

4SIGHT FINANCIAL SOFTWARE  
& THE FIELD EFFECT



WHITEPAPER:  
SYNTHETIC FINANCE  
OPERATING MODELS AND  
TECHNOLOGY CHALLENGES



THE FIELD EFFECT

4SIGHT  
FINANCIAL SOFTWARE

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## Introduction

Synthetic Finance trading using equity derivatives is becoming more important as new regulations increase costs for all market participants.

On the sell side, these cost pressures are resulting in some larger organisations re-evaluating client relationships and profitability versus capital, liquidity and balance sheet consumption.

As a result, the market is opening up to new service providers offering alternative client solutions.

On the buy side, interest in difficult to access emerging markets continues. Transaction taxes and the rise in UCITs hedge funds who are unable to pursue physical short selling strategies are also resulting in demand for synthetic routes to market.

The trends discussed above are all increasing demand for Portfolio Swaps, Total Return Swaps (TRS) and Contracts for Difference (CFDs) as market participants seek to enhance their existing Prime Brokerage, Delta One and Securities Financing activities or launch new offerings in this space. These changes in the market are leading firms to redefine their target operating models.

The reduced profit margins in the current regulatory environment also mean technology solutions that offer efficient processing of both physical and synthetic trades are becoming a critical component in running a profitable trading strategy.

This paper looks at some of the market trends leading to an increase in Synthetic Financing. It outlines some of the factors firms need to take into account when defining their target operating model for Synthetic Financing.

It discusses some of the technology challenges facing market participants. Finally, it considers how the future of Synthetic Finance may look from a regulatory and technology point of view.

This includes optimising trading activities using synergies between:

- Physical and synthetic financing
- Collateral and liquidity management
- Balance sheet analysis
- Capital usage analysis



## Increased Synthetic Trading Activity

There are signs that sell side firms are launching new Synthetic Finance services or ramping up existing offerings. According to Hedge Funds Review, JP Morgan's prime brokerage division in London has more than doubled its synthetic balances in the past 12 months.

Risk Magazine also reports that there has been double digit growth in Barclay's synthetic financing business in the past three years.

According to a recent survey by consultancy Finadium<sup>1</sup>, nine leading investment banks earned an estimated US\$7.4 billion in Delta One/synthetic financing revenues for 2014.

This is almost double what these banks will make from traditional securities lending and margin loan activities, based on H1 2014 financial reports and Finadium's conversations with market participants.

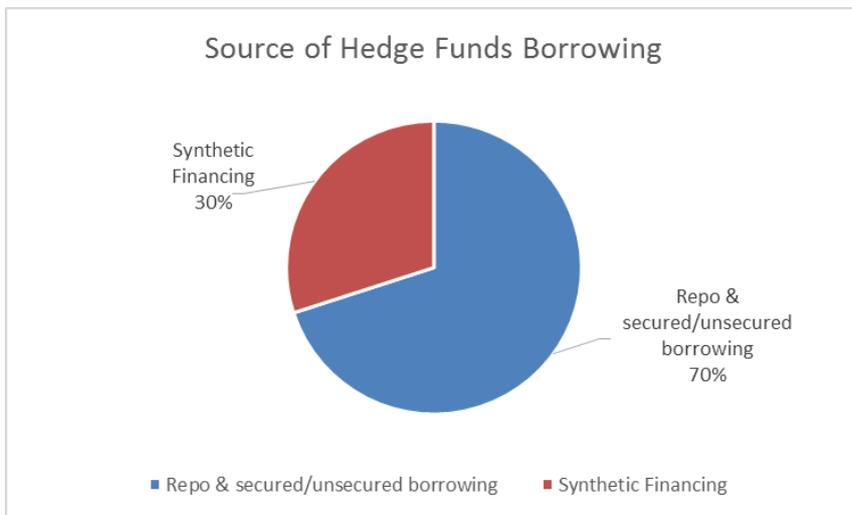
The report also states that; "on a relative basis, revenues from synthetic financing are over twice what they were in 2012, reflecting revenue growth across equity sales and trading divisions globally."



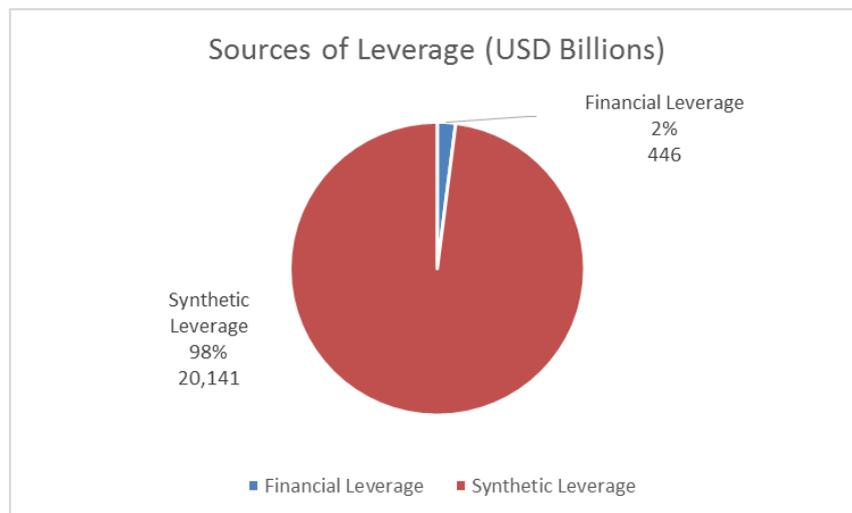
<sup>1</sup>. Josh Galper, Managing Principal, Finadium (October 2014): Capitalizing on Synthetic Financing Demand

When looking at data in the UK's Financial Conduct Authority (FCA) (formerly the FSA) Annual Hedge Fund Surveys, the amount of leverage that hedge funds gain from equity swaps such as Contracts for Difference (CFD's) and Total Return Swaps (TRS) has increased significantly.

