Tax Administration 2025

What is the global outlook for the next decade?

Contents

Introduction

Tax administrations face continual change. The never-ending stream of budget concerns, large and small policy changes, persistent demands to close the tax gap, rising taxpayer service expectations, and increasingly sophisticated tax avoidance schemes leave no room for boredom in the executive suite. However, the perception is that tax agencies, like most of the government, are generally ineffective at addressing necessary change on a timely basis.

Policy changes that reflect new realities usually occur slowly in government. But once policies change, the expectation is that operating procedures and supporting systems should adapt quickly. Too often, this does not happen. Organizational inertia and complexity often make processes difficult to change.

Most tax administrations are totally dependent on their information technology (IT) systems. But senior executives often complain that their systems are the biggest impediment to change. Hard-coded, inflexible applications and rigid infrastructure are among the frustrations of administrators. Efforts to modernize are expensive, can take years and, by the time the systems are delivered, are already outdated.

There is one more dimension to this discussion: the accelerating pace of change. In 2013, futurist Thomas Frey wrote, "Humanity will change more in the next 20 years than in all of human history." [1] It is difficult to argue against this view. Within a single decade, the smartphone has already had a transformational impact upon all our lives.

Technologies such as artificial intelligence, next-generation robotics and genetic sciences promise major transformations ahead. On the social and economic side, trends such as population migration, the continued emergence of previously underdeveloped countries, and the extension of the concept of 'multinational' to describe smaller and smaller businesses will have tremendous impact.

Tax administrations have been unable to keep pace with change—and the rate of change is accelerating. Where this will lead is the subject of this paper. Governments organize themselves service agencies in another. Over the next ten years, these trends will affect us all. This paper uses the generic term 'tax' but much of the discussion is more broadly applicable to many customs and social services departments.

This paper also examines the trends that could impact revenue administrations, what those impacts might be, and offers

suggestions on how revenue administrations might prepare. The early sections can best be viewed as a forward-looking environmental scan. The intent is not to predict the future, but only to examine patterns and existing trends to identify potential futures to understand how agencies might be impacted. Then, this paper offers suggestions, which do not depend on the specifics of how the trends actually evolve. Although the future cannot be predicted, executives must still prepare for it.

It is important to note that each country represents a distinct set of needs and that each sets its own path. There are significant variations from region to region and country to country within each of the data sets referenced. This is most true when comparing the more advanced countries to those less developed.

The data exists to create country-specific views, but that is not the purpose of this paper. While these variations exist, in the tax domain the similarities of challenges, even between developing and developed countries, are at least equal to their differences.

One of the themes of this period will be the evolution of the levels of cooperation and competition between all countries facing revenue challenges. While the impacts on countries vary, the forces to which each are subjected are largely the same.

Second, while tax policy is normally managed at the level of the finance ministry with revenue agencies often having little direct influence, tax policy has dramatic impact on revenue administration. Thus policy is considered along with the administrative impacts.

While it may seem futile to try to separate forces such as demographic, economic, political and technological trends, for the sake of simplicity, this paper does so in the following section before looking at the impacts on revenue administrations.

Future environmental scan
Demographic outlook

The demographic view of the world has many forces that lead to considerable complexity in understanding the future population and workforce for any country. A country can best determine the possible impacts by thoroughly examining its own numbers, but this paper examines the major global trends.

The global population continues to grow, and within that growth, two major patterns are forming. Population growth has slowed significantly and the population is aging. Figure 1 shows the growth and aging numbers.
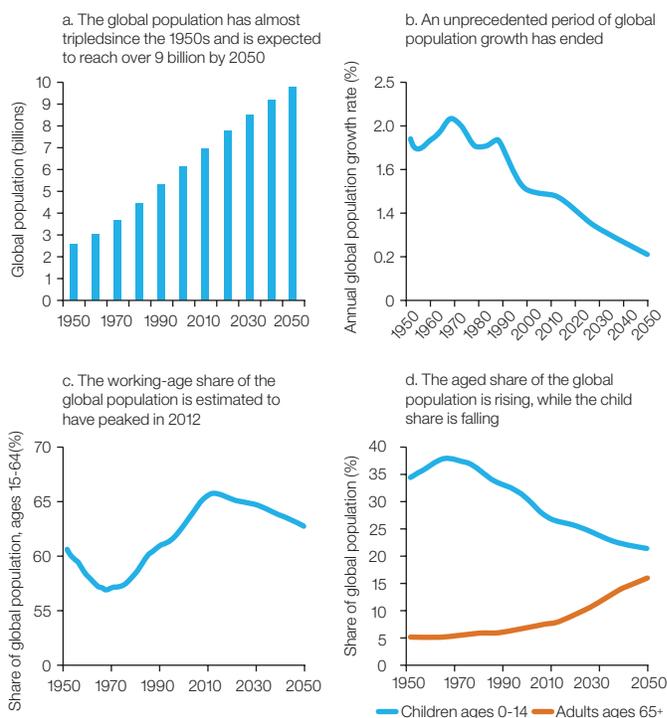
Figure 1: Demographic highlights indicate that the population rate is decreasing while the number of adults over the age of 65 is increasing.

Source: World Bank Global Monitoring Report 2015/2016 Advanced Edition

In most of the world, the birth rate is now below the replacement level of 2.1 births per woman. In fact, the only region of the world with projected continued high birth rates is sub-Saharan Africa. This means that in most countries, absent other factors, the number of workers available to fill jobs and thus become taxpayers will decline, affecting both the economy and government revenue. This trend increases with time but will have an impact within the next decade.

Many countries have, or are considering, raising the retirement age to try to minimize the near-term impact. In spite of this and reported unemployment rates of more than 50 percent in the 15– to–24 age group in Greece and Spain in 2014, the European Union (EU) working-age population is generally expected to decline by approximately 40 million by 2050. Their governments must respond. This is a broad economic issue for these countries potentially serving as a limiter on economic growth and thus government revenue.

To explore aging more deeply, we must understand the scope of the actual numbers. The global population over the age of 60 was 205 million in 1950, 810 million in 2012 and will be two billion by 2050. Of that population in 2050, 944 million are expected to be over 80.[2] We are living longer, enabling a later retirement age, but this much longer retirement must be funded.

A longer life also means more illnesses. One major factor in longer lifespans is the increase in global living standards, which enables more access to healthcare. However, as incomes rise in developing countries, so does the incidence of 'developed world' diseases such as diabetes and obesity adding even more cost to these healthcare systems.

According to one study, the global population affected by diabetes was 30 million in 1985, 246 million in 2011 and will be more than 350 million in 2030 at current growth rates.[3] Recent reports show that some countries, from the United Kingdom (UK) to Indonesia, are already at, or are nearing, a healthcare funding crisis and others will join them within this decade.

Another major demographic impact is mobility. In 2009, it was projected that by 2030, there would be 250 million migrants worldwide and that 65 percent would be living in developed countries.[3] In April 2015, the World Bank projected that 250 million would be the number by the end of 2015, 15 years early!

The details within the numbers are too complex to completely discuss in this paper, but we have some telling examples of the patterns to this point. Note that there are three different definitions of 'global north and south' used for assessing migration patterns within three different units of the United Nations (UN). To simplify, we discuss developed and developing countries using information from the International Organization for Migration.[5]

- While developing countries provide the most total migrants, as a percentage of their population, residents of developed countries are more likely to migrate.
- While estimates vary, only about 40 percent of global migration is estimated to be from developing to developed countries. About a third is from a developing country to another developing country, about five percent is from a developed country to a developing country, and more than 20 percent is from a developed country to another developed country.

- China is a growing destination for migrants. In educational migration, China has surpassed even Canada and Australia in the number of international students in its universities. In the past, most Chinese students migrated to attend school and remained in the host country. In 2011, for the first time, the number returning to China was more than 50 percent of the number departing.
- While developed countries are still the leading destination for migration for educational purposes, this is changing. Regional education centers in developing regions are improving in quality and attracting more students. The South African Development Community (SADC) is the leading region in terms of percentage of students migrating for study, and more than half of those stay within the region. Students from developing countries may be less likely to move to developed countries to fill depleted ranks of skilled workers than previously thought.
- For those migrants from developing countries, it is generally accepted that total of remittances going back to developing countries is roughly three times the total amount of donor aid to those countries.

