

The Importance of Price Curve Management In A More Regulated Commodity Trading Environment



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INTRODUCTION

In an era of significantly tighter regulation and oversight of commodity markets, forward price curves have taken on a whole new level of importance. Internal and external auditors, as well as regulators, want to be certain that the valuations used to build up financial statements are irrefutable and truly represent fair value based on reliable data. Indeed, several of the regulations now in force also call for increased and better documented risk management processes, including mark-to-market and profit and loss calculations.

Increasingly, funding banks and shareholders also desire increased transparency into risk management for assurances and forward price curves are central to that function. No matter how good the risk management systems are, it is the data that they utilize that is key to good risk management, and market pricing is a key ingredient in that data. Furthermore, the forward curve requirements don't just impact commodity trading and hedging operations, but also the treasury function.

In a previous paper¹, Commodity Technology Advisory defined forward curves and looked at their uses and the source of the forward curve data in some detail. In essence, forward curves have three major uses:

- 1/** Financial statements – companies use forward curves as inputs to derivative valuation models in order to calculate the fair value of commodity in-

ventories or financial instruments that are carried on the balance sheet (IFRS 13 and ASC 820).

- 2/** Asset Valuation – curves can be used to provide an asset holder with an estimate of an asset's current and future value.
- 3/** Risk Management and Reporting – a variety of forward curve types will be used as a part of the process of calculating risk metrics.

Indeed, given the above, it is fairly easy to begin to understand that the forward curve is both a central and critical piece of data used at the heart of all commodity-trading firms and across a number of different areas of the business. A basic question then, often asked by auditors and others, both internal and external, is how are the forward curves derived and maintained?

1) Managing Forward Curves in A Complex Market, ComTech Advisory White Paper, 2015

DEMANDS FOR CURVES

Only rarely will sources provide complete and accurate forward curves that suit the precise purposes of a market participant. Although external data aggregators can and do provide a variety of pricing data, these prices will typically come from many sources of variable quality and reliability, thus internally derived curves must be used quite frequently. This may be as a result of incomplete published curves, the absence of a liquid market, the lack of reliable sources for prices, or the desire to use a proprietary model on a particular pricing algorithm. In these cases, the onus is on the user of such derived price curves to be able to demonstrate how the price curve has been constructed for audit and other purposes.

Curves can be derived in any number of ways, for example, based upon a nearby liquid market price as a spread, or they may be based on a pricing formula referencing multiple differing liquid prices. In many scenarios, the source data might be provided in different units of measure, or currencies, to that which is required. There is room for error in manipulating price data for unit of measure or currency conversions; therefore, automation of such transformations via rules-based instructions is preferred. Whichever way the price curve is derived, the auditor will need to be able to review the construction methodology, as well as see the actual underlying values and calculation of how each price on the curve was derived.

For full audit capability, it isn't just the source prices that need to be maintained along with historical versioning and correction tracking, but also the resulting price curves. Serious issues can arise when updated prices are available for

a price curve. In effect, after the source price is updated, the derived curve must then be updated, while a historical version of the curve needs to also be maintained in order to allow reproducibility of calculations such as profit and loss or mark-to-market calculations in the past. In order to assure that there is no operator or human error in the process, the price curve should be updated automatically, at the time the updated price becomes available.

Finally, there are many versions of curves used for a variety of different purposes such as asset valuation, transfer pricing, mark-to-market, value-at-risk and so on. Each of these needs to be maintained with a complete and full history, and the result can be an explosion of forward curve data that needs to be managed with an enterprise strength approach. Furthermore, it is appropriate to restrict the access of different user types through some form of security system.

WHAT IS REQUIRED?

In many companies, much of the basic work around price curves is performed in spreadsheets. Many E/CTRM solutions actually lack basic curve functionality and pre-suppose that price data, including curves, will be brought in and stored for later use. They lack any ability to derive curves, track changes, monitor reasons for changes and audit such changes. As a result of increased regulatory oversight, commodity-trading firms now need a significantly more robust and auditable solution for forward curve management. This solution should provide:

- 1/** The ability to define an automated methodology to create forward curves from specified source data, using a simple or complex formulation.
- 2/** The automated recording of all calculations used within the process of curve creation with a complete audit trail.
- 3/** The long term storage of all source data along with the resulting curves, including versioning of those curves, with the ability to easily access that data on demand.
- 4/** Testing of curve methodology. Prior to promoting a curve methodology definition to production status, the ability to thoroughly test all the scenarios that a rule-based framework requires to operate effectively. This would provide the confidence required for downstream system capture, data integrity and documented proof to any internal or external oversight.
- 5/** A rules-based approach which would allow adjustments for units of measurement and currency conversions along with other manipulations.
- 6/** A rules-based approach which would also provide fallback scenarios in cases where a price is missing or unavailable for a period of time. Should the previous price be used or should some other temporary derived price fixing mechanism be used. Again, as more reliable prices came in, the old price curve would be maintained.
- 7/** Storage for all curves able to be manipulated and the results of those manipulations. The manipulations might be used for stress testing or another reason, but it is important to have a complete audit trail of prices, price curves and reasons for changes.
- 8/** Flexibility. It should be relatively easy to set up derived curves that are formula-based with a good deal of flexibility. These may be used for pricing or as valuation tools and each needs to be subject to all the rigors outlined above.
- 9/** Security of access. The auditor will want assurances that access to curves for editing is limited to those responsible.
- 10/** The ability to visualize the curve and manipulate it within the context of a visualization tool is also a nice to have feature.