In the 2011 survey, 30% of leverage came from Synthetic sources. Repo and other collateralised borrowing accounted for a combined 70% of total leverage.<sup>2</sup>



In the 2014 survey however, this had shifted dramatically. Financial leverage from repo transactions, prime broker financing, direct secured or unsecured lending accounted for just 2% of leverage vs 98% for Synthetic Leverage.<sup>3</sup>

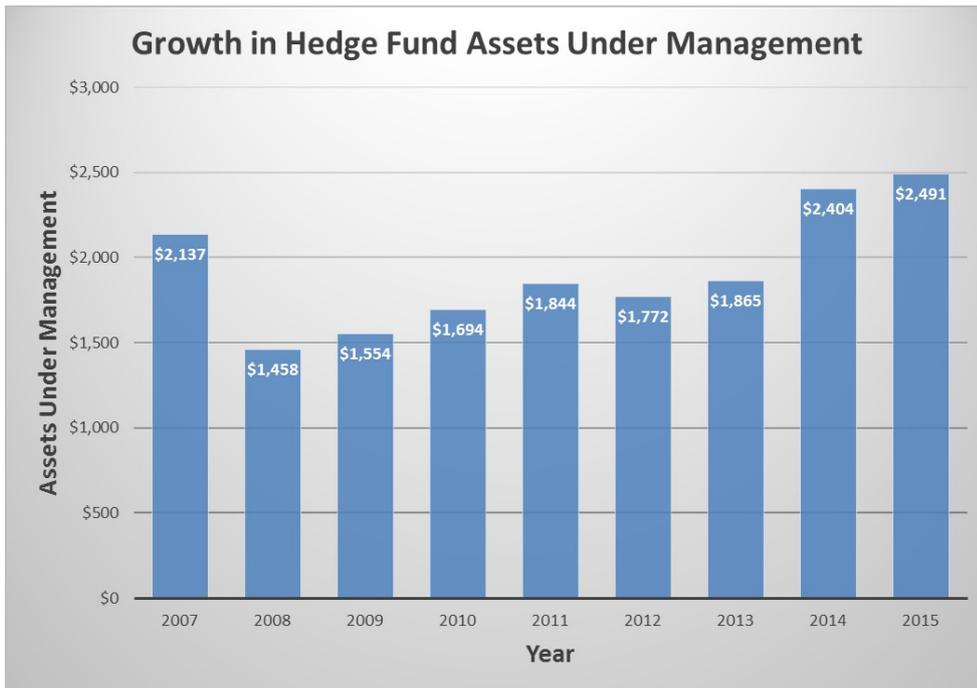


<sup>2</sup> Financial Services Authority (July 2011): Assessing the possible sources of systemic risk from hedge funds. A report on the findings of the Hedge Fund Survey and Hedge Fund as Counterparty Survey. [http://www.fca.org.uk/static/pubs/other/hedge\\_fund\\_report\\_july2011.pdf](http://www.fca.org.uk/static/pubs/other/hedge_fund_report_july2011.pdf)

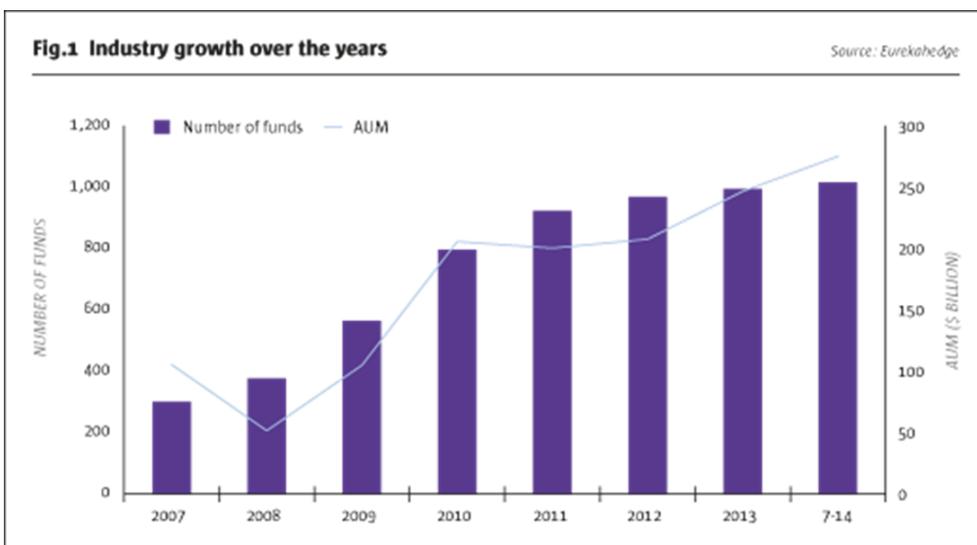
<sup>3</sup> Financial Conduct Authority (March 2014) - Hedge Fund Survey

## Buy Side Trends

After a slump in 2008 following the global financial crisis, hedge fund assets under management have rebounded year on year and now sit at \$2.4tr, up from a 2007 high of \$2.1tr.<sup>4</sup>



There has also been an increase in ACT 40 and UCITS registered funds, as hedge funds seek a way to gain access to more institutional and retail capital. The size of the UCITS hedge fund industry reached a record \$275.2 Billion in 2014 with a population of 1,016 funds.<sup>5</sup>



<sup>4</sup> Barclayhedge alternative investment databases: [http://www.barclayhedge.com/research/indices/ghs/mum/Hedge\\_Fund.html](http://www.barclayhedge.com/research/indices/ghs/mum/Hedge_Fund.html)

<sup>5</sup> The Hedge Fund Journal: Key Trends in UCITs Hedge Funds 2014 <http://www.thehedgefundjournal.com/node/9663>

A UCITs wrapper makes funds more attractive to investors due to greater transparency, lower leverage and enhanced investor protection.

