



# Going beyond the data - indirect tax

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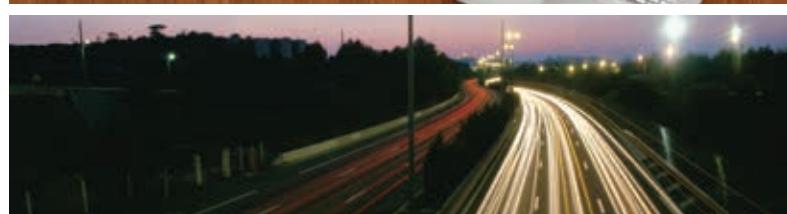
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# Tax Data is Big Data



# This is the first in a new series of articles – Going Beyond the Data – that will look at “Big Data” and its growing importance for indirect tax.

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## Introduction

In 2010, Rebecca Mead published an article in *The New Yorker* entitled “What Do You Call It? End of the Decade.”<sup>1</sup> Referring to the first decade of the 21st Century, Mead observed that no consensus could be reached. Should the decade be called the ohs? The double-ohs? The zeros? The zips? The aughts? That decade – one that began with Y2K, witnessed the ascendance of social media and the digital age and spawned the collapse of the financial markets – remains largely unnamed.

In one sense, the current decade (2010–2019) suffers a similar prospect. Should we call it the teens? The adolescents? The second decade? The 2010s?<sup>2</sup> But, in another sense, this current decade is already naming itself. In economics, this decade may well define itself by recovery (or lack thereof) from global financial concerns. In socio-economic terms, we are witnessing the return and rise of geopolitics, a term largely forgotten after the Cold War. Geopolitical considerations are evident in the current decade’s turmoil and unrest across the world.

In business, this decade seems destined to be named “The Decade of Big Data”.<sup>3</sup> We can already see the significant use of Big Data in diverse industries and applications such as logistics, health care, government services, retail, manufacturing, financial services and supply chains.<sup>4</sup> And this is just the beginning.<sup>5</sup> Analysts believe that the quantity of data available to businesses will increase by 40% every year for the foreseeable future.<sup>6</sup>

Much has been written about the Big Data revolution in a general sense. Relatively little, however, has been written about the specific application of Big Data to tax, and more specifically to indirect tax.

To fill that void, this is the first article in a new series for *Indirect Taxes International: “Going beyond the data”*. Aimed at helping to understand and prepare for the Big Data revolution in the context of indirect taxes, this series of articles will explore tax policy and administration in the age of Big Data; transformation of the compliance function into competitive advantage; the use of technology tools essential for the tax function in a Big Data world; and the anticipated evolution of indirect taxation over the next decade due to the Big Data revolution.

This first article sets the stage by establishing that data required by the tax function (i.e. tax data) provides a platform for the tax function to be engaged in the Big Data revolution in a way that can create new enterprise value.

## Value-Creating Analytics

Data is a core asset of the 21st Century business enterprise and value-creating analytics will be a top-down mandate.

The strategy of many 21st Century business enterprises will increasingly be based on information management and analysis.<sup>7</sup> The automation of knowledge related work is a global trend which is not expected to revert.<sup>8</sup> The next decade could be characterised by increased investment by businesses in technology, with the expectation that the organisation’s data will not only be used for primary reasons, but also mined in search of secondary and tertiary benefits.<sup>9</sup> Data could be used and reused in search of revenue growth, expense mitigation, customer service improvement, vendor management and organisational efficiency.

The C-suite level of management will require all facets of the enterprise to use data analysis to improve performance. Top managers reporting to the C-suite will need to position their departments in ways that demonstrate that they can transform data into value for the enterprise.<sup>10</sup>

Finance transformation – now more than just a gentle wave and the preferred model for how multinational enterprises are expected to operate<sup>11</sup> – is simply a point along the journey. The centralisation of previously decentralised functions of an enterprise can support desired improvements in accountability, control and standardised approaches,<sup>12</sup> as long as the subject matter expertise can be found in the newly created central hub. The impact of finance transformation is multidimensional; one of the extended post-transformation benefits is likely to stem from the ability of the business to find value in the centralisation of, and fresh visibility over, the enterprise’s data.

All departments of the modern business enterprise will be expected to participate in the data revolution. The tax department will not be carved out and excepted from this requirement. Instead, there will be a “power pivot” in the organisation towards data-based analysis and improvement, and the tax function will need to embrace that shift.<sup>13</sup>

# “... data contains hidden non-tax value that can be mined to enhance ... performance”

## Importance and Availability Of Data

The world is awash in discussions about tax reform and debates about tax fairness, both within and across borders.<sup>14</sup> Tax and the issue of paying one's fair share, is now one of the most prominent areas being scrutinised by governments, the general public and, to a great extent, the media.<sup>15</sup> These discussions are quickly bringing data to the forefront in discussions regarding transfer pricing, VAT/GST, trade and customs, global mobility, and more.

The changes thus required for response within tax departments are real and significant: these changes will only be exacerbated in the near future by the initiative Base Erosion and Profit Shifting ("BEPS"), the potential implementation of country-by-country reporting ("CbC"), the existing Foreign Account Tax Compliance Act ("FATCA"), and general matters of tax morality and tax transparency.<sup>16</sup> Some extractive industries, for example, have already responded to these trends by using data to create thorough and audited tax transparency reports.<sup>17</sup> These types of data-intensive reports seek to accumulate, in one place, the varied tax and excise payments made by business enterprises to governments in each country around the world.

Moreover, because governments often raise more than 30 percent of their revenues from indirect taxes,<sup>18</sup> tax authorities across the world have a strong incentive to close all tax gaps caused by simple errors, fraud and abuse in the indirect tax arena. This is why a quick search for the use of data analytics by governments and tax authorities reveals a variety of new tools for governments and tax authorities.<sup>19</sup>

Although tax authorities have long engaged in the collection, analysis and reporting of data, the nature, extent and pace of their data analysis is expected to expand and increase in the future. This evolution will be fuelled, in part, by continual advances in automation and electronic delivery of data. We can witness this progression each year, and especially so in three areas: e-invoicing, e-filing and e-accounting/audit.

E-invoicing – now required by some jurisdictions and permitted by many – may well be government-mandated for all businesses within the next decade, which will only compound

the already-present data analysis need for indirect taxes. Electronic invoices generally must include pre-set fields of information that enable tax authorities to verify transactions which have been carried out and for tax which has been invoiced. Many countries require that e-invoices be submitted via specific methods to guarantee authenticity of origin, integrity of content, and legibility of the e-invoice.<sup>20</sup> In a few countries, the tax authorities regulate the e-invoicing system.<sup>21</sup> Under this system, e-invoices are verified and certified by the tax authority before the transaction can be performed which enables the real-time verification of all transactions performed.

With regards to e-filing, jurisdictions increasingly require taxpayers to file, electronically, their required returns and additional reports. The information available can thus be immediately used by tax authorities not only to verify timely submission of reports, but also to cross-reference information provided by taxpayers. For instance, in the EU, taxpayers must file a report regarding their intra-EU sales of goods and services, which is made available to all EU tax authorities via the VAT Information Exchange System.<sup>22</sup> Tax authorities across the EU can thus verify whether the information provided by taxpayers is in line with the information provided by their vendors in other EU jurisdictions.

E-accounting/audit is also on the rise. Several countries – especially in the EU – require taxpayers to provide their financial data in a specific format,<sup>23</sup> such as the standard audit file of tax ("SAF-T"). The SAF-T format has arisen from work done by the Organisation for Economic Co-operation and Development ("OECD") to facilitate tax audits.<sup>24</sup> In practice, the tax authorities request the files and use special audit software that enables them to detect errors in the VAT reporting. A few countries require real time reporting of all tax relevant information. Brazil, for instance, recently implemented the public system of digital accounting<sup>25</sup> used to approve, store, and certify books and documents of commercial and tax bookkeeping and enable the tax authorities to make a complete assessment of the tax accounting information.<sup>26</sup>

In the future, the way that transaction-level data is collected, analysed and reported is likely to evolve as further countries introduce/reform indirect taxes. It does not require a giant leap of imagination to think that best practices discovered by these countries will spread across the world. The prediction, therefore, that tax authorities will increasingly understand the importance and availability of data and will likely require more of it (and sooner), is far from unlikely.

The speed and quality of data analysis, therefore, should improve. To keep pace, business enterprises will need to be able to perform their own timely, data analyses. While performing that work for tax purposes, it's probable that the indirect tax function will learn to use and reuse the transaction-level data to work closely with other areas of the business to create non-tax value for the organisation.

## Early Signs of Impact on Indirect Tax Functions

Over the past few years, many politicians, economists and academics have begun discussing the potential threats and problems that income inequality could create in the 21st Century. There is heightened sensitivity about these issues as automation takes hold, labour is undervalued and subject to arbitrage, and capital is king.<sup>27</sup>

Other economists, however, have begun to point out a more subtle issue that may be standing in the way of new century growth – and that is the transformation of the global economy from a “needs-based” economy to a “wants-based” economy. In a “needs-based” economy, growth occurs when people or businesses acquire the things they actually need for sustenance or compliance with governmental requirements. In a “wants-based” economy, growth occurs when new products or services so capture the attention of consumers (people or businesses) that they exercise their option to buy and consume; however, in a “wants-based” economy, consumption can be deferred, thus presenting the potential for slower-than-desired economic growth.<sup>28</sup>

How do the above schools of thought apply to the topic of Big Data and its impact on the indirect tax function? In a nutshell, the facts established earlier in this article – (i) that value-creating analytics will be a top-down mandate within the business enterprise; and (ii) that regulators are requiring and will require more data and sooner – create the context in which the indirect tax function within an enterprise is functioning as a “needs-based” economy. This means that the indirect tax function (and perhaps the tax function overall) must change to meet the modern demands of business and government. Adaptation is not a “want”, it is a “need.” And that is exactly what we are already seeing.