With an increased demand from inside and outside auditors, regulators and stakeholders for this kind of rigor around prices and forward curves, the time has definitely arrived for comprehensive, robust and flexible solution that meets all of the above criteria. The risk to the business of not being able to demonstrate this level of completeness around prices and forward curves are simply now too great and could threaten lines of credit, equity value and stakeholder sentiment, the profitability of the business and more importantly, its reputation and brand.

DATAGENIC

A COMPREHENSIVE SOLUTION

There is no substitute for a purpose-built application that addresses the specific requirements relating to forward curves, their construction, storage and integration with target systems. Having the correct agile data management platform in place allows the full complement of services to be harnessed during the curve build and management processes (for instance, validation, business process management, data and process dashboard, etc.). Additionally, the curve building application needs to be highly configurable to account for the many input parameters and rich metadata information that are used in the build process and curve management. Examples include the curve methodology, the source data sets and the fair value hierarchy.

DataGenic is a leading provider of software and services in the commodity data management arena including that of forward curve management. It has spent a considerable amount of time and expertise in developing these tools in order to offer a comprehensive, flexible, transparent and auditable solution that can also integrate with the E/CTRM solution of your choice.

DataGenic provides an agile data management structure, the associated processes and controls, the curve building application and framework to provide for the structured management of all curves and curve building methodologies while allowing flexibility to change and adapt the curve construction. Its solutions meet the criteria outlined above while offering many significant advantages and benefits over other solutions including:

- / Standardized Logic – Rule formation is standardized providing the ability to ensure that standards are devised, used and defensible as opposed to writing applications with no standards or with no transparency into the standards used.
- / Ease of Use – The rules can be written in a 'natural' language such as English making it both easy to use and to understand and defend.
- / Centralized Knowledge Base – All the rules and libraries are server based so they are accessible and usable by anyone (they are also automatically kept up to date with the latest versions) in and outside of the enterprise.
- / Transparency – The use of a rules-based system

allows users to break problems down into distinct conditions making the logic used more precise, reliable and understandable to other people such as auditors, regulators and stakeholders.

- / Mitigation of Key Person Dependency – The centralized, automated and server based curve construction mitigates the risk of the over reliance on people-based operations, which include concentrated knowledge, sickness, holidays, and attrition.
- / Collaborative – Curve building logic does not need to be dealt with in isolation – many people across the enterprise can contribute to the library.

DataGenic's Genic CurveBuilder is a purpose-built application that fully utilizes artificial intelligence and helps to remove the complexity of building curves and allow unlimited flexibility while delivering full transparency. While many still utilize undocumented and uncontrolled spreadsheets or 'black box' programs that don't allow visibility, Genic CurveBuilder provides the kind of a comprehensive solution needed to meet the demands of the current regulatory environment.

The application supports an unlimited number of curves, curve histories, curve interdependencies and curve complexities (combined with curve versioning, curve testing and roll-back). Curve generation is completely automated and fully logged, driven by an event (e.g. data update) or time scheduled. It also supports any asset class meaning it can handle the needs of the treasury department and any curve construction

methodology. In combination with other products and services delivered by DataGenic, it meets all of the above requirements and includes comprehensive workflow, data versioning and corrections reporting. DataGenic is also a data aggregator offering over 400 data feeds to its clients. In fact, Data-

Genic has built and delivers a suite of applications that handle everything related to data management from cleansing and validation of data to powerful charting and visualization tools to examine and drill down into that data.

SUMMARY

Commodities trading businesses are extremely complex and are increasingly subject to regulation, transparency and reporting. Funding banks and outside investors are increasingly aware of both the compliance issues and of the risk posed by trading, buying or selling physical commodities and commodities futures. Increasingly, they demand and expect that risk is well managed and that the data utilized by the risk systems is verifiable, defensible and trustworthy.

Price data and forward curves are a key and central component in this new era of compliance and transparency and all trading firms now need to ensure that they have a comprehensive, explainable and defensible approach to gathering, calculating and maintaining this critical information, underpinning their transactions and valuations.

Under such circumstances, a robust and fully transparent data and curve management application architecture is no longer a luxury option, but rather a base requirement. Under such circumstances, a robust and fully transparent data and curve management capability, such as that provided by DataGenic's CurveBuilder product, has become a necessity for those trading organizations that find themselves increasingly under the microscopes of regulators, stakeholders and financiers.

ABOUT DATAGENIC LTD

DataGenic is the leading global provider of on-premise and in-cloud Smart Commodity Data Management software, delivering intelligent analytics, real-time data content and proven business value.

The innovative solutions include a data-agnostic multi-commodity data management platform, visual mapping and management of business processes, extensive and extensible data quality management, unlimited forward curves construction and an intelligent decision framework. DataGenic customers include participants in the energy, metals, minerals, chemicals, agriculture, shipping and food and beverage industries.

DataGenic operates in Europe, Asia and the Americas.

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ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the ETRM and CTRM markets. We provide the invaluable insights into the issues and trends affecting the users and providers of the technologies that are crucial for success in the constantly evolving global commodities markets.

Patrick Reames and Gary Vasey head our team, whose combined 60-plus years in the energy and commodities markets, provides depth of understanding of the market and its issues that is unmatched and unrivaled by any analyst group.

For more information, please visit:

www.comtechadvisory.com

ComTech Advisory also hosts the CTRMCenter, your online portal with news and views about commodity markets and technology as well as a comprehensive online directory of software and services providers.

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