However, regulations prohibit UCITs funds from physical short selling strategies. They are only permitted to short using derivatives. This is increasing demand for Synthetic trading strategies.

Hedge fund interest in the alpha generation opportunities in emerging markets also continues to grow. However, there are a number of operational costs and headaches when accessing these markets.<sup>6</sup>

Synthetic routes to market using equity derivatives can provide a cost effective way for hedge funds to replicate emerging market stocks and indices. They avoid many of the operational overheads of physical execution e.g. clearing, custody etc.

In addition to these factors, the increased cost burden imposed on the sell side by the new regulatory regimes is leading brokers to pass on some of the costs of doing business to their clients.

There is pressure on hedge funds to rethink trading strategies that are capital and balance sheet intensive for their brokers. Strategies at the less liquid end of the collateral spectrum are also coming under fire.

The new demands on their sell side service providers are compelling funds to give more thought to their impact on the prime broker vs the fee income they generate. This is particularly the case for smaller hedge funds that do not offset these costs with execution fees.

Finally, the trend for hedge funds to diversify trading relationships by using multiple prime brokers following the Lehman collapse also creates a need for synthetic prime brokerage. It is quicker and easier to set up a synthetic trading relationship than a full cash PB service, making it easier to diversify, particularly for small to medium sized hedge funds.



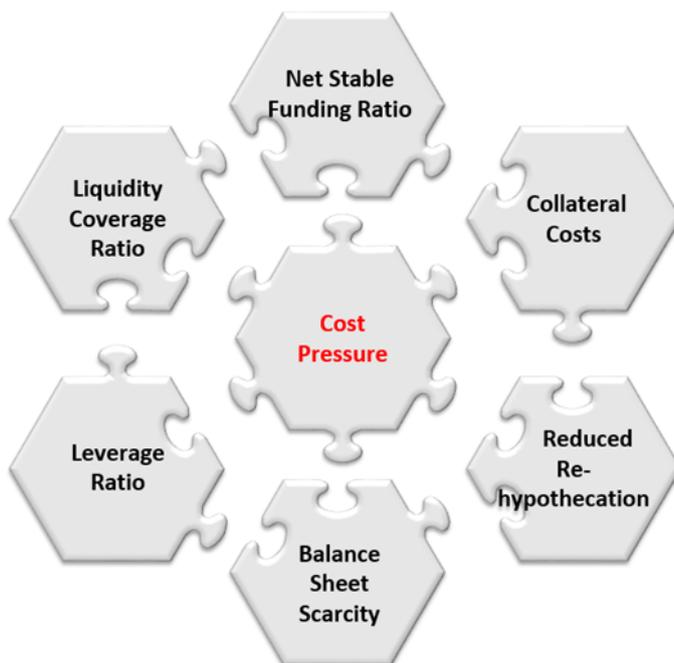
<sup>6</sup> RBS Equity Prime Services in association with TABB Group (July 2010): The Alternative Emerging Market: Equity Swaps and Synthetic Prime.

## Sell Side Trends and Cost Pressures

New regulatory mandates including Basel III, Dodd Frank and EMIR are having a seismic effect on Prime Brokers. This is resulting in a much closer consideration of the impact of a given trading strategy or client relationship on:

- Balance sheet
- Leverage ratios
- Capital costs
- Liquidity buffers (e.g. Liquidity Coverage Ratio, Net Stable Funding Ratio)

### Additional cost burdens on Prime Brokers



Liquidity charges are forcing brokers to think more about how they match assets and liabilities. Lending on a long-term basis to hedge funds, while sourcing funding in the short-term markets is no longer a viable option. The repo markets are not deep or liquid at the long end of the curve and Prime Brokers are now becoming net consumers of liquidity.

Furthermore, Basel III applies a liquidity charge to brokers when covering the positions of short clients with others who are long. This reduces the opportunity for brokers to achieve cost efficiencies by internalising trades.<sup>7</sup>

<sup>7</sup> BCBS 238 (Jan 2013): Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools: <http://www.bis.org/publ/>

## Increased Capital Requirements, Reduced Leverage and Balance Sheet Scarcity

Higher regulatory capital requirements, coupled with pressure to shrink balance sheets and stay within leverage ratios reduces trading opportunities for brokers.

## Reduced Rehypothecation

The ability to fund other trading activities by rehypothecating client assets from hedge fund client servicing is also becoming constrained. Hedge fund demand for segregated custodial accounts is further reducing the ability to re-use client assets.

## Deeper Analysis of Resource Allocation

The end-result of the trends discussed above is a deeper analysis of the deployment of scarce resources as banks seek to hit return on equity targets. In turn, this is leading to a much more in-depth calculation of the true P&L of each client based on a wide range of costs.

## Benefits of Synthetic Trades

Synthetic trades reduce some of these costs as the swap transaction is off balance sheet. The exposures are hedged and these hedges can net off, meaning the trade is balance sheet neutral.

Furthermore, Basel III stipulates that firms can only net off physical securities finance trades such as repos and stock loans on a single counterparty basis from a balance sheet perspective.<sup>8</sup> The rules for equity swaps on the other hand, allow firms to net hedges between different clients, offering greater balance sheet efficiencies.

This balance sheet netting means that synthetic trades also provide efficiencies when calculating the firm's Leverage Ratio.

Finally, from a Liquidity Coverage Ratio perspective, synthetic trades have a lower impact on cash outflow calculations than cash positions in a prime brokerage account.



