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WHITEPAPER

Product Control:

An Important Lever of Sustainability for Investment Banks

Introduction

With the evolution of financial markets and instruments, there is a need for investment banks (IBs) to have a control mechanism when it comes to operational risk. IBs have traditionally been the manufacturers of sophisticated financial products. The valuation of these products and the Profit & Loss (P&L) because of a change in positions or prices need to be explained to various stakeholders and functional groups within the banks who partake in the manufacture, sale, and calculation of portfolio risks.

IBs need a specialized group of people with the understanding of accounting, risks and financial reporting who needs to operate under a specialized Function.

For the purpose of dissemination, substantiating and explaining the P&L, and to call out the risks beforehand to various interfacing functions (risk, finance etc.), Product Control as a function is institutionalized in majority of IBs, and this role forms an integral part within this group.

The foregoing discussion is to make the finance community erudite about this Product Control function, the importance of it, how it helps banks in capturing operational risk, the specialization it offers and the 'control' atmosphere that it inculcates in an IB. This whitepaper also highlights the over-arching role of a Product Controller and how it acts as a glue to the function as a whole.

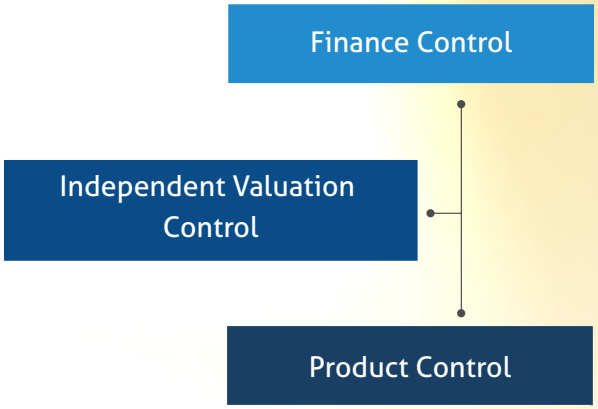
What is Product Control?

Product control is considered a very important middle office function. For investment banks (IBs) that manufacture and re-engineer several financial products, product control is considered the backbone to help control and measure operational risk.

It is a control function responsible for safeguarding the assets of the bank and accurately reporting the daily profit and loss (P&L) figures. This function is responsible for communicating these results within the bank and to regulators – such as the Federal Reserve or the European Central Bank. In some IBs, the product control task is performed by the risk management team.

The collapse of the Lehman Brothers in 2008, due to inefficient or lackluster product control, highlighted the need for an efficient Product Control process in IBs - leading to product control carving out a niche for itself.

How the Product Control function fits in the organizational structure in an IB



Product Control - Industry Trends

Investment banks institute the product control framework in a variety of ways to capture operational risk. Most major IBs have institutionalized this and hired specialists to create the framework for better control on the products and their impact on a firm's balance sheet.

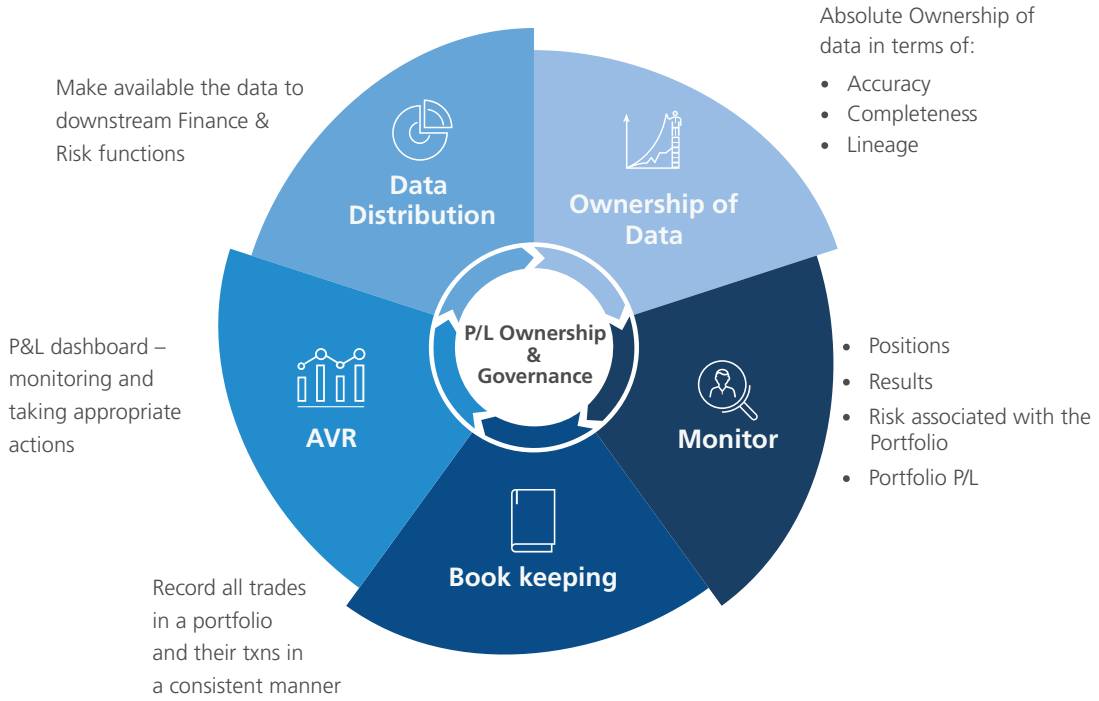
A few IBs do this through a packaged solution while some harmonize the risk functions as per asset class Line of Business (LOB) There are others who embed product control into their treasury function.

