Transfer pricing analytics: The exploitation of Big Data and emerging technologies in transfer pricing

Transfer pricing analytics: The exploitation of Big Data and emerging technologies in transfer pricing

Though it may sound like a cliché, most of us have heard various business leaders talk about data as the "new oil," the "new currency," and make similar statements about the overall impact of data and analytics. We live in a world that is increasingly impacted by data. Every aspect of our lives – from the sports we watch to the way we shop to the daily advertisements we see – is impacted by enhanced computing power and improved analytical tools. These technological advances have given us the ability to quickly analyse data sets that were previously too large or complex to handle without the use of a supercomputer and many hundreds of man hours. The emergence of Big Data is disrupting our current way of thinking, causing us to re-examine everything we thought we knew. Transfer pricing is no different than any other business process; however, it is in a better position to leverage rich and unique data sets to provide business insights.

Our discipline is at the core of the information collection process, including transactional data, legal entity company information, benchmarking data, legal settlements and other sources of information impacting intercompany pricing. These data sets exist across a variety of sources and systems. The ability to capture and analyse data is transforming

every aspect of the transfer pricing life cycle, from strategy and planning to price setting, maintenance, documentation, and even dispute resolution. In addition, new technologies that allow for data management, analysis, and visualization are being developed and released at a staggering pace. This rapid progression of technology is finally helping to move data analysis closer to the artificial intelligence objectives set by technologists thirty years ago.

Data analytics is a very broad concept that includes various angles and objectives that can be achieved in the world of transfer pricing. The first and most common application of Big Data can be labelled as **descriptive analytics**. It consists of analysing large data sets to derive trends and patterns from a descriptive standpoint. In the transfer pricing world, this may serve multiple purposes and provide a large variety of insights to the tax payer, including but not limited to:

1. providing a clear and compelling overview of financial results across regions, jurisdictions, legal entities, business units, or stock keeping units (SKUs);

2. facilitating the tracking of transfer pricing policy implementation results;

3. measuring the successful achievement of any potentially relevant metrics or KPIs; and

4. identifying, bucketing, and packaging information in a manner that improves and supports the decision-making process.

In sum, descriptive analytics allows for improving and deepening the understanding of certain information that is routinely gathered but usually buried into infinite amounts of quantitative data and sorted into large Excel files.
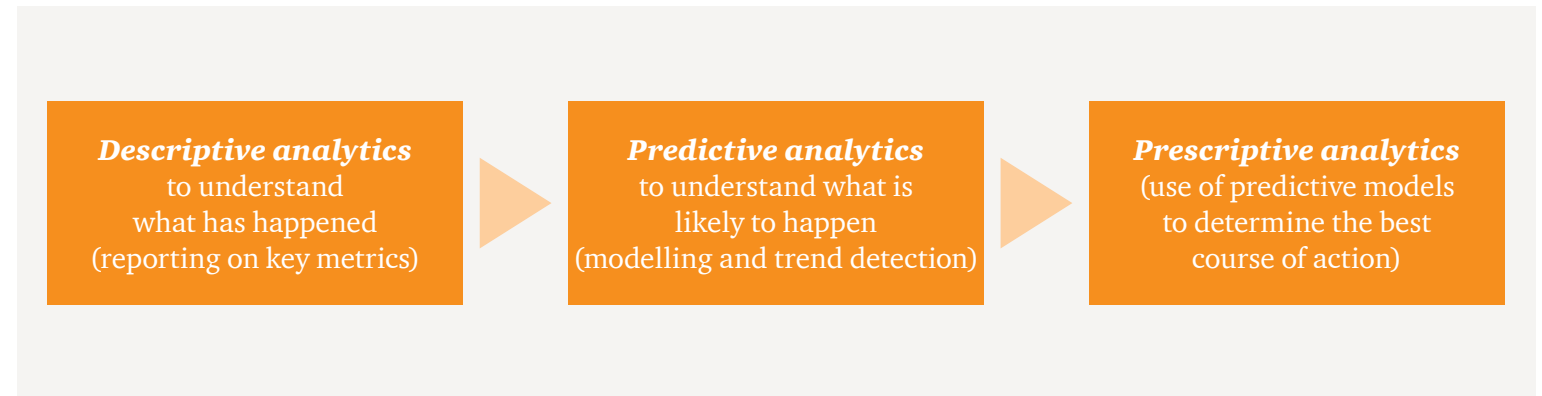