<sup>8</sup> Risk Magazine: Primes Push Synthetics as Basel III bites:  
<http://www.risk.net/hedge-funds-review/feature/2257348/primes-push-synthetics-as-basel-iii-bites>

## The Emergence of New Synthetic Service Providers

The trends discussed above are forcing some larger prime brokers to re-evaluate relationships with hedge fund clients. This is particularly the case for those pursuing trading strategies with high leverage, balance sheet consumption and liquidity requirements.

This reduction in client footprint is leading to an increase in the remaining market share available for smaller, more niche synthetic prime brokers or new entrants to the market.

Non-banks who are not subject to the same regulatory limitations as incumbent sell side firms may also start to fill gaps in the market.

There is also a continuing preference for hedge funds to set up trading relationships with multiple brokers to diversify counterparty risk following the Lehman default. This trend favours these smaller, more nimble firms.

It is far easier for them to win incremental hedge fund business from a larger Prime Broker rather than trying to completely replace these incumbent firms.

Furthermore, it is quicker and easier for a hedge fund to establish a synthetic service with a new prime broker compared with the complexity, due diligence and paperwork involved in a full service cash prime brokerage relationship.

Finally, the 'give up' process means Prime Brokers can now specialise without needing the execution or stock borrow capabilities in order to offer synthetic prime.

This means new entrants don't necessarily need access to large supplies of inventory or the relationships in the securities finance markets that brokers had traditionally required. This lowers the barriers to entry for new synthetic brokers even further.



## Technology Challenges

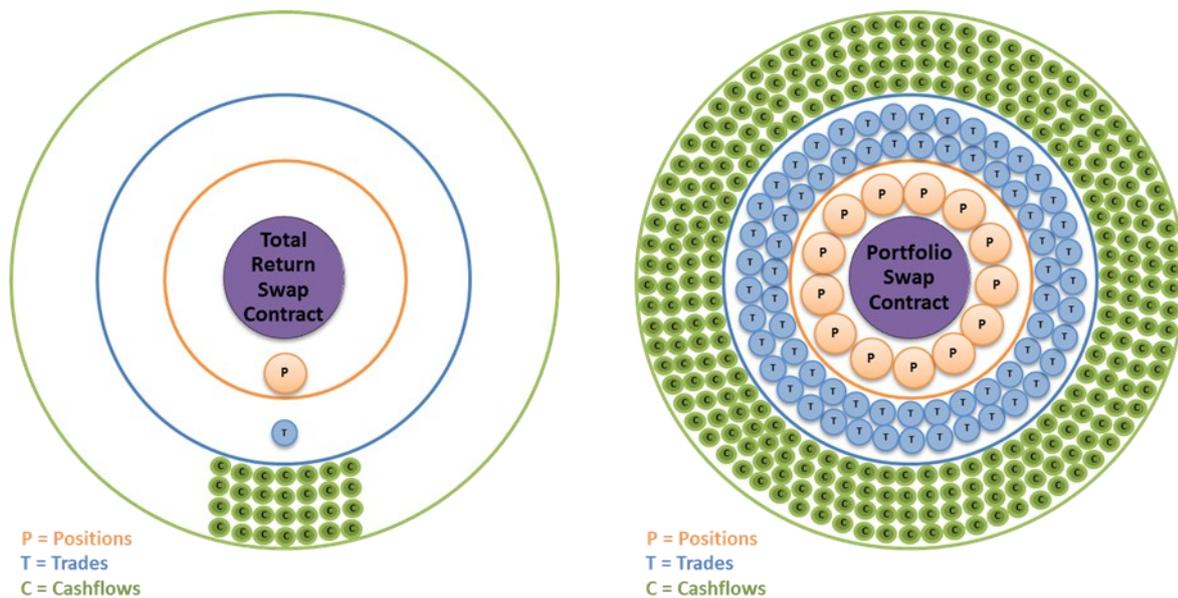
The equity swaps lifecycle can be complex. This is particularly the case for synthetic structures such as portfolio swaps, which are significantly more complex than their single-name total return swap predecessors.

The situation can be aggravated by trying to make a system that was designed to manage simple single-name total return swaps into a system that can also cope with complex portfolio swaps.

This approach often results in a sub-optimal outcome with operational inefficiencies and manual intervention. The data structures, workflow and volume processing capacity of the legacy system are incompatible with the demands of portfolio swaps.

The diagram below highlights some of the main differences between portfolio swaps and simple total return swaps.

### Differences in Complexity Between Total Return Swaps and Portfolio Swaps



In contrast a portfolio swap is a total return swap wrapper with a dynamic portfolio under which multiple positions can be traded. A large volume of trades contribute to each position.

If actively trading, the end user of the swap can generate a high volume of daily trade events for each of these underlyings. Each instrument in the portfolio swap also creates a high volume of cash flows and lifecycle events.

This results in a need for systems to manage this complexity in an automated way.