One notable anomaly in the data is North America where, unlike most western countries, the population is expected to continue to grow significantly. Most of this growth will be a result of immigration. The US population will grow from 321 million in 2015 to an estimated 438 million in 2050. One study shows that 82 percent of US growth will be from immigrants arriving after 2005, plus their children and grandchildren.[6]

There are also anomalies within migration trends driven by political and economic events, which create sudden increases in numbers of political or economic refugees. These periodic surges will continue. In spite of efforts to have standard policies and regional or global coordination, they will be addressed on a case-by-case and country-by-country basis, balancing significant political controversy with humanitarian concern.

Along with the great variance among countries, it is also clear that migration will continue to have both positive and negative impacts on countries depending on their economic circumstances and political environment. Revenue administrations have been generally effective at integrating skilled migrants, most of whom are salaried, into the tax system and some countries have already concluded that migrants contribute significantly to government revenue.

However, there are also significant numbers of migrants who become small entrepreneurs or otherwise participate in the cash economy. This presents a significant challenge as their home countries often have a different tax culture than the host country.

One other trend is the increasing urbanization of global population. While this has been a pattern for some time, the acceleration of this trend is leading to a continued emergence of new megacities. Figure 2 illustrates the pattern.
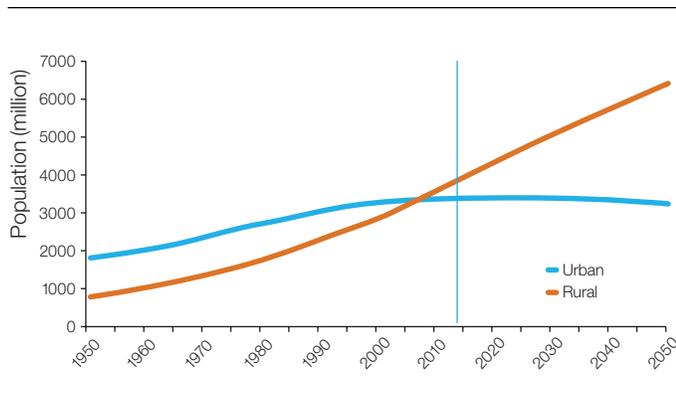
Figure 2: A comparison of urban versus rural global populations from 1950 to 2050.

Source: World Bank World Urbanization Prospects, 2014 Revision

In 2015, there were 22 megacities (10 million population or higher) and by 2025, there will be at least 30, mostly in the developing world. In 2005, the C40, composed of the mayors of the 40 megacities (by their own more liberal definition), was formed. The C40 has over 75 member cities. The infrastructure and ecological costs that come with city growth on this scale must be borne by governments. Revenue agencies will face a shift in the needs of their taxpaying populations.

The response of those countries already facing workforce shortages during this decade will be telling. Not all countries will face the problem immediately. Almost 60 percent of the world's population lives in Asia where the middle class is growing rapidly. According to one projection, by 2030, 90 percent of the world's middle class, by the UN definition of those with low risk of slipping back into poverty, will live in developing countries.[3] Even

though their populations are generally expected to decline also, this will not be an immediate economic issue as the poor moving up to the middle class will drive their emerging economies at least through this decade.

The upward economic movement in the most advanced developing countries, along with the shifting education patterns, means highly skilled developing country workers will increasingly be able to find suitable employment in their home country. This makes it likely that those with lower skills will continue to make up a preponderance of those desiring to immigrate.

The highest birth rates and thus largest population of newly working-age citizens without employment will be in sub-Saharan Africa where even the most optimistic of current development plans don't incorporate everyone into the work force. A major question is how to bring this surplus together in a meaningful way with the needs of countries with shortages. Some countries are already offering a variety of incentives such as special visas to attract the most skilled. Countries such as Sweden, Korea and New Zealand offer reduced tax rates, generally for a specified number of years. But the poorly skilled will continue to be a complex global challenge.

Other demographic patterns will have smaller yet significant impacts for tax agencies. For example, the number of individuals who become eligible for social services and retirement benefits in one country, but chose to live in another, will grow. This has been occurring for some time. The volumes are increasing and there are already anecdotal stories of difficulties in tracking beneficiaries outside the home country providing the benefits to determine if they are even still living. Most discussion of global data exchange between the tax administrations focuses on businesses and high-wealth individuals but this will need to expand.

Finally, consider this: population growth, coupled with economic growth, is projected to mean that by 2030, the world will require 50 percent more energy, 40 percent more water and 35 percent more food. These will further challenge efforts to address government fiscal needs along with the related and more often discussed ecological problems.

Economic outlook

How can increasing economic globalization be measured? One good indicator might be the number of cross-border financial transfers. It is estimated that over 95 percent of all such transfers go through the Society for Worldwide Interbank Financial Telecommunication (SWIFT) system.

The SWIFT system originally opened in 1977 with 2.8 million transactions. This grew to 518 million in 1994, 2.299 billion in 2004 and 5.6 billion in 2014.[8] This illustrates both the growth in international commerce and the extreme liquidity of the money that serves as the basis for determining taxes owed. Marketing hubs and other artifacts of profit shifting are only possible in such an environment.

The economic center of the world will continue to shift south and east. Asia has already surpassed both North America and Europe as a percentage of global R&D spending and China will likely surpass the US within the next decade. Over the decade, the

European Commission expects European exports to drop from 32 percent of the world total to 30 percent while the Asian portion rises from 29 to 35 percent.[3] While the US is one of the top of the destinations for foreign direct investment (FDI), for 2014 the UN Conference on Trade and Development estimates show four of the top five destinations to be developing countries.[10]

Estimates generally put 50 percent of the world's mineral resources in very poor countries. By 2025, they will be better at using those resources to extract maximum value for their own population and to enable diversification of their economies. Developing some of these resources involves high-risk investments, so countries must work to balance attracting the necessary investment while assuring more value for themselves. Better extraction of social benefit from these resources, as well as broader improvements in tax administration, underlie the prospects for meeting the goals of the post-2015 World Bank agenda.

Projections call for significantly lower economic growth rates in the US and Europe while by 2025, major economies in the developing world will extend well beyond Brazil, Russia, India and China (the BRIC countries), as illustrated in Figure 3. These will be major players in the overall global economic picture.

The next game changers in 2025 (beyond BRICs)

High GDP growth, improved FDIs, and rapid industrialization to give rise to a new lot of emerging countries, beyond BRIC nations, that contend to become next decade's economic leaders
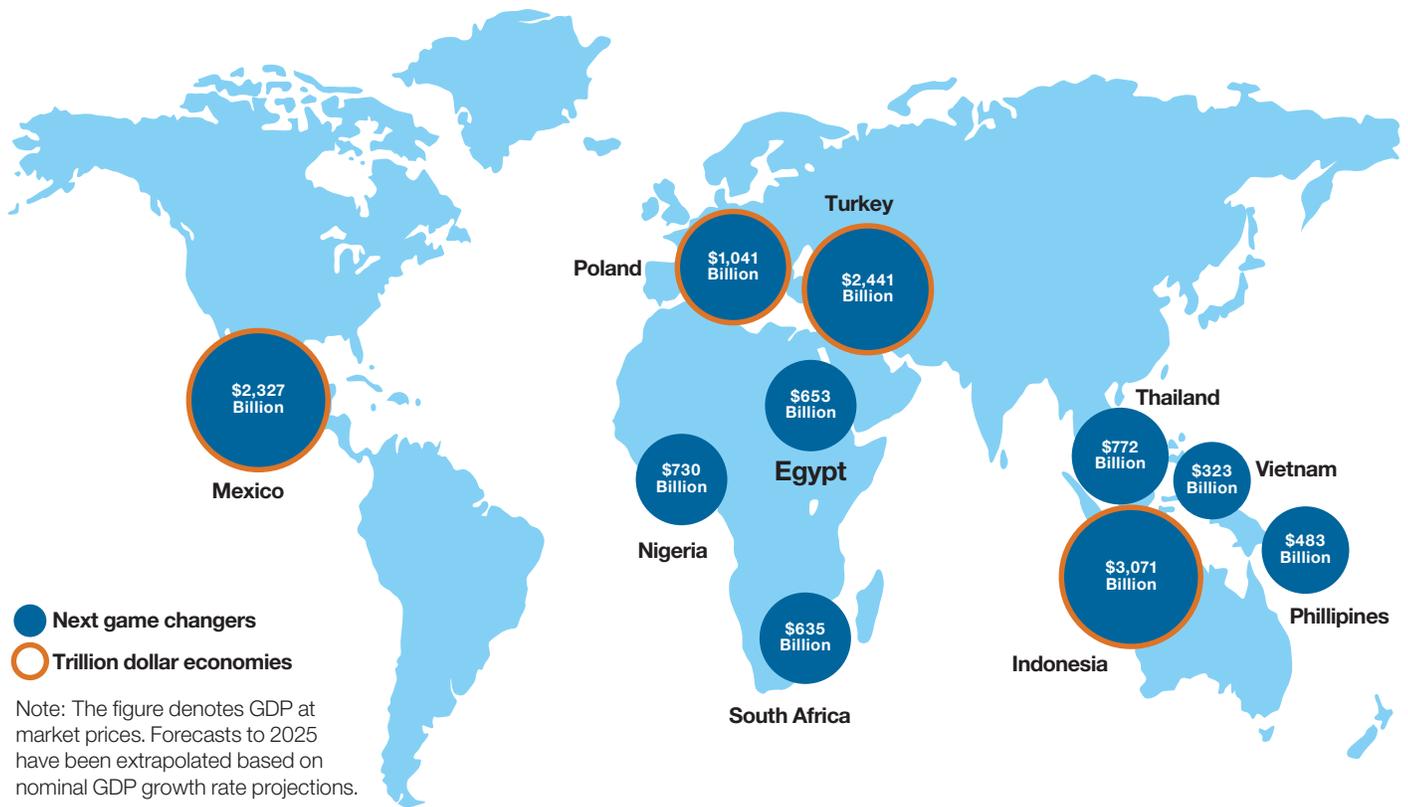