The emergence of Big Data is disrupting our current way of thinking, causing us to re-examine everything we thought we knew.

Transfer pricing analytics: The exploitation of Big Data and emerging technologies in transfer pricing

Although descriptive analytics has been around for decades, new technological solutions – centred around data visualisation tools such as Tableau, Qlickview, PowerBI (to name a few) as well as data computation tools and database management software – allow us to significantly expand the amount of data we analyse and efficiently grow data analytics to include a predictive and prescriptive angle.

Predictive analytics is the use of data and analytics to provide insights into the potential outcomes of various what-if scenarios and hypotheses. This analysis of historical trends and patterns to anticipate and predict the future allows for a more efficient and impactful decision-making process. Finally, prescriptive analytics utilises the power of data management, visualisation tools, and artificial intelligence solutions not only to analyse data at a deeper level but also to further assist the user (and, to some extent, replace it) in the articulation of approaches and policies designed to achieve a specific outcome.

Our Transfer Pricing Analytics practice understands the importance of data and analytics for solving traditional and emerging transfer pricing issues. Our practice has been developed on the premise that focusing on technical excellence is no longer enough to be a differentiated

Descriptive analytics to understand what has happened (reporting on key metrics)	*Predictive analytics* to understand what is likely to happen (modelling and trend detection)	*Prescriptive analytics* (use of predictive models to determine the best course of action)

adviser. Our clients expect us to deliver end-to-end assistance, from strategy through to execution. By leveraging data analytics and visualisation tools we can provide clients with tailor-made solutions and transactional insights to secure the monitoring and implementation of transfer pricing policies. We can also generate valuable information that improves the strategic decision-making process and facilitates the reduction of risks going forward. These benefits may be achieved holistically or at a specific level of the transitional data life-cycle, defined as follows:

1. **Data extraction:** Within most organisations, data is manually gathered from disparate sources and cannot be analysed cohesively. Via Extract, Transform and Load (ETL) tools, data can be pulled automatically

from source systems and stored centrally for efficient use.

2. **Data storage and basic manipulation:** Excel is the predominant tool leveraged for storing, calculating, and analysing tax data, which can be effective but is often time consuming to maintain and review. Adding data and analytics solutions (e.g., SQL, Alteryx, PowerPivot) to the current Excel environment can augment the potential for automation (and reduce time and level of effort).

