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McKinsey on Public Finance

New opportunities and enduring themes for global public finance leaders

Contents

Introduction

Public finance lies at the heart of government efforts to fund improvements in lives and livelihoods and build sustainable economic growth. As governments around the world invest in the social and economic welfare of their people, shepherd their countries through times of turbulence, and build resilience for the future, effective management of their nation's resources, fiscal health, and public finance institutions remain critical.

For years, nations have faced persistent fiscal pressures. Recessions, debt crises, major geopolitical events, and a global pandemic have led to profound fiscal imbalances in many geographies, as expenditure growth has outpaced revenues. In 2020, according to the IMF, global debt rose by 28 percentage points to 256 percent of GDP—the largest one-year debt surge since World War II. Public debt—currently at a record 99 percent of GDP—now accounts for almost 40 percent of total global debt, the highest share since the mid-1960s.[1] Inflation and rising interest rates are compounding the pressures on government budgets. And in many countries, long-term demographic shifts are exacerbating these liabilities, particularly those related to healthcare and pensions.

Around the world, public finance institutions are rising to the challenge by modernizing, increasing transparency, using data in innovative ways, and improving their performance—providing better outcomes for citizens. As in previous crises, the best public finance leaders are focusing on both the short-term challenge and the longer-term horizon, while building resilience to future shocks.

We are pleased to present *McKinsey on Public Finance*, which brings together our research and perspectives on these challenges along with some of our most popular articles over the last several years—timeless pieces that continue to resonate with global public finance leaders. We cover research on the overall fiscal health and resilience of economies; look in detail at opportunities for customs authorities to transform how they work, including by harnessing digital and analytics capabilities; and discuss approaches and tools ministries of finance and budget departments can use to ensure resources are deployed efficiently, effectively, and equitably.

Some articles address individual topics, including our perspectives on the unique public finance opportunity in Africa and the role for public finance institutions in addressing the risks posed by climate change. All seek to bring into focus our view that better, more proactive management of government finances can be transformational in every country. Our last two articles offer public finance leaders guidance on how to undertake and successfully deliver transformational outcomes.

We hope these articles are thought-provoking and support you in taking action to address the many challenges and opportunities public finance institutions face today. Let us know what you think at McKinsey_Public_Finance@McKinsey.com.

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[1] IMF, "Global Debt Reaches a Record $226 Trillion," December 15, 2021, available at https://www.imf.org/en/Blogs/Articles/2021/12/15/ blog-global-debt-reaches-a-record-226-trillion.

Closing the $30 trillion gap: Acting now to manage fiscal deficits during and beyond the COVID-19 crisis

Countries can not only take immediate steps to create a credible debt story for funding the deficit but also consider a portfolio of interventions to ensure their longer-term financial sustainability.

by Rima Assi, Akash Kaul, and Aurelien Vincent

In response to the COVID-19 crisis, governments around the world have ramped up their relief and stimulus spending[1] to unprecedented levels—just as tax revenues have slumped. The result could be a worldwide $10 trillion deficit in 2020 and a cumulative shortfall of up to $30 trillion by 2023.[2] As deficits mount, governments must consider a wide range of options. Some are, in effect, monetizing their debt through central banks. Others lean on additional borrowing or are considering ways to reduce deficits or sell off assets.

Whichever path governments choose, they face a great balancing act: managing record fiscal-deficit levels while restoring economic growth.[3] We estimate that they will seek to raise debt equivalent to an additional 20 to 25 percent of global GDP over today's level, as a direct result of the crisis. To start with, governments must make sure they can not only raise enough credit from debt capital markets (DCMs) and multilateral institutions but also optimize the cost-to-risk ratio of their debt portfolios. Yet for most countries, the greater challenge will be to ensure that increased debt-servicing costs do not crowd out vital investments or trigger big tax increases that would damage competitiveness and reduce aggregate demand at a time of crisis.

All this will not be easy. Our analysis suggests that higher levels of sovereign debt will add as much as $2.5 trillion a year to the debt-servicing[4] costs of governments over the next decade. They will need bold strategies that consider every available lever to master the great balancing act—and to avoid the worst-case scenario: a debt crisis compounding the economic one that COVID-19 has already unleashed. The timing of these strategies will be one of the most complex and instrumental success factors. To avoid disrupting the economic revival, fiscal measures

should not come too early, but to avoid losing control of the fiscal trajectory, they should not come too late.

Governments can scale up their capabilities to optimize existing revenue streams and contain expenditures, focusing in each case on operational excellence while taking care not to hamper the economic recovery. In some countries, an even greater opportunity lies in making government balance sheets transparent, including assets such as land, property, and state-owned enterprises (SOEs).

Many countries have considerable scope to manage and generate income from the assets on their balance sheets more effectively. We estimate that, globally, balance-sheet measures could raise up to $3 trillion a year by 2024, enough to fund the entire incremental cost of crisis-related debt service, at least until 2032. This route could prove essential for governments that have limited or very costly access to DCMs—a group that includes about half of all countries—those rated as subinvestment grade (BB+ and below). But balance sheets could also provide powerful options for countries that can more easily access debt, and these include many of the world's largest economies.

The winning recipe in this unprecedented crisis will uniquely combine economic-development and public-finance strategies. Sustainable economic growth provides the foundation for building public wealth and raising tax monies in the future, but a disciplined and healthy fiscal trajectory is necessary to sustain economic prosperity in the medium to long term.

In this article, we focus on the fiscal response and build on the assumption that many governments

[1] Ziyad Cassim, Borko Handjiski, Jörg Schubert, and Yassir Zouaoui, "The $10 trillion rescue: How governments can deliver impact," June 2020, McKinsey.com.
[2] Rima Assi, David Fine, and Kevin Sneader, "The great balancing act: Managing the coming $30 trillion deficit while restoring economic growth," June 2020, McKinsey.com. These figures are based on a McKinsey analysis, as of May 8, 2020, of the impact of a scenario in which the virus recurs, long-term growth is slow, and the world recovery is muted. This is considered the most likely scenario in a recent McKinsey Global Executive Survey.
[3] Ibid.
[4] "Debt servicing" is defined as repayment of interest and principal.

The winning recipe in this unprecedented crisis will uniquely combine economic-development and public-finance strategies.

feel the growing constraint of fiscal deficits. We also shine a spotlight on both the immediate steps countries can take to develop a credible debt story to fund their deficits and the broad portfolio of fiscal and financing interventions they can consider to ensure longer-term financial sustainability. Although governments typically consider policy changes—in taxation, for example—the article also focuses on operational levers. We suggest an approach that countries can use to pinpoint, prioritize, and sequence their options so that they can design and implement measures to achieve or maintain fiscal sustainability over the next two to three years. Last but not least, we consider how governments can build or strengthen their nerve centers for managing the fiscal crisis, so that they can shape and execute their rescue plans.

To ensure fiscal sustainability in and beyond the crisis, consider every lever

To address the immediate priority of funding larger fiscal deficits, governments must raise more debt, either through DCMs or multilateral institutions. To do so, they will need to pull a number of debt-management levers to improve their debt-issuance and -management capabilities—and to optimize the cost-to-risk trade-offs of their debt portfolios.
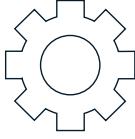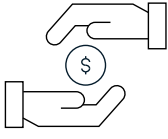
Just as important, the government of each country will need a credible debt story to demonstrate its medium-term fiscal sustainability and its capacity to generate sustainable economic growth—for

example, by financing growth-oriented capital expenditures. That kind of a narrative can reassure investors and ultimately lower the cost of debt for sovereign issuers. In the context of the COVID-19 crisis and its impact on public finances, most countries will have to consider a broad portfolio of solutions in their fiscal plans—both levers for implementation after the crisis passes and levers that can be pulled quickly if the amount of debt raised doesn't bridge their deficits (Exhibit 1).

Most governments can push to optimize revenue streams and contain some public spending, but the great balancing act will limit their scope to use these traditional budget-balancing tools. Our analysis suggests, for example, that attempts to close crisis-era government deficits through fiscal austerity would require cutting public expenditures by about 25 percent—which no government would contemplate. Likewise, using only tax increases to fund the deficit would raise taxation by 50 percent, which would hurt taxpayers, limit corporate investment, and reduce national competitiveness. That's why governments have to consider unlocking the funding potential of balance-sheet assets.

A thoughtful approach to all three nonsovereign-debt levers—balance-sheet funding, revenue-stream optimization, and the containment of spending—can give governments medium- to long-term support to help them fund the additional debt burden accumulated during the crisis. We estimate

Exhibit 1

Given the scale of the fiscal challenge, governments can consider a broad portfolio of available levers.

	Build excellence in debt issuance and management	Unlock funding potential of balance-sheet assets	Optimize revenue streams	Contain expenditures
Objectives	Debt issuance and management capability improvement for best cost/risk portfolio	Nonstrategic sovereign assets leveraged to raise short-term capital	Operational-lever analysis to increase collection without hurting economic recovery efforts	Expenditure review to improve efficiency of spend in light of new COVID-19 realities
Levers	● Upgrade debt story and communication strategy ● Optimize debt issuance with improved debt-management tools ● Partner with Central Bank to monetize part of the debt	● Create transparency and improve accuracy of assets on balance sheet ● Collateralize sovereign assets to raise more debt ● Use lending solutions to finance capital-expenditure projects (eg, PPP[1]) ● Sell nonstrategic assets ● Privatize SOEs[2] ● Leverage reserves	● Upgrade fraud deterrence and detection process ● Improve revenue collection through better citizen service ● Incentivize prepayment ● Improve management of assets to increase their yield	● Reallocate budget away from noncore categories ● Optimize procurement ● Use value engineering to streamline capital expenditure ● Review staff utilization and increase productivity ● Optimize social-welfare policies

Enablers of medium-term fiscal sustainability

[1]Public–private partnership.
[2]State-owned enterprises.

that nonsovereign-debt levers could finance all annual repayments, from 2024 to 2032, of the debt raised to fund the recovery from 2020 to 2023.

Our analysis suggests that nonsovereign-debt levers will ramp up over time to cover $4 trillion to $6 trillion of the cumulative deficit by 2023 if governments leverage their sovereign assets and increase their discipline and efficiency in collecting and spending revenue—assuming no major changes in fiscal policy. Governments would therefore finance 80 to 90 percent of their cumulative fiscal gap through conventional debt (Exhibit 2). In the

advanced economies, which will account for the majority of the new debt issuance, debt-to-GDP ratios would probably rise from an average of 105 percent before the crisis to approximately 125 percent by 2023.

Revamp debt strategies and build credible debt stories
Countries raised $2.1 trillion in debt in the first half of 2020. Since the start of the COVID-19 crisis, the issuance of sovereign bonds has increased by about 25 percent compared with the same period in 2019. Governments have focused on short-term

Exhibit 2

Ramp up debt and nondebt levers to bridge the fiscal gap.

Fiscal-deficit management, $ trillion

■ Debt
■ Nonsovereign-debt lever

24–30

| | | | | 2–3 | | 2–3 | Balance sheet[1] |

Waterfall chart showing fiscal-deficit management values:

- 2020: 10–11 (Debt)
- 2021: 7–8 (Debt), 1–2 (Nonsovereign-debt lever)
- 2022: 3–4 (Debt), 1–2 (Nonsovereign-debt lever)
- 2023: 2–3 (Nonsovereign-debt lever)
- Cumulative: 20–23 (Debt), 1–2 Expenditure[3], 1–2 Revenue[2], 2–3 Balance sheet[1]; total 24–30

2020   2021   2022   2023   Cumulative

[1]Monetized assets to amount to recurring value of 3–5% of GDP.
[2]Revenues optimization to amount to 2–4% of total revenues through improved collection, resulting in 1–2% of GDP impact.
[3]Expenditure-review savings to amount to 4–5% of addressable spend (expected to be 50% for Organisation for Economic Co-operation and Development countries), resulting in 1–2% of GDP impact.
Source: Center for Strategic and International Studies; International Monetary Fund (IMF) 2020 Fiscal Monitor, Chapter 1; IMF World Economic Outlook; Organisation for Economic Co-operation and Development; World Bank; McKinsey analysis

debt to manage their liquidity needs. Sovereign-bond issuance with tenors greater than one year fell by about 10 percent during the same period. Investment-grade countries—just over half the total—are leading the way, with about 90 percent of the debt raised in 2020 (Exhibit 3).

As the supply of sovereign debt increases, countries can create effective strategies to issue and manage debt and therefore attract investment. We estimate that they will raise an additional 20 to 25 percent of global GDP in debt over today's level as a result of the COVID-19 crisis.

A government-debt strategy must have a clearly articulated debt story mapping the path to long-term fiscal sustainability. A critical success factor for such a debt story is transparency and proactive communication: governments will need an up-to-date economic-development strategy and fiscal plan, with key economic metrics, including tax revenues, capital expenditures, and trade and GDP projections, as well as a solid approach to market communications. Other critical elements of the debt strategy include a fully operational debt-management office (DMO) and a clear internal institutional framework that identifies

Exhibit 3

Bridging the fiscal gap will require access to funding—which for many countries is not available at a reasonable cost.