For example, focus groups of tax executives at two recent KPMG International indirect tax conferences – one in Hampshire, UK and the other in Amsterdam, the Netherlands – demonstrated their awareness of this new reality. In an add-on “Big Data & Technology” session in late June 2014, approximately 80 percent of forum attendees attended, despite its last-day-optinal placement and competing offerings. Anecdotally, in one of the receptions during the week, when senior tax executives were asked to explain the most amazing thing that had happened in the past year, several responded that automation and Big Data represented the most fundamental changes that they had experienced in their careers. Many others agreed. In other words, these tax executives answered a question about the

prior year’s developments with a reference to its revolutionary significance compared to the span of their entire careers.

Indirect taxes are relatively new, but they are used in nearly every country. Over 108 countries enacted their primary indirect taxes (VAT/GST) within the past 25–30 years, and over 160 countries now have national-level indirect taxes.<sup>29</sup> The significance of this wave – both in terms of sheer numbers of national-level taxes and the complexity that comes with a lack of harmonisation – may have gone largely unnoticed until the first decade of the 21st Century. Today, however, that scale and complexity can no longer be ignored and the data that is required for (and controls, to some extent) compliance with these taxes has real value.

The fact that data is front-and-centre within indirect tax functions is unsurprising because indirect taxes (including, for example, VAT/GST, excise taxes, and trade and customs duties) are transaction-level taxes; and transaction-level data is essential to comply effectively. Moreover, the data required often involves the entire order-to-cash and procure-to-pay functions of the enterprise. Because such extensive transaction-level data is essential to the proper performance of the indirect tax function, the function is in a unique position, if it thinks progressively, to add value to the organisation through tax and non-tax data analytics. If you think of the indirect tax function in terms of “transforming data into value,” some might even call this gaining the “pole position” for all of tax. Indeed, the authors think it is, if the function engages with the overall enterprise the way that it can and should.

## Conclusions

If you conclude – as this article does – that:

- data is a core asset of the 21st Century business enterprise, and value-creating analytics will be a top-down mandate; and
- tax authorities increasingly understand the importance and availability of data and require more of it (and sooner);

then it must be agreed that the 21st Century indirect tax function should embrace the follow-on proposition that tax data is Big Data; and that data contains hidden non-tax value that can be mined to enhance the performance of the overall business enterprise. The indirect tax function may just happen to find itself in pole position if it chooses to adapt and evolve.

This article has given a background of indirect taxes and Big Data. The next article will probe more deeply into the subject to consider tax policy and administration in the age of Big Data.

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# Tax Policy and Administration in an Era of Big Data



The second article in our series “Going Beyond the Data” looks at how “Big Data” is being used to close the tax gap, collect and share information across borders, and increase operational efficiency.

**Niall Campbell**

KPMG in Ireland

The transformative powers of Big Data and analytics are hard to deny. Right across the globe, the combination of process automation, data integration and innovative analytics capabilities are dramatically reshaping the way businesses – and tax authorities – operate.<sup>1</sup>

As the first article in this series discussed, tax authorities are showing that they increasingly understand the importance and availability of data and, as a result, are starting to request more data from taxpayers, often within shorter timeframes.<sup>2</sup>

The author’s experience suggests that the new era of Big Data and analytics is having an impact on the formulation and application of indirect tax policy and administration. As this article discusses, the value of new data and analytics capabilities has not been lost on indirect tax authorities, with the pace of adoption likely to accelerate in the near term.

In fact, many are already taking steps to leverage data and analytics to solve the three big agenda items facing many indirect tax authorities today:

1. the closing of the tax gap;
2. the collection and cross-border sharing of information; and
3. the need for operational efficiency.

## Closing the Tax Gap

With pressure mounting on government budgets, many tax and treasury authorities around the world are now keenly focused on measures intended to improve their tax revenues by identifying and eliminating gaps between the total tax liability and the reality of collections.<sup>3</sup>

And rightfully so: according to a study commissioned by the European Commission (“EC”), the size of the indirect tax gap across the EU alone amounted to approximately 177 billion euros in 2012.<sup>4</sup> Worryingly, earlier research by the EC suggested that the tax gap has actually grown since 2006 when it sat at approximately 1.1% of GDP.<sup>5</sup>

The need to improve the use of data to grow and protect indirect tax revenues has been highlighted by coordinated activities at the OECD and G-20 level where discussions on the base erosion and profit shifting (“BEPS”) initiative<sup>6</sup> – particularly around the challenges related to applying indirect

tax to the digital economy – has reinforced the need for tax authorities to improve their own understanding and capabilities in data management and analytics.

In response, many tax authorities are starting to think more clearly about how they might leverage their data to improve their ability to spot irregularities or potential underpayments. The author’s experience shows that many tax authorities are already using basic analytics approaches to quickly and effectively sample taxpayer data, develop risk profiles, and flag potential audit issues.<sup>7</sup>

Other tax authorities have started to combine Big Data approaches to reduce the potential for fraud. In the UK, for example, tax authorities are investing in their capabilities to spot “Missing Trader Fraud”, a major cause of tax loss in VAT jurisdictions.<sup>8</sup> “By leveraging Big Data to create accurate profiles of new registrants for VAT, tax authorities can start to screen out “high risk” individuals and companies for deeper investigation and reduce their exposure to indirect tax fraud strategies such as Missing Fraud,” noted Chris Downing, an indirect tax specialist and partner with KPMG in the UK.

Yet, improving their own internal data and analytics capabilities is only one strategy being leveraged by tax authorities to close their respective tax gaps. Indeed, recognising that a significant portion of the tax gap is due to taxpayer system and control errors, a growing number of authorities have turned their attention towards improving and auditing taxpayer systems rather than data.<sup>9</sup> The author’s experience suggests that companies undergoing audits today are more likely to be facing a technology-enabled auditor than they were just five years ago. It is suggested that the current stage of evolution is just the early beginning of a major transformation in tax auditor capability and approach.

A small – but growing – number of jurisdictions have gone a step further by developing programs aimed at incentivizing companies to improve their own internal systems and controls. One of the more robust approaches has been that of the Inland Revenue Authority of Singapore’s (“IRAS”) Assisted Compliance Assurance Program, which – since 2011 – has offered co-funding for companies to conduct independent reviews of their GST-related internal controls.<sup>10</sup> In return, program participants will enjoy reduced compliance requirements, faster GST refunds and waivers of penalties (for non-fraud GST errors that are voluntarily disclosed).

Australia's program started as a three-year project aimed at helping taxpayers improve the integrity of their business systems on a case-by-case basis.<sup>11</sup> "The workshops and initiatives that the Australian Tax Office ("ATO") undertook over the three-year period are thought to have yielded around 1 billion Australian dollars in additional revenues by improving systems and controls related to tax and transaction data within major taxpayers,"<sup>12</sup> said Dermot Gaffney, KPMG in Australia. "This isn't about increasing tax revenues by changing the tax base or increasing rates; it's about improving compliance through improved data management which, ultimately, leads to a closing of the tax gap."

## Data Collection and Cross-Border Sharing of Information

Encouraged, in part, by the continuing discussions at the OECD and G-20 regarding BEPS, tax authorities around the world are now starting to explore how they might better collect, verify, and share data in order to improve the application of indirect tax policy and administration.<sup>13</sup>

Indeed, one of the key actions outlined in the BEPS Action Plan is to establish methodologies to collect and analyse data on BEPS and the actions to address it.<sup>14</sup> According to Arthur Kerrigan of KPMG in Ireland and former sector chief at the European Commission, there is now general acceptance at trans-national level that indirect taxes require a globally coordinated response.

"Essentially, the BEPS Action Plan suggests that the only long-term solution here is to look at a very developed system of information exchange between tax administrators on a global basis," notes the former tax policy administrator and current KPMG indirect tax policy specialist. "The fact that large-scale exchange of information is being talked about at the G-20 level gives incredible momentum to the adoption of data and analytics practices within national tax authorities."

To get there, however, tax authorities will need to gain greater control over the collection, management and governance of their tax data. Not surprisingly, a number of tax authorities are increasingly requiring taxpayers to electronically file ("e-file") their returns and reports<sup>15</sup> and, in doing so, are able to access a richer source of data in shorter timeframes than would have been possible using traditional (often manual) processes.

E-invoicing has also become common practice among tax authorities seeking to gain greater control over the transparency of indirect tax collections, reporting and payments, particularly with regards to the integrity of the content, authenticity of the origin and the overall legibility of indirect tax invoices.<sup>16</sup>

For some tax authorities, the movement towards e-filing and e-invoicing has unlocked new opportunities to create greater alignment between indirect tax rates, administration, and policy across various jurisdictions. In Brazil, for example, where companies often cite complex tax regulation as a key barrier

to doing business, the implementation of a regulated state e-invoicing system ("NF-e") has helped to significantly improve coordination across the various state authorities.<sup>17</sup>

"The ability to reliably move information between states has enabled the various tax authorities in Brazil to work together to find a more sustainable balance in terms of local policies and tax incentives," noted Murillo Mello, Partner with KPMG in Brazil. "I believe that the introduction of e-invoicing and electronic data capture marked a turning-point for Brazil's indirect tax system."

China's "Golden Tax System" is based on a similar approach whereby tax invoices are generated on dedicated machines that essentially collect data in real-time for the purpose of reconciling payment obligations.<sup>18</sup> According to Lachlan Wolfers, a partner with KPMG in China, the system provides China's tax authorities with unprecedented control and access to data.