Turkey

Poland

$1,041 Billion

$2,441 Billion

$2,327 Billion

Mexico

$653 Billion

Egypt

Thailand

$772 Billion

$323 Billion

Vietnam

$730 Billion

Nigeria

$483 Billion

$3,071 Billion

Phillipines

$635 Billion

Indonesia

South Africa

● Next game changers

◯ Trillion dollar economies

Note: The figure denotes GDP at market prices. Forecasts to 2025 have been extrapolated based on nominal GDP growth rate projections.

Figure 3: Game Changers in 2025 – High GDP growth, improved FDIs and rapid industrialization should give rise to a new lot of emerging countries (beyond BRIC nations) that contend to become the economic leaders of the next decade.

Source: World's Top Global Mega Trends to 2025 and Implications to Business, Society and Cultures, Iain Jawad, Frost & Sullivan, 2014

While overall economic growth and growth of the middle class in developing countries is expected to be impressive, economic inequality within and between countries will continue to be an issue. There is an increasing recognition that this needs to be addressed. History has shown repeatedly that high thresholds of inequality create social instability. While some countries are already moving to address this, it will be a continuing challenge throughout the decade, leading to steps involving global and local political, economic and tax policies designed to better balance the benefits of economic productivity.

Corporate investment will continue to seek the points of maximum return and the global footprint of multinational corporations will grow more complex. Because of the location of the largest surplus of unemployed individuals and the lowest labor rates, we will enter what could well become known as the 'African decades.' Companies from both developed and developing countries will continue to open and expand production capabilities in Africa.

Unfortunately, debt will not disappear. The numbers are just too large. It is important to recognize that the issue is really about total debt—private and public. Various reports put total global debt at almost three times global GDP. Private debt, both corporate and individual, impacts future purchasing power and thus economic growth. Paying off public debt will create a drag on public investment in infrastructure and the ability to provide the services citizens expect.

A significant number of countries have debt exceeding 100 percent of GDP and one report by The Guardian noted that a number of fragile countries such as Laos, Ghana and Tanzania, have taken advantage of low global interest rates but now have debt levels such that even a mild financial downturn or upward trend in interest rates could easily precipitate a crisis.[11] As we know from the recent past, a default in any country has a significant spillover effect into the global economy, creating fiscal strains and thus revenue declines that all governments must address.

By 2025, the definition of 'multinational' will encompass an emerging reality. Now, 'multinational' refers to a growing, but still relatively small number of very large corporations with a supply chain and distribution network that reaches many countries. However, our definition is already expanding to include recent start-up sharing economy companies such as Uber and Airbnb.

Furthermore, through sites such as e-Bay, Alibaba and Etsy even the smallest businesses operating out of a small shop in a developing country now can, and do, sell globally. And new disruptions for additional industries will continue to emerge. One good example could be disruption to venture capital and broader financial industries from the emerging peer-to-peer lending platforms, which offer higher potential returns, albeit at higher risk, for individual investors and a new source of funds for those having difficulty securing funding.

The policies and processes of many parts of government, including taxation, were developed for a world, which was largely composed of people and companies born inside a country, whose economic activity was largely confined within that country, and who survived or died within the confines of that country. Large multinational corporations have always been a challenge that countries have struggled to adequately address, but governments will need to fundamentally rethink their policies and process approach on a much broader basis.

Other trends disrupting our traditional views of the workplace and workforce are already underway. In a world where competition is global and fierce, major players such as Amazon reinvent working conditions at low pay rates to meet 'modern' commitments such as same-day delivery from an Internet merchant. This creates concerns, but in essence those workers needs are in fact competing with automation of those work processes—not a good choice for a worker!

As mentioned before, many countries face a declining workforce but automation and advances in robotics may help partially address that. The challenge is that the workforce decline and the introduction of the technological replacements will not likely occur along the same pattern.

Sharing economy players such as Airbnb, Uber and their competitors, such as GrabTaxi and Wimdu, along with traditional companies using a 'just when needed' class of work, already have created the piecemeal worker. This new work category is challenging governments in many ways. It has created political pressure from the industries and workers being disrupted but their popularity shows that they meet consumer needs. As many government policies were developed in world where everyone was clearly an employee or self-employed, these models of work are raising policy challenges that must be addressed.

All of these forces assure a furious effort to try to compete effectively for economic growth while simultaneously developing tax policies and processes, which assure adequate government funding while meeting the needs of all stakeholders. Previous major economic and workforce transformations, such as the industrial revolution, occurred over decades. The current transformations will move much more quickly. With the shifting tides, policy makers will react in unpredictable ways and tax agencies must be prepared to implement the results.

Political outlook

National boundaries continue to be important but there is a growing recognition that the impacts of boundaries and protecting 'my' interests as a country have a negative impact on economic advancement. This adds complexity and cost to economic ventures while also creating economic distortions in the marketplace. Countries talk about 'easing' the burden on taxpayers but, in reality, want to do so in a self-interested way. While much of the talk in international tax circles is about cooperation, at the political level, countries are very much in competition for revenue, for jobs and for influence. Cooperation between tax administrations must fit within the political context.

It is not the purpose of this paper to present the challenges of non-state players dominating the news such as ISIS or Al Qaeda and who will 'win.' However, it would also be negligent to ignore the impact global political trends will have on tax administration in this global economic environment. The recent flood of political refugees from the Middle East and North Africa strains governments both in a political and a financial sense.

In December of 2012, the US National Intelligence Council published a report outlining the alternative views of the world in 2030 based upon the input of a wide range of global experts pulled from a variety of fields. They did not try to predict the world in 2030, but did paint a picture of four alternative possibilities for that timeframe. This, as shown in Figure 4, provides a brief and comprehensive political perspective on the potential states of the world.

Potential worlds

- **Stalled engines:** In the most plausible, worst-case scenario, the risks of interstate conflicts increase. The US draws inward and globalization stalls.
- **Fusion:** In the most plausible, best-case outcome, China and the US collaborate on a range of issues, leading to broader global cooperation.
- **Gini-out-of-the-bottle:** Inequalities explode as some countries become big winners and other fail. Inequalities within countries increase social tensions. Without completely disengaging, the US is no longer the global "policeman."
- **Non-state world:** Driven by new technologies, non-state actors take the lead in confronting global challenges.

Figure 4: Four potential states of the world

Source: US National Intelligence Council Report, Global Trends 2030: Alternative Worlds, December 2012

Regardless of how the scenario plays out, the world of tax administration will be impacted in terms of relations between countries and the extent to which they cooperate or continue to compete. From the organization of early societies into tribes, empires, feudal structures and more recently the nation-state, humans have adapted themselves to the defensive, political and economic needs of the age.

We are at one of those turning points where the current principal structure, the nation-state, is an obstacle to the trends of economic needs. But this will not change in this decade. One could view the UN, the EU and other regional bodies such as the Association of Southeast Asian Nations (ASEAN) as steps to address this issue.

For the foreseeable future, in spite of cooperation in areas such as Base Erosion and Profit Shifting (BEPS) initiatives and the World Bank Sustainable Development Goals (SDG), the world is likely to be a complex set of entangling social, political, economic, and defense relationships that will constantly shift. Tax administration will be impacted as their cross-border initiatives are in play and any success depends upon a cooperative political environment.