S&P Global Ratings, number of countries

AAA	AA	A	BBB	BB	B	CCC	SD	D
11	19	13	24	17	34	6	5	1

Debt issued, by rating, $ billion

Total debt issued **47,430**

AAA	3,400
AA	21,600
A	13,800

BBB	5,400	BB	2,100	B	800	CCC 30
						SD 300

Total debt issued in 2020 **2,128**

AA		AAA 150
	1,070	
A	590	CCC 1
BBB	200	40	70	SD 7
	BB	B	

Average 10-year yield,[1] %

AAA	AA	A	BBB	BB	B	CCC	SD	D
0.1	0.5	1.3	3.7	6.0	8.7	16.1	32.0	N/A
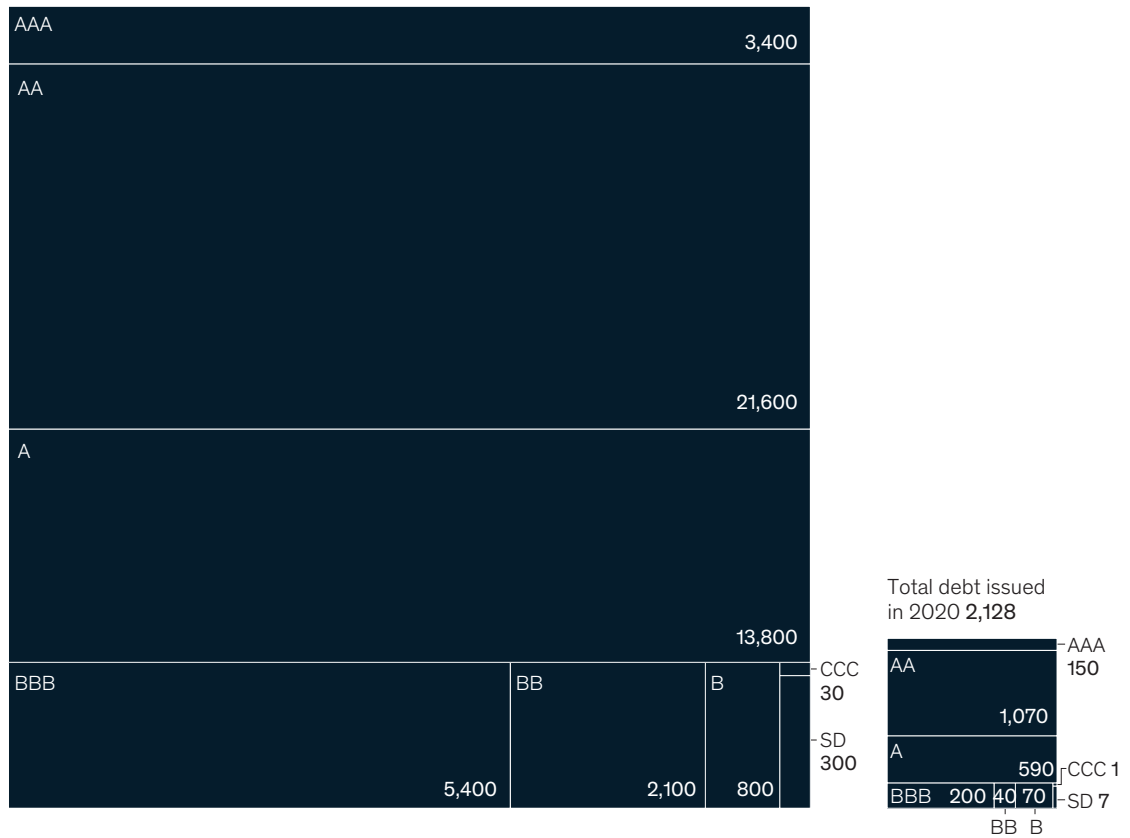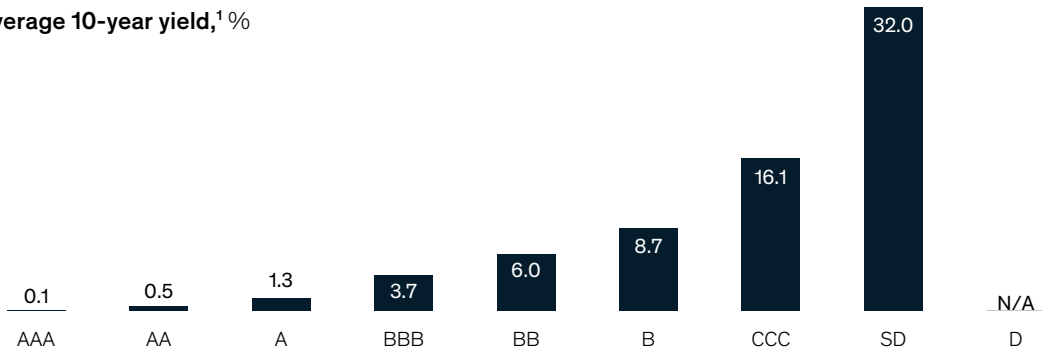
[1]Calculated in May 2020, used as a proxy for cost of borrowing.
Source: Bloomberg; International Monetary Fund DataMapper; S&P Global Ratings

As the supply of sovereign debt increases, countries can create effective strategies to issue and manage debt and therefore attract investment.

budget and nonbudget entities and the rules for sovereign guarantees.

Indonesia's DMO, for instance, has issued bonds to fund the country's response to the COVID-19 crisis and its economic recovery. Its first "pandemic bond" raised $4.3 billion. Thanks to sound fiscal discipline in the preceding years—a deficit of less than 3 percent and a debt-to-GDP ratio of about 30 percent—Indonesia has the credibility to explore global bonds. It has issued an estimated $34 billion in net debt in 2020 and plans to sell a further $27 billion in pandemic bonds to cover additional spending.[5]

To unlock additional value, manage the balance sheet as an investor

Traditional funding sources are unlikely to plug the fiscal gap for most countries. Governments must also consider alternative solutions that leverage their assets and the depth of their balance sheets. Creating transparency, estimating the value of assets on the state's balance sheet more accurately, and unlocking that value through monetization strategies will be important to generate revenue that complements debt as a source of financing.

Transparency is important to attract both financiers and potential investors. We estimate that governments could raise 2 to 3 percent of GDP a year by monetizing the assets on their balance sheets. Global public assets are worth more than 200 percent of global GDP, around half of it in real estate—a tremendous untapped opportunity to raise additional cash resources.

To capture it, governments should manage their assets as investors: they will need to review the value and returns of their real-estate holdings, SOE investments, and other assets. Start by identifying high-potential assets and prioritizing opportunities to optimize them. First, government agencies should determine which assets to consider. Top-value assets can be identified and categorized with the help of a scan of inventories provided by agencies and other inputs from them and from experts. The assets in question might include downtown buildings, surplus land in high-value areas, and assets identified through the hypotheses of agencies or experts.

The next step is to size the opportunities after an initial opportunity assessment that considers the value-creation levers that will have the greatest impact, comparative assets, case examples, and the capital base. These opportunities include high-value property for sale or lease, buildings in relatively low-density areas that can be developed more intensively, and select businesses and infrastructure that can be divested or optimized.

Governments can further filter such a list of sized opportunities through a qualitative feasibility assessment that draws on the views of agencies to arrive at a short list of the top five to ten opportunities. Each of them can then undergo a deep-dive analysis to evaluate nuanced legal considerations and assess sources of additional value. These vetted opportunities may then move forward.

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[5] Announcement by the government of Indonesia, April 6, 2020.

Governments can provide seed equity to create an infrastructure fund as a special-purpose vehicle (SPV) to monetize the public real-estate portfolio by raising debt against it. Previously unrecognized or undervalued real-estate assets can be transferred to the fund at market value and then used as collateral to finance development. A review of existing assets conducted in a US state, for example, revealed an estimated $600 million to $1.1 billion in potential untapped annual recurring value. Real estate accounted for about 70 percent of the value of the reviewed assets, infrastructure and operating businesses (such as transportation companies) for 15 and 10 percent, respectively.

In Singapore, the creation of an active holding company to maximize the ROE of national commercial assets contributed about $3 billion to the country's budget.[6] New Zealand was the first country (in 1991) to adopt a transparent balance sheet applying international accounting standards. It has since tracked the evolution of its net worth (assets less liabilities), which has now reached 45 percent of GDP. As a result, the country raised its credit rating to AA+ and reduced the cost of servicing its debt.

This kind of review allows governments not only to increase the potential value of such holdings but also to enable alternative funding solutions: they can collateralize sovereign assets to raise more debt, use nonrecourse lending solutions (such as public–private partnerships) to finance capital expenditures, and exploit or sell nonstrategic assets (for example, by raising revenue from land).

To increase revenues, make the most of collection levers

In an environment of decreasing revenue pools, governments must not only rethink the way they collect revenues but also ensure that they collect everything to which they are entitled. Revenue-collection agencies, such as tax and customs authorities, can strengthen their collection capabilities. More efficient collection, inspection, and compliance could increase fiscal revenues by 3 to 5 percent, which would compensate for 15 to 20 percent of the global drop in fiscal revenues expected as a result of the slowdown. The use of advanced analytics to improve the selection of audited taxpayers, for example, enabled one Organisation for Economic Co-operation and Development country to generate $400 million in additional revenues.

Such a transformation requires strong leadership and disciplined execution, with three distinct components (Exhibit 4):

Exhibit 4

There is a significant revenue-acceleration opportunity from operational levers.

Core levers in tax and customs value chain   ● Near term   ○ Longer-term or policy-related potential

Registration	Declaration	Payments	Audits and inspections	Debt collection
○ Formalize establishments	● Improve declaration-verification intelligence ○ Revise current tax/tariff regime (eg, structure, levels)	○ Reduce payment delays	● Improve field-inspections operations and auditing	● Accelerate undisputed debt collection ● Enhance disputed debt-collection operations

2- to 3-year potential out of addressable baseline, by value-chain segment, %

Declaration 4–5	Audits and inspections 5–7	Debt collection 1–2
		10–14
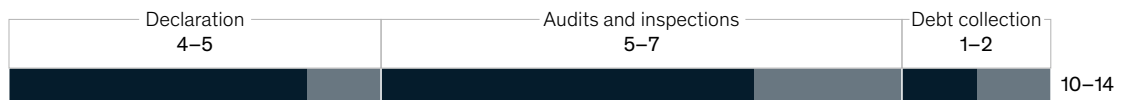
[6] Dag Detter et al., "Putting public assets to work," Citi Perspectives, 2019.

— *Improving the tax system to strengthen long-term sustainability.* One key move is to simplify and improve corporate tax and VAT regimes—for example, by launching electronic-invoice programs. The necessary steps include designing specific tax regimes for microactivity and informal businesses and redesigning exemption regimes and incentives to ensure that they actually do promote investment and economic development.

— *Reforming tax and customs administration to improve enforcement and collections.* The key steps here include ramping up the processes and capabilities for inspections and audits—for example, by using advanced-analytics techniques and third-party data from banks, utilities, retailers, and other sources. Governments and tax authorities must also have the ability to make debt-collection processes more stringent and to move more quickly against defaulters.

— *Improving compliance.* The levers available include launching or strengthening initiatives to register businesses and individuals. Governments can also reduce barriers to compliance—for example, by increasing the use of remote payments and prefiling and, where appropriate, giving defaulting taxpayers a clean start. Longer-term levers include launching or strengthening taxpayer-education programs through mass-communication media.

Achieve material savings without hurting the economic recovery

New COVID-19 realities, such as the increased adoption of digital technologies and greater demand for healthcare, give governments a unique opportunity to revisit their planned expenditures and, in many cases, to enhance the delivery of services. To make good on this new reality, governments should enable the norms it requires, such as physical distancing, sanitization, and remote working. Each of them has budgetary implications.

Governments will also have to consider the trade-offs between achievable fiscal savings and their effects on the economy and explore anything that helps them to do more with less. In the short term, they may well have to deprioritize all expenditures that aren't urgent. To achieve material savings, governments must consider four levers:

1. accelerating efficiency through best-practice procurement measures,[7] such as centralized spending on common categories and enforcing reference prices by developing a price index

2. reducing the wage bill without reducing headcounts; one tried-and-tested method is to optimize the use of labor and to eliminate "ghost workers" (salaries paid for nonexistent roles)

3. reviewing subsidies and their application, with a focus on transparency and using digital tools to spot leakages while streamlining eligibility processes and delivering benefits[8] more efficiently

In an environment of decreasing revenue pools, governments must not only rethink the way they collect revenues but also ensure that they collect everything to which they are entitled.

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[7] See Tera Allas, Diego Barillà, Simon Kennedy, and Aly Spencer, "How smarter purchasing can improve public-sector performance," March 2018, McKinsey.com.
[8] See Melanie Brown, Damien Bruce, and Mike McCarthy, "Social spending: Managing a $5 trillion challenge," August 2019, McKinsey.com.

4. making infrastructure and capital deployment more effective through value engineering to streamline capital expenditures, among other things; governments can also improve the delivery of initiatives by monitoring contractors more effectively

Value engineering includes the implementation of design-to-value and lean-execution techniques to standardize designs. It can, for example, be used to reduce hospital construction costs by streamlining design standards for recurrent platforms (such as the rooms of patients) and by optimizing specifications. Typically, value engineering can save up to 20 percent of the total construction cost of a hospital project and about 10 to 15 percent of the capital cost of roads, housing, and schools.

Develop a fiscal-sustainability plan now

Countries have different degrees of freedom to act, and these differences will influence the levers each country uses in its fiscal-sustainability plan, which will depend on its starting fiscal position and ability to unlock short-term funding. The resilience of its midterm approach to economic and fiscal issues will be important as well.

