were a C-suite Executive of a bank with a similar funding profile TODAY:

- Would you want your Treasurer to define scenarios to stress test the risks of his funding mix?
- Would you want your Treasurer to define and calibrate the models and assumptions that determine the size of his liquidity buffer?

- Would you want your Treasurer to propose the risk appetite to the Board and, if approved, later manage and check adherence to his own proposal?
- Would you want your Treasurer to provide regular updates to committees, e.g. on the execution risks of the funding plans he himself developed (e.g. to address an incremental funding need)?
- Or would you (and potentially your Treasurer) feel more comfortable to have at least a second opinion by an independent Risk team in the second line?

Types of second line operating models in banks

Most banks have strengthened their second line liquidity risk oversight since the financial crisis. From speaking to peers and consultants at least three operating models can be distinguished:

- In **Model Type A** there is no designated Liquidity Risk department. Instead the second line oversight is performed by other parts of the Risk function, e.g. by the Market Risk or Enterprise Risk department.
- In **Model Type B** a designated Liquidity Risk department forms part of the second line. Further oversight is provided by other parts of the CRO function, e.g. Enterprise Risk. In this model, the designated Liquidity Risk department primarily assesses the adequacy and effectiveness of existing first line controls. The actual controls are still owned by Treasury. As such the Liquidity Risk department is usually rather small.
- In the **Model Type C** the designated Liquidity Risk department owns key controls, e.g. stress testing or models and assumptions. These controls are usually transitioned from Treasury. In this model, the second line headcount is usually higher than in Type B. The headcount is also higher compared to those of the Treasury department.



Segregation of duties between Treasury and Risk

Especially for Model Type C this leads to the question how a bank could segregate liquidity management duties. Exhibit 2 illustrates one possible segregation based on the mandates shown in the top row:

- The reporting department (which in most banks nowadays sits outside of Treasury) owns the data gathering and liquidity reporting tasks.
- The Treasury department owns the entire planning and execution.
- The Liquidity Risk department owns four mandates: Governance, Monitoring, Models and Assumptions, Stress and Scenario testing.

Mandates of the Risk function

As the bottom row of Exhibit 2 illustrates the Treasury function may have to fully or partially transfer these four mandates.

Governance

Under the Governance mandate, the Risk function may establish risk led governance committees (with representatives from Treasury and the Business). These include committees that oversee the exposures as well as committees that review the liquidity risk models and assumptions. In addition, the Risk function may own certain updates to the Board on funding and liquidity (previously owned by Treasury) and other governance committees, globally and locally.

Monitoring

Under the Monitoring mandate a bank should develop an end-to-end risk control framework. The framework should include preventative controls related to planning and execution, e.g. the set up of a requirement for entities to articulate their Liquidity Demand for the next 3-6 months (which is then compared to the Treasury Funding Supply capacity and informs

the funding plan). Treasury can own these controls. The second line may own other preventative controls, such as the inclusion of liquidity risk in any Pre Trade Approval and the New Business process. With regard to detective controls, all appetite and limit proposals may be developed and presented by the second line. Likewise, the limit setting authority for liquidity risks can be migrated from a CFO led Asset Liability Management governance committee to a CRO led Risk governance committee.

Models and Assumptions

With regard to Models and Assumptions, Treasury may no longer own the calibration of internal liquidity risk models. Decisions such as stress haircuts on unencumbered assets, rollover assumptions for secured funding, the inclusion of certain liquidity risks for derivatives, franchise consideration or assumptions on the internalization and asymmetrical unwind of positions in the prime brokerage business are consequently owned by subject matter experts in the second line and, as noted above, governed by a risk led committee.

Stress and Scenario testing

Finally, Stress and Scenario testing can inter alia cover aspects such as the

- definition of stress scenarios used to calibrate internal models
- definition of scenarios used to test plans, e.g. the Contingency Funding Plan
- calculation of liquidity metrics, ranging from sensitivities (e.g. impact of marginal changes in funding mix) to stress metrics (e.g. Stressed Net Stable Funding Ratio)
- development and calculation of Reverse Stress Tests for liquidity risk
- calculation of funding costs under different scenarios, including those run by the Enterprise Risk department.