3. **Complex data computation:** Updating and reviewing calculations in complex Excel models can be time consuming and adds risk of error to the process. Data analytic tools (e.g., SQL, Alteryx, PowerPivot) can bolt onto existing Excel models, or replace the use of Excel all together, to increase the scalability of
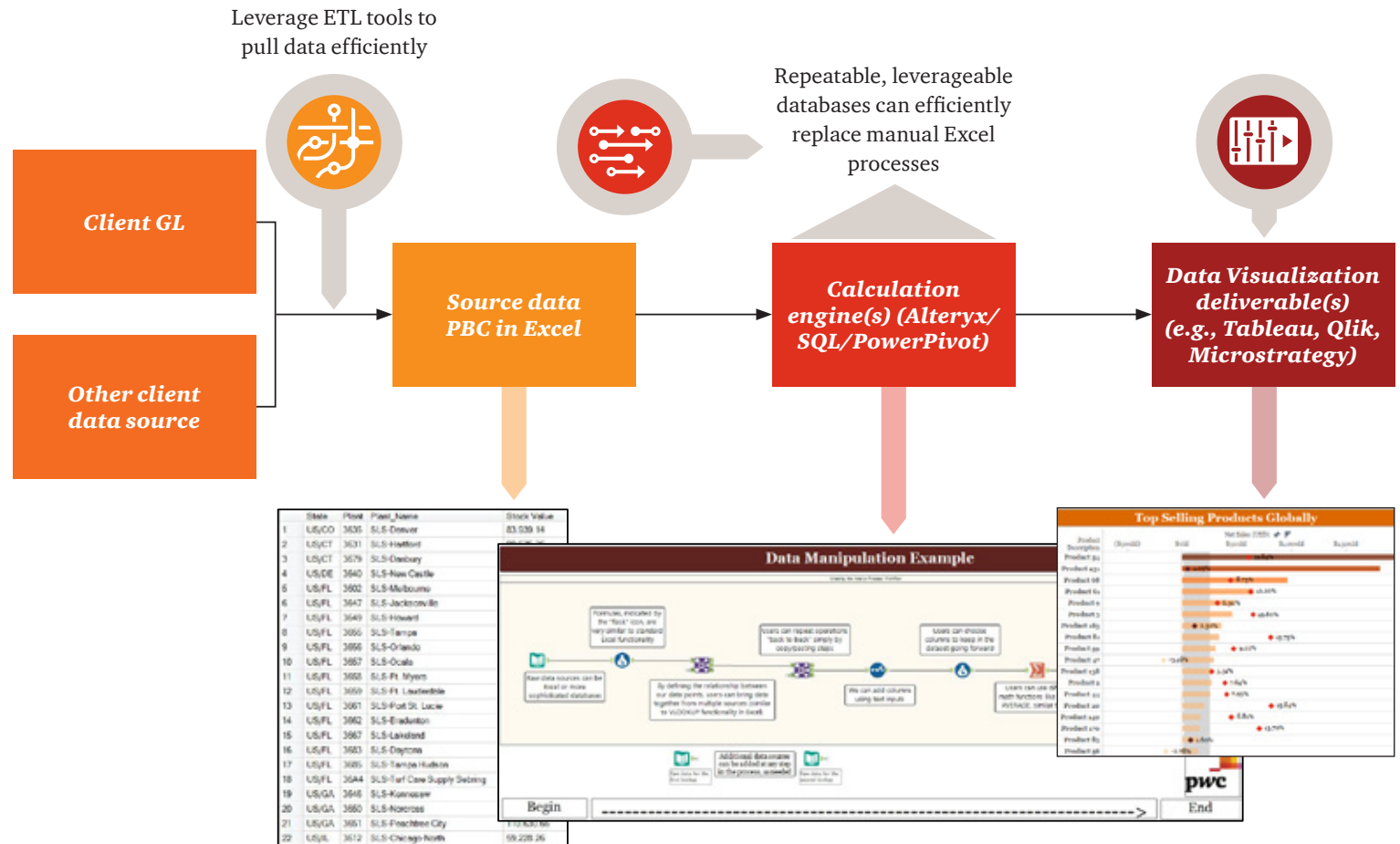
complex calculations (e.g., across legal entities, business units, consolidated groups) and mitigate overall risk via greater control.

4. **Data visualisation and dynamic modelling:** Tax calculation results are highly aggregated and documented in static reports (e.g., PowerPoint, Word), requiring these deliverables to be manually updated each time data is refreshed and minimising end-user functionality to dynamically interact with reported data. Visualisation solutions (e.g., Tableau, MicroStrategy, Qlikview, etc.) are leveraged and tack directly onto the calculation engine(s) (e.g., SQL, Alteryx, Excel) to create web and mobile-enabled dynamic dashboards and to provide enhanced data insights, enabling end users to efficiently make strategic business decisions.