"While the regulatory burden may be somewhat onerous in comparison to other jurisdictions, the reality is that China's Golden Tax System may be the world's greatest and largest tax data collection system," he noted. "It will not be long before the authorities start harnessing the power of that data to improve tax policy formulation and administration."

## Improving Efficiency of Tax Collection

Much like many of the taxpayers with whom they work, indirect tax authorities are also increasingly recognising the potential efficiency and operational benefits that enhanced data management could bring to the administration of indirect tax.<sup>19</sup>

As the first article of this series noted, tax authorities are coming under increasing pressure to expand the nature, extent and pace of their data analysis.<sup>20</sup> Yet, with little to no additional budget allowances forthcoming, many tax authorities are now having to find ways to "do more with less" while simultaneously preserving (or enhancing) service quality and revenue returns.

Clearly, automation and technology enablement will play a key role. Indeed, many of today's tax auditors are increasingly leveraging new technologies that can quickly parse through millions of records to accurately identify issues, thereby reducing the resources and time required to conduct an audit.<sup>21</sup> Similarly, the ability to conduct targeted sampling of taxpayer data or to create more accurate controls for identifying and escalating potential inconsistencies, irregularities or challenges has allowed tax authorities to increase their productivity and focus their efforts on "higher risk" areas and taxpayers.<sup>22</sup>

At the same time, the author has noted a general trend towards tax authorities shifting more of the "heavy lifting" of data collection, verification and reporting onto the taxpayers themselves. Singapore and Australia's initiatives to improve taxpayer systems and controls, for example, essentially require taxpayers (and particularly their CEOs) to not only guarantee a level of assurance that their data is being properly controlled, but also to voluntarily alert the tax authorities if errors occur.<sup>23</sup>

A similar system of “horizontal monitoring” of agreements in the Netherlands requires taxpayers to conduct and report the findings of statistical sampling on their controls in return for reduced audit and compliance requirements.<sup>24</sup> “Instead of spending time conducting their own investigation with an army of auditors, tax authorities are increasingly starting to expect taxpayers to routinely assess their controls and come forward to the authorities should any errors have been made,” noted Leo van Loo with KPMG in the Netherlands. “Obviously, this allows the tax authorities tremendous opportunities to improve their own internal efficiency.”

## A New World Emerges

The big question for corporate executives and tax leaders, however, is how all of this data-driven change to tax policy and administration will impact their organisations going forward. To find out, seven KPMG member firms’ country leaders around the world were asked to share their insights from their experience in the market.

### A. United States

Most local and state tax authorities already demonstrate fairly sophisticated data and analytics capabilities and have become equally adept at leveraging their data to drive improved audit capabilities and enhanced operational efficiency. But with tax authorities requiring increasing levels of transparency and data, organisations operating within the US will quickly need to improve both the automation and the governance of their tax data. Particular focus will need to be placed on automating areas that are currently heavily reliant on manual data processes such as the calculation and reporting of purchase taxes.

### B. China

In some respects, the use of Big Data by the tax authorities in China is a story of contrast. On the one hand, the tax authorities do not ordinarily use data analytics as part of their day-to-day auditing and investigation techniques. On the other hand, the so called “Golden Tax System” is itself one of the most sophisticated data reporting tools used by tax authorities around the world. However, given that the system is essentially “standalone,” organisations operating in China will want to invest in developing the right systems and processes to appropriately reconcile between the data in the government system and that in their own ERP platforms.

### C. Netherlands

Dutch tax authorities have always been open to new approaches and quick to adopt automation. So it is not surprising that the Netherlands has also been quick to incorporate data and analytics practices into their tax policy and administration. As a result, it has become more critical than ever for organisations operating in the Netherlands to be able to demonstrate that their tax framework and controls are robust, rigorous and reliable. Those

who can demonstrate control will enjoy a “light touch” from tax authorities while those who cannot will likely draw increased scrutiny and reporting requirements in the future.

### D. Brazil

The introduction and wide-spread adoption of e-filing and e-invoicing within Brazil’s various indirect tax areas has increased the pressure for organisations to improve their IT systems and data controls in order to avoid any type of tax exposure or unexpected liabilities. But this isn’t just about ensuring compliance and reducing risk. Many of the more sophisticated tax departments within organisations operating in Brazil are now starting to use the massive amount of data they share with tax authorities to improve their business strategy by developing executive dashboards, improving decision-making and conducting scenario planning.

### E. United Kingdom

While the UK now accepts e-filing for income tax and has been conducting electronic audits on indirect tax compliance for more than a decade, recent focus for data and analytics investments within HMRC have tended to go towards improved fraud detection and risk management systems in an effort to close the tax gap. However, the reality is that – as technology costs start to fall and taxpayers become more sophisticated – we expect HMRC and Treasury to quickly ramp up their data and analytics capabilities. UK indirect taxpayers would be wise to improve their data controls and capabilities in preparation for heightened scrutiny; from tax authorities, stakeholders and the general public.

### F. Australia

Given the structure of the country’s indirect tax policies, it is perhaps not surprising that Australia boast a long track-record of leveraging data and analytics to improve, coordinate, and plan indirect tax policy. However, rather than investing in new analytics systems and processes themselves, the recent emphasis of tax authorities in Australia has been to encourage corporations to buy, implement and independently assess robust controls and systems to manage tax reporting and compliance. The appointment of the ATO’s first-ever external commissioner (Chris Jordan) suggests that the tax authorities intend to improve and expand this relationship further in the future.

### G. Singapore

Singapore’s investment into technology, systems, and controls is starting to pay off. Indeed, by some estimates, VAT collections rose by more than 5% between FY 2012/13 and FY 2013/14.<sup>25</sup> Much of this improvement can be attributed to the improved use of technology. But while the Singapore tax authority has certainly set a high bar for compliance, the reality is that the cost of compliance need not be as high as there are a number of cost-effective solutions.

## Conclusion

The age of data and analytics has already started to fundamentally transform the way that indirect tax policy and administration are planned and executed. Looking ahead, new advances and applications for data and analytics, combined with increased demand for cross-border information sharing, are expected to drive further – and more significant – change within indirect tax systems around the world. As the pace of

change is so rapid, the challenge for global businesses is to be ready for this new world.

The next article in this series will look at how companies are using data and analytics to respond to the increased demand for data and how some organisations are transforming their compliance function to create a competitive advantage in their markets.

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# How trade data will transform your business



The data revolution has the potential to transform business, not simply in providing more efficient processes for customs, indirect tax and supply chains, but in making strategic trade decisions.

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## Introduction

There are few things as important to a Chief Trade Officer ("CTO") as reliable and accurate data. It's what keeps the supply chain moving.

Ensuring the CTO – or the customs and indirect tax professionals – have access to this data in a timely manner is critical. On any given day, an organisation may be asked for the ten-digit tariff classification of a newly-sourced component that is en route to an overseas manufacturing location. Or the revenue service may request information about the reported value of yesterday's imported tooling from the parent company. You may even face questions from customs authorities in emerging markets, keen to understand the country of origin of a new product, often to uncover potential anti-dumping duties.

The implications of not having complete and correct data immediately available could be significant. New components may not arrive at the assembly line on time; documentation relating to the tooling (or the tooling itself) may be examined before release; finished products may be detained at the port while customs authorities determine if it is subject to an antidumping order. As we have seen with recent port disruptions in the United States, profits can be significantly affected when imported parts or products are held up for any reason.<sup>1</sup>

We believe that – to support ongoing and future trade activity – organisations should embrace the Big Data revolution. Indeed, as this article demonstrates, trade data can transform business across several key areas including customs, indirect tax and supply chain and, ultimately, can help empower the CTO to boldly take trade activity to a new level.

## Harnessing Trade Data for Reporting and Analytics

The use of trade data to fulfil legal and procedural requirements is nothing new. In fact, for more than a decade, the World Customs Organisation<sup>2</sup> ("WCO") has supported a data model that "provides an end-to-end view of regulatory information in the international supply chain and is a key

enabler for governments and trade."<sup>3</sup> The WCO data model is made up of certain data elements that are harmonised globally as used by importers, exporters, transportation providers and government agencies.

As of June 2014, almost two thirds of WCO member countries stated that they were in the process of adopting or reviewing the WCO data model requirements at a national level.<sup>4</sup> This is a good sign and suggests that more than half of the WCO member countries understand the benefits of "harmonising data across border agencies in the context of a single window".<sup>5</sup> And many are already taking steps toward automating their information systems to allow for the transmission and maintenance of data relating to trade activity in their own countries.

All signs indicate that more countries will start aligning to the WCO data model soon. In fact, as governments increasingly move toward the implementation (or mutual recognition) of customs programs like the Authorized Economic Operator program (part of the WCO's SAFE Framework) or enact new requirements for electronic or advanced cargo reporting, we expect to see a continued trend towards governments embracing trade automation and implementing local versions of the WCO data model.

Clearly, the ability to harness trade data is key to achieving end-to-end visibility throughout the supply chain.

For the most part, finding the data is not the biggest challenge. In fact, there are several sources from which a CTO may obtain trade data, whether that be from the company's global trade management solution or enterprise resource planning system; from third party service providers; or from the various customs, revenue and other government authorities that enable importers and exporters to retrieve trade data. The bigger challenge comes from ensuring that the data is reliable and captured frequently.

Once pipelines to obtain the data are established, the possibilities are virtually infinite. Indeed, while this article focuses on the use of trade data in the areas of customs, indirect tax, and supply chain, it should not be difficult to imagine a much broader world of opportunity. Consider, for example, the breadth of data collected from a typical

import declaration and how that data could be mined for value to facilitate informed decision-making throughout the organisation.