Recent trends amongst IBs indicate that the organization of the product control function has evolved into common models.

The ‘One-Umbrella’ model vs. de-coupled model

- In the **‘One Umbrella’** model, all the core roles, responsibilities & functions of the Product Control Group (PCG) are placed under a single authority, which depending on the construct of an IB, could be the Chief Financial Officer (CFO), Chief Operating Officer (COO) or the Chief Risk Officer (CRO).
- In the **de-coupled** model, all the core roles, responsibilities & functions of the Product Control Group (PCG) are placed as a function under several authorities.
    - The de-coupling can be to promote synergies among Risk, Finance & Product Control functions. For example, for P/L, it can be under the authority of the CRO due to synergies with the monitoring of market risk, while the Balance Sheet, Cash Flow or P&L sign-offs can be under the authority of the CFO.
    - Again, de-coupling can happen due to strategic considerations For example, for the Equity & Equity Derivatives business line, the PCG can be under the authority of COO, while for the Fixed Income business line, it can be under the authority of CRO.
    - Another reason for de-coupling can be the will to promote autonomy - essentially, providing independence to the PCG team and avoiding conflict of interest.

Product Control Function & Activities



A typical day for a Product Controller:

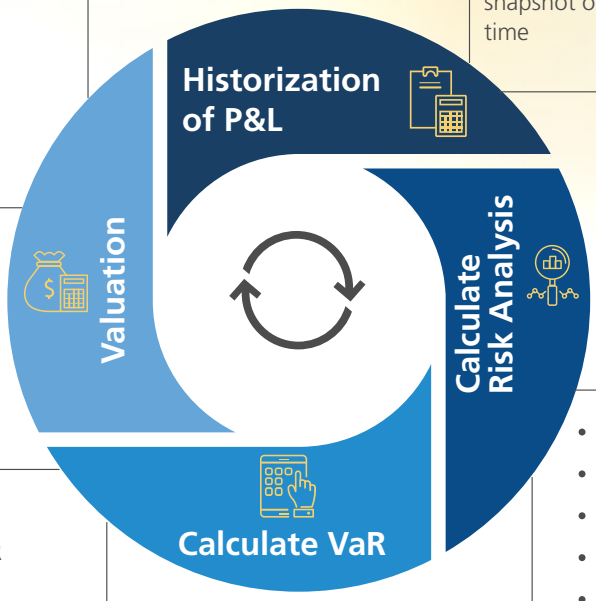
The product controller and team report T+1 Trading P&L for all the regions across various asset classes. The primary responsibility of a product controller is to produce P&L for the trading desk, substantiate the P&L numbers, explain the P&L to both the traders and onshore regional controllers and ensure that they maintain a 'control' environment.