What countries do with each lever and the timing of its implementation will vary (Exhibit 5):

— Investment-grade countries with broad access to DCMs can prioritize increasing their access to debt markets by updating their debt stories and strategies. They can then plan their fiscal consolidation after the economic recovery.

— Countries with potentially limited or costly access to DCMs may need to emphasize making their assets more transparent (and therefore improve their debt story) and use alternative funding solutions. They will also have to plan for fiscal consolidation in the shorter run and communicate their medium-term fiscal plans, including the actual levers used quickly to achieve fiscal sustainability.

— Countries with no or limited access to DCMs will need to pull all available levers to develop a comprehensive, sustainable plan that allows them both to cover their short-term expenditures and to maximize their medium-term access to finance.

Exhibit 5

Depending on archetype, countries have several courses of action.

Action timeline, by country archetype

● Take action immediately ● Capture short-term, no-regret moves and plan ahead ● Plan compelling fiscal considerations beyond 2020

	Levers for debt story and medium-term fiscal sustainability			
	Build excellence in debt issuance and management	Unlock funding potential of balance-sheet assets	Optimize existing revenue streams	Contain expenditures
IG[1] countries with large DCM[2] access	●	●	●	●
Low IG countries with potentially limited/ costly DCM access	●	●	●	●
Countries with no/ very limited DCM access	●	●	●	●

[1]Investment grade.
[2]Debt capital market.

As each country builds its fiscal-sustainability plan, governments can prioritize easily implemented levers that will work quickly and will not hamper the economic recovery in the short term. Improving the debt story, leveraging reserves, and reallocating expenditures, for example, are all likely to achieve short-term results without significantly disrupting the economic recovery. However, the impact of these levers will vary from country to country (Exhibit 6).

Governments will also need to utilize other levers, but their timing will be specific to each country. Those with easier access to the DCM are likely to give the economy more time to recover by scheduling other, more disruptive levers for the medium to long term. Countries with no or limited access to the DCM will probably need to pull these disruptive levers in the short term, since they must struggle to finance their immediate fiscal deficits.

Exhibit 6

A detailed fiscal plan will require prioritization of sublevers based on time to impact and disruption to economic recovery.

Prioritization matrix

Levers

- Build excellence in debt issuance and management
- Optimize existing revenue streams
- Unlock funding potential of balance-sheet assets
- Contain expenditures

HIGH

Time to impact

- Privatize SOEs[1]
- Review staff utilization
- Incentivize prepayment
- Improve management of assets
- Optimize procurement
- Improve revenue collection
- Optimize social welfare
- Improve transparency of assets
- Use lending solutions/PPP[2]
- Upgrade fraud detection
- Reallocate spend
- Collateralize assets

PRIORITY FOR HIGH AND RAPID IMPACT

- Partner with central bank to monetize part of the debt
- Leverage reserves
- Upgrade debt story
- Deprioritize capital expenditure
- Debt issuance
- Sell nonstrategic assets

LOW ——— **Disruptive effect on economic recovery** ——→ HIGH

[1]State-owned enterprises.
[2]Public–private partnership.

Last but not least, governments will need to upgrade their ability to shape and execute their fiscal plans through a fiscal nerve center, which can improve and speed up responses to disruptions and optimize the fiscal impact of government policy during the rapidly evolving crisis. Such a nerve center can also help finance ministries use real-time economic and fiscal dashboards to make fiscal decisions, develop new initiatives, accelerate existing ones, and coordinate key budget entities.

With the nerve center established, governments can act on three immediate needs. First, they can build fiscal scenarios and project cash flows to comfort their constituents and investors by creating transparency. Second, they can simultaneously develop robust fiscal-sustainability plans, implement prioritized levers, and monitor progress. Third, they can act immediately to strengthen the future fiscal sustainability of their countries by implementing structural levers while remaining mindful of the potential impact on the country's economic recovery. Then they can use their performance on key outcome and practice metrics to identify which levers to prioritize in the fiscal-

rescue plan. Benchmarking performance against similar countries will help highlight the levers that can have the greatest impact and guide the plan's development.

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COVID-19 has created a perfect storm for public finance: sharply increasing expenditures, declining revenues, and therefore unprecedented and enduring fiscal deficits. In this environment, governments cannot rely on business as usual to finance their deficits and ensure their fiscal sustainability.

Instead, they should act quickly to create a credible debt story and consider the full portfolio of levers available to them given their fiscal starting position, their ability to raise short-term debt, and the resilience of their medium-term fiscal plans. That approach will not only help them develop and implement robust fiscal-rescue plans for 2020 but also ensure they put their countries on a path to fiscal sustainability.

The rise and rise of the global balance sheet: How productively are we using our wealth?

Net worth has tripled since 2000, but the increase mainly reflects valuation gains in real assets, especially real estate, rather than investment in productive assets that drive our economies.

by Jonathan Woetzel, Jan Mischke, Anu Madgavkar, Eckart Windhagen, Sven Smit, Michael Birshan, Szabolcs Kemeny, and Rebecca J. Anderson

© Getty Images

November 2021

Executive summary

In this research, we borrow a fundamental tool from the corporate world—the balance sheet—to take stock of the underlying health and resilience of the global economy. This view complements more usual approaches based on GDP or other economic flows. It provides an in-depth look at the state of the global economy after two decades of turbulence, notably the 2008 financial crisis and its aftermath, more than a decade of ultra-low interest rates and heavy central bank intervention, and, most recently, the COVID-19 pandemic.

We focus on ten countries that together account for about 60 percent of global GDP: Australia, Canada, China, France, Germany, Japan, Mexico, Sweden, the United Kingdom, and the United States (see Box E1, "Our research approach, key concepts, data sources, and limitations").

A central finding from this analysis is that, at the level of the global economy, the historical link between the growth of wealth, or net worth, and the value of economic flows such as GDP no longer holds. Economic growth has been sluggish over the past two decades in advanced economies, but net worth, which long tracked GDP growth, has soared in relation to it. This divergence has emerged as asset prices rose sharply—and are now almost 50 percent higher than the long-run average relative to income. The increase was not a result of 21st-century trends such as the increasing digitization of the economy. Rather, in an economy increasingly propelled by intangible assets, a glut of savings has struggled to find investments offering sufficient economic

returns and lasting value to investors.[1] These (ex-ante) savings have instead found their way into a traditional asset class, real estate, or into corporate share buybacks, driving up asset prices. At the same time, the growth in financial assets and liabilities has mirrored that of real assets, whether in response to or as a reason for real asset price increases.

Should we celebrate these trends or worry about them? Wealth as measured by net worth is rising fast. Yet the divergence between net worth and GDP raises some critically important questions for policy makers and business leaders. Foremost among them: is society in the throes of a paradigm shift as today's world uncovers new sources of wealth? Why has this rise in net worth not resulted in sustainable increases in economic flows? Is there a risk of reversion to the historical mean, which would potentially entail a sharp decline in net worth and a knock-on effect on financial markets? What new 21st-century stores of value may emerge?

In this research, we seek to create an analytical foundation, a diagnostic accounting that will support further research into the health of the world's economy, as well as provide a useful framework for answering such questions.

50%

Increase in asset prices since 2000 over the long-run average

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[1] See *Getting tangible about intangibles: The future of growth and productivity?*, McKinsey Global Institute, June 2021, McKinsey.com; and Lukasz Rachel and Lawrence H. Summers, On secular stagnation in the industrialized world, National Bureau of Economic Research, working paper number 26198, August 2019.

Our research approach, key concepts, data sources, and limitations

We sought to complement GDP or flow-based approaches to economic analysis by building an integrated global balance sheet of all types of assets and liabilities, over time, and across countries.

National balance sheets measure financial assets, liabilities, real assets, and net worth as the sum of all assets minus liabilities in the household, government, nonfinancial corporate, and financial sectors. Financial assets and liabilities include all types of financial instruments like savings accounts and bank deposits, fixed-income securities like bonds, equity, pension assets, and derivatives (but not pay-as-you-go pension systems). Real assets include natural endowments like land and natural resources, which are not the result of a production process, as well as produced assets like dwellings and buildings, infrastructure, machinery and equipment, precious metals, and intellectual property products, which are also referred to as intangible assets.

This work aims to provide a balance sheet of the financial and real economy at current market prices. In line with national accounting guidelines in the 2008 System of National Accounts, we focus on the private market value of assets and intentionally show and analyze asset price effects rather than adjust for them.[1] This analysis does not account for externalities or societal value beyond private value—in other words, it excludes assets like natural capital (for instance, biodiversity)

and human capital, and assumes that intangibles quickly lose commercial value due to competition. In many analyses, we normalize the market value of balance sheet items or net worth by nominal GDP to adjust for size and income levels of countries and also because income must eventually underpin the value of assets. We do not adjust for different asset price levels across countries.

The primary component of our data, stocks of financial and real assets that compose balance sheets, comes from the Organisation for Economic Co-operation and Development (OECD), Federal Reserve Board, CEIC, and national statistics offices. In some cases, adjustments and extrapolations were needed, particularly for the United States and China. Limitations of these data sources include varying accounting assumptions like depreciation rates on structures, different methodologies for estimating land values, large uncertainty about estimating the value of unlisted equity, as well as a likely undercounting of public assets.[2]

This research marks our first attempt to create and analyze a global balance sheet. We consider this a useful frame of reference to better understand the context in which corporate leaders and policy makers operate. For instance, it helps develop a better understanding of what underpins household and national net worth and where we store value, including the role of intangibles. It also helps explain how net worth is formed and rises and falls over time and across countries. This in turn provides insight into the sustainability of wealth accumulation, pension systems,

and the dynamics of wealth concentration, among others. A balance sheet approach also provides a complementary view of the role of the financial system, including how leveraged our economies are in aggregate beyond traditional measures of debt and its relation to GDP. By taking into account not only debt but also the assets backing that debt, this approach can throw a spotlight on potential risk exposures.

We acknowledge the gaps in this work. By taking a global and cross-sector view, we have not analyzed in depth the challenges in specific sectors, such as the potential to optimize the value of public assets on government balance sheets, for example by redeveloping or redeploying public land for higher-value use or improving operational public assets.[3] We also have not assessed the precise exposure of the financial balance sheet to risk scenarios. We note changes in ratios like asset valuations and loan-to-value measures but do not address in depth underlying theories of why, for instance, asset prices have diverged from GDP growth. By taking a private market value perspective, we do not look at depletion of natural capital or development of human capital. We made several extrapolations and interpolations to obtain solid data for the ten economies; more granular views would be possible for a larger set of countries if harmonized balance sheet data were a priority for more economies.

For full details of our balance sheet accounting of the global economy, including valuation and depreciation methods and a list of our data sources, see chapter 1 and the technical appendix.

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[1] The System of National Accounts (SNA) is the internationally coordinated standard set of recommendations on how to compile measures of economic activity. Its origins date back to 1947, when the issue was taken up by United Nations Statistical Committee, leading to the 1953 publication of the first SNA. It has subsequently been revised five times, in 1960, 1964, 1968, 1993, and 2008. See Historical versions of the System of National Accounts, United Nations Statistics Division, unstats.un.org.

[2] Dag Detter and Stefan Fölster, "Unlocking public wealth," *IMF Finance & Development*, March 2018.

[3] Dag Detter, *Exploring the unknown: How asset maps can transform public financial management*, IMF Public Financial Management Blog, August 30, 2021.

Assets on the global balance sheet are split almost equally between real assets, financial assets outside the financial sector, and those within it

To construct a global balance sheet, we add up all real assets in the economy, as well as all financial assets across all sectors (including, notably, the financial sector), analogous to the way a corporation builds its balance sheet. In 2020, the combined balance sheet of the ten focus countries totaled about 18.1 times their GDP in financial and real assets. Scaled up to the global economy as a whole, that total amounted to $1,540 trillion (Exhibit E1).

At a functional level, three balance sheets of (coincidentally) about $500 trillion each interlock: the real economy balance sheet; the financial balance sheet; and the financial sector balance sheet.

Exhibit E1

Each of the three components of the global balance sheet amounted to about $500 trillion in 2020, or six times GDP.

Size of balance sheet
$ trillion

85 ⬤ Global GDP

	Real assets		Liabilities and net worth	
1 The financial sector	*Financial assets held by financial corporations*	510	*Liabilities held by financial corporations*	520
2 The financial system	*Financial assets held by households, governments, and nonfinancial corporations*	510	*Liabilities held by households, governments, and nonfinancial corporations*	500
3 The real economy	*Nonfinancial assets*	520	*Net worth*	510
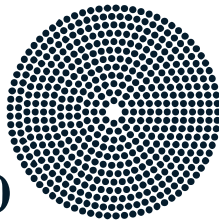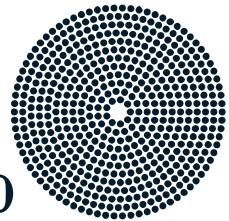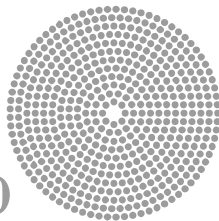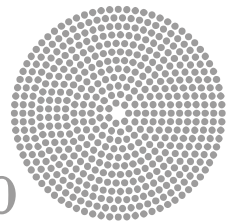
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

6.1x GDP

Total size of real assets and net worth

The real economy balance sheet has $520 trillion in real assets, such as machinery and equipment, infrastructure, buildings, natural resources, and intellectual property, or IP. These are mirrored on the liability side as net worth.