Reporting lines

The head of the department may have a direct reporting line to the CRO. Otherwise, critics



may argue that the role is somehow buried within the CRO function and still uses other parts of CRO as “a crutch” to provide some “soft touch” oversight. They may also challenge a potential asymmetry compared to the seniority of the Treasurer (usually N-2, reporting to the CFO).

How to proceed?

There is no one size fits all model. However, imagine a Board member, major shareholder, regulator or auditor confronts you with the following question: How do you as a C-suite Executive get (re)assurance that your bank has an effective oversight for the liquidity management? You may refer to the Asset Liability Committee (ALCO) and recent examples of challenges your Treasurer was confronted with. However, the ALCO may be discounted as a CFO led governance committee and the example as anecdotal evidence.

The proposals laid out above try to offer a more structured answer. They aim to strengthen the bank’s risk management. In many ways they align the operating model for liquidity risk with those common for other risk classes, e.g. market, credit and operational risk.

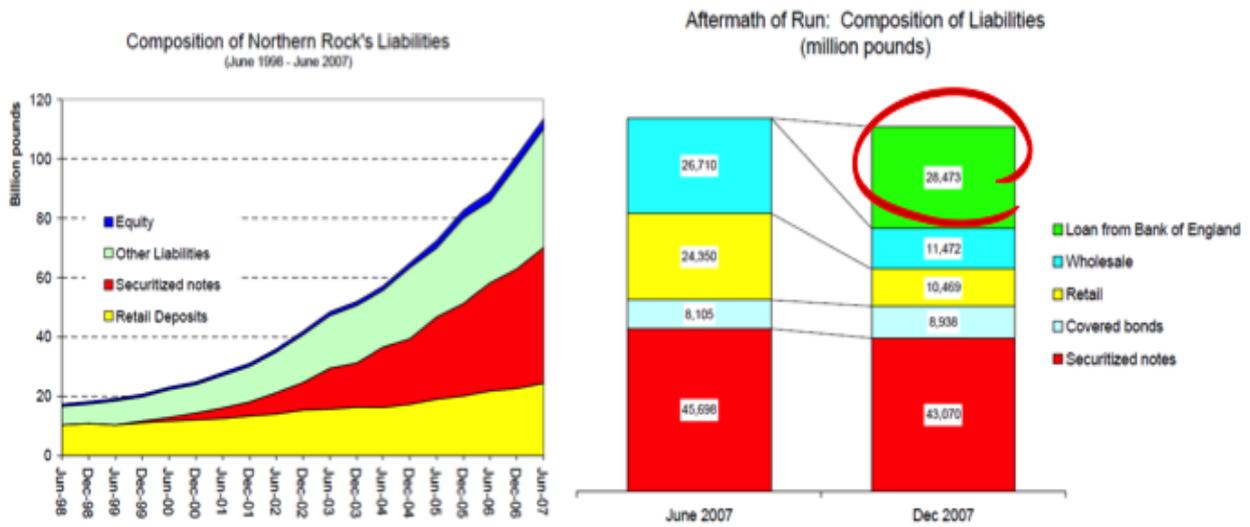
In practice, banks that implement new operating models such as Model Type C often change the size, seniority, skill set, stature (mandate) and structure (including reporting lines) of the liquidity risk oversight, in parts by transferring tasks and human resources from the Treasury to the Risk function. The recent experience of a G-SIB bank who adopted Model Type C suggests that the implementation is feasible within less than two years and offers a more comprehensive risk management oversight compared to traditional operating models. The bank also received positive feedback from different major regulators and auditors. Together with other improvements in the identification, measurement, management and reporting of liquidity risks the new operating model inter alia contributed to the removal of regulatory add-ons.

While by no means a panacea, you may want to debate these proposals in your bank, as liquidity should matter long before it becomes the only thing that matters.

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Exhibit 1: Northern Rock funding mix



Source: Hyun Song Shin (2008): Reflections on Modern Bank Runs: A Case Study of Northern Rock, Princeton University Working Paper, p.6 and p.10

Exhibit 2: Segregation of duties (current and target state)





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