Product Control Landscape

Daily Valuation (P&L)

- Economic Fair Value P&L - Official Valuation, validated by Product Control Group
- Trading P&L or Flash P&L - Valuation used by each desk to calculate their daily P&L
- Private P&L - Valuation to test the parameters

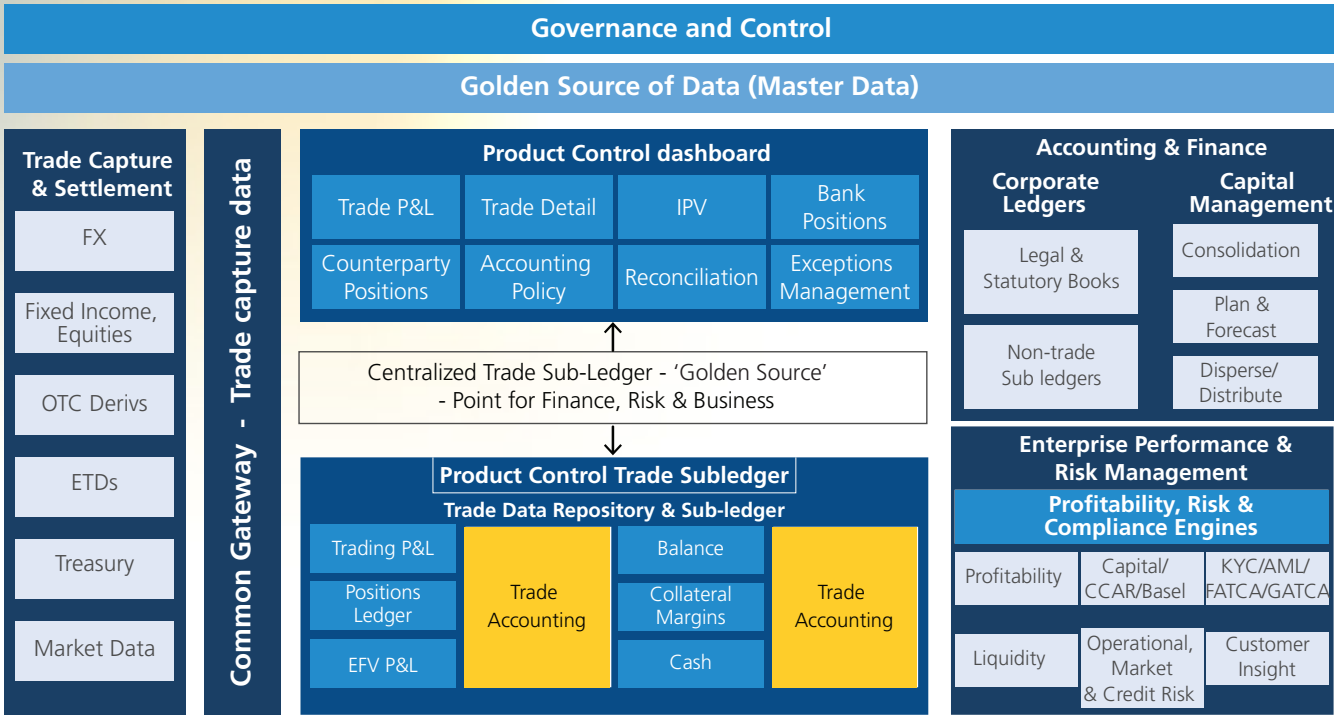
Portfolios are historized daily to get a snapshot of valuation at that point of time



- Historical VaR
- Variance-Co-variance VaR
- Monte Carlo Simulation

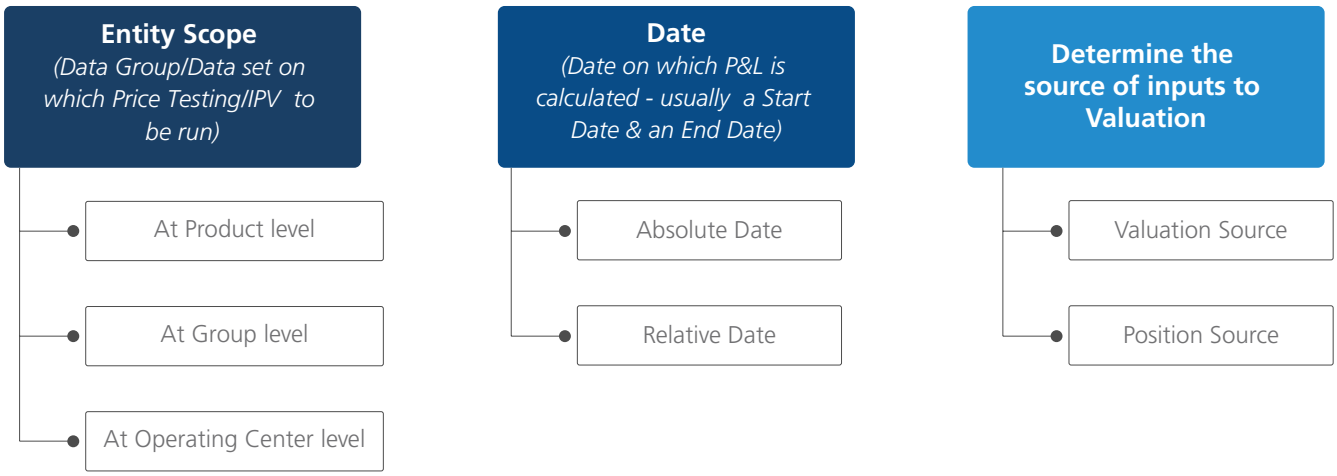
- Internal Risks
- External Risks
- Execution Risks
- Brand & Reputation Risks
- RWA Summary

