Taking risk to the top office

Much has been made of the need to move from the reactive mindset of risk reporting to a proactive mindset of efficient capital management, and of the need to find a workable integration of credit and market risk. By fusing the machinery of risk management and prime brokerage, Steve White, Chief Executive of RiskCare, presents ”cost-to-capital” - a new and pragmatic remedy to the sector’s risk management woes. The business model described is effective and realistic to implement, and will increase confidence that risk is comprehensively understood.

To facilitate a wider range of activities in the financial markets, "sell-side" organisations use their own capital as a raw material, and add value with their risk management, product development and service provision expertise. This article presents a new business model for sell-side institutions to manage, protect and exploit their capital.

The economic value added of an investment bank can be decomposed into the discernment of market intelligence surrounding the supply and demand for its financial products - clearly a front office function - and the quantification of the capital at risk in order to create those products and services.

The dominant problem with risk management over the past year is not that the practice has failed, but that sell-side institutions have confined it to a role where it is ineffectual. Risk management has been regarded as an adjunct to trading, structuring, funding and other banking activities. The credit crunch has exposed a wide range of flaws in credit risk, market risk, pricing, rating…. but many of these are symptoms of a deeper problem with the organisational structures of sell-side institutions.

The central problem is that risk is an afterthought, rather than the bedrock of investment banking activities. Although there are a multitude of problems including cultural and motivational conflicts, many of the practical issues can be addressed with a single solution, an introduction to which is described below. If risk is put in the driving seat of investment banks, this will propagate outwards to provide remedies for many of the difficulties that the credit crunch has brought to light.

Risk and trading – a new world order

The widely accepted process where business management uses an independent risk function to monitor the activities of their business lines is underplaying the role of risk management; the role of risk management needs to be redefined to be the guardian of the bank's capital base.

Risk is to move out of the middle office and into a new "top office". Profit making endeavours within each business line are subordinate to the overall objective of maximising the efficient use of the bank's capital. For sell-side institutions to fulfil their potential, their risk management expertise has to become part of their economic value added. The perception of risk management as being a cost of doing business and mitigating against downside returns is defeatist, and is part of the underlying cause of the failures witnessed in the credit crunch.

"Cost-to-capital"

The paradigm shift is realised by introducing a risk-based "cost-to-capital". This is highly analogous to a margining mechanism, where each business line / product / silo / service or other profit centre receives a daily margin call that is added to or subtracted from their capital base.

The calculation of the cost-to-capital margin is based on the risk of the profit centre's current exposures, and therefore includes correlation effects with the rest of the bank's business lines. The "risk" that is to be considered is to be as broad as possible - for example, based upon risk measures that incorporate credit and market factors, but ideally will also include funding and other charges for illiquidity. The methodology used to compute the cost-to-capital charge should properly reflect all the factors that impact their capital resources - risk, value, earnings, funding and other costs of sale. This business model has the potential to enable and empower RAROC, Economic Capital and CVA.

In the model proposed here, the initial capital allocated to each profit centre continues to be the responsibility of the bank's executive management. But the cumulative effect of subsequent cost-to-capital margin calls impacts the capital utilisation and enables assessment of the profitability and the risk exposure taken by each front office business. The top office are responsible for the implementation and the oversight of the cost-to-capital margining process, and so become the guardian of the bank's capital.

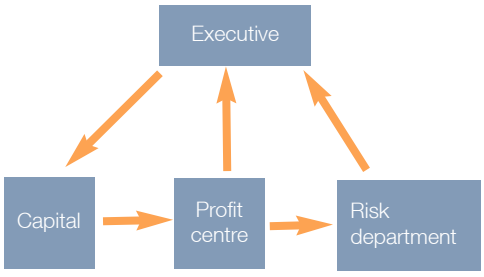
For every new position that a business unit is entering into, they provide the parameters for the counterparty, valuation and other factors that the top office deem appropriate. The deal is then priced by the top office, who inform the business unit of the internal price, the cost-to-capital margin and a more complete picture of their risk landscape with the covariance matrix (or other form of 'risk cube') of the embodied risks in the proposed deal. This provides the business unit with a comprehensive picture of the exposure that they are considering, and they can then make a risk-informed decision on whether or not to proceed with the deal.

Risk budgeting

By considering the aggregate cost-to-capital over all positions, it is possible to amalgamate the cost-to-capital covariance matrices, and by setting limits against chosen risk factors it is possible to express a risk budget for each business line.