The financial balance sheet of households, corporations, and governments has $510 trillion in financial assets like stocks, bonds, pension funds, and cash and deposits that facilitate ownership and risk transfer of real assets as well as time shifting of savings and consumption. These financial assets are mirrored on the balance sheet by $500 trillion in liabilities, since they represent eventual claims against those same sectors. The financial balance sheet is coincidentally almost the same size as the real economy one, although historically it has been much smaller.

Finally, financial institutions create and intermediate those financial assets and liabilities—with transformation of risks, maturity, and size—and hold $510 trillion in financial assets and corresponding liabilities of $520 trillion. Exhibit E2 shows how these three balance sheets interlock. Each of three amounts to about six times GDP. While each equalizes within itself at a closed economy level, in our analysis of ten countries, there is a small negative net financial position, meaning that these countries collectively borrow from the rest of the world and so assets and liabilities do not match precisely.

At the global level, real assets constitute net worth and make up 6.1 times GDP, while aggregate financial assets net out

In this report, we assess assets and liabilities, gross and net, at the line-item level, across sectors, across countries, and, finally, from a global perspective. A key concept for this research is that of net worth as a mirror image of real assets at the global level. Net worth is the store of value that defines wealth and is available to support the generation of future income. For households, net worth includes both real assets such as property and financial assets including stocks and bonds.

At the global or closed economy level, however, financial assets are matched by corresponding liabilities, such as the bonds owned by households that are a liability of a government, or equity that is a liability for the issuing corporation. Hence, while the gross volume of financial assets is now nearly equivalent to the value of real assets, on a net basis, after subtracting corresponding financial liabilities, the net aggregate value is zero. Net worth is what is left after financial assets and liabilities net each other out and thus is equivalent to the value of real assets.[2] Therefore, while financial assets represent wealth to sectors, institutions, and households, and fulfill many functions like ownership and risk transfer of real assets, on the consolidated global balance sheet, financial assets do not add to net worth, nor do financial liabilities subtract from it.

At a national level, countries can, however, have positive or negative net financial assets or liabilities contributing to net worth. These represent lending or borrowing positions in relation to the rest of the world; in our sample countries, such positions account for a maximum of 13 percent of total country net worth.[3]

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[2] See James Tobin, *Asset accumulation and economic activity: Reflections on contemporary macroeconomic theory*, University of Chicago Press, 1980.

[3] In our sample of ten countries, the collective net financial position is less than 0.1 times GDP, a slight negative. For this reason, real assets do not exactly match net worth.

The global balance sheet can be interpreted as three interlocking balance sheets of about $500 trillion each.

Balance sheet components, 2020, GDP multiple

Simplified

The real economy balance sheet, where savers and investors accumulate real assets and thus wealth. In a world without finance, real assets and wealth are identical—for example, someone accumulates wealth by building a house.[1]

(=)

The financial balance sheet outside the financial sector, which incorporates financial assets and liabilities of households, governments, and nonfinancial corporations. These assets and liabilities enable ownership and the transfer of risk related to real assets and allow smoothing or time shifting of consumption and savings.[2] All financial assets and liabilities are created in pairs and net out at the global level.

(=)

The financial sector balance sheet, which reflects intermediation activities of the financial sector between ultimate savers and final investors (in real assets), based in the nonfinancial sectors. Financial institutions' balance sheets must balance via double-entry bookkeeping.[3]

(=)

	6.1 ($520 trillion)	5.9 ($500 trillion)	6.0 ($510 trillion)	6.1 ($520 trillion)	6.0 ($510 trillion)	6.1 ($510 trillion)
Produced	3.7					
- Non produced	2.4					
	Real assets	Liabilities outside financial sector	Financial assets in financial sector	Liabilities in financial sector	Financial assets outside financial sector	Net worth

Liabilities incl equity partially financed/backed by real assets[4]

Intermediation and financial asset and liability creation[5]

Double-entry bookkeeping[3]

Intermediation and financial asset and liability creation[5]

Wealth transformed via financial assets; allowing indirect ownership of real assets[4]

Wealth ultimately transformed into real assets (directly or via corporate equity ownership); real assets serve as store of wealth[5]

1. Globally, assets equal liabilities (and net worth) within each of the three levels shown; small deviations are due to the collective rest-of-world position across the ten countries in our sample.
2. Consumption smoothing refers to saving and borrowing to maintain an even level of consumption over time.
3. Financial sector double-entry bookkeeping includes real assets; for that reason, as well as due to asymmetric valuation changes on assets and liabilities, liabilities are not perfectly equal to financial assets.
4. Not all real assets have a financial liability against them (eg, house without a mortgage), and not all liabilities are asset backed (eg, student loans). Historically, liabilities have been much smaller than real assets.
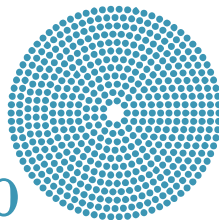5. Not all financial flows are intermediated by the financial sector (eg, direct equity ownership), and there are financial assets and liabilities only within the financial sector.
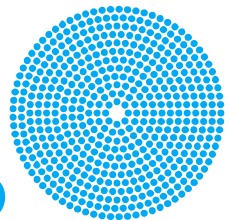Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

The world has never been wealthier, with large variations across countries and households

Since 2000, the global balance sheet and net worth have tripled in size. Net worth grew from $160 trillion in 2000 to $510 trillion in 2020. Net worth averaged $66,000 per capita globally in 2020, albeit with large variations across economies, and even larger differences between households within an economy. In the countries in our sample, per capita net worth ranged from $46,000 in Mexico to $351,000 in Australia.[4] This raises questions about how to build wealth for more households and what drives country differences in the market value of net worth.

To normalize net worth for differences in income levels across countries—and also because net worth is a claim on future output—we also look at net worth as a multiple of GDP. It ranged from 4.3 times in the United States to 8.2 times in China (Exhibit E3).

$66,000

Average per capita net worth across the ten countries in our sample

A variety of factors shape the level of net worth relative to GDP across countries. They include resource endowments, trade balances, investment rates, as well as price levels of assets in comparison with consumer baskets. Australia, Canada, and Mexico have considerable natural resources of 0.3 to 0.5 times GDP. Manufacturing exporters Germany and Japan, as well as resource exporter Canada, hold significant net financial assets and have a net lending position to the rest of the world, as a result of current account surpluses. China and Japan have some of the highest net-worth-to-GDP ratios and historically heavy investment in stocks of public and corporate non-real estate assets that are nearly twice as high as in other economies in our sample, except for Mexico.

Relative price levels, particularly in real estate, also play a role. In Australia, China, and France, the value of residential land and buildings relative to GDP is 18 to 44 percent above our sample average, even as residential living space per capita is broadly in line with our sample average.[5] Net worth in the United States was the lowest relative to GDP among the ten countries. This reflects the significant US net foreign debt (among other net liabilities) as well as the country's comparatively low household and corporate real estate wealth relative to income— even though it has the highest per capita floor space in our sample, in part because its land market is vast and more elastic than in other countries.[6] (Note that household net worth in the United States is higher than average among our sample countries relative to GDP and more than one- third higher than national net worth, as households there have large equity and debt claims against the corporate and public sector which are not backed by real assets or total economy net worth. Put differently, US households have large asset holdings that eventually can be regarded as claims against themselves in their role as taxpayers and consumers.)

Across the ten countries in our sample, China accounted for 50 percent of the growth in net worth, or wealth, over that period, followed by the United States, at 22 percent. Japan, which held 31 percent of wealth across the ten economies in 2000, held just 11 percent of the total in 2020.

Within the household sectors of China and the United States, two-thirds of wealth is owned by the top 10 percent of households.[7] In the United States, the amount of the country's wealth held by the top 10 percent of households grew from 67 percent in 2000 to 71 percent in 2019, while the share of the bottom 50 percent of wealth owners dropped from 1.8 percent in 2000 to 1.5 percent in 2019. In China, these shifts were more extreme: the top 10 percent of households owned 48 percent of the nation's wealth in 2000, and by 2015, those households owned 67 percent. The bottom 50 percent of Chinese households owned 14 percent of the wealth in 2000 and 6 percent in 2015.[8]

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[4] These figures are based on nominal conversions to US dollars. At purchasing power parity, Mexico's per capita net worth is $104,000 and Australia's is $356,000.

[5] Data on residential living space sourced from Rogoff and Yang include 8 of the 10 countries. This sample average excludes Japan and Sweden. See Kenneth Rogoff and Yuanchen Yang, "Has China's housing production peaked?," *China and the World Economy*, Volume 29, Issue 1, 2021.

[6] See Aida Caldera Sanchez and Asa Johansson, "The price responsiveness of housing supply in OECD countries," *Journal of Housing Economics*, May 2013, Volume 2, Issue 3.

[7] We focus on China and the United States for reasons of data availability. The World Inequality Database, wid.world. See also *Inequality: A persisting challenge and its implications*, McKinsey Global Institute, June 2019; and Thomas Piketty, *Capital in the Twenty-First Century*, The Belknap Press of Harvard University Press, 2017.

[8] The World Inequality Database, wid.world.

Total balance sheets and net worth vary widely by country.

National balance sheets and net worth at market prices, 2020

National balance sheet, GDP multiple

- Real assets
- Financial assets (households, government, and nonfinancial corporations)
- Financial assets (financial corporations)

National net worth

	National balance sheet, GDP multiple			GDP multiple	Per capita, $ thousand	Per capita, PPP, $ thousand[1]
China	8.0	6.2	4.7	8.2	86	141
France	7.6	8.2	8.0	7.7	296	355
Japan	6.5	7.5	8.7	7.2	284	295
Australia	7.4	4.7	5.2	6.8	351	356
Sweden	6.0	8.5	6.8	6.2	323	339
Germany	5.3	4.2	5.4	6.0	274	322
Canada	5.3	6.7	8.2	5.9	255	284
Mexico	5.9	2.7	1.4	5.5	46	104
United Kingdom	5.1	5.3	11.5	4.8	195	218
United States	4.8	5.7	5.6	4.3	272	272
Global	6.1	6.0	6.0	6.1	66	104

1. Purchasing power parity. Rates from World Bank; sample average redistributes GDP weights based on PPP GDP; global (extrapolated) view takes into account world PPP GDP multiplied by the net worth/GDP ratio of 6.1.

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.

Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Asset, liability, and net worth profiles vary across economic sectors, with households owning about 95 percent of wealth

Households can be regarded as the final owners of wealth. For households, real assets—mostly housing—make up almost half of net worth. Net financial assets, in roughly equal parts pension assets, deposits, and equity, make up the other half (Exhibits E4 and E5). Distribution of household assets, however, varies between countries. For instance, assets held by households in Australia, France, Germany, and Mexico are primarily buildings and land, while in the United States, equity and pensions make up most of household wealth. Among other factors, this reflects differences in countries' pension systems, for instance pay-as-you-go arrangements versus those where assets are accumulated to meet pension obligations. In Japan, deposits make up more than one-third of total household assets. Via those financial assets and real estate holdings, households in the ten countries control 95 percent of net worth, ranging from 64 percent of national net worth in Mexico to 135 percent in the United States.

Exhibit E4

The distribution of assets and liabilities varies by sector.

Global balance sheet by sector, 2020, %, GDP multiple
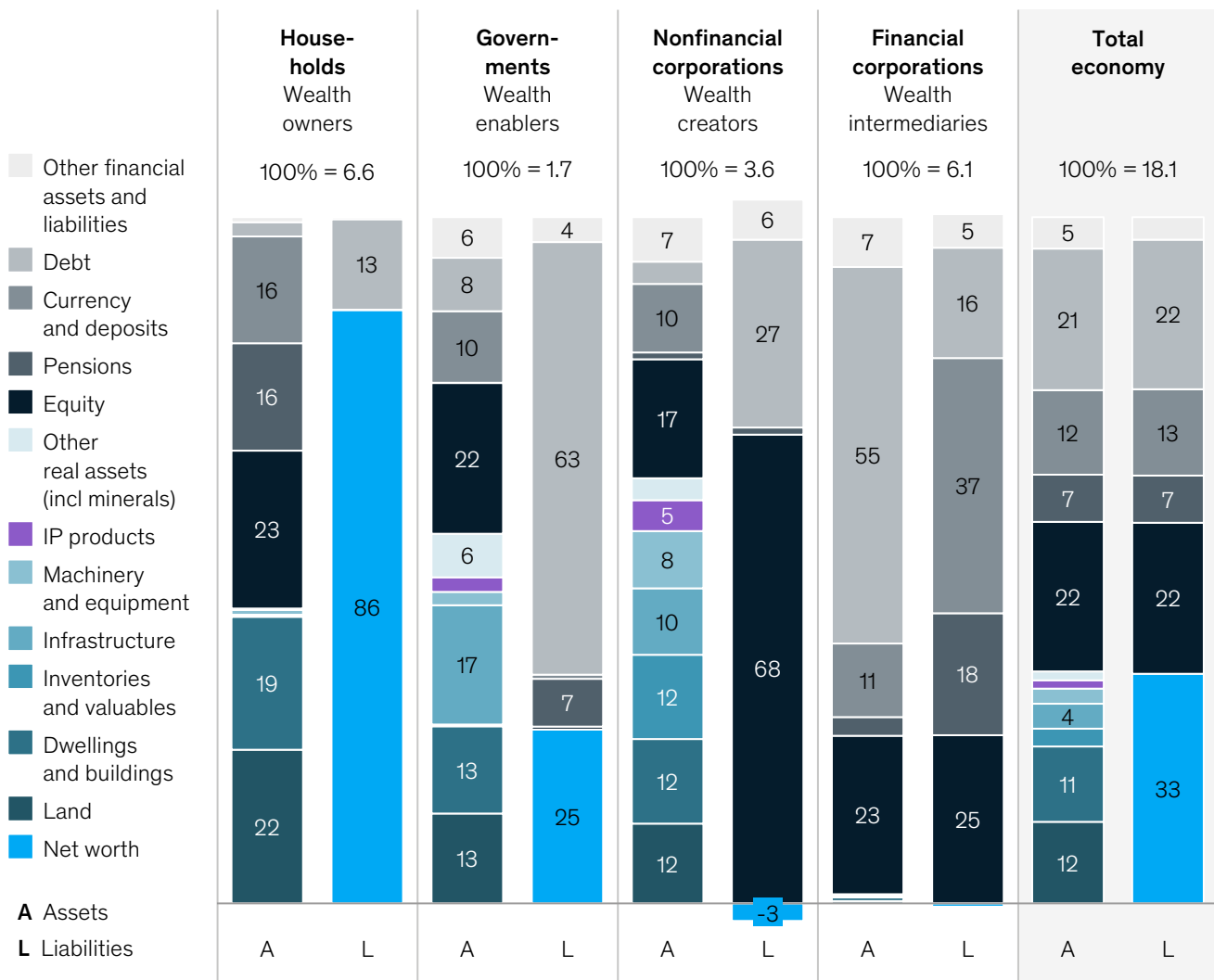
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Real assets constitute net worth at the total economy level, while financial assets work to pass net worth on to households.