– **Customs reporting:** By collecting and mining global import activity data, a CTO can, for example, gain immediate insight into how much the company spends on customs duties not only globally, but also by country, region, business unit, supplier, manufacturer and product. This can provide a key competitive advantage for the organisation by helping decision-makers better understand potential customs exposure (on a loss of revenue basis for non-compliance) and identify opportunities to reduce their “above the line” import costs.

– **Indirect tax reporting:** Indirect taxes are another critical component of the import function in many jurisdictions. As such, it is critical that the CTO has visibility into their value added taxes (“VAT”), goods and service taxes (“GST”) or other indirect taxes paid upon import. This, in turn, enables the CTO with a greater ability to manage cash flow when recovering import VAT/GST. Consider, for example, the sourcing decisions needed by a company with manufacturing facilities in two different countries, both of which can make the same product. Analyzing the customs and indirect tax data for the main raw material may lead the company to import more raw material into country A and source the material locally for country B, particularly if the duty spend in country A is lower and VAT/GST recovery is quicker. Clearly, having access to both data sets facilitates the CTO’s ability to make well-informed decisions.

– **Supply chain reporting:** The capture of trade data should also provide the CTO with a deep well of insight into their supply chain activities across their various partners including customs brokers, freight forwarders, carriers and other logistics providers. With this information, the customs and indirect tax professionals can team with the logistics department to establish key performance indicators (“KPIs”) on the services performed by supply chain partners.

At one level, the monitoring of these metrics should help the organisation to evaluate performance, support supply chain security and identify external factors impacting the supply chain. If, for example, the KPIs illustrate that two customs brokers differed on the average number of days to obtain customs clearance within the same country, CTOs would have the visibility into those metrics to understand what was driving that difference (whether that be differences in port congestion, that one broker may handle a product regulated by participating government agency requirements, or simply a performance issue with one of the brokers). Without this insight, the CTO’s organisation could experience profit erosion while the product waits to be released.

## Managing the Risk of Non-Compliance

As rules shift and compliance rises up the agenda, governments are increasingly realising the value of capturing trade data to meet procedural and legal requirements. CTOs are also increasingly finding value in analyzing trade data to better manage compliance risks, particularly within their supply chains which often include international shipments between related entities.

We have seen multiple examples that illustrate how visibility into trade activity can support customs, indirect tax and supply chain compliance. Indeed, with all of the data that is now available, it would not be too difficult to envisage how data from import declarations and export filings could also be used to support compliance requirements in other areas such as anti-money laundering, transfer pricing and social compliance.

– **Customs risk management:** Not only does the availability of trade data allow the CTO to monitor daily trade activity in each country if desired, it also allows them to manage their risks better (for example, by reviewing products’ trade attributes holistically and focusing on the products with inconsistencies in areas such as tariff classification, free trade agreement usage, country of origin declarations, or reported values). At the same time, access to global trade data enables the CTO to develop defined processes around internal audits of import and export activity, document internal global policies in key areas and develop robust training programs.

– **Indirect tax risk management:** Those organisations capturing import VAT/GST as a data element on import declarations can, in near real-time, easily determine if they have underpaid or overpaid (or maybe not paid at all) and then take the appropriate corrective actions. Visibility into global trade data would enable CTOs to quickly respond to a tax authority’s request for proof of payment of VAT/GST on imported products by demonstrating how a VAT/ GST payment ties directly to an import declaration.

– **Supply chain risk management:** Over the past two years, supply chains have been challenged by major and unanticipated disruptions (such as congestion in the US West Coast ports, labour issues, newly enacted trade sanctions, the possible incidence of the Ebola virus in certain ports in Africa and floods in Thailand). With global supply chains becoming increasingly complex and interconnected, it is vital that companies continuously assess the risk of supply disruption. By analyzing the company’s trade data and involving multiple tiers of the supply chain (including suppliers, customers, logistics providers, distributors and manufacturers), CTOs can start to develop a strategy that aligns business process and technology while offsetting risk to the global supply chain.<sup>6</sup>

## Generating Tangible Business Value

With unfettered access to trade data for reporting and risk analysis purposes, CTOs can typically start to identify a return on the investment. In many cases, organisations may find trade-related savings that can be achieved across the organisation.

- **Customs savings:** Visibility into data on imports and exports globally can help CTOs identify a reduction of customs duties and fees through programs such as free trade agreements, customs duty drawbacks, foreign trade zones or other duty deferral programs, or first-sale for export.
- **Indirect tax risk management:** By analyzing indirect taxes paid on imports a CTO could, for example, evaluate the savings available from a EU customs warehousing opportunity by fully exploring the various customs duties and VAT paid upon entry declaration into the EU. In addition, a CTO could also use this data to determine VAT paid on an importation that could potentially be recovered through refund claims.
- **Supply chain savings:** Trade data analysis could also help the CTO determine whether their company could benefit economically from using different logistics providers that may offer better freight, insurance or carrier rates or near-

shoring production of certain products. Alternatively, the CTO may use the trade data to determine whether their company should consider consolidating import declarations or even move to self-filing of import declarations to help reduce the landed cost of imported products.

## Let Your Trade Data Take Your Business to the Next Level

With the benefits of trade data in the areas of reporting, analytics, compliance, and savings opportunities now becoming increasingly clear, we believe that the CTO is now well-positioned to transition from a reactive mode to a proactive position with leading practices.

The trade technology and processes that should now be available to the CTO can be used in a multidisciplinary fashion to complement work performed in the same areas by other stakeholders (such as tax, supply chain, ethics and compliance, or procurement) to facilitate informed decision-making throughout the organisation.

Indeed, we firmly believe that – by adopting trade data analytics – CTOs should now be well positioned to help generate tangible business value that is beneficial to the organisation as a whole.

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# Indirect Tax Compliance in an Era of Big Data



The evolution of Big Data is having a major impact on indirect taxation. Tax authorities are also making use of data as a tool to improve tax data gathering and collection. This article considers how a data-driven approach to indirect tax compliance may bring significant tax benefits to companies operating in this environment.

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By now, it should be fairly clear that the evolution of Big Data is having a significant impact on the field of indirect taxation. Regular readers of this series – and keen observers – already recognise that data has changed the indirect tax landscape in three key ways:

- First, data has become a core asset of the 21st century business enterprise, creating opportunities for value-creating analytics as part of a top-down mandate within the modern business enterprise.
- Second, tax authorities increasingly understand the importance and availability of data and, as a result, are starting to require more of it, sooner than ever before.
- Third, tax authorities have recognised that innovation in the field of data and analytics has provided new tools to help close the tax gap, collect data and share it across borders, and improve the efficiency of the tax collection function.<sup>1</sup>

With Big Data already driving major changes within the modern business enterprise and government, many indirect tax leaders and authorities are starting to turn their attention toward the practical implications that these trends may hold for today's businesses. How, for example, can data be leveraged to improve compliance? How can analytics reduce the complexity of working across multiple jurisdictions? What does a "data-driven" indirect tax approach look like in practice?

## An Overwhelming Burden

The tax world is far from simple. Indeed, it seems safe to say that it is one of the more heavily regulated environments.<sup>2</sup> It could also be stated that the related tax legislation can be extremely complicated; it is playing catch up with new business models and the digital economy and the demand by governments to increase tax revenues without increasing tax rates.

Consider, for example, how the US Internal Revenue Code has evolved over its first 100 years. For that first federal-level tax law to pass in 1913, the United States Constitution first required an amendment to expressly permit the imposition of income taxes to support the general finances of the federal government.<sup>3</sup> Together, the constitutional amendment and the text of the income tax legislation filled 27 pages; by contrast, the 2013 CCH Winter Edition of the United States Internal Revenue Code filled a vast 5,248 pages; and the CCH Standard Federal Tax Reporter tallied 73,954 loose-leaf pages in a 25-volume set of binders.<sup>4</sup>

Similar examples that affect value added tax ("VAT") and goods and services tax ("GST") compliance are also evident around the world. In 2015, for example, the 28 Member States of the EU introduced new VAT rules for vendors (EU or non-EU) who provided telecommunications, broadcasting, and electronic services to final consumers residing in the EU.<sup>5</sup>

Even though the new rules contain some "simplification" measures, they are still extremely complex: a non-EU business providing electronic services to UK residents would need to read approximately 248 pages of legislation and guidance just to familiarise itself with the new provisions.<sup>6</sup>

Extrapolate that level of complexity to the other 27 EU Member States, and it is not difficult to imagine that the non-EU vendor would need to read thousands of pages of dense material to understand and evaluate the similarities and differences in the rules prescribed by other Member States. Such changes are spreading across the world; Korea is introducing new VAT rules applicable to digital services effective July 2015,<sup>7</sup> Japan is implementing similar provisions for digital services in October 2015<sup>8</sup> and the Australian authorities announced their intention to tax imported services with effect from July 2017 in the 2015 Federal Budget released May 12, 2015.<sup>9</sup>

# “...today’s data management tools allow organisations to pull data from almost any source...”

Given that more than 160 countries now employ some form of VAT/GST to raise revenues to help fund governmental budgetary needs, global business will find exponential complexity.<sup>10</sup> In only two decades, the number of countries with a VAT/GST regime has tripled; and with that comes the complexity of compliance with hundreds of different tax systems.<sup>11</sup>

## More Audits, More Often

As noted in the second article in this series, many tax authorities are already starting to think more clearly about how they might leverage data they receive to improve their ability to spot irregularities or potential underpayments. Experiences around the world show that many tax authorities are already using some form of analytics to sample taxpayer data quickly and effectively, develop risk profiles, and flag potential audit issues.<sup>12</sup> The use of technology and data analytics is more widespread than is generally thought. A recent survey<sup>13</sup> found that 19 of the 22 countries surveyed across the Americas, Asia Pacific, Middle East and Africa used these tools as part of their review and audit of business taxpayers.