Technology outlook

Technology changes everything. The smartphone is so globally prevalent today that it is easy to forget that the first true smartphone was sold only eight years ago. Today's smartphone can do more things, and do them faster, than any PC from ten years ago. Continuing advancements on a variety of fronts promise multiple transformations in the near future. There are estimates that by 2020, ten terabytes of computing power will cost about US$1000. That is significant as this is the estimated computing power of the human brain. In a recent survey of 800 executives conducted by the World Economic Forum, over 45 percent indicated that they believed that by 2025 we will see the first board of directors where artificial intelligence will have a seat at the table![12] These technologies hold great promise for tax administrations. Some will create great challenges.

Those with greatest potential impact on revenue agencies include:

Cognitive computing
No technology has more promise for transformation of business functions. While cognitive computing has existed conceptually for many years, the development of IBM Watson technology has brought cognitive computing to the forefront.

Cognitive computing provides system capabilities that can think, understand, learn (and never forget) and interact with humans in a more natural way. While others are moving into this space, IBM has already demonstrated the capability of the technology to offer clients applications using Watson for practical use cases from natural language customer services on the Internet to enabling the medical community to have immediate access to medical data from thousands of sources to enable better diagnosis and treatment.

In an IBM survey of government executives, 83 percent of those familiar with cognitive computing believed that it would have a critical impact on the future of their organization. 100 percent of those familiar with the technology intend to invest in cognitive capabilities. For a longer discussion, see Mission: Possible! Your cognitive future in government, a white paper by IBM.[13]

For tax administrations, uses will emerge such as serving as an assistance agent for taxpayers, combining with existing analytics technology to take on advanced auditing tasks and enabling a combination of internal data external sources such as newspapers, social media and law enforcement sources to better detect hidden cost savings. While the power of cognitive computing will generally have a positive impact for government, it is conceivable that those looking to avoid or minimize taxes can also use the technology to find loopholes in the tax codes or easier paths to hidden activities.

The nature of Internet presence
As more of the world's population becomes more dependent on online information and services, opportunities and threats will increase. On the positive side, we will see the emergence of the zero interface (0X) which will make it easier and less manual to access information and execute transactions. The use of voice, motion and even glances to access the Internet will spur citizens to expect these new capabilities from their government applications. Other countries will even follow the lead of Estonia and have online voting in national elections.

On the other side, the 'access anywhere' dimension to the virtual world will expand the current challenges faced by tax administrations. Security threats, cross-border crime and tax Secure identity schemes incorporating biometrics will continue to evolve and revenue management agencies should be prepared to be at the leading edges of adoption of these technologies to enable anyplace, anytime, any device access for both citizens and employees.

Robotics
The sophistication of robotics, for example, in the manufacturing sector, will continue to advance and be perceived as a threat to the working classes. However, even more significant will be the advances of robotics in the services sector. Numerous studies in recent years have portrayed the services sector as the new source of jobs for those no longer needed in the manufacturing sector. However the use of robotics for activities such as cleaning, mail delivery and food preparation have already challenged this notion. For those countries facing labor shortages, robotics offers a least a partial solution especially when combined with cognitive computing. On the other hand, robotics also can eliminate jobs for which there are workers or be used as leverage to hold down wages.

Drones

Drone technology, while perhaps offering some services that tax administrations can use, has the potential to offer significant challenges. There are already reports of drug and smuggling organizations creating their own anonymous drones (those not having commercially required transponders for identification and tracking) for purposes of transporting large amounts of cash and or goods across national borders undetected. In addition to drug traffic and terrorism concerns around such capability, this creates a significant new revenue management challenge around value-added tax (VAT), excise and customs taxes as well as those schemes involving money laundering.

3D printing

While 3D printing may still be seen by many as just a technology for creating simple products, this is rapidly changing. There has been recent publicity about 3D being used for construction of a small bridge in Amsterdam and by NASA to manufacture components for the engines of rockets being developed for deep space travel. While 3D printers have been limited to construction from three base materials, recent developments at MIT are moving this to ten base materials. This expansion of capabilities is expected to continue. So what happens in a multinational supply chain when most steps of the manufacturing process are eliminated and raw materials are shipped directly from extraction points to the site of manufacture? Not only are jobs lost in the final manufacturing process, but multiple countries that were part of the value-added supply chain could lose sources of jobs and revenue.

Internet of Things (IoT)

At first, IoT was comprised of capabilities such as simple monitoring of home security systems and thermostats. But the technology has quickly evolved to be used in manufacturing, fleet management and the broader security world. There are already examples in the business world of the gigabytes of data these sensors can produce on a daily basis for purposes such as remote management of offshore oil rigs.

As we move to a world where sensors are built in, or attached to, millions of items, including some we wear, we will ultimately use our computers to search not only the virtual world but also the physical world and remotely monitor production processes down to microscopic detail. Revenue agencies could potentially use this capability for tracking of movement of goods to both ease the burden on business taxpayers in complying with VAT/General Sales Tax (GST), and excise and customs taxes. Policies regarding IoT data are yet to be set in many instances and it is not apparent that tax policy makers are representing their interests.

Digital currency

Since launch of the first bitcoin protocol in 2009, there has been continual debate about the likely dramatic growth (and then, with the Mt. Gox bankruptcy in 2014) and possible death of digital currency. Neither has proven to be the case. The use of digital currency has grown through businesses either accepting bitcoin directly or, more commonly, by accepting the payment through a bitcoin processor who converts the bitcoin to local currency immediately or within hours and passes that along to the merchant.

Current government positions on digital currency use vary widely. Russia and China don't allow their banks to participate in bitcoin transactions. The US and UK government position has been somewhat different. The US IRS has declared bitcoin to be property instead of currency and addresses it accordingly. While current global volumes are normally less than 125,000 transactions per day, projections are for growth. Countries in the developing world are exploring digital currency as a way of addressing their unbanked citizens and can do so easily within the country.

However, to address global transfers such as remittances where fees are now averaging eight percent, requires a global solution. For example, the Philippines has developed the e-Peso digital payment system in cooperation with banks, but this only applies for people physically residing in the country. Interestingly, this initiative has also been credited with driving rapid growth of bitcoin exchanges within the country. If the use of bitcoin grows as anticipated, governments will need to adopt firmer policies on its use.

Blockchain

Although it is the technology that enables digital currency, Blockchain deserves its own discussion as there are currently efforts to develop further uses of the technology due to the high level of privacy, security, efficiency and certainty it offers. The technology is not yet mature but offers such value that maturation is expected quickly. Technology companies such as IBM, a consortium of banks and some government agencies are already exploring or investing in tools to extract value from this capability.

Blockchain can create a trusted relationship between two or more parties who may not even know each other without the need for a trusted third party. As one current example, Everledger is a diamond certification solution which has over 800,000 diamonds registered and without the need for any paper certificates which might be valid or fraudulent, producers, shippers, sellers, purchasers and insurers can see through the Blockchain the one version of the truth as to the authenticity of any registered diamond. Such a use for land registries or legal documents are examples of potential government uses that are often mentioned. The capability could also be used in lieu of traditional ways of sharing or reporting data by allowing access through digital key controls with the assurance that the Blockchain technology has not and will not allow the 'truth' to be compromised.

Exploration of Blockchain as a tool for highly trusted online elections is underway. Tax agencies will want to monitor the technology for two reasons. One, their auditors will ultimately encounter Blockchain-based financial records. Second, they should explore operational uses such as new, more secure ways to build integration with ecosystem partners such as employers and accountants or to implement international data exchange agreements.

Dark web

Part of the Internet remains a mystery for most of us. It is where shadier bitcoin transactions occur. While we often see stories of how these dark corners of the Internet are used for illegal activities, it is important to remember that the intent of the original developers was for security and protection of privacy.

Government tax agencies must recognize that there is a large marketplace which operates much like eBay or Amazon where the vendors of illegal materials are given ratings by their customers so that the buyers can order from 'reliable' suppliers. While government investigation of this domain has occurred, it has mostly been by law enforcement and anti-terrorism departments. One tax agency executive recently stated that his organization had observed a rapid increase in illegal tax activity on the dark web between 2014 and 2015. Revenue agencies should be preparing to face the challenges of this domain.

Virtual reality (VR)

Over the next ten years, VR will become mainstream. We will likely begin to see integration of movies with video gaming through VR enabling us to participate in movies, rather than to just watch them. But initial applications to train football players and dentists as well as to treat a variety of illnesses such as post-traumatic stress syndrome (PSTD) are already in use. Other valuable uses, such as a way to enable juries to see and experience a crime scene, are under development. Businesses and governments will find valuable uses such as in enhanced training capabilities, particularly where simulations would add value.