Wealth breakdown by sector, 2020, GDP multiple

	House-holds Wealth owners	+	Govern-ments Wealth enablers	+	Nonfinancial corporations Wealth creators	+	Financial corporations Wealth inter-mediaries	=	Total economy

Net financial assets

■ Financial assets
■ Liabilities

	Households	Governments	Nonfinancial corporations	Financial corporations	Total economy
Financial assets	3.8	0.8	1.4	6.0	12.0
Net	2.9				
		-1.3			
Liabilities	-0.9	-0.5	-3.7	-6.1	-12.1
			-2.3	-0.1	-0.1 [1]

Real assets

	Households	Governments	Nonfinancial corporations	Financial corporations	Total economy
Real assets	2.9	0.9	2.3	0.1	6.1

Net worth

	Households	Governments	Nonfinancial corporations	Financial corporations	Total economy
Net worth	5.7 (95%)	0.4 (7%)	-0.1 (-2%)	0 (0%)	6.1

The top row shows that total net financial assets net out at a global level, leaving real assets equivalent to net worth (middle row). In the corporate sector, real assets are offset by net financial assets.

Bottom row: Net worth is mostly held by households—half in the form of financial claims on corporates and governments, the other half in real estate.

1. At the global level, net financial assets are equal to zero. The -0.1 times GDP figure here represents the collective rest-of-world position across the ten countries in our sample.
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

The public sector, often seen as an enabler of wealth, owns mostly public buildings, infrastructure, land, and natural resources, which are worth about 90 percent of GDP, as well as financial assets such as stakes in state-owned enterprises. On the liability side, public debt in many countries exceeds the value of public assets. Public net worth was sizable, particularly in China, at 1.8 times GDP (due to sizable land ownership and high investment in state-owned firms), Australia (due to natural resource endowments), and Sweden (which had relatively low levels of public debt and a broad portfolio of financial and nonfinancial public assets). By contrast, the UK and US governments are net borrowers that have not built public wealth commensurate with debt.

Nonfinancial corporations, the creators of wealth, own productive assets like machinery, factories, and intangibles to the tune of 0.8 times GDP, and inventories amounting to about 0.4 times GDP. They also have significant real estate holdings, such as hotels, restaurants, and office buildings. They pass this wealth on to households via debt and equity. This sector includes state-owned enterprises if they generate substantial revenue.[9] (State-owned enterprises that have little or no revenue are included in the government sector.) Real assets in the corporate sector range from 1.3 times GDP in the United States to 3.8 times GDP in China.

Financial corporations, the intermediators of wealth, mirror the assets and liabilities in other sectors. They hold financial assets such as mortgages, public and corporate bonds, and equities. At the same time, they owe deposits, bonds, and pension assets, mostly to households.[10] The financial sector includes central banks and their expanding balance sheets.

Real estate makes up two-thirds of global real assets or net worth, raising questions about capital and wealth allocation

The value of residential real estate including land amounted to almost half of global net worth in 2020, with corporate and government buildings and the land associated with them accounting for an additional 20 percent. Other fixed assets like infrastructure, industrial structures, machinery and equipment, and intangibles—the types of assets that typically drive economic growth—make up only one-fifth of real assets or net worth (Exhibit E6). They range from just 15 percent of net worth in France and the United Kingdom to 39 percent in Japan. This raises questions about the way societies allocate and build capital and wealth and, at a time of rapid economic change linked to technological advances, whether we have managed to find a 21st-century store of wealth that could be as durable as bricks and mortar. For now, despite the rapid adoption of digitization, that does not appear to be the case.

Intangible assets are a prime example. In this research, intangible assets refer to intellectual property like R&D and software, and they play an increasingly important role in today's economy.[11] The OECD reported in 2015 that intangible assets had expected returns of 24 percent, the highest rate among produced asset categories.[12]

[9] The 2008 System of National Accounts classifies state-owned enterprises with prices at least 50 percent of costs as corporations.

[10] For further understanding of the foundations of our research, see *System of National Accounts 2008*, European Commission, International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD), United Nations, and World Bank, 2008, and Francois Lequiller and Derek Blades, *Understanding national accounts*, second edition, OECD, 2014.

[11] Broadly defined, investment in intangibles has come to outstrip tangible investment in a number of geographies; see Jonathan Haskel and Stian Westlake, *Capitalism without capital: The rise of the intangible economy*, Princeton University Press, 2017; Carol Corrado et al., *Intangible investment in the US and EU before and since the Great Recession and its contribution to productivity growth*, European Investment Bank, 2017; and Carol Corrado et al., "Innovation and intangible investment in Europe, Japan, and the United States," *Oxford Review of Economic Policy*, Summer 2013, Volume 29, Number 2.

[12] *The impact of R&D investment on economic performance: A review of the econometric evidence*, OECD, April 2015. Additional research suggests that these high returns may not persist over time. The authors note that idea production, or the creation of intangible assets through research and development, faces diminishing returns over time across industries. See also Nicholas Bloom et al., "Are ideas getting harder to find?," *American Economic Review*, April 2020, Volume 110, Number 4.

Real estate accounts for two-thirds of real assets.

Distribution of real assets, global average, 2020, %

- ■ Land
- ■ Dwellings
- ■ Nonresidential buildings
- ■ Mineral and energy reserves
- ■ Other nonproduced assets
- ■ Inventories
- ■ Machinery and equipment
- ■ Infrastructure
- ■ IP products
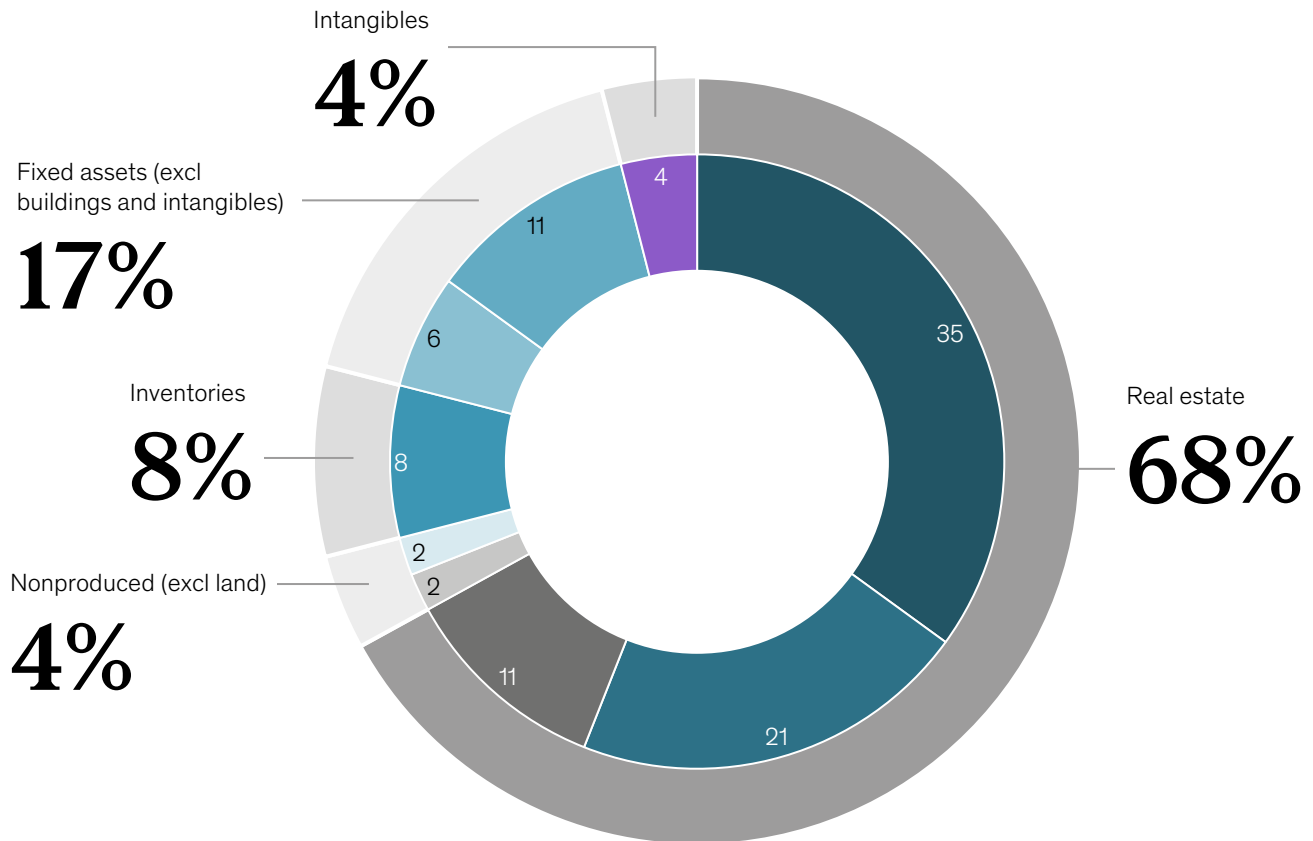
Intangibles **4%**

Fixed assets (excl buildings and intangibles) **17%**

Inventories **8%**

Nonproduced (excl land) **4%**

Real estate **68%**

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Labels for values <1 not shown. Figures may not sum to 100% because of rounding.
Source: AMECO; CEIC; EU KLEMS; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Nonetheless, intangibles represent only 4 percent of total net worth and have thus not served as a significant store of value, at least not as currently measured. The reason is that for their mostly corporate owners, the value of intangible assets is assumed to decline rapidly due to obsolescence and competition, even if their value to society may have a much longer shelf life (see Box E2, "Measuring

intangibles"). The market value of equities in many (but not all) countries has not materially diverged from underlying asset values as recorded under customary accounting standards, which suggests this assumption is broadly in line with markets.

Measuring intangibles

Intangible assets are difficult to measure. To assess their value on national balance sheets for this research, we varied two parameters.

First, we expanded the definition of intangibles beyond intellectual property by including organizational capital, training, and brand investments. This increased global net worth relative to GDP by 4 percent. While this would roughly double the value of intangibles on the balance sheet, their value would nonetheless remain small compared to their tangible counterparts.[1]

Second, we adjusted assumptions on the lifespan of intangibles, which has a much larger impact. Current accounting standards assume relatively high amortization rates of more than 20 percent annually, or a commercially exploitable life of less than five years. This would be in line with relatively rapid loss of value to competition or obsolescence.

From a societal point of view, however, it could be argued that intangibles, like know-how, live nearly forever. The invention of the wheel in the fourth millennium BC, for instance, is still relevant to e-bike manufacturers today. Removing any depreciation or amortization from the measurement of intangibles over the past 20 years would increase global net worth by 11 percent and nearly quadruple their value. In the United States, this approach would add about 0.8 times GDP to corporate assets and thus go a long way toward explaining the difference in corporate equity liabilities relative to underlying net asset values of one times GDP in 2020. While we tested this sensitivity, in this research we stick to the commercially exploitable value of intangibles as a store of value on a balance sheet, to conform with their treatment in national accounts as well as with market valuations in other countries.

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[1] See Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics,* February 2016.