Another trend is for tax authorities to require businesses to transfer transaction-based data as part of, or in advance of, the indirect tax reporting process. In light of this trend, it is becoming even more essential that businesses can vouch for the accuracy of the indirect tax decisions made by accounts payable and accounts receivable teams and that they get it right the first time.

It goes without saying that nobody wants to be audited. Audits invariably lead to added business complexity, increased costs, increased demands on scarce resources, and potential relationship issues with tax authorities. And, not surprisingly, indirect tax managers and executives are keen to reduce the frequency and impact of tax audits on their business.

Yet as tax authorities become more sophisticated with their analytics capabilities, the reality is that – without a change in the way compliance is managed – businesses may well find that the complexity and frequency of tax audits increases. The specificity and detail of the audits themselves may, at the same time, become more intricate.

## A Data-Driven Approach

Against this backdrop, many corporate indirect tax leaders are beginning to explore ways to make better use of data to improve their indirect tax compliance.

Many already collect all of the data they need to achieve significant improvements; yet few appear to understand how to translate that data into insights and ultimately convert these insights into value.

A data-driven approach to indirect tax compliance may deliver a wide range of potential tax and business benefits such as:

- **Identifying exceptions and potential challenges:** By looking across all of their indirect tax data, organisations can quickly start to identify areas, processes, or jurisdictions that create frequent compliance challenges and then work to remedy these issues at a more systemic level. Similarly, the ability to identify and manage exceptions in various markets allows businesses to help determine whether they are paying the right tax at the right time to remain compliant without overpaying.
- **Delivering a clear audit trail:** Those with a data-driven approach to indirect tax compliance should be well-equipped to find and present more quickly – with increased accuracy – data or compliance records required by tax authorities. More proactive organisations can use this capability to provide indirect tax authorities with audit files ahead of any anticipated action to reduce the potential for audits.
- **Uncovering new trends and issues:** A data-driven approach provides indirect tax leaders and executives with enhanced insight into overall trends in their compliance and – importantly – can help them identify when processes or data are at odds with the trends (such as a sudden drop in VAT payments in one market). These anomalies can again be analysed and appropriate resolution steps taken either internally or with the appropriate tax authority.
- **Providing a unified view of compliance:** Modern visualisation and analytics techniques allow organisations to achieve a “single view” of their compliance position across multiple markets and to understand where challenges and opportunities may occur. Given the rapid shifts in today’s business environment, this type of visibility and insight can lead to improved business decision-making and flexibility.

### A. Putting Data First

While the tactical implementation of a data-driven approach to indirect tax compliance will vary depending on the organisation, the markets in which it operates, and the business model, generally data-driven models work in the same way.

First, data is extracted from master data, finance and inventory management sources across the enterprise and – if necessary – fields are translated into a common

architecture. Next, the data is validated against a series of tests which reflect the indirect tax principles and the unique circumstances of the organisation. One set of such tests<sup>14</sup> includes numerous accounts payables and accounts receivables tests that query every line of data to identify possible exceptions or errors.

The challenge then is to use that information to improve the compliance process. Clearly, not all exceptions identified will require full remediation; organisations will need to have the right insight and capabilities to understand which exceptions need to be elevated and which simply require ongoing monitoring. The point is that the appropriate measures are taken – based on solid data – to reduce the potential for audits and improve overall compliance.

### **B. Putting Misconceptions to Rest**

In general, there are three main misconceptions about data-driven approaches to indirect compliance that often slow its adoption in many corporate businesses. The first is the belief that data needs to be consolidated before it can be used. Based on this misconception, many organisations have spent considerable time and resources struggling to bring all of their data into a massive data warehouse.

The reality is that today's data management tools allow organisations to pull data from almost any source and then translate and combine it in a separate environment or platform. However, it must be noted that data veracity is key: those with unreliable master data will almost always find that their insights are equally unreliable or questionable.

Another misconception is that data-driven approaches to indirect tax compliance are expensive, complex, and disruptive to implement. Many finance and indirect tax departments are already using all their resources just to meet their business support, reporting and audit obligations; few have the time and resources to put toward identifying new problems.

Adopting a data-driven approach does not need to be complicated and it certainly does not need to be expensive. Indeed, there are a number of outsourced options that can deliver these services and analyse the resulting insights on a pay-for-use basis. For example, a platform may allow organisations to uncover insights for only a small period of time, a select market or a discrete business (the model used by KPMG member firms). Alternatively, it can be deployed fulltime and worldwide to provide ongoing monitoring and analysis. In this manner, value can be achieved with reduced complexity and disruption and at a cost that meets the needs of the organisation.

The third misconception is that a data-driven approach to indirect tax compliance should deliver immediate and dramatic savings, and therefore if costs or effort start to increase rather than decrease it is a sign of failure or lost investment.

But the reality is that – unlike many other “automation” initiatives – the focus of a data-driven compliance approach is to improve compliance and reduce cost in the longer term. A highly-successful approach could, therefore, increase the amount of time and effort put toward compliance in the short-term as issues are uncovered and remedied. It stands to reason that those with more fundamental compliance problems will need to do more work in order to improve their stance.

However, over the longer-term, experience suggests that savings do emerge. Improved compliance and monitoring can translate directly into fewer audits and, as a result, lower costs and reduced potential for data management can also lead to reduced costs when audits do occur as data is more readily available and accessible and therefore requires less manual intervention. This is why many tax authorities are incentivizing businesses to include data validation as part of their indirect tax governance, processes and controls: we use the term “incentivize” in the broadest sense as it ranges from co-funding indirect tax reviews to businesses having to vouch for their indirect tax governance in return for lower audit frequency and penalties.<sup>15</sup>

More proactive organisations can also use this data-driven approach to identify other value-generating business insights, particularly for areas such as accounts payable and accounts receivable. Targeted analysis can provide actionable insight resulting in tax recoveries, cash flow improvement and process cost reduction. Some may also use these insights to model the indirect tax cost of future growth plans, product launches or new supply chains.

### **C. Understanding the Cost of Data-Driven Compliance**

The question of whether – or how much – to outsource is always a critical decision for indirect tax leaders. Measuring the equation of value versus cost in today's technology-driven environment is not always easy.

However, it is possible to see a number of interesting approaches emerging. At the March 2015 Summit on Business Intelligence & Analytics, Gartner analyst Neil Chandler delivered a session on measuring the business metrics of analytics efforts. Chandler recommended three calculations to help ascertain the success or failure of such data efforts, which were: (i) the total cost of ownership calculation; (ii) a cost-benefit analysis; and (iii) a return on investment computation. With respect to the total costs of ownership, Chandler observed that most businesses underestimate total costs of ownership.<sup>16</sup>

Under Chandler's approach, both direct and indirect costs of ownership must be determined. Direct costs include data, software, hardware, and people costs; and each of those four categories contain onetime, recurring, and special costs that must be evaluated. For example, data costs must include: (i) onetime costs, such as integration and migration

expenditures; (ii) recurring costs, such as archiving, backup, and security costs; and (iii) special costs, such as data governance. Similar analysis of the other three categories of direct costs unveils a litany of expenses required to own and operate a technological environment. On top of direct costs, there are also indirect costs for such things as effort required to train the team on new processes, costs required to overcome resistance, and other costs.

We think Chandler's framework – well-understood, thoroughly calculated, and vigorously applied – provides a compelling construct for the analysis of the full costs of indirect tax compliance. A number of the world's largest organisations, particularly those operating in multiple jurisdictions and sectors, may find that it makes sense to build out their own internal capabilities further; that the reputational, compliance and financial benefits outweigh the costs.

From experience, many businesses that undertake this type of self-review are astonished to learn how much they are paying for their compliance function; and they often find that the identified benefits do not seem to justify the level of expenditure for the function. In such cases, certain companies have shown a proclivity in recent years to move quickly to outsource the function.

## Driving Value from the Indirect Tax Compliance Function

Outsourcing the indirect tax compliance function is about more than just cost-benefit ratios and returns. In today's rapidly-evolving technology and tax environment, many are looking to combine their data-driven approach with targeted outsourcing in order to achieve wider benefits for the function and for the organisation.

For many, outsourcing the indirect tax compliance function allows organisations – particularly those with leaner finance and tax functions – to access more recent technologies without having to invest new capital. Similarly, an outsourced function can often offer "leading practices" in compliance processes, and data management based on deeper experience and insight.

Many of those who have outsourced their indirect tax compliance function have found they have enjoyed wider business benefits such as increased efficiency, better decision-making, improved risk management, and a stronger focus on the core business. Larger, more complex organisations also see significant benefit from achieving tighter global control and improved visibility into their indirect tax compliance.

No matter what level of outsourcing is used, the overwhelming objective should be to "lock down" the compliance process so that internal resources can be better allocated to value-adding activities such as driving continuous improvement or uncovering insights from transactional data.

For those in the indirect tax function, this shift can have significant implications. Capabilities, skills and roles may quickly change and evolve. With this, perceptions of the function can also change, driving the function away from being a simple "cost center" and towards becoming a value-creation center.

## Conclusion

As the complexity and risks of indirect tax compliance increase for organisations around the world, we believe that a data-driven approach to compliance will increasingly become key to success. Those that are able to properly evaluate their capabilities and create the right model and structure – leveraging outsourcing, shared services and internal models to drive greater efficiency and control – should find themselves well-positioned to reap the wider benefits of a more mature and focused indirect tax compliance function.