Cloud computing

Cloud computing is not new, but its adoption in government is still emerging. Over the next decade, government cloud models for application of private, hybrid and public clouds will evolve. Uses will include collaborative platforms and shared service platforms to enable more efficient, cross-government infrastructure and application sharing. Security is still a concern for many government officials but uses by agencies such as the US CIA, the state of California and governments in Europe show that maturation of the technology and attitudes toward it will lead to widespread adoption.

Typically the response of revenue management agencies to new technologies has been reactive. Some even say that they don't want to be first in their field to implement a new technology. This is perhaps logical in many instances because of the political risk involved in failed government projects. However, the nature of the new technologies and the opportunities and challenges they present will make tax agencies become more proactive and less reactive to new technologies. This is both from a policy perspective, in terms of helping to set standards related to new technologies, as well as using them to both protect and enhance their service and compliance functions.

Tax administration evolution over the next decade

The central theme for the decade is that policy changes and budget pressures will be greater than before in both developing and developed countries. We describe three overarching themes:

• Policy issues
• Budget-driven efficiency demands
• Technology patterns

We then discuss how the tax administration will evolve in the services and compliance domains.

Policy issues

Tax policy is about more than revenue. It is also about the tax system as a tool for social and economic policy. Tax policy is one of the most effective tools available for domestic policy and will not be given up as such. We already see the scope of the tax policy domain expanding to include mechanisms for implementing environmental policy (carbon taxes), health policy (World Health Organization [WHO] push for higher cigarette taxes) and financial stability (financial transactions tax). This pattern will not change, so tax agencies should be prepared.

There are several major policy focus areas during the decade. Several difficult ones that will need to be addressed as challenges from the new economy emerge. One issue for many countries is the new category of employees created by the sharing/gig economy which does not fit into traditional forms of work status. Some countries will find it necessary to adjust their tax definition of employee versus self-employed or even to create a new category.

Also, as perhaps best illustrated by Airbnb and others, there is the issue of what happens when a new business model is totally disruptive in a way that could circumvent a major source of revenue, in this case hotel/tourist taxes. Continuing to try to force the components of the new economy into traditional categories is disruptive to these new emerging entities. In an ideal world, tax policy would not be an obstacle to market innovation. Furthermore, the same employees and companies being disrupted also have a voice in the political dialogue. The role of tax policy in assuring economic vitality will be a theme each country must continuously address.

The next major area of focus is multinational business tax issues. Currently, there are highly publicized international tax initiatives which give the public impression that at least some tax policy is made at the international level. These are related to the current G20/Organization for Economic Co-operation and Development (OECD) initiatives addressing BEPS.

While widely praised as representing major steps toward addressing important tax issues brought on by the global economy, the reality is that they are recommendations that must be adopted on a country-by-country basis. They are not intended to halt tax competition among countries but only to address aggressive, and sometimes illegal, tax planning by corporations and to facilitate compliance initiatives that could not be successful on a unilateral basis.

Even if most countries adopt the BEPS recommendations as proposed, there will be areas in which cooperation is tempered by the fact that countries also compete with each other through tax policy and that these policies are often very politically sensitive. A good example is the debate over 'innovation boxes.' While the OECD advocates elimination of these policies, some member countries are debating initiating them. Cooperative competition may be the operative phrase. The diversity of policies will still make some jurisdictions 'better' headquarters locations for companies and marketing hubs are not expected to disappear. Tax rates will likely continue to be a major form of competition between countries in spite of criticism of those with extremely low rates and steps such as the EU push for a minimum tax rate for their member countries.

BEPS implementation will be addressed during this decade and other important areas of cooperation such as the OECD's Tax Inspectors without Borders will evolve. But not all corporate tax issues will be resolved. Pressures already force some major companies to address and modify their tax structures, but full agreement between companies and tax administrators is not likely.

Many current tax policies evolved in a time when the business world was very different. Some date back a hundred years, when the number of multinational corporations was less than ten. The modern scope and nature of international commerce and the mobility of money and intellectual property in an Internet age were not on the minds of those who developed the principles such as transfer pricing. There are suggestions that the current

international taxation scheme for multinational corporations is outmoded. But it is ingrained into government policy and revenue regimes and into the operating models of corporations. It is hard to envision fundamental change in the near future.

Pressure will likely increase to explore additional incremental changes and steps such as a Global Financial Register advocated by Gabriel Zucman (15) and the Global Legal Entity Identifier System (GLEIS) moving forward under the direction of the G20 could well be in place. But tracking numbers by themselves are just tools, not solutions.

For individual taxpayers, the focus will likely be on adjustments to tax rates as country circumstances dictate and political considerations allow. Social and political considerations in some countries may dictate more aggressive changes to address internal income inequality. This will likely include, but not be limited to, more progressive rate structures as well elimination of policy loopholes.

Another area not likely to be resolved quickly is the variance in country policies related to mobile workers. Some countries attempt to tax business travelers on the first day of travel in the country, depending on the nature of their business, while others are much more lenient. Others have policies that a traveler cannot exit a country unless all taxes are paid in advance.

For most countries, this is not broadly enforceable at the present time, but technology can enable enforcement creating more challenges for mobile workers at the immigration portals of country exit points. In this increasingly mobile age, pressure will develop for more consistency to relieve pressure on these workers and costs for their employers for relatively small benefit for the countries involved.

The forces which will impact policy during the decade are easy to see. How each country will respond is not.

Budget-driven efficiency demands

While pressure for more revenue at reduced cost is always present, the intensity will increase. In developed countries, it will be caused by the revenue needed to reduce deficits, to cover existing debt and pay for increased retirement/social services/ healthcare demands while economies are growing at slower rates. In the least developed countries, the trend is for revenue to become more self-sustaining under the framework set by the World Bank Strategic Development Goals (SDGs) for post-2015. This is key to maturation of their educational, economic and social capabilities to enable more advanced development.

As part of broader government frameworks, tax administrations will be subject to the continuing aim to make overall government operations more efficient. Tax agencies that do not already do so will be asked to take on additional government collection activities. It can be expected that more benefit programs will be converted to monetary payments only and administered through the tax system. This lowers the administrative overhead significantly and some studies have shown that the value of the social service agency oversight to assure effective use of funds is, for some programs, adding less value than originally thought.[14]

There will also be more shared services expansion. Governments that have moved in this direction have experienced significant savings and improved services by sharing functions such as human resources, payroll services, procurement and some IT services across departments. A major area of growth for the decade will certainly be to take advantage of cloud computing to share infrastructure, host shared services and create a generally more flexible and cost-effective IT function whether the operation is in-house, outsourced or a combination of the two. This involves breaking down political barriers between departments but the fiscal pressures will make this necessary.

In a number of countries, budget pressures already force staff reductions. Some tax administrations already struggle to hire and retain skills in certain categories and this challenge will no doubt get worse, even for those with fewer employees and a declining national workforce. The skills needed will be higher—with auditors requiring skills in use of sophisticated analytical tools and forensic auditing capabilities and collectors facing more complex challenges to find the assets.

Competition for high-end IT skills has been a persistent challenge for governments and will continue to be so as governments look to both lower costs and leverage technology to make agencies smarter. At the present time, there is already a critical shortage of data analysts to meet the growing demand in both the private and public sectors. Finding the right mix of skilled staff and advanced enabling technology will be a key challenge. If the right skills cannot be found, reliance on vendor support could well increase, impacting budgets.

Technology patterns

After human resources, technology consumes the largest portion of most revenue administration budgets, yet systems are often described as a hindrance. For the most advanced administrations, this is generally because they are based on older technologies which are inflexible and rarely provide a comprehensive view of the taxpayer, encompassing all available data, for either services or compliance purposes. It is common to find that 90 percent of the IT budget goes to keeping these old systems running, updating only for current policy changes, rather than going to development of new capabilities to improve program delivery.

Most tax administration executives recognize this dilemma and are taking steps to address it. For developed countries, complexity and budget constraints will make this effort take much of the decade. As it would be extremely risky to replace all of their installed base of systems overnight, high-level integration skills for blending the old with the new must be available internally or from a trusted partner.

For developing countries, donor/aid organizations are committing increased support to help get the fundamental systems in place so that the objective of larger self-sustenance can be met. The least developed countries will likely continue to look to commercial, 'off-the-shelf' tax packages to meet their immediate needs quickly. However, the typical core tax solution must, due to budget constraints, support their needs for at least 15 to 20 years. These governments would be best served by making sure the selected solution is adaptable enough to meet their needs beyond the end of this decade.