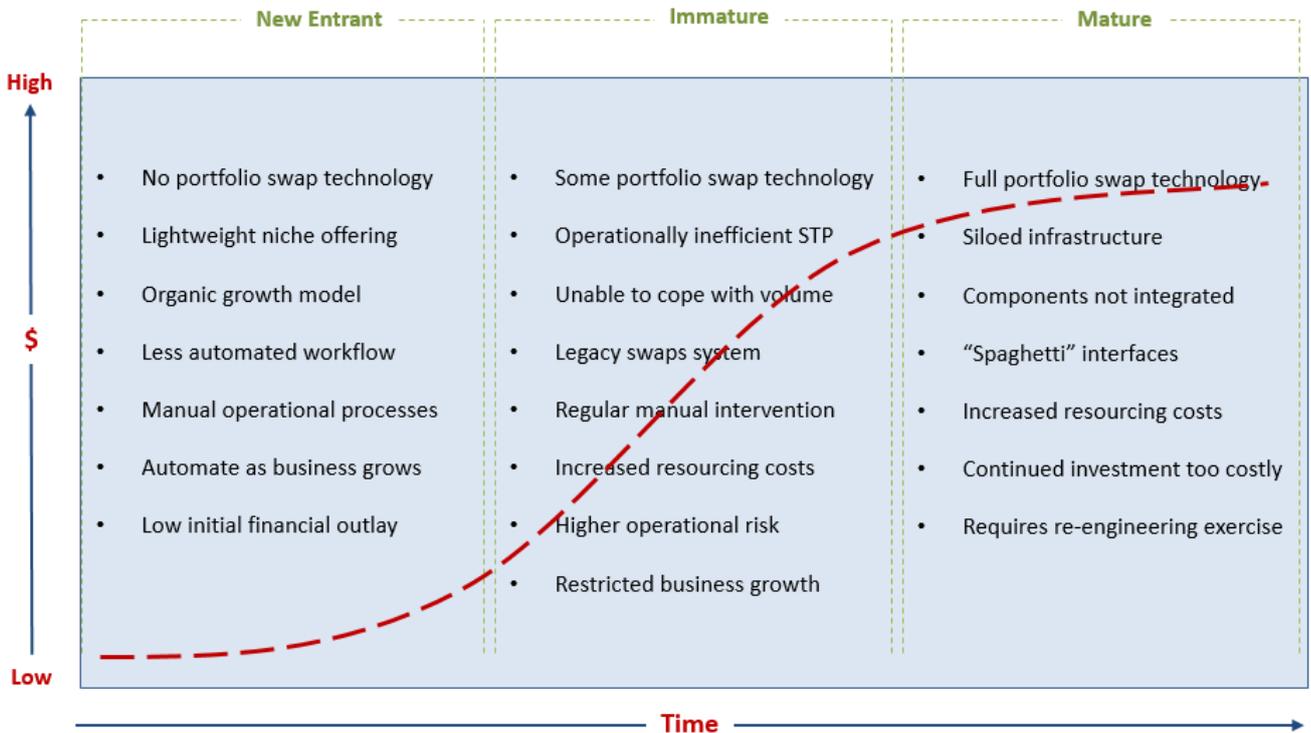
## Technology as a Driver of P&L

Given the complexity of synthetic trading and reduced profit margins in the current regulatory environment, state of the art technology solutions will be a key differentiator for prime brokers and other market participants. Solutions that offer efficient processing of both synthetic and physical trades are a critical component in running a profitable trading strategy.

On the buy side, larger hedge funds and asset managers may also benefit from deploying technology solutions for trading synthetics. Software as a service solutions can add value for these firms without significant spend on hardware and IT infrastructure.



### Technology Infrastructure Maturity



While there are some variations, most market participants fall into one of the following categories:

#### New entrants to swaps with no existing technology infrastructure.

These participants would like to gain some market share in this sector with a niche business initially and the intention to grow organically over time.

To keep the initial financial outlay and risk on a small scale, the offering would be low volume and rely on manual operational processes, which would be subsequently be automated as the volume and business revenues scale up.



### Existing market participants with a technology solution that is not yet mature.

These participants will be able to offer portfolio swaps. However, the level of maturity may not extend to being able to offer full flexibility on contract amendments or overrides.

They may not yet be able to cover multiple asset classes including indices, baskets or convertible bonds. These participants may experience the following pain points:

- Operational inefficiencies and low STP.
- Inability to cope with increased volumes. This is particularly the case if they are using a legacy swaps system that was not purpose built to manage the portfolio swap volumes and complexity.
- Lack of full automation in some areas such as client reporting, corporate actions processing or internal MIS obligations.
- Regular manual intervention in the daily workflow, which adds to the overall resourcing costs and incurs operational risk.

This leads to a situation where the existing system is restricting business growth and subsequently impacting P&L.

### Existing market participants with a technology solution that is mature, but for whom the cost of adapting or maintaining existing systems is becoming prohibitively expensive.

These participants are able to offer a rich fully flexible product across multiple asset classes but:

- Often the infrastructure was built over time in a siloed fashion when technology budgets were less constrained.
- System components are not fully integrated into a global repository and are connected by a “spaghetti” of interfaces.
- An increased number of disparate interfaces leads to increased resourcing costs to maintain the interfaces, which can be aggravated further if the resources are in high cost locations.
- This is particularly relevant in the current environment where there are new regulatory requirements year-on-year that need to be incorporated into several components and interfaces.
- For some firms it may become too costly to continue to invest in the current platform and a re-engineering exercise is required.

## Technology Cost Reduction

Technology cost is a key driver in today's landscape. Business revenues now have a flatter curve than in previous decades.

One way firms can maintain profit margins is to reduce technology costs. In this instance, a cost-effective vendor solution can be preferable to the high-cost of internal headcount and infrastructure required to manage in-house solutions.

The caveat to this is that it must simplify the architecture footprint. It is also important to select a vendor that can provide off-the-shelf interfaces and with experience of developing new interfaces to third party systems.

However, the choices open to institutions considering their build vs. buy options are limited. Options range from a handful of expensive risk management systems to standalone swaps booking systems with limited scope of functionality and limited integration points to other Prime Finance functions.