Among the ten sample countries, companies and markets in Canada and the United States may seem to value intangibles more favorably than those in the other countries, however. As market-to-book ratios soared, the value of corporate equity in the United States exceeded the value of underlying net assets by one times GDP in 2020. This may reflect a higher value of intangibles, but it could also relate to the market and competition environment or be in part a result of so-called superstar effects among the top 10 percent of companies in economic profits.[13]

Wealth has grown out of proportion with income due to asset price inflation, marking a departure from historical trends

Before 2000, net worth growth largely tracked GDP growth at the global level. There were individual country differences and exceptions from this pattern, typically reverting to the historical mean over time. These countries and periods include the United States in the late 1970s and early 1980s, when construction costs greatly exceeded general inflation; Japan during the asset bubble of the late 1980s that was followed by the "lost decade"; Sweden in the real estate bubble followed by a banking crisis in the early 1990s; and the United States during the real estate price rise before the 2008 financial crisis (Exhibit E7).[14]

In about 2000, however, net worth at market value began growing significantly faster than GDP in almost all of our sample countries, even as real investment continued moving in tandem with GDP. This coincides with a period during which interest rates and rates of return on real estate declined to historical lows.[15]

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[13] We define superstar companies as global firms in the top 10 percent of companies in economic profit. *Superstars: The dynamics of firms, sectors, and cities leading the global economy*, McKinsey Global Institute, October 2018, McKinsey.com. For an analysis of the competitive environment, see Thomas Philippon, *The great reversal: How America gave up on free markets*, Harvard University Press, 2019.

[14] See Robert Shiller, *Irrational exuberance*, third edition, Princeton University Press, 2015.

[15] See Thomas Laubach and John C. Williams, "Measuring the natural rate of interest," *The Review of Economics and Statistics*, November 2003, Volume 85, Number 4; Kathryn Holston, Thomas Laubach, and John C. Williams, *Measuring the natural rate of interest: International trends and determinants*, Federal Reserve Bank of San Francisco, working number paper 2016-11, December 2016; Robert E. Hall, "Low interest rates: Causes and consequences," *International Journal of Central Banking*, September 2017; Mauricio Ulate, *Going negative at the zero lower bound: The effects of negative nominal interest rates*, Federal Reserve Bank of San Francisco, working paper number 2019-21, September 2019; and Lukasz Rachel and Lawrence H. Summers, *Secular stagnation and the decline in real interest rates*, National Bureau of Economic Research, working paper number 26189, November 2019.

Since 2000, net worth at market prices has increased relative to nominal GDP in most countries.

Net worth at market prices relative to nominal GDP, 1970–2020
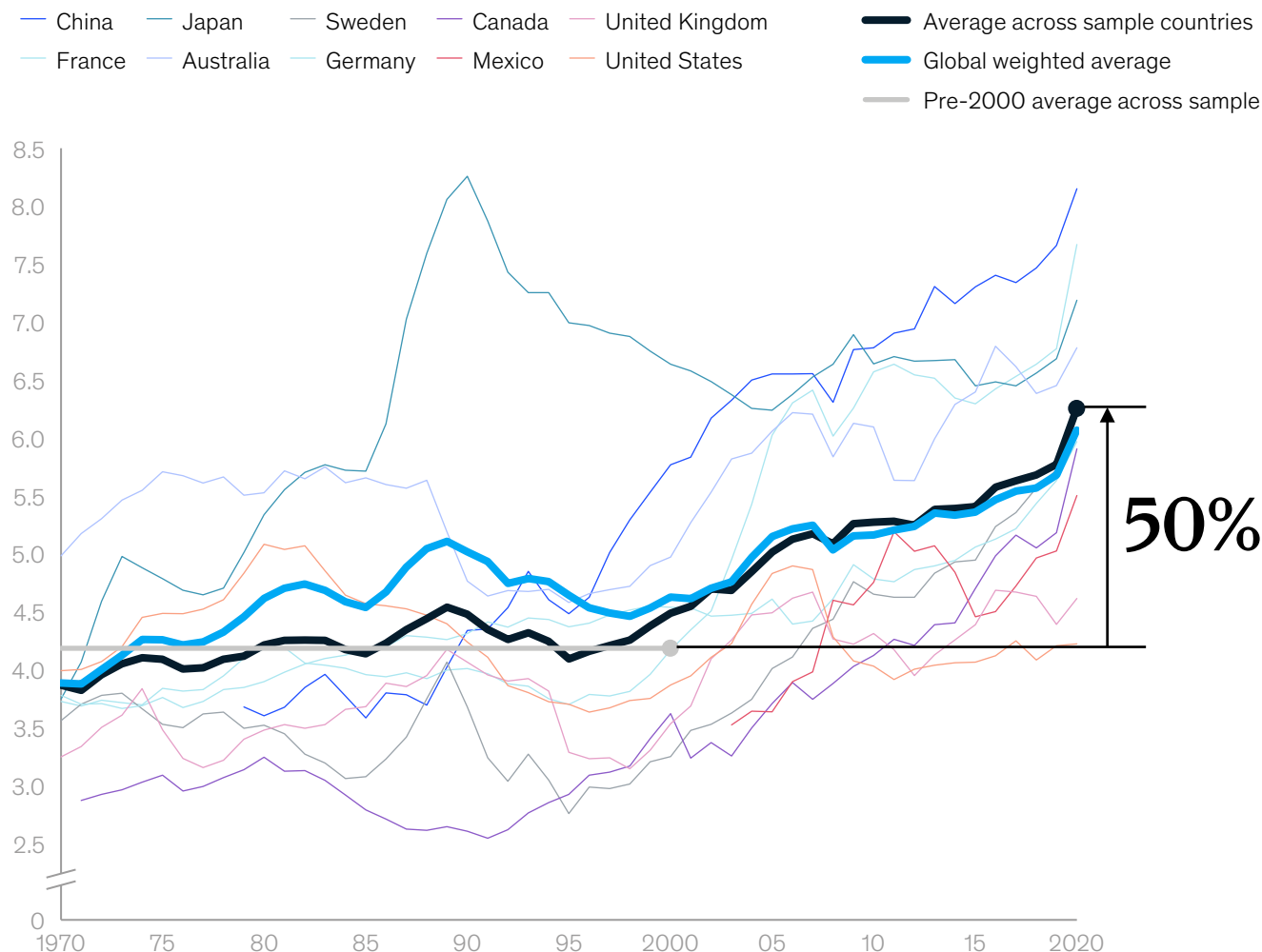
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Labels for values <1 not shown. Figures may not sum to 100% because of rounding.

Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Inequality Database; World Bank; McKinsey Global Institute analysis

Compared to GDP, net worth between 2000 and 2020 was 104 percentage points higher on average than between 1970 and 1999, albeit with considerable variation across the ten countries. The largest increase in net worth relative to GDP in 2000 to 2020 was in France, a full 371 percentage points, as real estate prices soared, particularly in the early 2000s.[16] Sweden's net worth grew by 301 percentage points relative to GDP from 2000

to 2020, reflecting higher valuations on residential and corporate real estate, while China's grew by 262 percentage points, due mostly to growth in produced assets controlled by nonfinancial corporations.

[16] One hundred percentage points is equal to a change in GDP multiple of 1. The percentage point figures in this report consider the change inclusive of the first year in the listed range. Given end-of-year reporting of stocks, the percentage point figures for 2000–20 take the difference between GDP multiples of 2020 and 1999.

Net worth growth relative to GDP was somewhat more muted in the United States. An increase of 94 percentage points in the value of real assets relative to GDP from 2000 to 2020 was partially masked by net foreign liabilities (that is, foreign debt and other obligations that exceed ownership of foreign assets), which increased by 41 percentage points over that period. Also, the continuing impact of the 2008 financial crisis slowed the growth of home prices in the United States compared to most other countries in our sample. Savers, including companies, put their money into financial assets instead: in the period 2000 to 2020, the average value of nonfinancial

corporate equity liabilities relative to GDP and to underlying net corporate assets was almost double the value of the average from 1950 to 1999.

Higher asset prices accounted for about three-quarters of the growth in net worth between 2000 and 2020, while saving and investment made up only 28 percent

Net worth is a claim on future income, and historically, growth in net worth largely reflected investments of the sort that drive productivity and growth, plus general inflation. Net worth is increasingly driven by price growth beyond inflation,

Exhibit E8

Price changes across countries account for 77 percent of net worth growth from 2000 to 2020.

% of net worth growth derived from price increases, net investment, and net financial assets, 2000–20

Legend:
- Price increase beyond CPI
- Price increase in line with CPI
- Net investment[1]
- Net financial assets

Country	Price increase beyond CPI	Price increase in line with CPI	Net investment	Net financial assets	% of increase from price change
Australia	47	37	24	-7	83
Canada	32	26	26	16	59
China	52	18	28	-2	70
France	53	29	19	-1	82
Germany	31	33	15	22	63
Japan	25	81	75	-81	-56
Mexico	39	50	17	-6	89
Sweden	51	18	23	8	69
United Kingdom	51	45	15	-10	96
United States	34	53	32	-19	87
Global	43	34	28	-4	77

% of increase from price change

1. Net investment is calculated as the sum of nominal investment less depreciation from 2001 to 2020 (without adjusting for price effects).
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Mexico data start in 2003.
Source: CEIC; Federal Reserve Board; national statistics offices; IHS Markit; OECD; World Bank; McKinsey Global Institute analysis

while net investment contributed only 28 percent to net worth expansion (Exhibit E8). Asset price increases thus made up 77 percent of net worth growth (negative net financial assets made up 4 percent), and more than half of those price effects were in excess of general inflation.

Real asset valuations have grown over the past two decades as interest rates have fallen and operating returns have stagnated or declined
Real assets are critical to the global economy. Returns on those assets account for about one-quarter of GDP directly. Growth in real assets also complements labor in driving productivity, which in turn drives economic growth. As expected, our analysis shows a positive relationship between an increase in produced assets and capital returns on a per capita basis, as well as between produced

assets per capita and labor productivity. Widely discussed differences in labor share of income across our sample countries also largely reflect differences in the value and portfolio mix of assets in each country.[17]

As asset valuations soared, valuation gains over and above inflation outstripped operating returns in several economies over certain time periods, creating a rationale for investors to prioritize the potential for asset price increases over real economic investment and improvement of operating assets (Exhibit E9).

As part of this broader trend, the value of corporate assets and equity has diverged from GDP and from corporate profits over the past decade. Since 2011, total corporate real assets grew as a weighted

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[17] See also *A new look at the declining labor share of income in the United States*, McKinsey Global Institute, May 2019; "Understanding the downward trend in labor income shares," in *World Economic Outlook: Gaining Momentum?*, IMF, April 2017; and Loukas Karabarbounis and Brent Neiman, "The global decline of the labor share," *The Quarterly Journal of Economics*, February 2014, Volume 129, Issue 1.

Exhibit E9

After 2000, valuation gains approached operating returns.

Real asset operating returns and valuation gains post-inflation, 5-year rolling averages, %

4.2 2.0	3.6 -0.6	3.9 1.7	4.0 3.9	3.7 2.9
6.2	**2.9**	**5.6**	**7.9**	**6.6**

Average returns for period, % Total
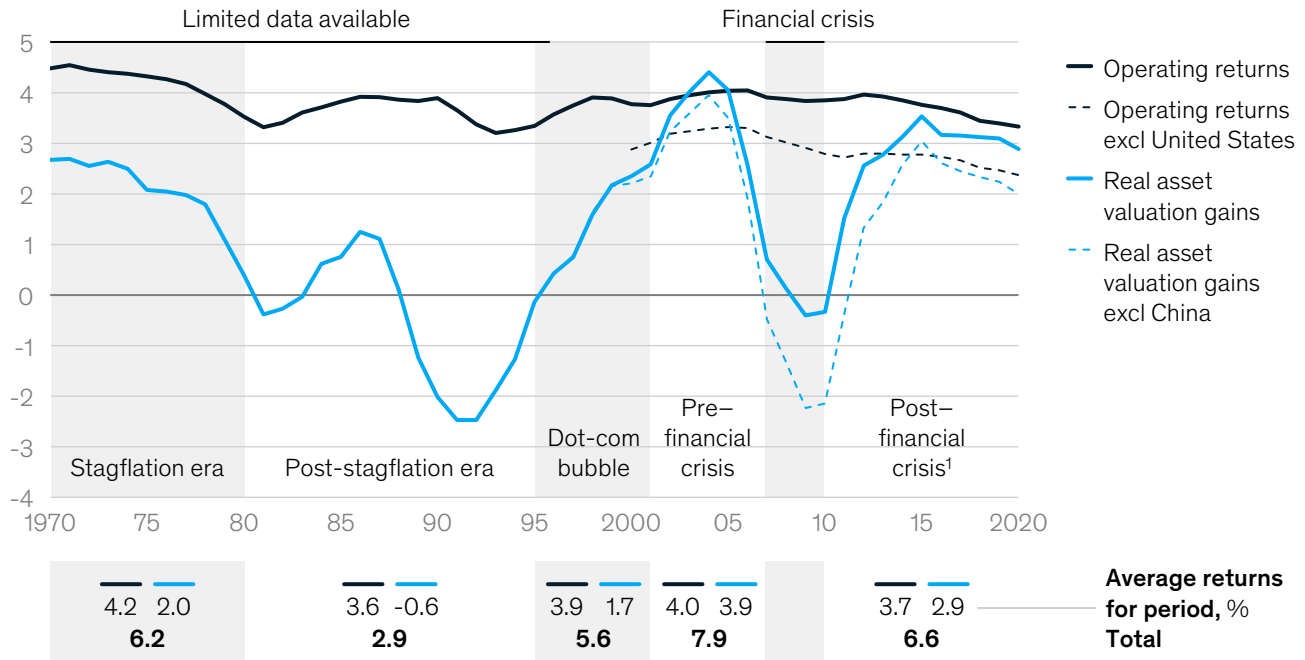
1. These figures reflect the period 2010 to 2020. If this period had begun in 2008, average operating returns would have been 3.7% and average post-inflation valuation gains 1.9% (and total returns 5.6%).