With these fundamental system needs addressed, tax administrations will be better positioned to maximize the use of analytical and cognitive technology to drive better insights and decision-making. Analytical technologies have been used in tax administrations for over 30 years but have been largely restricted to addressing narrow problems such as audit case selection. Few have invested in a comprehensive foundational capability enabling deep insight into the service and compliance needs for each taxpayer and providing managers and executives with the information they need for all of their decisions. There will be an increasing need to do so, based on the value of such investments. Outside of core systems replacement/enhancement, this will be the area of greatest investment during the decade.

Simply put, analytical systems use data to understand problems based on models constructed by knowledgeable experts who understand the problem being addressed. They work best with structured data, or unstructured data from which structured data can be extracted. Cognitive systems are more useful for incorporating unstructured data, including news articles and social media, and can think, learn and respond in natural language providing deeper insight for tax compliance and new ways of servicing taxpayers.

By the end of the decade, all tax administrations will use advanced analytics solutions and cognitive computing together to better address their most critical issues. The most advanced tax administrations will have strategic initiatives to leverage the technology across the full enterprise to become intelligent enterprises. These will better understand the relative value of investments in services versus enforcement. They will conduct detailed policy impact analysis and revenue projections. They will better plan resource shifts by predicting call volumes down to the hourly level and to better anticipate the impact of economic and social events.

Finally, even a cursory review of news headlines shows us that security threats to infect systems, steal data or just to prove that it can be done are not likely to disappear. Government agencies across the spectrum, including tax agencies, have been targets of attacks. Tax agencies in many countries already do a good job of integrating with government-wide security processes. As electronic channels are generally in the hands of the private sector, and private companies are as much a target as is government, best practice is to have policies and procedures for alerts and coordination between the private and public sectors, as well as global communication channels. Many governments in developed countries have already put similar processes in place and the others will need to do so during the decade.

Services programs

Services programs have been among the first targets for those tax administrations already forced to accept budget reductions. These continued pressures will drive agencies to use technology to reduce the need for face-to-face service offices and for telephone operations. By 2025, in most developed countries, the number of walk-in offices will be greatly reduced and telephone support operations further reduced by 50 percent or more. Using cognitive computing front-ends to the tax agency web presence will enable citizens to interact in natural language with systems on the Internet and telephone in much the same way they currently interact with live agents. This is already beginning in the area of answering questions related to rules, laws and regulations via the Internet. This will advance to the point of responding to the account status inquiries based on the evolving ability of systems to perform the necessary calculations. Such systems require training, but then do not forget what they learn and can be available 24/7. As they continue to learn, they should be able to exceed the accuracy of live agents.

Interestingly, while this use of technology will seem in one way, less personal, in another way, it will be more personal. Based upon the availability of more and more data (thus big data) to the extent privacy policies will allow, agencies will have the capability to take a holistic view of the taxpayer. They will thus better understand individual taxpayer status (such as family status and births/deaths from government records) and needs (such as an upcoming payment date). This will make intense personalization of services increasingly the norm and available anytime, on any device. The most advanced tax administrations will have developed (again, consistent with local privacy laws) more integration with employers and other services agencies to automate information exchange to update taxpayer records, significantly reducing the burden on taxpayers.

Use of social media tools and other electronic forms of communication will expand the capability of taxpayers to interact with governments. The government of one Caribbean country recently had the experience of learning about major criticism of a policy change in the newspapers a week after it had passed the legislature. While taking steps to reverse the legislation, they came to realize that the criticism had been on Twitter only hours after passage but they had not picked it up. By 2025, revenue agencies will have developed the capability to use social media as an early alert system for significant policy and process breakdowns adding more value to this form of 'dialogue.'

Tax administrations will develop better understandings of the relationship between the services domain and the compliance domain and how each can best be used to maximize revenue. While agencies have always understood that taxpayer services contribute to compliance, they have not been very effective in measuring this or the relative value of various service channels. Agencies now understand themselves to be social engineering agencies, not in the manipulative sense of the term, but in the sense of better understanding individual taxpayers and groups of taxpayers and tailoring services and enforcement efforts to better facilitate compliance and maximize revenue.

To do this and make effective use of their big data projects, agencies will not only have statisticians and economists on staff, but also social scientists. Perhaps as many as a dozen tax agencies already have taken this step and more will certainly follow. Some revenue agencies, academic institutions and even the World Bank are already doing 'randomista-style' behavioral studies to better understand taxpayer behavior and agencies are adjusting programs to match the outcomes. These practices will be widespread by 2025. Using methodologies being applied in other industries, they will look for answers to questions such as, "For a given set of taxpayers, will appeals to good citizenship, a simple notification, or threats of penalties have the most positive effect on revenue?"

A large number of countries have done a good job in working with the schools to educate the young on tax matters and bring them into the tax culture in a positive way. They will also look to identify better ways of bringing immigrants into the system. Those migrating within corporate structures are not the major issue here. But many of those coming from developing countries come from a different tax culture, generally where non-compliance is higher and cheating is a cultural norm. Those immigrants who work in the cash economy are susceptible to under reporting or staying out of the tax system. But most want to be a true part of their new country and tax administrations will do more to facilitate this.

By 2025, most advanced tax administrations will have completed the rethinking of their relationships with other 'tax players' and will have developed the technology and ecosystem mechanisms to use accountants, tax/accounting/payroll software companies, employers, banks and more to drive efficiencies for all to improve service and to reduce compliance burden, especially for business taxpayers.

For example, currently agencies develop electronic services for businesses to access on their websites and frequently adoption is less than anticipated as going to the e-service is outside the taxpayers normal work stream.

However, if agencies make their e-services available to software companies through application programming interfaces (APIs), the providers of software to the businesses can make the e-service accessible within their products. This will make access and use for businesses much simpler and add value to the commercial products.

Working with software companies to integrate policy and procedural changes into their products more quickly can ease the learning curve for taxpayers, especially new businesses. Some OECD countries already work effectively with their ecosystem and this practice will become universal. Initial efforts have been on coordination, but to increase ecosystem impact, the efforts must focus on moving from coordination to integration.

Compliance programs

As BEPS continues to be an emphasis throughout the decade with the major focus on adoption of the policy principles and putting the mechanisms, such as country-by-country reporting and more rigorous transfer pricing processes, in place. Some countries will struggle with integrating exchanged data within their current compliance processes but will sort this out. In addition to the revenue impact, the fact that it is on the G20 agenda and that it has become a political issue in a number of countries will keep BEPS as a high-profile issue.

There are closely related initiatives that could come to fruition during the decade and would need to be accommodated. One of the most likely would be the GLEIS because of G20 sponsorship and another possibility is the Global Financial Register. There are estimates that BEPS represents a very high percentage of the revenue leakage in some of the poorest countries with high levels of resource extraction. But for most countries, BEPS does not account for even half of the tax gap, so it will not likely account for the majority of tax agency compliance resources.

Looking at other compliance issues, a 2013 EU study estimated that the average country-level VAT tax gap was 15.2 percent.[16] There were wide variances but eight countries had gaps of more than 25 percent and other global regions face similar problems. VAT data is already exchanged routinely within the EU, but could be another component of broader global data sharing in the future.

Dimensions of the underground economy such as cash businesses, smuggling and money laundering continue to be challenges. The audit rate for advanced tax administrations will hover at around one percent or lower. Increasing the results of compliance programs will require approaches beyond the traditional audit. More countries will likely implement policy initiatives, such as VAT lotteries and tying automobile licenses to proof of tax compliance, to improve compliance.

But the principal method of attack will be better use of analytics to identify fraud and error. The technology exists to do much of this work today, provided the right range of data is available and the right detection models have been developed. By the end of the decade, the technology will be implemented more strategically across the enterprise and results from these deployments will advance significantly, provided the right data skills are in place.

For individual taxpayers, at the highest income levels there will be some continued move to follow the corporate lead and 'pick-your-own' tax rate by renouncing country of birth citizenship and moving to a lower tax country. These will continue to make news but will be relatively low in volume. The big challenge will be the high volume but lower average value (in the larger picture) fraud and errors from the masses of taxpayers. In aggregate, this represents significant revenue but at the individual taxpayer level, the cost of securing the taxes can easily surpass the revenue obtained.

Those countries that pre-populate the tax filing for the taxpayer have a distinct advantage especially as they increase their ability to do so accurately and more countries will follow their lead. For the others, efforts will focus on gathering more validating data against which to assess filings as they are received, a major component of what is sometimes referred to as 'real-time' tax administration. As more revenue administrations have been engaged to pay out monetary benefits, the level of fraud in this area has grown exponentially.