Product Control Business architecture



- AML - Anti-money Laundering
- IPV - Independent Price Verification
- FTP - Funds Transfer Pricing
- KYC - Know Your Customer
- ETD - Exchange Traded Derivs
- EFV - Economic Fair Value
- FX - Forex
- OTC - Over the Counter
- FATCA - Foreign Account Tax Compliance Act
- GATCA - Global Account Tax Compliance Act

Launching the Product control process: Pre-requisites



The pre-requisites include:

Determine the Entity Perimeter (Scope)

This is important since the P&L Valuation process (sometimes referred to as 'Price Testing') is done with or run on that set/scope for various dates to find out the difference in P&L and its cause. This process can be run and scoped at product, group, and operating center levels.

Determine the Date

This step is pivotal as the comparison between the P&L of a particular data set (scope) is done between two dates. This runs the P&L process either against absolute or relative dates.

Determine the source of inputs

To carry out a P&L run or re-run, the two important inputs needed include position and valuation sources. Hence, the process must identify the sources from which valuation data and position data are to be considered and used as a 'Golden source'. This would enable an accurate & consistent P&L run.

Key steps in the Product Control function:

Configure the Valuation environment	Configure the Position environment	Comparator	Historization	P&L Explained
• Financial Data Rules • Pricing Rules • Greek Rules	Identify the source from where Positions data will be retrieved	Product Controller can run the Valuation process with different pricing matrix and compare the results	Historize the P&L to enable comparison and analyze the diff. in valuation	Explain the differences in the P&L of two different dates which can be caused by : • Positions effect • Price Effect

The following are the key functions of a product controller, which determine the efficiency of the entire process. These functions are key to the success of a firm in terms of capturing, minimizing, or controlling the operation risk.

Configuration

- Configure the Valuation Environment, which includes:
  - – Financial Data Rules.
  - – Pricing Rules.
  - – Greek Rules.

- Configure the Position environment, which includes:

  – Identifying the sources from where positions data is retrieved.

  – Configure the control on market data based on the need.

Comparison

- The product controller can run the valuation process with different pricing matrices and compare the results.

Historization

- The product control function should create a framework to historize the P&L – to enable comparison and analyze the differences in valuation.

Explanation

- Explain the differences in the P&L of two different dates.
- P&L Attribution – Explain the factors that caused the difference in P&L.

  – Positions effect.

  – Price effect.

An Illustrative Product Control Dashboard - Daily P&L View

Trade vs. Flash P&L mismatch													
		22/07/2021						23/07/2021					
		Flash P&L	Flash MTM	Daily P&L	Daily MTM	P&L Variation	Flash MTM	Flash P&L	Flash MTM	Daily P&L	Daily MTM	P&L Variation	Flash MTM
Eur IRS Total		1000000	1060000	1000000	1040000	0	-20000	1180000	1120000	1180000	1120000	0	0
EUR IRS	Trader A	400000	410000	400000	410000	0	0	300000	320000	300000	320000	0	0
	Trader B	300000	320000	300000	320000	0	0	420000	330000	420000	330000	0	0
	Trader C	300000	330000	300000	310000	0	-20000	460000	470000	460000	470000	0	0
USD IRS Total		1400000	1500000	1400000	1500000	0	0	1320000	1330000	1330000	1410000	10000	80000
	Trader A	200000	220000	200000	220000	0	0	150000	100000	170000	200000	20000	100000
	Trader B	300000	310000	300000	310000	0	0	280000	290000	270000	290000	-10000	0
	Trader D	500000	540000	500000	540000	0	0	470000	500000	490000	510000	20000	10000
	Trader E	400000	430000	400000	430000	0	0	420000	440000	400000	410000	-20000	-30000