Transfer pricing analytics: The exploitation of Big Data and emerging technologies in transfer pricing

As shown in the table below, our solutions span over the entire data life-cycle. With capacity and technological solutions from data extraction to data visualisation, our approach allows for enhanced customisations of tailored-made solutions, based on the very specific needs of clients across industries. This is a clear competitive advantage in a space where solutions usually tend to focus on standardised output, and seldom sufficiently takes into consideration the client's capacity to maintain sustainable back-end solutions.

Sample process flow leveraging data analytics and visualisation technologies

Leverage ETL tools to pull data efficiently

Repeatable, leverageable databases can efficiently replace manual Excel processes

Client GL

Other client data source

Source data PBC in Excel

Calculation engine(s) (Alteryx/ SQL/PowerPivot)

Data Visualization deliverable(s) (e.g., Tableau, Qlik, Microstrategy)

ETL = Extract, transform and load GL = General ledger PBC = Prepared by client

Transfer pricing analytics: The exploitation of Big Data and emerging technologies in transfer pricing

The positioning of transfer pricing analytics within our global transfer pricing service offering and the larger cross-service environment is key in understanding the full potential of such an initiative. Composed of a cross-functional team of tax and advisory professionals, transfer pricing analytics is a unique approach currently unmatched in the market. It can be viewed as a stand-alone service offering, an ad-hoc value-add contribution, or as an innovative way of delivering work product, as well as a cross-functional discipline aimed at facilitating the collaboration between tax and business stakeholders to produce unique and valuable insights. Currently, every sub-specialty in our transfer pricing global service offering is impacted by transfer pricing analytics (i.e., the data gathering process can be expanded and analysed) and may benefit from transfer pricing analytics. For example, data can be properly mined and analysed to leverage predictive analytics in the context of a transfer pricing dispute resolution. Clearly, transfer pricing analytics is at the core of today's transfer pricing challenges and opportunities, and the variety of solutions delivered to clients to date further reinforces this statement. In fact, we have already developed highly performing tools in the following areas (and continues to create innovative tools for re-shaping the transfer pricing service offering):

- **Legal entity output:** end-to-end solution for the development of legal entity results based on aggregated general ledger for compliance, planning, and modelling purposes.

- **Country by country reporting (CbCR):** end-to-end solution to comply, analyse, and prescribe change in the CbCR environment, from data extraction to dynamic visualisation.

- **Margin analyser:** dynamic data visualisation solution to review, monitor, and correct operating margins for legal entity to SKU-related profitability levels based on third-party benchmarks.

- **Scenario analysis:** data computation engine and dynamic modelling output solution for realtime comparison of planning scenario.

- **Financial transaction / 385:** end-to-end solution for treasury departments with respect to intercompany financing transaction in the Prop. Regs. Section 385 context.

Our global Transfer Pricing Analytics initiative comprises a core team of professionals in the United States and key regions around the world. In addition to transfer pricing experience, the team has expertise in statistics, data science, programming, and artificial intelligence. The exploitation of Big Data to enhance the depth of our transfer pricing services is anticipated to disrupt our traditional service offering for the benefit of our clients throughout the network. Tax authorities in many jurisdictions are already beginning to use data analytics in their assessment of transfer pricing. The emergence of country by country reporting disclosures will only create more data to potentially be analysed. Therefore, we will lead this trend by bringing innovative and client-customised solutions to the market in order to harness the computing power available to businesses.

Tax authorities in many jurisdictions are already beginning to use data analytics in their assessment of transfer pricing. The emergence of country by country reporting disclosures will only create more data to potentially be analysed.

Authors

👤 **Horacio Pena**

🌐 PwC US

☎ +1 646 471 1957

✉ horacio.pena@us.pwc.com

👤 **Brian T. Burt**

🌐 PwC US

☎ +1 646 471 8386

✉ brian.burt@us.pwc.com

👤 **Laurent Bellay**

🌐 PwC US

☎ +1 646 471 3906

✉ laurent.bellay@us.pwc.com