While capital allocation enables the bank to control exposures to individual business lines on a dollar basis and is adequate for regulatory capital purposes, risk budgeting enables a more granular

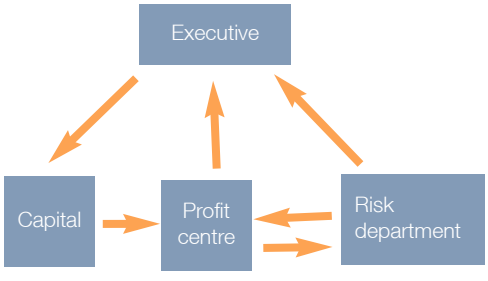
Current state



Prevailing Sell-side modus operandi

Capital is provided to each profit centre in portions determined by the banks executive. Business units report on the profitability and separately the risk department reports on the risk levels.

Future state



Proposed restructuring

Capital is provided to each profit centre, but each exposure is priced and weighted by the risk department. As the risk profile, P&L and exposures change, this capital allocation is modified by the risk department using a risk-based cost-to-capital margining system.

approach. A risk budget can be used to determine which particular risk factors a bank favours, and enables organisations to take a macroeconomic view of their business.

Once a risk budget is assigned to a business unit and measured on a daily basis by the aggregated cost-to-capital margin charges, the risk weighted returns generated by the business unit become readily observable.

Risk budgeting works in both directions; where profitable trading opportunities cannot be pursued due to insufficient capital or risk appetite, the business line that is impeded can then instigate a dialogue with the top office to introduce new capital for the proposed activity.

The capital efficiency of a bank can be measured and improved upon - there is a cost in taking too much risk (exceeding the risk budget), but there is also an opportunity cost in underutilising the bank's capital base. The bank's executive committee will monitor capital efficiency - this is one measure of the economic value added of the risk department, and the foundation for changing it from a cost centre to a profit centre.

Limitations of cost-to-capital achieving a healthy balance

The risks that an investment bank is exposed to can be broadly categorised as 'internal risks' which are under their managerial control, and 'external risks', which are outside their managerial control.

"Internal risks" include operational risk, legal, reputational, franchise value… although controllable to the extent of the organisation's management competency, internal risks tend to be harder to quantify.

"External risks" are often more readily modelled and quantifiable, but cannot be directly controlled - only hedged or leveraged. These include market, liquidity and credit factors, and this is the area with which cost-to-capital is concerned.

There is a conflict of interests with the front office being solely responsible for the quantification of external risks (i.e. pricing); their motivators are short term (annual at best) and their focus is narrow - certainly not bank-wide. A business model that encourages the under-pricing of risk is not sustainable.

Cost-to-capital seeks to give a balance and purpose to both top office and front office pricing.

The top office is responsible for preserving and exploiting the bank's capital base, while the front office are responsible for generating additional value by understanding the supply and demand dynamics of the market.

If the front office is able to command a premium over and above the price that the top office places on the risk consumed, then the trade is viable, and it is readily possible to attribute the source of profit to either the top or the front office. Cost of capital is actually the cost of sale.

This relationship is similar to treasuries that provide funds transfer pricing, except that in cost-to-capital the charge embodies a more complete picture of risk than just interest rates, and is also used as a control; risk management and risk control become one and the same.

Both the front office and the top office are now measurably contributing to the economic value-added of the bank and can get financial recognition for it.

The bank itself can benefit from a healthy tension between the two competing interests - the need for continual profit on one hand, and the need for growth and long term capital stability on the other.

If risk is transitioned into a profit centre, this "healthy tension" is not only reliant on the professional integrity, strength and culture of the people involved, but there are also financial motivators to back this up.

Natural by-products

At face value, the process described above is little more than applying the same controls to internal business lines that prime brokers apply to their hedge fund clients. And why not? If it's good enough for clients' and other people's capital then surely it's good enough for internal business lines and internal capital? While most prime brokers practice a 'rule-based' approach to quantifying risk, the more advanced practitioners use a VaR-based approach, similar in concept to the business model described here. A bank's own business managers will then be encouraged to develop a risk-sensitive mindset similar to hedge fund managers, tangibly feeling the risk that they are taking, and becoming more adept at exploiting it and seeking risk adjusted returns within the confines of their risk budget.