Clearly, technology will be a key consideration for organisations as they start to make this shift. In the next article in this series, Chris Downing, Partner, KPMG in the UK will take a deeper look at some of the big technology questions facing indirect compliance functions in the era of Big Data, and will provide some insight into future trends and emerging technologies to help support tax functions as they move towards a data-driven model.

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## Notes

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Council Regulation 967/2012 (amending 282/2011) 7 pages  
Council Implementing Regulation 1042/2013 (amending 282/2011) 20 pages  
Explanatory Notes to Council Implementing Regulation 1042/2013 92 pages  
EU Commission Guide to the VAT Mini-One-Stop-Shop 31 pages  
EU Commission Guidelines: Auditing under the MOSS 3 pages Local In-Country Legislation (e.g., UK legislation) 61 pages  
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- 16 Gartner Summits, Gartner Business Intelligence & Analytics Summit, March 30–April 1, 2015, Las Vegas, NV.

# Technology, Data and Innovation

## Essentials for Indirect Tax Management

As organisations are becoming more globalised and transaction flows are becoming more complicated, the requirement to monitor the accuracy of tax calculations through use of data and analytics has significantly increased. This article outlines how D&A can be applied to better understand and manage transactional taxes.

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The world of indirect taxes is rapidly changing. Today's indirect tax functions face increasing pressure from external stakeholders on taxation and tax risks, while at the same time balancing the emergence of new technologies with the need to depend increasingly on accounting systems for indirect tax management. Clearly, today's complex era of technology change requires a new skillset from indirect tax professionals.

Technology also brings significant opportunity to the indirect tax function. Indeed, with the help of data and analytics ("D&A"), complex enterprise resource planning ("ERP") landscapes and indirect tax processes – until now the bane of most indirect tax professionals' existence – can start to be unraveled.

However, tax D&A is not just about identifying and investigating data anomalies in good time or increasing control of the end-to-end indirect tax process. Indirect tax analytics can also be the key to unlocking additional value within transactional data that can serve as a basis for improvements, not only in indirect tax performance, but also across the wider business.

## Introduction

The use of D&A is not new. In fact, methodologies have been evolving since the mid-1950s when early D&A activities, now considered "Analytics 1.0", first appeared.<sup>1</sup>

During the past two decades – and particularly over the past five years – D&A has come of age.<sup>2</sup> An entire ecosystem has developed, supported by increasingly sophisticated technologies, while at the same time the application of D&A has expanded considerably. In the finance, logistics, and scientific fields in particular, the application of D&A has already started to deliver significant benefits.<sup>3</sup>

As Niall Campbell noted in his article in this series, the value of new D&A capabilities has not been lost on indirect tax authorities.<sup>4</sup> In fact, as D&A matured, it was often the tax authorities themselves that led the development of tax-driven analytics.<sup>5</sup> Today, software-driven validation of transactional data is a tool used widely by tax authorities around the world.

Unfortunately, in-house indirect tax functions have(generally speaking) not kept pace with the sophistication of the tax authorities. As recently as five years ago, many in-house tax analytics relied primarily on Microsoft Excel (the program still remains the most commonly used technology within the "modern" tax function today).

If in-house indirect tax functions are to keep up with their tax authority counterparts, they will need to improve their use of D&A.

As this article argues, in-house indirect tax functions should be applying tax D&A across their tax process – not just in their tax reporting – to drive improved compliance and control, as well as to create new value for other parts of the business.

## The Transaction Tax Challenge

Anyone involved in tax management knows that there is a significant difference between managing direct taxes such as corporate income tax, and indirect taxes such as value added taxes ("VAT") or goods and services taxes ("GST").

In the indirect tax world, every single transaction (for both sales and purchases), and many activities related to those transactions, must be assessed in real-time to determine the specific tax treatment. Direct taxes, on the other hand, are assessed on a periodic basis, often just once per year.

Corporate income tax professionals may be less concerned with some of the finer details of the transaction, such as where the customer is resident; what product or service is being sold; where the order is to be fulfilled from; and the terms upon which the transaction takes place. However, for indirect taxes, these (and potentially many other data elements) are often crucial when determining where and how a transaction is to be taxed.

Another major difference between direct and indirect taxes is that in many countries indirect tax returns may never be audited by the tax authorities. In other words, it is only once the statutory time limits have been exceeded that the tax payer can have any real certainty over the tax values that have been submitted.

## Tax Processing in ERP Systems: Understanding the End-to-End Process

A major challenge facing in-house indirect tax professionals is the potential for human error. Possibly an even greater challenge, however, is the fact that – lulled by the automation of ERP systems – many in-house tax professionals do not recognise the various areas that require frequent monitoring and control:<sup>6</sup> those that do, may often focus rather narrowly on the reporting side of the process. However, VAT/GST processing within an ERP system is generally dependent on four key business areas: reporting, accounts receivable, accounts payable, and master data.

### A. Reporting

For most businesses, the key finance activity (relative to indirect tax) is generally the extraction of VAT/GST reports from the ERP system at the end of a reporting period. These reports are however often intentionally simplified to facilitate local tax compliance, and typically only extract key values, together with an associated tax code which acts as a key identifier. For the most part, very little other detail is provided, such as the underlying transactions and additional information needed to validate the tax treatment applied to the transaction. Simply put, the VAT/GST reporting process often does not provide the detail indirect tax professionals actually need to properly assess their controls or deliver new insights to the business.

### B. Accounts Receivable

The accounts receivable process is where invoices are typically created via sales orders and outbound deliveries and, as such, is where ERP systems have the most automated functionality to calculate tax codes for each outgoing transaction. In indirect tax technology circles, this is often called the “VAT logic,” an automated set of rules that determines and controls the tax decision based on the transactional and master data available.

VAT logic works beautifully as long as the correct data is being used, the controls cannot be manually overridden and the VAT logic governance process ensures that the actual logic is consistent with both internal (business) and external (tax law) changes.

The problem here is that – to the authors’ knowledge – there is no single ERP system in the market that, “out-of-the-box,” can automatically support VAT/GST determination across all kind of industries. Many major ERP platforms have rather well-known indirect tax limitations.<sup>7</sup> As such, errors are often made and data is (occasionally) unreliable.

### C. Accounts Payable

Manual intervention is common in the accounts payable (“AP”) process. Indeed, hobbled by significantly less automation of tax codes than with receivables, many accounts payable departments still rely heavily on accounting clerks manually selecting tax codes to reflect whatever tax was charged on the invoice by the vendor. For companies with overseas customers or vendors, this requires a basic knowledge of the country-specific VAT rules to identify the correct tax code.

This is not an easy task, particularly given that VAT/GST rules and tax rates change from time to time. As such, AP clerks need to be trained on the latest VAT/GST rules on a regular basis and/or VAT determination manuals (essentially a decision tree to assist with the manual tax code determination) need to be designed.

The challenge here is that, whether housed in a shared services center or in-house, most AP departments have defined key performance indicators based on the total number of invoices that employees need to process on a daily basis. Combined with the reality that the work has a strongly repetitive nature and the list of potential codes could easily exceed 100, it is perhaps easy to see how the wrong code could occasionally be selected.

There are few systems-based controls in place to prevent mistakes within the AP function and, as such, the AP function would benefit greatly from detective VAT/GST controls such as those available through D&A.

### D. Master Data

As noted earlier, the automation and reporting of tax within an ERP system relies heavily on the availability and accuracy of master data. Given that most ERP-enabled organisations are exposed to more than 100,000 different elements of master data (based on the authors’ experience), almost all enterprises face the challenge of maintaining a reliable and robust master data process while at the same time ensuring that the master data is accurate, up-to-date, and fit-for-purpose based on the requirements of the business functions using the data. Generally speaking, the key master data components relevant from a VAT/GST perspective are often related to the vendor, the

customer or the product: it is vital that accurate and complete VAT/GST-relevant information is captured for each of these master data components.

Sometimes the error can be obvious. One of the most basic examples of a “critical” VAT/GST-relevant customer master data field is the country where the customer resides: while it may be evident on the invoice, if the customer country in the master data is not a reliable field, the accuracy of the tax code decision cannot be guaranteed.

## VAT Monitoring Through Data and Analytics

Tax authorities, supervisors, financial investors, and other stakeholders are increasingly focused on taxation and tax risks; they expect companies to be in control of their main tax risks.<sup>8</sup> In response, many companies have now put significant effort into identifying their main tax risks and implementing Tax Control Frameworks, essentially a set of governance frameworks which identify the key tax risks within a business, provide a clear overview of tax responsibilities and accountabilities related to those risk areas, articulate the controls in place to mitigate the risks and describe the monitoring program to ensure such controls are tested on an ongoing basis.<sup>9</sup>

Until recently, tax control monitoring had always been an episodic undertaking, via a manual review. Opinions and findings often relied solely on the subjective opinions of fiscal experts, based purely on a handful of process walkthroughs and selected samples of invoices and other tax-relevant documentation.

Today’s Big Data and D&A environment, however, has enabled the monitoring process to transform into a highly-automated and objective approach. Substantial amounts of transactional data can be tested, monitoring can be conducted in near real-time, and the effectiveness of entire groups of VAT/GST application controls can be developed.

That being said, the effectiveness of VAT/GST application controls (such as ensuring that every sales invoice contains a tax code or that tax codes on sales invoices cannot be manually overridden) provides only partial assurance on the validity and completeness of the input and output VAT/GST activity. To bridge that assurance gap, indirect tax functions are increasingly looking to D&A.