Quotes (in %)				
LIBOR				
	1-Month	3-Month	6-Month	9-Month
CHF	0.2	0.25	0.27	0.29
EUR	0.3	0.35	0.39	0.45
USD	0.24	0.27	0.32	0.38

Quick Links
1. Adjustments
2. Operation Status
3. Other Reports
4. Trade Accounting
5. Sign-off Cash Flows
6. Sign-off Positions

Trading Activity Alerts				
Type	Subject	Status	Category	Due Date
1	Adjustment Approval Required	Not Started	Action Required	31/07/21
2	Inter-company breaks Trade # 589767	Not Started	Action Required	31/07/21
3	Trade Limit Violation	Not Started	Action Required	31/07/21

An Illustrative Product Control Dashboard - Operations View

Operations Status - Product Control Feeds						
Source	Today's Volume	Average Volume	Accounted	Accounting Exceptions	GL Transferred	Transfer Exceptions
Murex	1090000	25600000	Yes	0	Yes	10
Calypso	2500980	22500000	Yes	0	Yes	0
Totem	3400500	50000000	Yes	20	Yes	10
ICE	450000	550000	No	200	No	0

Trade Accounting Policy
Maintain Event Model
Update Trade Attributes
Update Source Configuration
Update Financila Data Rules
Update Pricing Rules

Reference Data Maintenance
Map Legal Entity
Map Product
Set Trade Limits
Update Thresholds
Map Business Unit

Close Processing
B/S Sign-off
P&L Sign-off
Run EOD Reports
Cash Flow Sign-off

* B/S - Balance Sheet
* EOD - End of Day
* P&L - Profit & Loss

An Illustrative Product Control POV - 'Drill-down' from Firm to Desk Results.

Total Firm View

Annual Report	
Total Derivs. Contract	$2,50,00,000

Ledger View

Entity	CCY	GL Account	Balance
56	USD	Forward & Options Contracts	$75,00,000
80	USD	Cross-CCY IRS	$89,59,000