But there are also other useful by-products of taking this more real approach to risk

management - banks that practice this approach will:

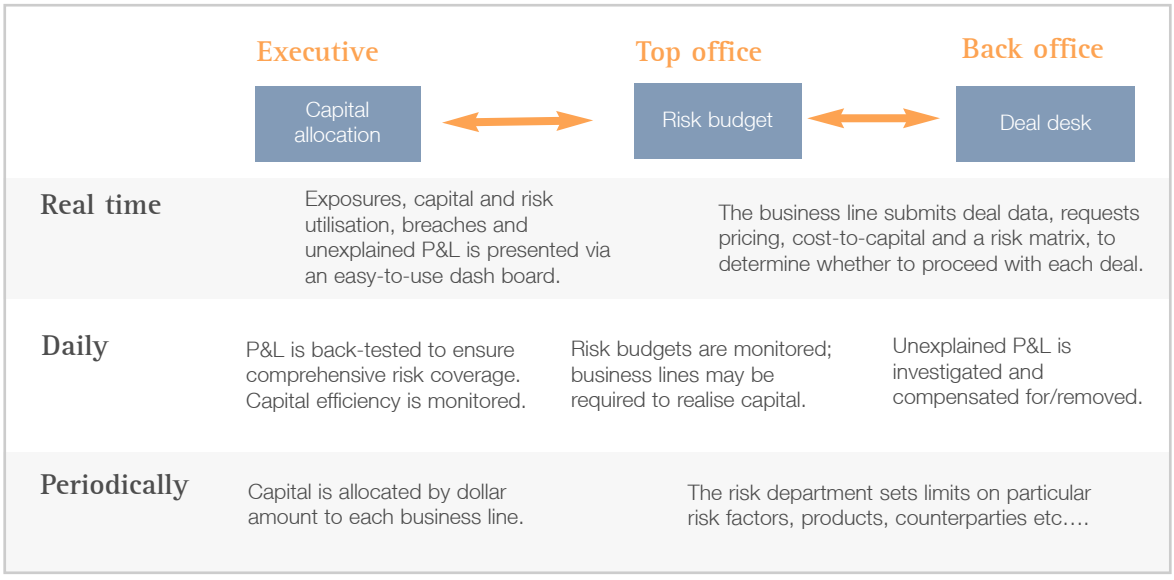
- Be well placed to introduce a bank-wide platform for revaluation-based P&L explained / attribution based on top office internal pricing, reporting to business lines and senior management. Since this information will be passing to-and-fro between the top office and each profit centre on a daily basis within the cost-to-capital margining process, there is no difficulty in reporting this. Indeed, a more likely (and bank-wide) home for P&L explained will be the risk management function of the top office.

- Be able to adopt a common approach to external risks by identifying a common set of risk factors that integrate credit risk, market risk, liquidity risk. There is no longer a segregation of arbitrary classes of risk; external risk and internal risk demand different management frameworks. This is an opportunity to unify the various factions of risk management - every position needs a covariance matrix associated with it, and there need be no limits on the factors that are embodied therein.

- Benefit from risk-informed trading - traders currently use localised front office risk measures that inform them of their exposures within their own desk - by pushing risk upstream of the trading process, a more informed, holistic interpretation of risk becomes possible. Intra-day risk will be reduced as it is now in the trader's interest to hedge at the point of trade. Correlation benefits are readily observable and can be credited to the front office and used to influence compensation schemes. By presenting this wider view of risk, traders are encouraged to communicate with other silos and take an organisational-wide view of their activities. If traders have access to this more complete picture of their risk landscape, they will be able to identify and exploit other trading activities that might have otherwise escaped their notice.

- Achieve a product-wide consistent risk framework - any holistic approach to managing risk needs to be product-agnostic. This does not simply place demands upon pricing and risk methodology, but also upon the process flows and mechanics as they vary between flow and structured products, equity, fx and debt markets, and the various venues through which they are traded. The mechanism described here can be deployed across all these businesses e.g. flow businesses may use a "capital carve-out" approach to gain exposure to preferred risk factors without suffering a performance penalty from the risk system. Multi-asset basket trades that cross multiple business silos can readily be accommodated. Issuance and underwriting businesses can request a risk budget from which they draw-down as the process develops. By making risk 'upstream' of the business, cost-to-capital removes or reduces the integration and reconciliation effort associated with risk systemsMeaningfully benefit from regulatory capital adequacy demands, as this measure will fall out of the cost-to-capital approach - in fact the cost-to-capital methodology will, to a certain extent, mimic the inverse of the capital adequacy formula. Cost-to-capital could be considered as "economic capital on the desktop", since this is the goal - it's about putting the right information in front of the right people at the right time.

Cost-to-capital - key process flows



A self-correcting mechanism risk utopia?

Inevitably human factors will come into play, and business units will seek profits by taking risks that are not properly captured in the cost-to-capital methodology.

By back-testing P&L over time, it is possible to identify residual, unexplained profits or losses. This can be used to hold an informed dialogue with the affected business unit(s) and to notify the bank's executive so that there is top level awareness of the problem.