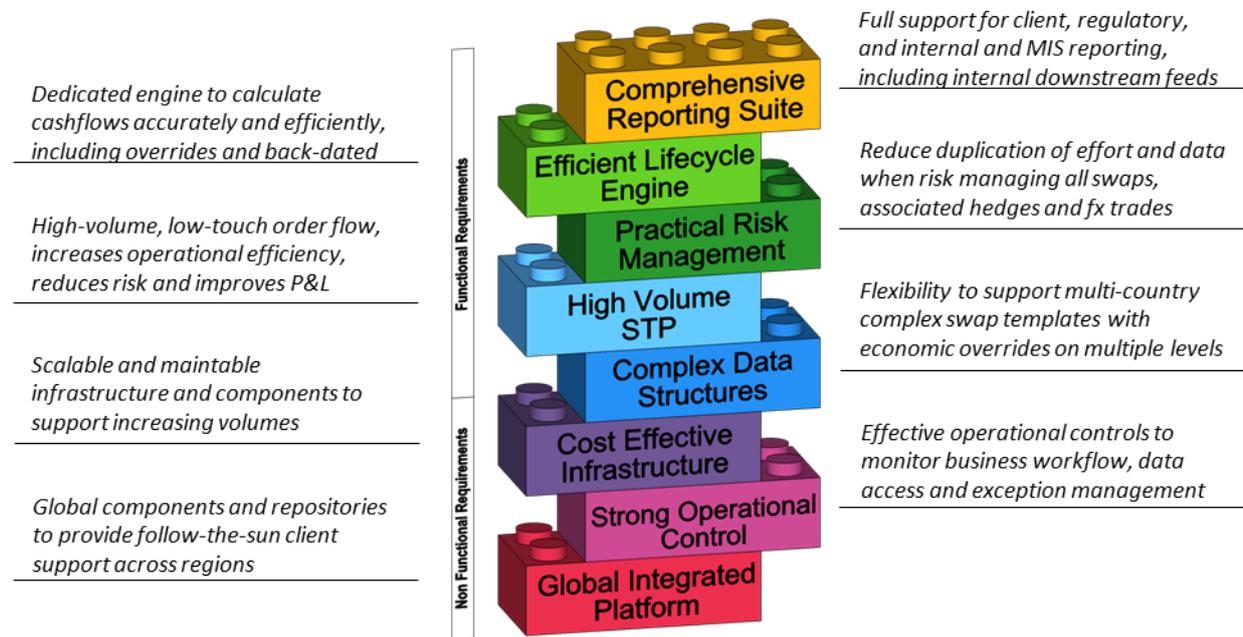
Regardless of the choice to buy or build, the complexity of portfolio swaps demands a technology solution that:

- Automates the trade lifecycle
- Supports high transaction volumes
- Reduces manual processing
- Minimises the number of interfaces
- Maximises the integration between system components.



The system of choice should contain the following features or “building blocks” to be able to support portfolio swaps successfully for both non-functional and functional requirements.

### Building Blocks



It is also important to note that choosing to move a new system can also involve challenges such as migrating an existing portfolio of deals from a legacy platform.

This requires very careful planning and execution. Additionally the interfacing costs can be substantial to integrate the new system into all of the upstream and downstream components in the technology stack.

## Target Operating Models

It is clear that synthetic finance is a complicated business requiring sophisticated technology that must automate business processes that are often specific to synthetic finance. For example, trade capture may involve booking the hedge (e.g. the underlying cash equity give up trade) before the swap.

The PnL calculation process will generate different PnL numbers depending on client preference for parameters LIFO / FIFO.

FX requirements, such as the handling of restricted currencies, differ across geographies – for example, you can go to jail in some countries if you short the currency. Controls around cash balances are therefore super-critical.

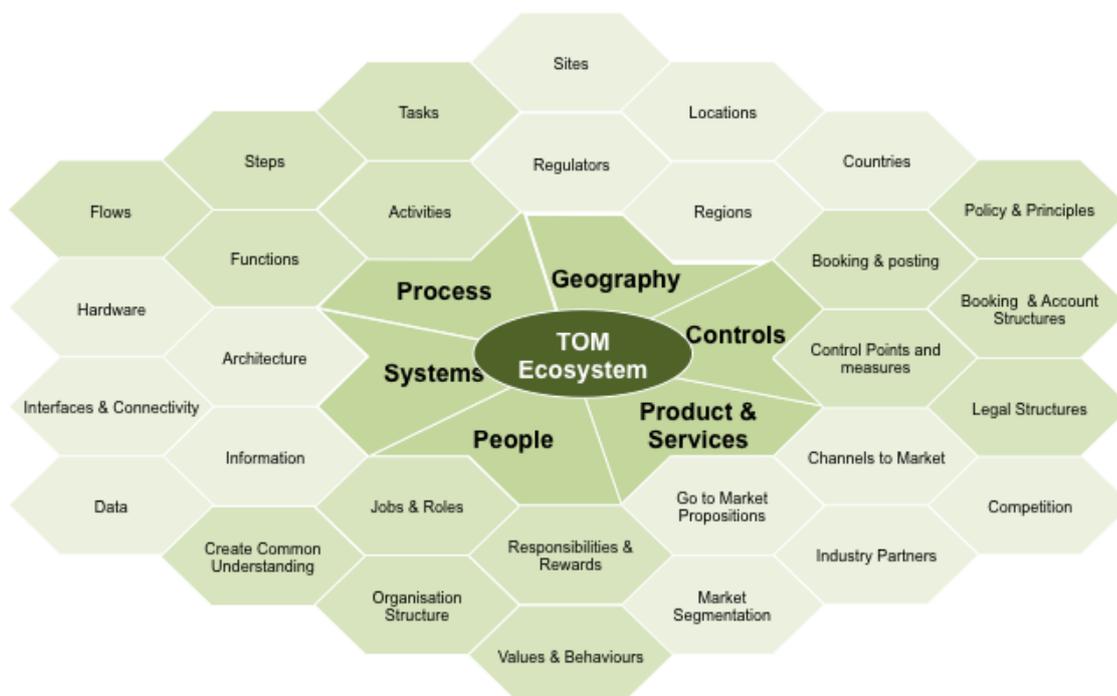
Without a high degree of automation and a strong controls model, operational cost and risk are likely to be unacceptable.

In other words, a global operating model may be required that standardises how business is done across silos, geographies and jurisdictions, reflecting legitimate regional differences.

“Target operating model” is frequently mentioned when firms embark on major investments, but it is often not well understood. At the highest level, a target operating model aligns **people, process** and **technology**.