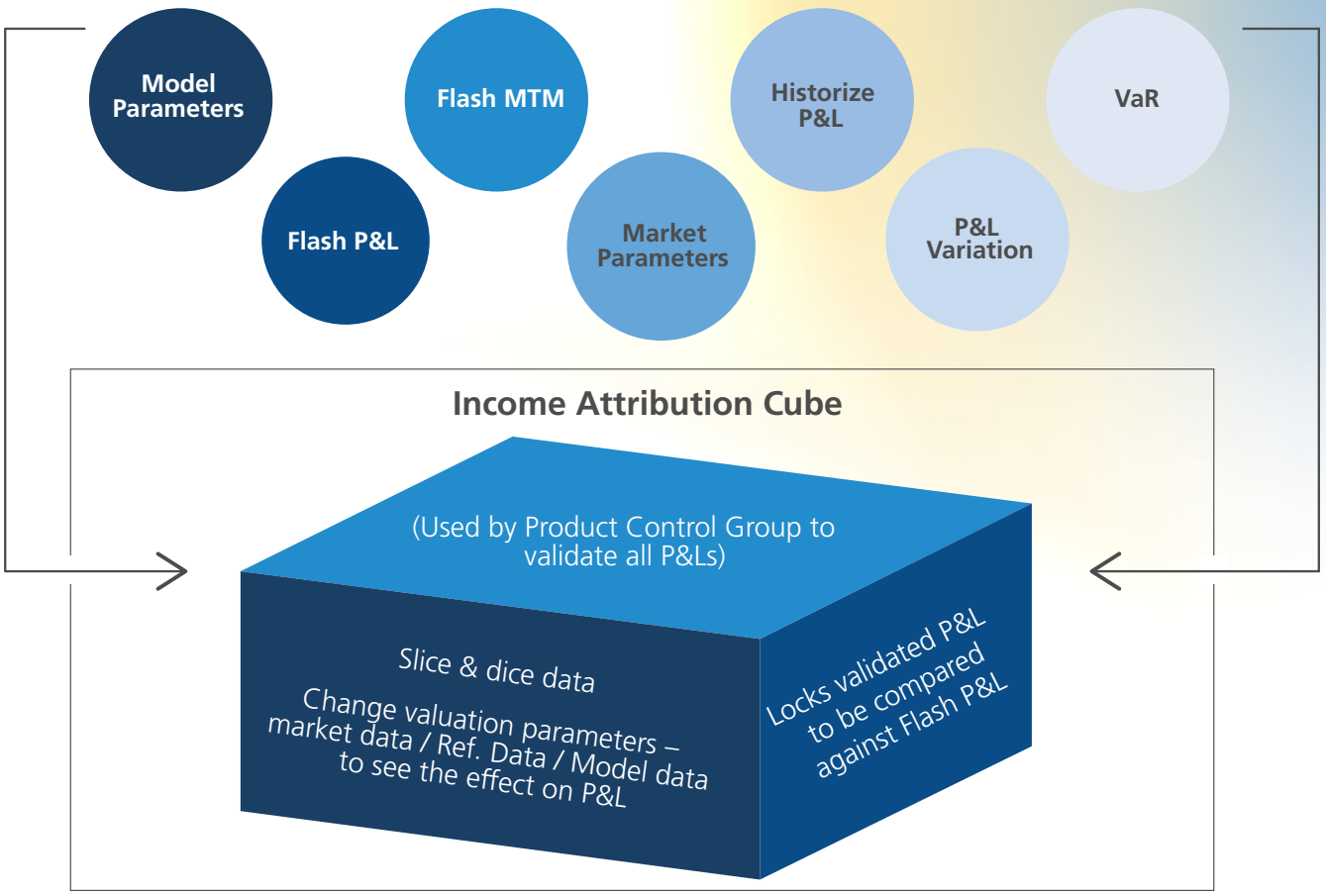
Product Controller View

Desk	Family	Group	Instrument	Counterparty	Balance
150	IRD	CCIRS	USD Libor A 1M	300	$7,80,04,000
230	IRD	CCIRS	EUR Libor A 3M	225	$9,87,65,478

Contract Sub-ledger View

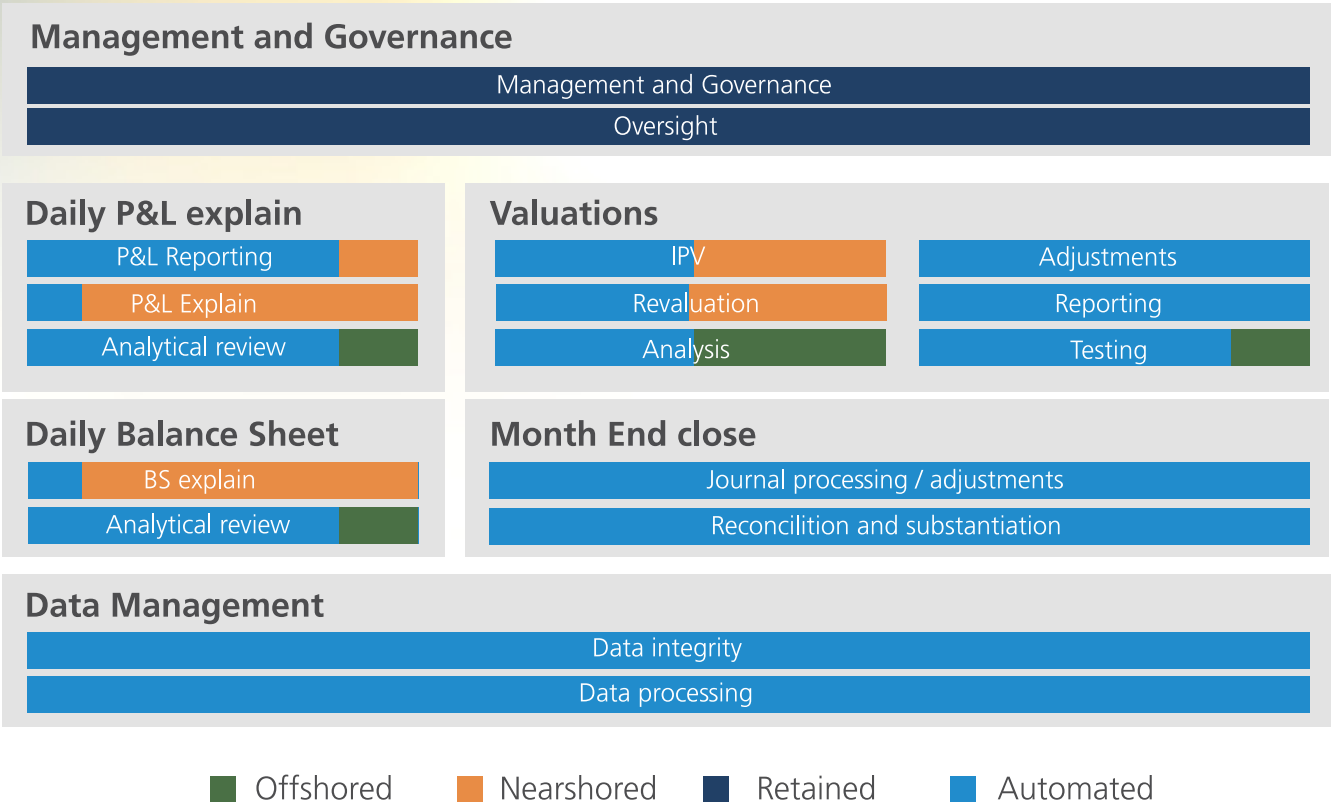
Desk	Trader ID	Contract	Family	Group	Instrument	Counterparty	Date	Value Date	Amount	Debit Account	Credit Account
145	1012	459987	IRD	CCIRS	GBP Libor A 1M	190	01/01/21	02/01/21	$40,00,000	3409876	3456890
145	2012	345675	IRD	CCIRS	GBP Libor A 1M	190	01/01/21	02/01/21	$45,00,500	3409876	3456890