Note: Data availability starting dates: United States, 1970; France, 1979; Japan, 1995; Sweden, United Kingdom, 1996; Australia, Canada, Germany, 1997; China, 2001; Mexico, 2004. Operational returns calculated as net operating surplus divided by produced assets and land.

The global average is an extrapolation derived from a weighted average of ten countries based on GDP.

Source: AMECO; CEIC; Federal Reserve Board; IHS Markit; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

average by 61 percentage points relative to GDP across the ten countries. Corporate liabilities increased even more. Liabilities linked to equity grew by 105 percentage points while debt liabilities grew by 27 percentage points. The corporate profits underpinning those values declined by one percentage point relative to GDP at the global level. This divergence points to declining capital productivity and returns.

Operating returns on produced assets vary significantly across the ten countries, from 3 to 4 percent in the European Union and Asian countries we analyze to 6 to 8 percent in Australia, Canada, the United Kingdom, and the United States, and 11 percent in Mexico. Asset portfolios and industry mix only partially explain these differences. For Australia and the United Kingdom, high land prices may skew some of the findings, as land is not typically counted as capital stock used in production even though rents associated with urban land often contribute to capital returns. The high yields in the United States and Canada, however, persist after adjusting for this. This raises questions about market and competitive conditions that foster or inhibit high returns and drive or hamper capital productivity.[18]

Declining interest rates and, notably, rental yields were central to increasing asset values

As net worth relative to GDP has grown in most countries since 2000, interest rates have fallen, particularly in the past decade. Indeed, our analysis found a strong inverse correlation between net worth relative to GDP and five-year rolling averages of nominal long-term interest rates after 2000 in all countries apart from China, Japan, and the United States. In the United States, this is at least in part

because of the 2008 financial crisis, which muted real asset prices for a sustained period despite very low interest rates. Japan, meanwhile, had low interest rates throughout the period, leaving little room for further declines.[19] In China, by contrast, net worth grew materially relative to GDP, while interest rates did not see a significant decline over the past decade in the same manner as in our other countries.

Real estate, which, as we have shown, represents two-thirds of net worth, illustrates the basis of valuation gains and their link to interest or discount rates. As home prices have risen, approximately tripling on average across the ten sample countries from 2000 to 2020 (with Japan as an outlier, as home prices there declined), the impact of higher rental income, including imputed rents on property owned outright, was outweighed by sharply decreasing rental yields. Rental yields are a proxy for capitalization rates used by the real estate industry to determine property values based on expected rental income streams.[20] Capitalization rates and, by extension, rental yields typically decline with declining interest rates as financing costs decrease, as well as with expected rent growth. Declining interest rates have hence played a decisive role in rising real estate prices. Additionally, inelastic land and real estate markets meant that changes in interest rates or rental yields drove up real estate prices rather than reducing rents.[21] A long-term view of some real estate markets suggests that valuations today are relatively high by historical standards (see Box E3, "Real estate prices seem elevated from a long-term historical perspective").

3x

Average increase in home prices since 2000 in the ten sample countries

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[18] See *Getting tangible about intangibles: The future of growth and productivity?*, McKinsey Global Institute, June 2021.

[19] Japan's long-term interest rate in 2000 was 1.7 percent, according to the OECD. Other countries in 2000 had long-term interest rates of at least 5 percent.

[20] Rental yields are defined as rental income in a given year compared to the market value of a home (in other words, the rent-price ratio). Capitalization rates are defined as net operating income of a property divided by the property's market price. Capitalization rates are used to discount future rental income expectations and are a primary metric used by developers and investors to determine the price they are willing to pay for a property. Taking a similar approach, we use rental yields as effective discount rates on rent prices to understand home prices. See also Edward Glaeser and Joseph Gyourko, "The economic implications of housing supply," *The Journal of Economic Perspectives*, Winter 2018, Volume 32, Number 1; and Edward L. Glaeser, Joseph Gyourko, and Albert Saiz, "Housing supply and housing bubbles," *Journal of Urban Economics*, September 2008, Volume 64, Number 2, pp. 198-271.

[21] For further discussion of home price growth and broader economic implications, see John V. Duca, John Muellbauer, and Anthony Murphy, "What drives home price cycles? International experience and policy issues," *Journal of Economic Literature*, 2021, Volume 59, Number 3.

Real estate prices seem elevated from a long-term historical perspective

According to data from Nobel laureate Robert Shiller, inflation-adjusted home prices in the United States over the past 130 years have mostly moved in line with goods price inflation. However, there were two exceptions to this: beginning in and immediately following World War II and beginning in the late 1990s and continuing through 2006.[1] Home prices then fell sharply during and after the 2008 financial crisis but have since rebounded to their pre-crisis levels.

An even longer-term view of home prices focuses on the Herengracht canal in Amsterdam dating back more than three centuries to 1650.[2] There, too, home prices have largely moved in line with inflation over time, and rent prices have largely moved at the same pace as home prices. The Amsterdam data also show a notable increase in real home prices beginning in the 1990s through 2005 (when the data end). Real prices in 2005 were near their late-18th-century peak.

[1] "Online data Robert Shiller," econ.yale.edu.
[2] Piet M. A. Eichholtz, "A long run house price index: The Herengracht Index, 1638–1973," *Real Estate Economics*, 1997, Volume 25, Issue 2, pp. 175–92; and Brent Ambrose, Piet M. A. Eichholtz, and Thies Lindenthal, "House prices and fundamentals: 355 years of evidence," *Journal of Money, Credit and Banking,* 2012, Volume 45.

Exhibit E10

Rising home prices are a function of rent price growth and declining rental yields, with the latter shaping home prices in most countries.

Dynamics of real estate price and stock changes across countries, 2000–20

■ Primary factor behind home price growth[1]

	Nominal home price growth, %	Rent price growth, %[2]	Rental yield change, %	Growth in household real estate stock/GDP, pp
China	411	76	-66	6[4]
Canada	243	31	-62	146
Australia	239	75	-48	118
Sweden	220	46	-54	104
United Kingdom	165	56	-41	111
Mexico[3]	149	45	-42	95
France	138	37	-43	199
United States	108	76	-15	42
Germany	64	27	-22	61
Japan	-20	-5	19	-38
Global	250	69	-43	42
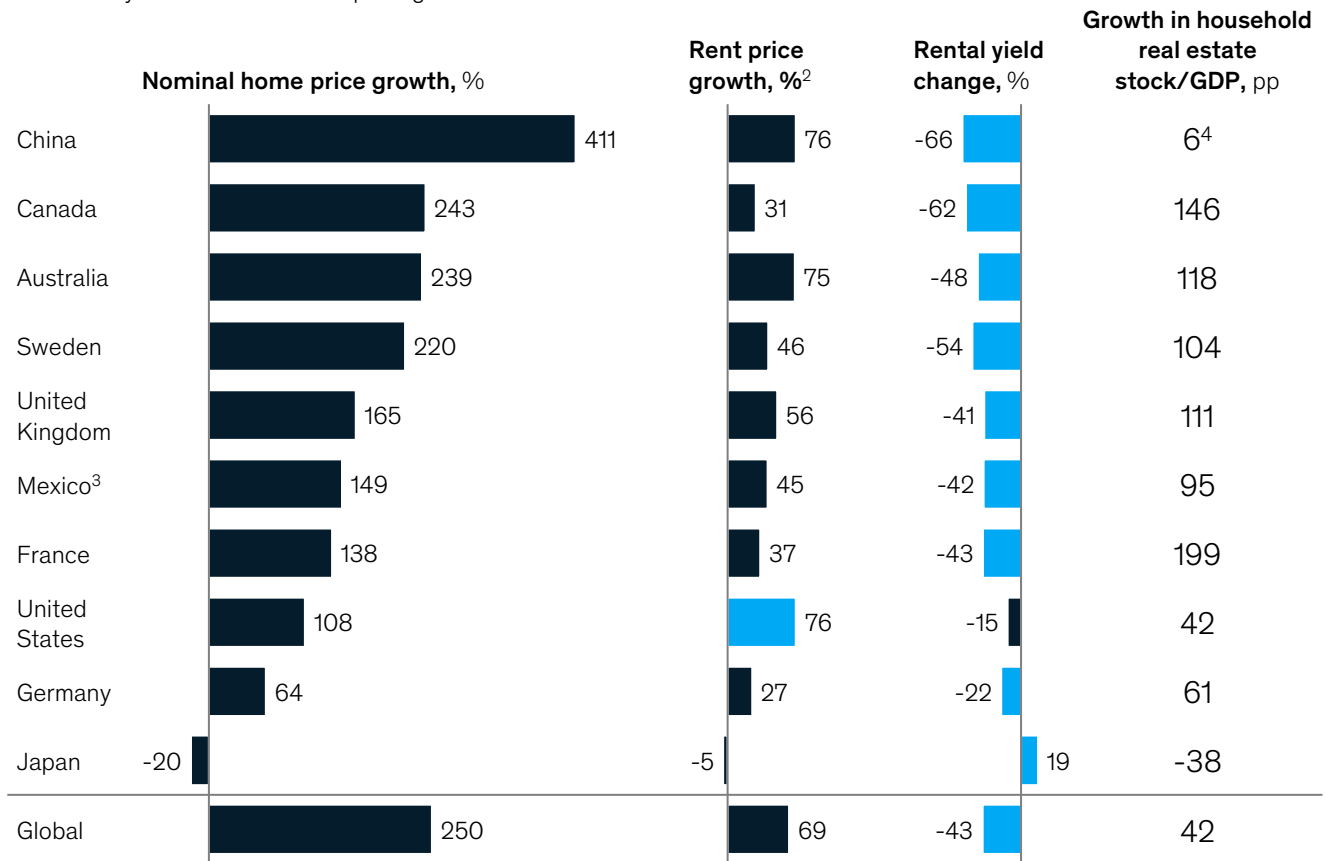
1. Home prices are a function of rental income and rental yields (which are a proxy for capitalization rates used by the real estate industry), wherein home prices are equal to rental income divided by rental yields. Specifically, the percent increase in nominal home prices is equal to the following formula: (% increase in rents − % increase in rental yields)/(1+ % increase in rental yields).
2. Rent prices reflect imputed rent of owner-occupied homes.
3. Mexico's data reflect the period 2005–20.
4. China's overall household real estate stock has grown only slightly faster than GDP, with a growth in GDP multiple of 6 percentage points from 2001 to 2020, even though nominal home prices have grown over 400 percent.
Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

In the United Kingdom, lower rental yields, or higher value-to-rent multiples, accounted for 38 percent of the increase in real estate–related net worth, with rent increases explaining an additional 31 percent; 21 percent of the increase reflects the multiplicative impact or interaction effects of rents and yields rising at the same time. Only 9 percent of that increase was due to net capital investment in maintaining or growing the stock of buildings. A similar pattern holds true, with variation, across countries (Exhibit E10). Australia, Canada, France, and the United Kingdom had the highest growth in the value of household real estate relative to GDP.

Of the net worth gains tied to real estate at the global level, some 55 percent derived from higher land prices, while 24 percent was attributable to higher construction costs. (The remaining 21 percent was a result of net investment—that is, construction of new homes or improvements to existing ones, less wear and tear.)

Nearly all net worth growth from 2000 to 2020 occurred in the household sector as a result of growing equity and real estate valuations

Household net worth grew from 4.2 times GDP in 2000 to 5.7 times GDP in 2020, growth that actually exceeded total net worth growth given net worth declines in the nonfinancial corporate sector, particularly in the United States. Half of household net worth growth in this time frame came from rising equity values, which were most prominent in China, Sweden, and the United States (growth in GDP multiples of 1.7, 1.0, and 0.8, respectively). An additional 40 percent of household net worth growth relates to rising housing values (Australia, Canada, France, Sweden, and the United Kingdom all saw growth in excess of a full GDP multiple). Household net worth also grew as a result of rising deposits that filtered through to them on the back of money creation and stimulus measures (most pronounced in China and Japan, where deposit assets grew by more than 0.5 times GDP). Debt in the household sector kept comparatively steady relative to GDP at the global level, up by 0.2 times GDP, but grew by 0.6 times GDP in China, albeit from very low levels.

At the global level, government net worth did not change much, by less than 0.1 times GDP, although this masks a wide range across countries—from a growth of 0.7 times GDP in China to a decline of 0.7 times GDP in the United Kingdom. Government debt expanded throughout relative to GDP, from 0.2 times GDP in Germany to 1.2 times GDP in Japan. Some governments also saw growth in financial assets, such as equity of state-owned enterprises in China, and real assets, especially in Australia (minerals) and France (buildings and land).

Nonfinancial corporations saw equity liabilities grow at the global level by 0.3 times GDP more than the increase in the real assets backing those equities, particularly in Canada, Japan, and the United States, where equity growth was more than five times larger than real asset growth. Real assets in nonfinancial corporations grew by more than a full GDP multiple in China (particularly in inventories including construction work in progress), France and Sweden (particularly corporate land valuation increases), and Mexico (particularly in commercial buildings and machinery and equipment). China saw the most significant growth in net debt liabilities, with a change in GDP multiple of 0.7.[22] At the other end of the spectrum, Japan's nonfinancial corporations reduced debt relative to GDP.