In our experience, a target operating model specific to synthetic finance must be developed which recognises the 6 key dimensions shown in this schematic, and the sub-components that make up each dimension.

### Target Operating Model Dimensions and Components



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Typically, the creation of a synthetic finance operating model will start by defining end-to-end business processes (such as swap and hedge booking) that will have most impact on the architecture.

Control points are often defined as steps within the processes, and may be preventive (such as a limit or approval) or detective (such as a reconciliation). Whilst it is critical the firm is satisfied with its target control model, unnecessary controls can often introduce cost or delays that add no value to the business.

The business processes will call on a set of functions that most likely should be automated (such as back-dated amendments), but some (such as exception processing and client service) will involve manual work. The functional model also captures critical business rules such as FIFO/LIFO price calculation.

Automated functions resolve naturally into business requirements for communicating with your technology provider, whether in-house or independent software vendor. These will often land in a Business Requirements Document (BRD) or a Request For Proposal (RFP) depending on your technology strategy.



Manual functions should be mapped to roles and responsibilities within organisational units. In this way the target model aligns people and process with technology.

There are many ways to model a synthetic finance business. In this simple representation we have identified 8 core functions, supporting around 20 key business processes.

Functional Operating Model



The challenge many firms face is that though they are experts in their business, they do not often design target operating models. So the approach may not be familiar and they may lack the necessary skills. Thus we find it is often done badly, or never completed because it has taken too long.

A structured process is needed to design the TOM quickly and efficiently, within cost and timescale constraints. There are many ways to meet the challenge, but we have found this 8-step process works pretty well.

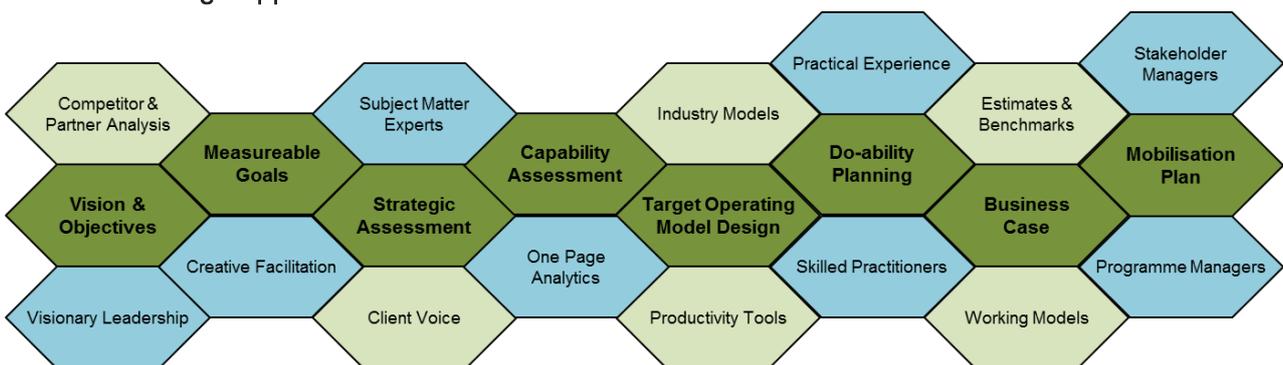
Start by writing down the vision for the synthetic finance business: what is it trying to achieve and how will it measure success? What existing bank capabilities can be re-purposed, perhaps from cash equities or derivatives lines of business?

Draw out the target process, function and controls. Identify the programme building blocks needed to deliver the target state, and develop high level cost and effort estimates, leading to an indicative business case to justify the investment.

In our experience, this can be achieved in about 3-4 months with the right sponsorship and the right skills, supported by relevant templates and tools.

In conclusion, it is perfectly possible to design low-touch efficient infrastructure to support a synthetic finance business. But it is critical to start with the end in mind, and to adopt a structured approach that delivers the TOM design quickly to enable the business to progress rapidly.

### Structured Design Approach

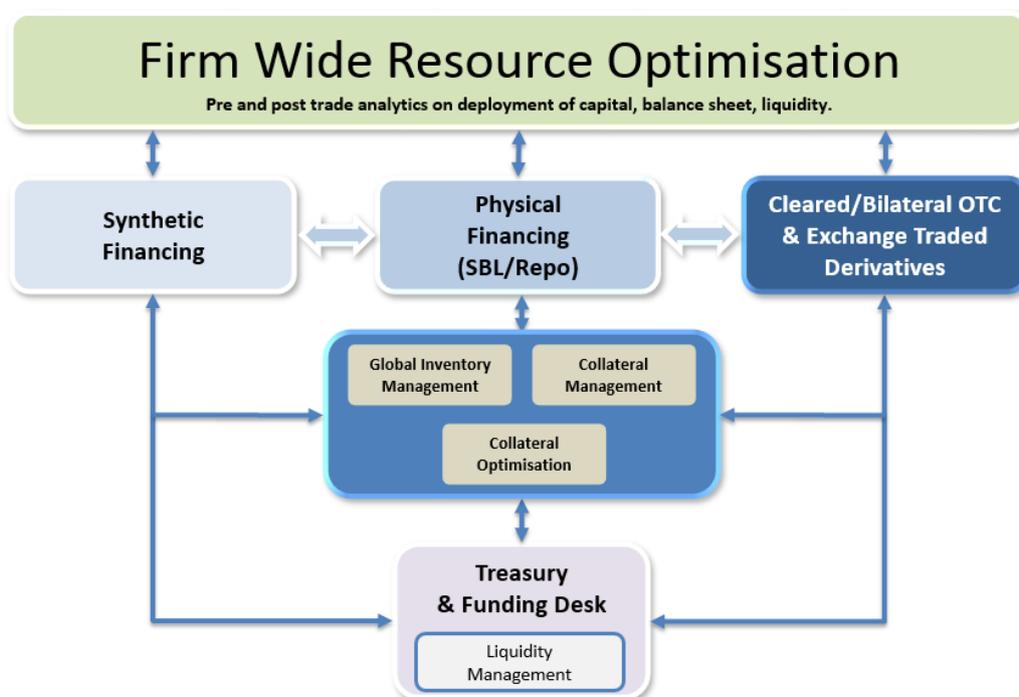


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## Future trends: fully optimised systems and business processes

Many firms have already reached a point where they have achieved a reasonable level of operational efficiency with their Synthetic Finance operating model and technology. However, a number of trends are emerging that may offer ways to further optimise systems and processes.