The simple fact is that D&A (for indirect tax purposes) must be aligned to the VAT/GST and business activities. It is often most effective when focused on either specific risk areas (such as the underpayment of output VAT or claiming too much input VAT) or specific opportunity areas (such as targeting VAT working capital benefits or the overpayment of output VAT).

It must be noted, however, that all D&A processes are iterative by nature. Indeed, most analytics assessments initially produce a number of false positives (transactions that

are identified as anomalies, but on investigation, do not add up to the VAT/GST risk/opportunity) and therefore D&A tests must be constantly updated and optimised to ensure future analytics are efficient and effective.

## Driving Business Value from Tax Analytics

Requesting new funding for D&A within the indirect tax function can often be a challenge. Few executives or IT departments want to put more money into what they often perceive to be a reporting function.

Businesses would be well-advised to assess the wider enterprise benefits of tax D&A to support the development of a business case for advanced D&A software. For IT departments, who often control IT budgets, the ability to leverage investment from a D&A tool across multiple functions is often seen as a big value-add when it comes to investment in new software.

Perhaps the most obvious areas where VAT/GST data sets and tax D&A can be used to add value to other business functions relate to providing input into tax transparency initiatives such as base erosion and profit shifting (“BEPS”) and country-by-country (“CbyC”) reporting processes.

VAT/GST data sets can also be analysed to help provide insights to help other tax functions that possess a strong transactional nature, such as transfer pricing, environmental taxes, customs duties, and excise. However, to maximise the analytic value for these tax areas, VAT/GST data may need to be enriched with additional information and data which, in turn, can unlock additional analytic tests that can provide valuable insights across a wide variety of different tax types, thereby avoiding the need for multiple data extracts.

For example, the VAT data sets could be used to analyse intercompany margins, deviations per product, goods flows and periods to support transfer pricing decision-making. This would allow organisations to transform their current intercompany pricing analysis (which is typically an Excel-based exercise) into a real data-driven approach where dozens of transactional data flows form the basis of the analysis.

While layering in other non-VAT data may seem like a significant complication, the good news is that there are now a number of D&A tools available in the market and the integration of such additional data is relatively straightforward (assuming the data is held somewhere within the ERP system or other business database).

Of course, forward-thinking and business-minded indirect tax professionals will also quickly see that there are wider benefits available when looking at the same data set from a non-tax angle. Data could, for example, deliver insights into duplicate invoices, the segregation of duties, early payments to vendors,

the prevalence of invoices without purchase orders or a high volume of low-value invoices from the same vendor.

Clearly, the benefits of applying D&A within the indirect tax function and across the tax process can be significant.

## Conclusion

In this article we have outlined how D&A can be applied to better understand and manage transactional taxes. As organisations are becoming more globalised and transaction flows are becoming more complicated, the requirement to monitor the accuracy of tax calculations through use of D&A has significantly increased. Tax authorities are not slowing down their adoption of increasingly sophisticated tools and data specialists to perform VAT/GST audits in a highly efficient way; consequently, the need for change has become critical.

For large, multinational or complex businesses to manage VAT/GST proactively, indirect tax functions need a combination of well-implemented and controlled ERP systems (that include robust authorisations, VAT application controls and correct tax rates) and a VAT monitoring mechanism (preferably utilising D&A to assure the quality of VAT data and controls).

They will also need to engage in multidisciplinary teams, bringing together tax and technology, to drive collaboration which, in turn, will require them to demonstrate a willingness and capability to step into each other's worlds and to (a certain degree) speak each other's language.

The bottom line is that D&A should never be a goal in itself, but rather a means to help measure VAT control objectives and contribute to the realisation of effective VAT calculation processing and business enablement.

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## Notes

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# The Future of Indirect Taxes – 2020 and Beyond!



# Our “Going Beyond the Data” series concludes with a look at future trends in indirect taxes and the part that will be played by the Big Data phenomenon.

**Lachlan Wolfers**

KPMG in China

Very soon, a value added tax (“VAT”) or goods and services tax (“GST”) will apply in all major economies of the world, with the exception of the United States – a staggering growth of a tax first introduced in France in 1954, applied in only 48 countries by 1989, and then expanded to over 160 countries around the world.

But what happens from 2020 and beyond? In this final article in the series entitled “Going Beyond the Data,” we engage in crystal-ball gazing and predict two global megatrends which affect indirect taxes, and then most importantly, how each of those megatrends will impact on global developments in the use of data and analytics – more specifically, the Big Data phenomenon.

## First Trend – More Comprehensive VAT/GST Bases

The first global trend is the anticipated shift towards more comprehensive VAT and GST bases.

The Organisation for Economic Co-operation and Development (“OECD”) recently released ‘Consumption Tax Trends 2014’<sup>1</sup> which highlights the fact that 21 out of 34 OECD member countries increased their VAT/GST rates at least once over the period from 2009-2014, with the average VAT/GST rate amongst OECD member countries now exceeding 19%. The obvious opportunity now is for governments to broaden the base – because their rates may be starting to reach a natural ceiling; to plug revenue gaps most commonly associated with the digitization of global economies; or to continue the shift from corporate taxes to indirect taxes given the relative ease of collection and stability of the latter in times of economic uncertainty.

The uncertainty is whether policy makers can navigate often treacherous political waters to achieve this policy outcome. The patchwork systems in place in countries like Australia and Malaysia and across many of the Member States of the European Union (“EU”), with broad categories of zero rating, exemptions and/or reduced rates, is testament to the political compromises often needed to get a tax enacted.

Interestingly, the OECD recently concluded<sup>2</sup> that reduced rates and other concessions were not an efficient way to protect lower income individuals and address the so-called regressivity of indirect taxes, which is the oft-cited reason given by policy makers for providing such concessions in the

first place. A recent OECD study shows that many of these reduced rates actually benefit higher income households more than lower income households. This is particularly the case for reduced VAT rates on restaurant meals, hotel rooms and cultural goods, such as books, theatre and cinema tickets. This suggests that a better way to achieve equity and social objectives would be to remove these reduced rates and provide more targeted relief measures, such as income-tested benefits and tax credits.

Another “concessionary” area which will be watched closely is financial services. Historically, financial services were exempted from indirect taxes on the basis that it was considered too difficult to measure the value added on a transaction-by-transaction basis. However, the goalposts gradually shifted when countries such as South Africa recognized the ease with which VAT could be applied to financial services remunerated on an explicit fee or commission basis. General insurance policies also became subject to VAT/GST in countries such as New Zealand, South Africa, Singapore and Australia; and even in Europe, the exemption from VAT has been substituted by Insurance Premium Taxes.

Now countries such as China are experimenting with the idea of taxing all, or nearly all, financial services under a VAT: with governmental regulation over their financial services sector being progressively relaxed, it provides a good testing ground for other countries to observe. If the Chinese experiment is successful, expect the debate about reforming financial services to be reignited in Europe and elsewhere. With the entry of market disruptors such as high-tech companies and traditional retailers into financial services, the rise of fee based products, and more sophisticated pricing models used by financial institutions, many of the traditional arguments used to rebut the application of VAT or GST to financial services now appear weakened. The mantra of some governments seems to be that applying indirect taxes to financial services may not produce perfectly pure policy outcomes, but sometimes “near enough is good enough”<sup>3</sup>.

A related trend is the shift from multiple rate VAT and GST systems to single rate systems. Countries such as China, with its multiple rates of 3%, 6%, 11%, 13% and 17%, should inevitably consolidate into a single rate: a similar change may occur in India where the GST is expected to be initially introduced with multiple rates for different goods and services, but should ultimately be rationalized after a settling-

in period. Both countries are undertaking significant indirect tax reforms which will impact on around 35% of the world's population.

At the other end of the population scale, New Zealand is the country generally regarded as having the most comprehensive indirect tax base, and by and large, it works. It is the model for countries seeking to implement "modern VAT/GST" systems. It would not be surprising to see other countries following the New Zealand lead in 2020 and beyond.

## Second Trend – Global Framework for Cross-Border Services and Intangibles

The second trend, though perhaps likely to exceed a 2020 target, is the shift towards a global framework for applying VAT or GST to cross-border flows of services and intangibles. That global framework is expected to result in a high level of consistency between countries in the VAT/GST treatment of international trade flows, based on the "destination principle". This is the principle that VAT or GST should be levied in the place where goods and services are consumed, not the place from which they originate. The destination principle provides a very powerful response, in an indirect tax context, to the base erosion and profit shifting ("BEPS") debate which is ongoing in a corporate tax context.

As Professor Rebecca Millar recently noted,<sup>4</sup> there is a real contrast in the challenge for policy makers in taxing cross-border transactions under corporate taxes as compared with indirect taxes:

Yet the conclusion that "something needs to be done" simply does not have the same significance for VAT as it does for income tax. This is not because VAT on global digital transactions is easy to collect: it is not. Nor is it because VAT raises different collection problems than income tax: for the most part, it does not. What is different about VAT is the almost universal agreement on the substantive jurisdictional principle that should be used to determine the tax base. Some countries might pay lip service to the destination principle, particularly countries with limited tax collection capacity and a high reliance on VAT to meet their revenue needs. Other countries – or their tax administrations and/or courts – might disagree about what the destination principle requires in particular circumstances. Nonetheless, there is little or no significant disagreement on the fundamental principle. Nor is there any significant disagreement about the most important aspect of the neutrality principle, which entails the notion that there should generally be no tax burden on business-to-business (B2B) transactions under a VAT. Thus, whatever it is that needs to be done, it is unlikely to involve a fundamental re-think of the jurisdictional basis upon which decisions are made about which country has the right to tax consumption.