Real-time, up-front analysis of these claims has already demonstrated the ability to save governments billions in revenue as best exemplified by the US IRS, through their Return Review Program. Especially in those countries with severe budget limitations, benefit-sharing contracts will be more widely used to enable vendors to provide fraud and error detection capabilities and take their payments from the benefits obtained. This is currently being done in the US, in North Carolina and New Jersey, and the UK has initiated a similar project. These current projects focus on monetary benefits and tax refund fraud, but this approach could be used beyond this scope.

One of the frontiers in tax fraud is still technological fraud, although it has been around for some time in a number of countries. It is technological in two ways. First is in the sense that, as tax administrations have implemented e-filing and e-services solutions, if one can get the scheme right, they can generate refunds of income or VAT taxes systemically, receive the funds and disappear quickly.

On the other side, those so inclined can hack government or commercial systems and obtain enough personal identification information to make government systems believe the transmission is coming from the actual taxpayer. Because of the large size of the refunds the average taxpayer receives in the US, the IRS will likely continue to be the main target of such schemes. But a recent example in Thailand involved a scheme which included insiders to create fake companies and then generate false invoices which generated large VAT refunds. It would thus be foolish for any tax administration to not have programs in place to detect such schemes.

Each area of non-compliance requires its own set of steps to make significant revenue gains. The largest non-BEPS area of emphasis globally is likely to be VAT compliance where the nature of fake/missing invoices, missing trader/carousel fraud, use of sales suppression software and the cross-border nature of much of the fraud will require tighter focus and better solutions.

Currently two different trends are emerging for improving VAT. Some countries such as Russia and Taiwan require online submission of all VAT transactions so that each can be analyzed in context. While others explore 'trusted partner' programs where company systems could be certified as calculating VAT correctly. Countries will choose the method that best suits their situation and all will use more refined analytical models to address VAT non-compliance.

Analytical tools will be used to create risk profiles for both individual and business taxpayers so that agencies can more effectively focus compliance resources on those taxpayers who past behavior and profile flag necessary action. Cognitive tools will make these profiles even more refined than current tools. This will further enable up-front screening of filings in lieu of the traditional downstream audit which delays revenue, increases cost and reduces the likelihood of collection. Predictive analytics mature during the decade and enable better focusing of pre-transaction initiatives such as services outreach and compliance warnings.

Compliance functions will need to make some decisions about what data is actually useful. Many countries in both the developed and developing world do not yet have effective data management programs. The cross-border data, as well as increasing data from other entities in-country that contributes to fraud and error detection, will be a challenge to manage and use effectively. Compliance functions need to define what is actually useful, rather than just what is available, and how they will use it. In this way, big data projects can be efficient and most valuable. By the end of the decade, most countries will have addressed this with the data management/big data initiatives that compliance functions require.

One smaller arena for broader cooperation is the joint conduct of audits of multinational entities. A number of countries already have processes in place for these, but a technology-based collaborative auditing platform is very feasible if the compliance value can be shown and cross-border tax administration mechanisms are put in place. This is another example of where technology is not the obstacle to more efficient and effective tax administration, the obstacle is the global tax system, or the lack of one.

It is worth noting that the concept of a World Tax Organization, under the World Bank, was one of the more controversial proposals at the Addis Abba Financing for Development conference in the summer of 2015. The major developed countries opposed it, likely due to concerns about such a body imposing on tax policy sovereignty. However, the administrative aspects of tax administration could be an effective starting point for a trusted global body to help assure that the cooperative initiatives achieve maximum impact.

The creation of a tax administration reference model similar to the Treasury Reference Model developed by the World Bank and a data model for tax administration similar to the customs data model developed by the World Customs Organization are examples of where such an organization would likely start. These steps toward administrative, if not policy, coordination would help enable more effective compliance in this mobile world.

It is highly likely that the methods of conducting audits will begin to change during this period. Leveraging the ecosystem partners producing the software which creates tax filings, it should not be necessary to check if the output/filing is correct. If the software is approved in advance, only the inputs could need to be confirmed, not how the software handled in the inputs.

Some steps in this direction have already been taken in a few countries such as the IRS review of software products used for electronic filings in the US. This, coupled with steps by some OECD countries to require a standard file from company systems which can be used to verify the filing, could transform audit processes. At current audit rates, tax administrations cannot audit themselves into higher levels of compliance. However, audits are necessary and making them more efficient could drive more audits with the same resources levels. Agencies will have to rethink current approaches and begin a transformation.

Preparing for the future

Although the future cannot be accurately predicted, world leaders must prepare for it. Daily pressures far too often keep executives from focusing attention on the longer term. In fact, in most countries, the focus is difficult to maintain beyond the next election. In those countries without elections, most of the focus is on near-term public perception of policies and actions to maintain their base of support.

The statement that "the best way to predict the future is to make it" has been attributed to a number of people over the years. But accepting that it is true, how do we act on that insight? This only occurs if tax administrations find ways to be more adaptable in program execution and smarter in their decision-making. It is possible. There are some steps tax administrators can take.

Most important is to establish processes for getting beyond leadership focused only on solving the problems of yesterday and today with solutions that may be out of date by the time they are implemented. This does not necessarily mean higher cost. It does mean better understanding long-term needs to make longer-lasting investments. Most tax agencies do not yet have a formal, 'outside-in,' environmental scanning process to support their internal strategic planning.

A few revenue agencies, such as the Australian Tax Office, have days each year where the entire management team focuses on trends and patterns that will impact tax agencies. This is a recommended practice. These scans should address a variety of challenges. What is changing in our society, economy and technology that might impact our tax administration? What impact will this have on our taxpayers? What impact will it have on tax compliance? What do we need to do to become a facilitator of the new economy and economic vitality, rather than an impediment?

Tax administrations can be more effective in the core mission of revenue maximization and in their contribution to economic vitality of the country if they are anticipating trends, in step with current issues and, as a result, are less reactive. As reactions to trends often start at the policy level, it would be advisable for this process to include key policy officials as well as the tax administrators.

Think of future planning for revenue agencies in terms of the three critical assets they possess and how to maximize the effectiveness of each. The most valuable asset of each agency is its human resources (HR) and this is reflected in budgets. Tax administrations should be continually rethinking their human resources processes and needs. This is especially true in those countries where, as policy, government employment is essentially lifetime employment.

As referenced earlier, the availability of workers and the skills they will need is changing. In spite of the fact that the overall size of tax administrations' staff may shrink in many countries, a large percentage of these countries have indicated that they will be doing significant hiring due to a rapidly aging workforce. How should we replace the legacy workforce? Data specialists, forensic auditors and high-end IT integration skills will likely be major challenges in the coming decade.

The challenges of technology-driven fraud are also such that, rather than the traditional approach of training some auditors in this technology, tax administrations are likely to find it necessary to hire specialist 'ethical hackers' and experts in the dark web to work alongside auditors. Tax executives should continually ask themselves questions about recruitment challenges, changing skill requirements, training needs, how to use workers growing up in the gig economy and how the desired future state should impact HR policies. Selecting employees based on the traditional standards and job categories will not serve tax administrations well.

After human resources, the next most important asset of a revenue agency is its data. Agencies have now, or have legal access to, massive amounts of data and we have seen that this is expected to grow. But tax administrations have been generally unimpressive in their ability to use such data. For those that have not already done so, an immediate need is to understand the value of and how to better manage data within the tax administration. This means understanding data as a business asset rather than an IT asset.