In recent years, there has been a convergence between different products, business functions and desks. This has seen a more integrated focus on areas such as cross product collateral optimisation and netting, balance sheet usage/capital analysis, liquidity management and internalisation. The diagram below shows one potential configuration of this integrated model.



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A more holistic view of all trading activity with a given client provides opportunities to identify the true costs and benefits of the relationship, based on the resource base consumed by the client. This can result in a more objective allocation of increasingly scarce resources based on concrete data.<sup>9</sup>

However, it also offers a way to identify operational efficiencies for clients, for example around cross-margining and more effective internalisation of longs and shorts. Brokers can then pass these cost savings on to customers, offsetting the increased costs of doing business imposed by Basel III and other rules. This fully optimised model requires an investment in integrated technology systems that offer straight through processing and can take advantage of the synergies between physical and synthetic financing, collateral and liquidity management and central management of the firm's resources.

<sup>9</sup> Hedgeweek (Jan 2015): Prime brokers focus on holistic relationships  
<http://www.hedgeweek.com/2015/01/21/216967/prime-brokers-focus-holistic-relationships>

This operating model looks to:

- Improve the internalisation opportunities from client portfolios
- Reduce funding consumption
- Increase the return on capital and balance sheet

Clear views of global inventory can be extremely useful from the point of view of meeting collateral requirements internally before going to the street. Likewise, integration between the synthetic finance and physical stock loan system can make it easier to rehypothecate client collateral and incorporate the benefits of this into client specific P&L.

Vendors offering a full suite of closely integrated solutions that allow users to take advantage of the synergies discussed above can provide significant efficiency benefits as these areas converge in the future.

### Regulatory View

From a regulatory point of view, the growth in synthetic trades mean there is a threat of greater scrutiny from regulatory bodies. Statements from regulators suggest that if a high volume of financing transactions move to synthetic structures, this may be viewed as banks circumventing the spirit of rules such as Basel III, that were designed to improve systemic stability.

This may result in directives such as mandatory clearing of equity derivatives at some point in the future. See ISDA's recent paper on the topic for a more in depth discussion of this:

<http://www2.isda.org/attachment/NjU1Ng==/Central%20clearing%20in%20the%20EQD%20market%20FINAL.pdf>

The Financial Stability Board (FSB) has also alluded to synthetic trade types in its consultations on trade reporting of Securities Finance transactions. The FSB indicated it may propose additional data elements to address "transactions that are economically equivalent to repos, securities lending transactions or margin transactions".

Whether this would encompass equity derivatives is not yet clear. However, if there is a large increase in synthetic trades this may raise eyebrows and result in a push from the regulator for greater transparency.

At present though, the Synthetic Finance space looks like an area that will continue to experience growth as the more demanding trading landscape in the post-crisis world continues to take shape.



## Conclusion

The synthetic equity derivatives market shows strong growth potential due to the pressures financial institutions are now facing. This will provide opportunities for both incumbent firms and new entrants to the market who had previously not had the capability or desire to offer prime brokerage services to win business from incumbents.

Some of these entrants may even emerge from the buy side as non-banks meet the gap left by existing sell side brokers due to regulatory constraints.

Increases in trading volumes, operational inefficiencies and the complexity of the equity derivatives lifecycle mean technology will become a key differentiator as firms look to win market share while maintaining profitability.

Firms should seek to implement a holistic target operating model that optimises the deployment of scarce resources and maximises synergies across product types. This approach looks to increase return on capital and balance sheet while reducing funding consumption and provides a deeper analysis of client profitability across all business lines.



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Whitepaper: Future Trends in Optimisation

<http://www.4sight.com/products/4sight-collateral-management/collateral-optimization/future-trends-in-optimisation-whitepaper>



## About 4sight Financial Software

4sight Financial Software is an independent software solutions provider with nineteen years of experience and offices and clients worldwide. 4sight's customer base includes a full spectrum of buy and sell side market participants, from smaller banks and asset managers through to global broker dealers.

Clients in sixteen countries on four continents use 4sight's software to meet their business needs and 4sight offers the reliability and experience of a company with a proven track-record.

The 4sight's Swaps system is a user-friendly solution for managing the complete equity derivatives lifecycle. It offers Prime Brokers running Synthetic Finance desks a front to back office solution for swap transactions including Contracts for Difference (CFDs), Total Return Swaps (TRS) and Portfolio Swaps.

In addition to software development, 4sight provides project management, consultancy services and customer support through its global network of offices.

For further details, please visit: [www.4sight.com](http://www.4sight.com)

## About The Field Effect

The Field Effect is a boutique consultancy specialising in clearing and collateral management spanning cleared and uncleared OTC Derivatives and Exchange Traded Derivatives.

TFE provides advisory services to every participant in the industry value chain, including buy-side and sell-side firms, clearing houses, custodians and CSDs.

The Field Effect's services include:

- business vision and strategy
- "voice of client" analysis
- target operating model design
- business requirements definition
- vendor RFP and selection (service and technology providers)
- system implementation
- programme governance and PMO

For further details, please visit [thefieldeffect.co.uk](http://thefieldeffect.co.uk)