Common verbiages used in the Product Control space



What scope do IT services firms have?

Product Control services - Typical landscape of Sourcing out vs. Retaining



Source KPMG: *The future product control model - KPMG United Kingdom (home.kpmg)*

Scope for IT services firms - By Product Control functions

Data Model

- Using ETL tools to extract data from Target source.
- Ref. Data Testing, Model Data validation, Source to obtain Market Data.
- Establishing Data sourcing policies.

Domain Consultancy

- Pricing/Valuation.
- Establish the rules for Price Testing.
- Using Risk experience, calculate the various Risk measures.
- Implementing Risk Management Tools.
- Parameterization.
- Model Data building.
- Market Data usage/lineage.

Analytics & Automation

- Help with Data Analytics abt the P&L explained.
- Advanced analytics to slice-and-dice data.
- Automation to re-run Price Testing by altering all or some parameters.
- Automation to alter model data in response to Market Data changes.

Creating and maintaining the data model/architecture

- To create interfaces to source the posittions and market data, Establish data sourcing policies.
- Store and update the data.
- Creating access control to the product controller to set up rules against these data.
- Reference data testing, model data validation.

Domain Consultancy

- **Pricing/Valuation**
  - Establishing the rules for price testing.
  - Using risk experience and calculate the various measures.
  - Implementing a Risk Management Framework.
- **Parameterization/Modelling**
  - Model data framework building.
  - Market data usage/lineage.
  - Intelligent use of parameters in model building.

Analytics and Automation

- Help with data analytics about the P&L.
- Advanced analytics to slice and dice data - Income attribution cube.
- Automation to re-run price testing by altering all or some parameters.

Conclusion

In this whitepaper, we have tried to give the audience a brief of the Product Control function, how it is organized, the landscape, and the key steps.

We also highlighted the scope for IT service providers while IBs want to leverage on the 'best-fit' engagement model. IT service providers, with their innovative offerings especially in the areas of automation and advanced analytics with domain consulting, stand a good chance to offer or partner with IBs.

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Subhodip is a Senior Director Consulting with the Banking and Financial Services Center of Excellence, LTIMindtree, and and is primarily responsible for Governance, Risk & Compliance and Investment Banking areas in BFS Consulting @ LTIMindtree

Subhodip is a CFA, has a MS (Finance) degree, and is a skilled Capital Market & Investment Banking professional with close to 21 years of industry experience, with rich experience in working with major investments banks across the US & Europe. He has deep domain experience across Regulatory Reporting, Risk, Market Infrastructure & CoTS product implementation, with interest in middle officeapplications,pr ocesses, and functions. The author was part of Product Control implementation with three prominent European IBs over a period of eight years. His current focus includes solutioning, thought leadership and consulting.