Tax leaders should determine whether their organization understands the value of data and whether they are using it effectively. If they do so, many will join the organizational trend of appointing a chief data officer (CDO). Commercial companies use client data to target marketing and even predict what customers will buy. Tax administrations should be exploring the equivalent value of their data for driving services and compliance and planning their data strategy accordingly. For a deeper discussion of this topic, see the paper, *Data-driven government: Challenges and a path forward.*[17]

The third most important resource is the IT capability on which tax agencies now rely. How to plan systems needs for the future is a top-of-mind issue for many tax administrators. Many are constrained by inflexible systems that do not adequately meet today's needs. Government processes in developed countries often lead to delivery of new systems that are outdated by the time they are operational.
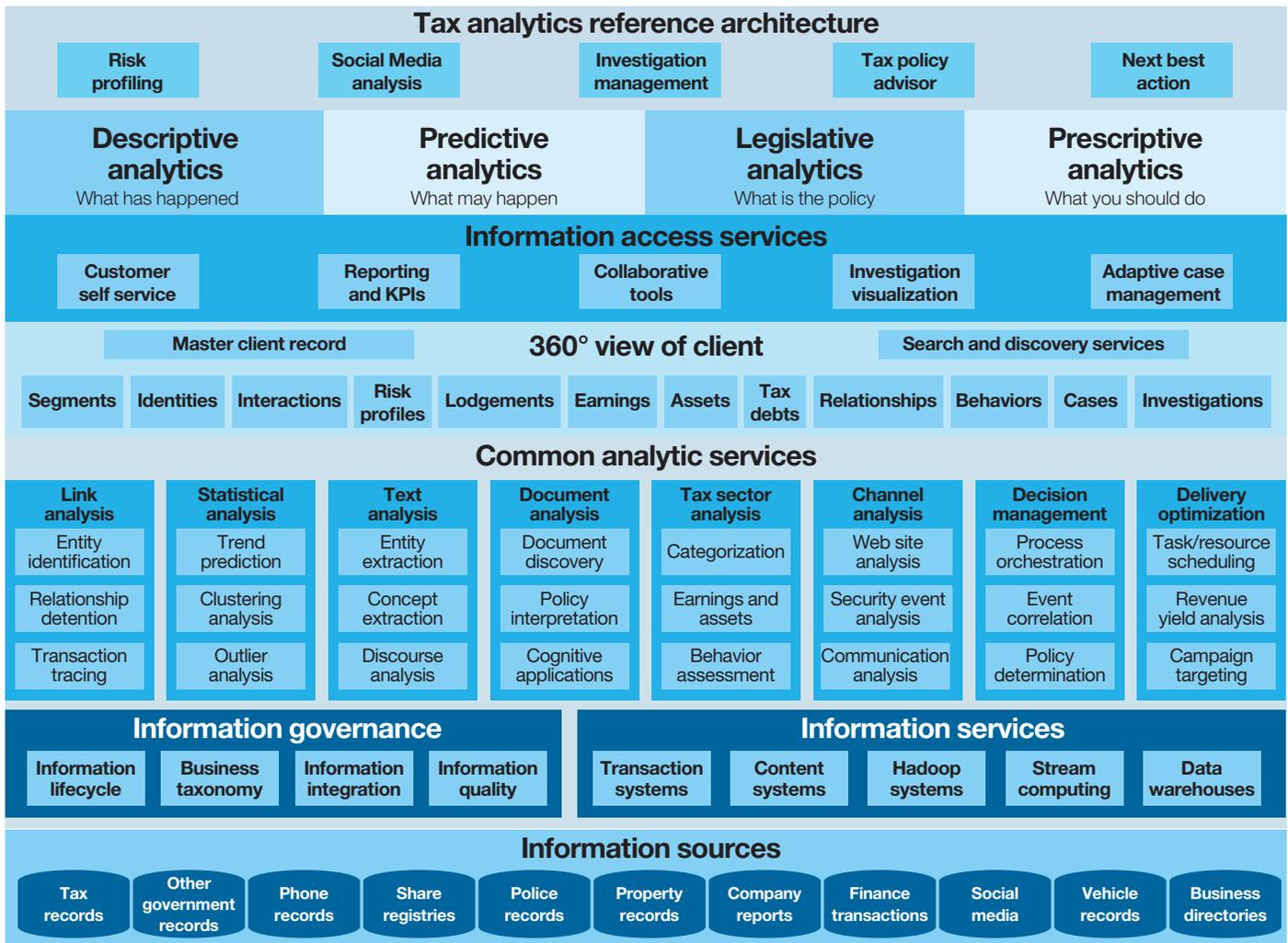
In developing countries, even when donors assist, it makes the process more complex and often delivers inadequate results. Tax administrators should focus on two aspects of systems, beyond core functional requirements, that are rarely mentioned in requests for proposals (RFPs). These are:

- First, *flexibility/adaptability*: This is the ability to make basic changes such as tax rate changes or adjustments to process flow easily and quickly.
- Second, *extensibility*: This is the ability to accommodate more significant changes such as addition of a new tax type, additional data sets and new functions such as absorption of responsibilities previously with another agency without having to rebuild the system or build an alternative system.

Proposals for new systems should incorporate evaluations against these two key criteria.

Within the context of the IT strategy, tax administrations need to assure that they are taking a holistic approach to their analytics investments. Because of the need to increase revenue, most early-stage tax administration investments in analytics have been focused on generating quick revenue through fraud detection by identifying questionable filings and by better selection of cases. Some agencies continue to seek a new analytics solution for each compliance problem they are trying to solve.

A much more logical approach is to develop a comprehensive view of tax administration analytical needs to create an analytics framework and build toward that as investments are made. Figure 5 is an example of such a framework. This helps enable investments to be leveraged across multiple programs and to be used not only for fraud and error detection but also for capabilities such as policy analysis, revenue projections and better management of customer service functions.

Tax analytics reference architecture

Risk profiling	Social Media analysis	Investigation management	Tax policy advisor	Next best action

Descriptive analytics What has happened	**Predictive analytics** What may happen	**Legislative analytics** What is the policy	**Prescriptive analytics** What you should do

Information access services

Customer self service	Reporting and KPIs	Collaborative tools	Investigation visualization	Adaptive case management

Master client record — **360° view of client** — **Search and discovery services**

Segments	Identities	Interactions	Risk profiles	Lodgements	Earnings	Assets	Tax debts	Relationships	Behaviors	Cases	Investigations

Common analytic services

Link analysis	Statistical analysis	Text analysis	Document analysis	Tax sector analysis	Channel analysis	Decision management	Delivery optimization
Entity identification	Trend prediction	Entity extraction	Document discovery	Categorization	Web site analysis	Process orchestration	Task/resource scheduling
Relationship detention	Clustering analysis	Concept extraction	Policy interpretation	Earnings and assets	Security event analysis	Event correlation	Revenue yield analysis
Transaction tracing	Outlier analysis	Discourse analysis	Cognitive applications	Behavior assessment	Communication analysis	Policy determination	Campaign targeting

Information governance

Information lifecycle	Business taxonomy	Information integration	Information quality

Information services

Transaction systems	Content systems	Hadoop systems	Stream computing	Data warehouses

Information sources

Tax records	Other government records	Phone records	Share registries	Police records	Property records	Company reports	Finance transactions	Social media	Vehicle records	Business directories

Commercial in confidence

Figure 5: Tax analytics reference architecture

For a variety of reasons, tax administrations continue to rely on vendors for technical support. The world has seen many failed tax IT projects involving revenue agencies and vendors, neither of whom intended those projects to fail. Revenue agencies, procurement officials and vendors should work together to find more effective models. For revenue agencies to respond more rapidly to changing needs, their contracts must facilitate rapid change and the vendors that support them must respond quickly.

Governments must accept that private companies need a reasonable profit and companies must appreciate that governments are very cost sensitive. In a collaborative partnership, even cost should not be an overwhelming obstacle. Many administrations currently use long-term contracts from which they can more quickly order services with abbreviated secondary processes and timelines. To assure maximum innovation, it is advisable that vendors be incentivized through some form of benefit sharing to bring innovation to their performance throughout the delivery period of long-term contracts.

Developing countries that do not yet have access to a solid core system should ensure that they select vendors with diverse experience in supporting a variety of revenue agencies. These projects are always more complex than they seem and vendors who have complex tax systems experience are better able to meet budget and schedule targets.

Developing countries also have a challenge to be supportive of local companies but few of these companies have the experience and maturity necessary to assure success. A history of corruption in many countries means the most capable international companies are often hesitant to take on these projects.

If this issue can be addressed, is very reasonable to build requirements to assure that any outside tax systems integrator engaged is required to team with, and develop the capability of, local companies during contract delivery. This will both assure project success and help the local IT industry.

Finally, executives should not underestimate the power of the tax ecosystem as a tool for change. Revenue administration CEOs should give personal attention to building relationships with their counterparts in other ecosystems such as the tax/accounting/payroll software industries as well as the accounting, financial services, banking and other government department communities.

These should be viewed as strategic partnerships to help governments provide services and improve compliance while helping the partners build more productive relationships with their clients. To maximize value, the strategic and policy aspects of the ecosystem will be more difficult than the technical ones and the full C-suite must be engaged.

The future for tax administrations is complex and the exact direction of the future can never be determined precisely. However, by focusing on these key issues, tax administrators will position themselves to both meet their immediate needs and be better prepared for the future.

For more information, visit: **ibm.com**/government

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