This discussion will enable the top office risk department to upgrade their cost-to-capital methodology as appropriate (or for the business unit responsible to take remedial action), and ultimately to repeat this cycle until there is no residual or "mysterious" P&L. In time, this could lead to a comprehensive risk model and true risk confidence. "Back-testing" is a misnomer - it is not an optional extra, but needs to be operationally embedded into an organisation; it is a critical reconciliation that is as important as the risk calculation itself, and is the basis for trust in P&L, risk, pricing models, forward-looking scenarios and historical sampling.

But theres always a cost

Clearly this approach is dependent upon the identification and modelling of common risk factors and scenarios. But this is an accepted practice that many banks are currently doing. Similarly, although this approach places no increased demands upon data management, it does increase the dependency upon data; no data - no deal; trading activity could be delayed or curtailed by inadequate data.

Risk managers in the top office - not the front office - necessarily become responsible for pricing. Risk managers are responsible for quoting an 'internal price' that is used for the cost-to-capital calculation. Separately, if a business unit so wishes, it can either quote a spread over this, or as is currently the dominant practice, it can develop and independently quote its own price against which it will trade. However, the necessity for risk departments to properly price all trades to its own satisfaction, knowing that it is responsible for the cost-to-capital, does mean that there may be significant work for organisations that wish to adopt this business model.

According to industry best practice, much of this should be part of the existing platform for risk departments today. The issue is not so much related to the functionality that is available, as to the manner in which it is deployed.

Realisation - technology re-used

Except for the primary responsibility for pricing transferring from the front office to the top office and the consequential need to upgrade the pricing technology, much of the existing infrastructure will provide a suitable platform for realising this new framework. A lot of commercial and proprietary risk technology is capable of modelling credit and market risk factors under one roof - the fact that they aren't used in this manner is a matter of organisational structuring, system configuration and licensing.

This is not about a wholesale upgrade of the infrastructure, but a manageable incremental technology change, coupled with business process changes - relatively pain-free in comparison to the possibility of heavier regulation resulting from post credit-crunch intransigence.

Making it happen

The business model presented above is a simplification of the operational model that currently underpins most sell-side institutions.

If you were designing a shop floor for an industrial manufacturing process, a representation of the prevailing sell-side business model that uses capital as raw material would be almost unintelligible. By restructuring a sell-side organisation as identified here, it is a streamlining of the decision making processes surrounding the proper deployment of capital. In the world of risk management, even a pleasant surprise is unwelcome.

The discipline of daily margining was one of the earliest symptoms of the credit crunch, with a disputed margin call between Merrill Lynch prime brokerage and a Bear Stearns off balance sheet hedge fund. This demonstrated the value of margining as a concept. With a critical mass of organisations using cost-to-capital margining and risk budgeting, this has the potential to repress systemic risk. It gives greater visibility and a more complete picture of exposures, a more timely involvement in controlling them and is an effective mechanism for communicating risk. The investment banking mindset can be changed from "capital > trade > risk" to "capital > risk > trade"; you can know your risk before you trade, rather than vice versa

If the risk department becomes the top office responsible for capital preservation (and leaves the trading units responsible for profit and growth), then within the confines of the risk model and the factors that are being tracked, there should be no surprises for senior management.

The hour is now

By making risk management proactive, and by relating risk measures to capital and risk budgets, risk management is made real, meaningful and effective. The business model described here is a way to realise the objectives of Economic Capital, RAROC and CVA, and integrate these methodologies with robust risk management controls. This is not about being bullish or bearish, or risk adverse or risk-embracing - it's about being risk confident.

With this framework in place, senior management can be confident there are no "unknown unknowns", and that every bit of their capital is efficiently deployed.

Do you have sufficient confidence in your organisation's risk management capability to let them make charges to your capital base on your behalf?

You should do - if risk management is a key "value add" in an investment bank's business model, then using risk to manage the bank's capital is a core competency.

If you are worried about your shareholders returns on their equity (should this question even need to be asked?), then moving to a cost-to-capital risk budgeting approach is a compelling proposition.

"There is a widespread consensus about the need for a strong, independent risk management function. This is usually achieved by having a role, such as CRO, with a strong reporting relationship that reinforces the importance of the function. However, the reporting relationship is not sufficient by itself. The CEO and board of directors need to ensure that the [CRO] is able to independently influence risk taking, risk appetite and risk mitigation. The members of the risk management organisation should have shared responsibility for approving new business, products, and transactions along with the business line."

Containing Systemic Risk: The Road to Reform, The Report of the CRMPG III, August 6th 2008.

For more information

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