While a single set of rules to be applied globally may be an unrealizable dream, agreement on framework principles is not. As the OECD has recently recommended,<sup>5</sup> supplies of services and intangibles in a business-to-consumer ("B2C") context should be taxed based on the place of performance where they are consumed "on the spot", such as services physically performed on a person, accommodation, restaurant and catering services, entertainment and sporting events, exhibitions and trade fairs. B2C supplies should be taxed based on the "usual residence" of the customer for other supplies of services and intangibles, such as consultancy, accounting and legal services, financial and insurance services, long-term rental of movable property, telecommunications and broadcasting services, and online supplies of content, storage and gaming. And business-to-business ("B2B") rules, where the emphasis is on achieving neutrality, should focus not only on where the business customer will use its purchases that final consumers will acquire, but also on facilitating the flow-through of the tax burden to the final consumer.

The logical consequence of this approach is the need for simplified registration and compliance regimes to enable suppliers without a physical presence in that jurisdiction to properly account for VAT/GST. Governments will be incentivized to do so, given that they otherwise run the risk of having to rely on more difficult and costly enforcement and collection mechanisms.

Already we have seen movement towards the implementation of these principles with the adoption from January 1, 2015 of the EU's "Mini One Stop Shop", which not only invokes the destination principle for B2C transactions, but also seeks to simplify the compliance burden for business across EU Member States. Similar measures have also recently been implemented in countries such as Norway, South Africa, Korea and Japan, with others such as Australia and New Zealand shortly to follow. It would not be surprising to see whole trading blocs, such as the Association of Southeast Asian Nations economic community, banding together to administer collection systems on a more simplified basis. This is key: unless governments can come together to simplify or overcome the need for separate country registrations, tax filings, and compliance, they will in many cases be resigning themselves to an "80/20" level of tax collection.<sup>6</sup>

## Big Data

This decade has seen a seismic awakening in the business world to the power of data and analytics. Historically the domain of the IT expert, data and analytics is now harnessed to drive business growth; to enter new markets; to drive change across operations, supply chain and finance; to understand and anticipate customer needs; and to implement new business models.

In this series of articles,<sup>7</sup> KPMG experts noted the transformative powers of Big Data and analytics in an indirect tax context, and how this phenomenon is reshaping the way businesses, and tax authorities, operate. In the first article we showed how tax authorities are increasingly understanding the importance and availability of data from business. In the second article we examined the impact of Big Data on the formulation and application of indirect tax policy and administration. The third and fourth articles focused on the impact of Big Data in a trade and indirect tax compliance context respectively. The fifth article then outlined how data and analytics could be applied to better understand and manage transactional taxes. Here we examine the impact of Big Data on indirect taxes in 2020 and beyond.

At a recent KPMG Global Indirect Tax Services event held in Hampshire, United Kingdom, participants from many of the largest multinational companies around the world debated eight key statements around the future impact of Big Data on indirect taxes. These statements, while deliberately provocative, paint a picture of the potential of Big Data post-2020. The eight propositions are:

#### **1. No more periodic returns – tax will be settled in real-time.**

Already we have seen innovation in countries such as Brazil, which recently implemented a public system of digital accounting used to approve, store and certify commercial and tax bookkeeping documents, to enable tax authorities to make a complete assessment of their tax accounting information. Similarly, in China, its Golden Tax System provides a data download of transaction level information to the tax authorities on a monthly basis. While not yet “real-time,” that solution is not far away. The experiences in these developing countries beg the question – if Brazil and China can do it, then why not more fully developed economies? Interestingly, in a recent article published by Bloomberg BNA, two academics put forward a thought-provoking proposal as to how indirect taxes could be transformed into something more akin to a retail sales tax through real time tax collection.<sup>8</sup>

#### **2. Big Data will close the VAT/GST gap.**

While there is an abundance of anecdotal evidence supporting increased requests for data by tax authorities from business, thus far much of that data has not been harnessed. This will change. Data analytics enables tax authorities to develop sophisticated risk profiles and conduct trend analysis, flag potential audit issues, and screen out higher risk cases for deeper investigation – cutting off avenues for fraud before they even occur. By analogy, just as we expect immigration officials to use data to pre-screen passengers before arriving at their destination, so too will tax authorities. “Random” audits will become a contradiction in terms.

#### **3. The tax transparency debate will shift to indirect taxes.**

Several recent high profile media cases have highlighted a disconnect between community expectations around the contribution that multinational companies should make to tax collection in the countries in which they operate, and their actual contributions. This has led to mandated disclosure obligations in a number of countries, as well as to many companies voluntarily reporting their tax payments. The role of indirect taxes in that debate has been somewhat muted to date, raising issues such as: (1) whether indirect taxes should be reported as part of a company’s total tax obligations; and (2) does a multinational company bear some responsibility if it is legitimately able to provide goods or services into a country without VAT or GST? Arguably the consumer is the winner, but equally it may be contended that the supplier has secured a competitive advantage over locally-based businesses.

#### **4. Data quality and analysis will be the new audit battleground.**

The new audit battleground will be around the testing of business systems and processes, to better understand controls around manual interventions, and to see how those systems respond to changes as a result of new products or services, or new rates and indirect tax rules. The debate in tax audits will be around whether one data set is better than another – in other words, whether tax authorities’ data which shows a certain correlation or trend is more accurate or robust than that of the company being audited. Tax authorities in Singapore have been amongst the leaders in this area, recognizing the mutual benefit for both companies and governments in the former investing in controls over indirect taxes as a means of securing enhanced compliance, with the latter co-funding the costs of implementing it.

#### **5. You won’t control all your own data anymore.**

Banks and credit card processors are already playing an increasing role as “de facto” tax collectors, with their data routinely being requested for analysis and to validate transaction level data. Interestingly, that same transaction level data which is so critical in an indirect tax context will increasingly be leveraged by tax authorities in a corporate or personal income tax context.

#### **6. Your data will become very interesting to others.**

Increased information exchanges between governments will facilitate multi-country tax authority audits. Additionally, indirect tax systems will increasingly rely on the VAT/GST registration status of parties, or their address details, and that information will likely become publicly available.

## 7. Indirect tax rules will be written with data analytics in mind.

For example, place of supply rules will cease to be based on vague or uncertain concepts such as “residency” for tax purposes, but instead will use proxies such as the consumer’s IP address or credit card information. Interestingly, this could shift the capacity for VAT/GST avoidance into the hands of tech-savvy consumers, able to shop around for the lowest VAT/GST rate using geoblockers. Non-resident or tourist refund schemes could, at least in theory, be abolished in favour of point of sale discounts, although it may be more convenient for governments to continue with inefficient practices to mitigate the financial impact.

## 8. You [the tax manager] will be redundant by 2020!

This was a tongue-in-cheek suggestion designed to highlight the changing roles and responsibilities of tax managers as a result of the Big Data phenomenon. In the future tax managers will be more focused on issues such as how systems respond to changes in products, services and technology; testing the integrity of systems; and analysing trends and exception reporting. Big Data demand is expected to reach 4.4 million jobs globally, with two-thirds of these positions remaining unfilled.<sup>9</sup> The point is simple – businesses need to retrain, recruit or upskill their tax staff to respond to the Big Data challenge.

## What Does it all Mean?

The truly fascinating issue to consider is how these megatrends will interact. If we have a shift towards a more comprehensive VAT/GST base together with the adoption of a global framework for applying VAT or GST to cross-border flows of services and intangibles, what happens when this is overlaid with the Big Data phenomenon?

Consider the following:

1. The place of taxation for cross-border flows of services and intangibles will, in the near future, be based around proxies such as the customer’s IP address, their credit card information, or the address they use as part of an ordering process. What this highlights is that data collection will drive the direction of the tax rules, rather than tax rules framing businesses’ data collection needs. Put another way, tax rules will respond to business needs, rather than business responding to tax rules.

2. The convergence of traditional financial services with the digital economy is likely to bring about a broadening of countries’ VAT/GST base, at least in the financial services sector. Debates as to the boundaries of exemptions for financial services (such as whether something is or is not a “payment system”), the problems of cascading of VAT/GST in B2B transactions, and disputes about partial exemption or apportionment methodologies would be rendered obsolete.
3. Real time tax collection potentially represents a “win-win” for both governments and business – while output tax may be paid more quickly, input taxes should similarly be refunded on a real time basis, and problems such as “carousel fraud” or “missing trader fraud” would disappear. In theory this should lead to VAT or GST systems operating in practice more like single layer “retail sales taxes”.
4. The more comprehensive the VAT/GST systems used throughout the world, and the more globally consistent the framework for dealing with cross-border flows of services and intangibles under a VAT/GST, the better able business is to implement powerful tax engines. Auditing, both by business and tax authorities, will be focused on the quality and integrity of their systems, rather than technical detail.
5. Technological development will allow developing countries to make quantum leaps in their tax collection and administration systems. Just as mobile payments are enabling more sophisticated banking and financing transactions in many parts of Africa, so too will technology enable the gap between tax collection in developing and developed countries to be bridged.
6. Increased volumes of goods now cross borders in non-physical form (for example, digital downloads), and as a result, the focus of collection and enforcement infrastructure operated by tax authorities will need to respond and adapt. With technological developments we could not have contemplated only a few years ago, such as 3D printing technology, over time the scope of what we deliver electronically is expected to substantially increase.

Only in the past 30 years have computers entered commercial and home use. Only in the past 15 years has internet usage become widespread. Smartphones have developed over the past 10 years, and in the last five years we have become accustomed to doing our banking and our shopping online. Seemingly everywhere we go we leave a digital footprint. Big Data is the recognition of the power and value to be gained in harnessing that data – it’s not difficult to foresee its impact in the world of indirect taxes.

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## Notes

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