Financial corporations had minimal change (and near-zero levels) of net worth. Balance sheets, however, grew by roughly two GDP multiples, nearly half of which came from growth in debt assets (mirroring growth in debt liabilities spread across other sectors, and including debt acquired by central banks in asset-purchasing programs). The remainder came from equity and currency and deposit assets, including those from within the financial sector. On the liability side of the balance sheet, nearly all the growth came from currency and deposit liabilities, and some equity growth. The United Kingdom, which had the largest financial corporation balance sheet relative to GDP in our sample in 2020, also saw the greatest growth over the past two decades, by more than 5.5 multiples of GDP.

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[22] Subtracting debt assets to account for intrasector holdings.

Financial assets and liabilities also grew faster than GDP, mirroring the growth of real asset values and vastly exceeding net investment

From 2000 to 2020, total financial assets grew from 8.5 to 12 times GDP, with growth taking place within and outside of the financial sector. Within the financial sector, financial assets grew from 4.4 times GDP in 2000 to six times GDP in 2020. Currency and deposit liabilities within the financial sector, including central banks and commercial banks, in particular saw substantial growth of 96 percentage points. Central bank balance sheets, which are included in the financial sector and reflect many (but not all) of these currency liabilities, expanded collectively from 0.1 times GDP in 2000 to 0.5 times in 2020. Over the same period, central banks in Japan, France, and Germany increased their balance sheets, by 1.2 times GDP, 0.7 times, and 0.6 times, respectively. More than 40 percent of the global increase in financial assets and liabilities relative to GDP between 2000 and 2020 (and about 10 percent of the increase in US dollar terms) occurred from 2019 to 2020 during the COVID-19 pandemic.[23]

Outside of the financial sector, financial assets such as bank deposits, corporate bonds and equity assets, and pensions grew from 4.2 times GDP in 2000 to six times GDP in 2020. Over the same period, debt-to-GDP ratios outside the financial sector grew by 79 percentage points, with substantial variance across the ten countries. (In the total economy, debt-to-GDP ratios increased by 77 percentage points over this period.) This growth in financial assets (and liabilities) outside the financial sector mirrored a similar increase in real asset values.

However, new debt and other liabilities greatly exceeded net investment. Between 2000 and 2020, almost $2 in debt, or about $4 in total liabilities including debt, was created for each $1 in net new investment—and that does not include the balance sheet of financial corporations (Exhibit E11). The country variations were wide, with the amount of debt created for each $1 in net new investment ranging from just over $1 in China to nearly $5 in the United Kingdom. This raises questions about capital allocation and purposeful creation of debt, as well as the sustainability of rising debt in the event of a mean reversion in asset prices.

For each $1 of new investment, almost $2 in debt, or about $4 in total liabilities including debt, were created between 2000 and 2020.

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[23] Central bank data are sourced primarily from the OECD, with supplemental data directly from the central banks in several cases. This includes data for all years from Australia, China, and the United Kingdom, and for 2020 from Canada, France, Germany, and Japan.

From 2000 to 2020, almost $2 of debt and $4 of liabilities were created for every $1 of net investment.

Global growth and stock of real assets and liabilities, excluding financial sector, nonconsolidated data, 2000–20, $ trillion
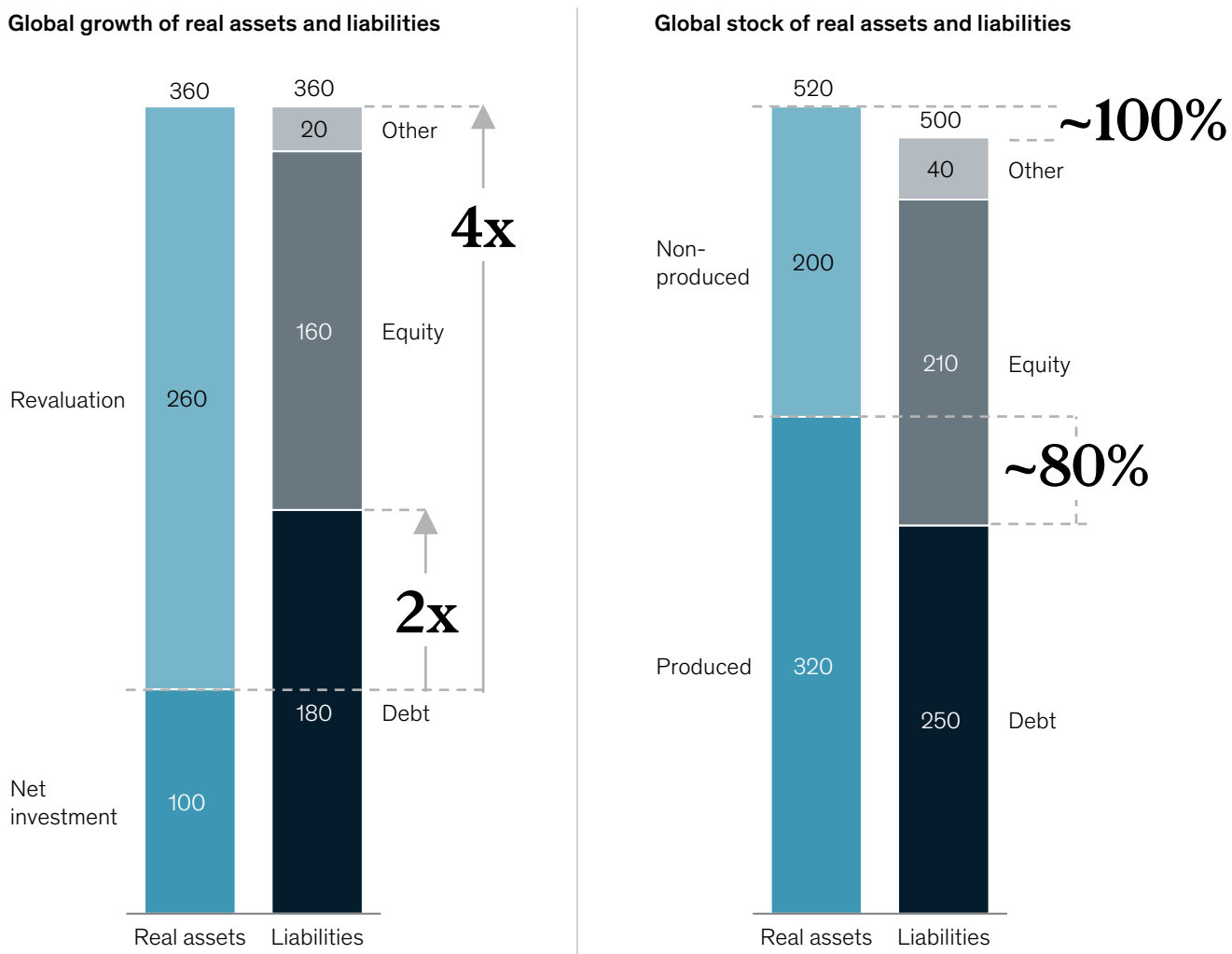
Global growth of real assets and liabilities

Revaluation

Net investment

| | Real assets | Liabilities |

360 — Real assets: Revaluation 260, Net investment 100

360 — Liabilities: Other 20, Equity 160, Debt 180

4x

2x

Global stock of real assets and liabilities

Non-produced

Produced

520 — Real assets: Non-produced 200, Produced 320

500 — Liabilities: Other 40, Equity 210, Debt 250

~100%

~80%

| Real assets | Liabilities |

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

While this research cannot provide an answer to debt sustainability questions, it complements well-established metrics such as debt-to-GDP ratios with comparisons of liabilities to assets. For instance, while debt-to-GDP ratios are similar in countries like China, France, and the United Kingdom, loan-to-value ratios, which we define as debt relative to produced assets, vary markedly across these three countries, from 57 percent in China to 98 percent in France to 138 percent in the United Kingdom. Loan-to-value ratios are particularly high in the government sector, with debt often several factors higher than underlying public assets. Despite rising debt, the cost of debt has sharply declined relative to GDP thanks to declining interest rates.[24]

[24] See Olivier Blanchard, "Public debt and low interest rates," *American Economic Review*, April 2019, Volume 109, Number 4.

Several scenarios are possible, with an imperative to deploy wealth more productively for critical investment needs

There are different ways to interpret the vast expansion of balance sheets and net worth relative to GDP. It could mark an economic paradigm shift, or it could precede a reversion to the historical mean, softly or abruptly. Aiming at a soft rebalancing via faster GDP growth might well be the safest and most desirable option. To achieve that, redirecting capital to more productive and sustainable uses seems to be the economic imperative of our time, not only to support growth and the environment but also to protect our wealth and financial systems.

In the first view, an economic paradigm shift has occurred that makes our societies wealthier than in the past relative to GDP. In this view, several global trends including aging populations, a high propensity to save among those at the upper end of the income spectrum, and the shift to greater investment in intangibles that lose their private value rapidly are potential game changers that affect the savings-investment balance.[25] These together could lead to sustainably lower interest rates and stable expectations for the future, thereby supporting higher valuations than in the past.[26] While there was no clear discernible upward trend of net worth relative to GDP at global level prior to 2000, cross-country variation was always large, suggesting that substantially different levels are possible. High equity valuations, specifically, could be justified by attributing more value to intangible assets, for instance, if corporations can capture the value of their intangibles investments more enduringly than the depreciation rates that economists assume. Rapidly rising levels of debt, in this view, would be supported by higher asset values and low costs of debt, thus not representing a problem.

In the opposing view, this long period of divergence might be ending, and high asset prices could eventually revert to their long-term relationship relative to GDP, as they have in the past. Increased investment in the postpandemic recovery, in the digital economy, or in sustainability might alter the savings-investment dynamic and put pressure on the unusually low interest rates currently in place around the world, for example. This would lead to a material decline in real estate values that have underpinned the growth in global net worth for the past two decades. At current loan-to-value ratios, lower asset values would mean that a high share of household and corporate debt will exceed the value of underlying assets, threatening the repayment capacity of borrowers and straining financial systems. We estimate that net worth relative to GDP could decline by as much as one-third if the relationship between wealth and income returned to its average during the three decades prior to 2000. Assessing scenarios including this reversion of net worth to GDP, a reversion of land prices and rental yields to 2000 levels, and a scenario in which construction prices moved in line with GDP since 2000, we find that net worth to GDP by country would decline by between 15 and 50 percent across the ten focus countries.

Not only is the sustainability of the expanded balance sheet in question; so too is its desirability, given some of the drivers and potential consequences of the expansion. For example, is it healthy for the economy that high house prices rather than investment in productive assets are the engine of growth, and that wealth is mostly built from price increases on existing wealth?

Decision makers could hence work to stabilize and reduce the size of the balance sheet relative to GDP by growing nominal GDP. To do so, they would need to redirect capital to new, productive investment in real assets and innovations that accelerate economic growth.

For business leaders, this would mean identifying new growth opportunities and ways to continuously raise the productivity of their workforce with capital investment that complements rather than displaces their employees. Many corporations have excess liquidity that they could deploy. Sustainability investments, for instance, could turn from a cost to a growth opportunity if framework conditions such as

[25] Atif Mian, Ludwig Straub, and Amir Sufi, "What explains the decline in r*? Rising income inequality versus demographic shifts," presented at the 2021 Jackson Hole Economic Symposium, Federal Reserve Bank of Kansas City, August 2021.

[26] See also Adrien Auclert et al., *Demographics, wealth, and global imbalances in the twenty-first century*, National Bureau of Economic Research, working paper number 29161, August 2021.

higher carbon pricing were put in place that require higher investment yet keep a level playing field between competitors. Could changes to the way intangibles are accounted for on corporate balance sheets result in higher investment? And how should business leaders think about providing new stores of value, justifying equity valuations and building household wealth?

Leaders of financial institutions could seek to develop financing mechanisms aimed at deploying capital to new growth opportunities while limiting debt creation for asset transactions at ever-rising prices. Also, the global balance sheet is directly reflected on their own balance sheets. Beyond risk assessments, what do the trends of the past 20 years and scenarios ahead mean for their balance sheets and revenue growth? How might they contribute to the evolution of the global balance sheet, and what does it mean for responsible banking?

For policy makers, rebalancing would require removing barriers to investment in glaring gaps in the economy such as sustainability and affordable housing.[27] Tools already exist to achieve this, such as reforming zoning regulations that make real estate scarce; tax levers that alter the taxation of capital and property gains relative to income; and getting more serious about carbon pricing and regulation. Likewise, as financial regulators, they can affect debt levels by changing standards or maximum loan-to-value ratios for the provision of loans or revisiting the tax advantages of debt. Policy makers can also aim to increase their own buildup of productive assets and net worth, starting with better measurement.

A broader question is how to reorient institutional frameworks. Decision makers could develop new metrics decoupled from transaction prices of small volumes of traded assets to measure wealth. The framework governing competition in an era of intangibles and their role in storing wealth could evolve. Pension systems and savings may require

new structures to accommodate wealth that has historically grown sustainably only in tandem with GDP yet is now elevated. It could mean adjusting the rules governing financial systems and institutions if savings and investment make up less than one-third of growth in real assets, and most balance sheet growth is linked to rising asset prices.

For business leaders, financial institution leaders, policy makers, and households alike, this research offers a new way of assessing the macroeconomic context in which they are operating and living. It offers a platform for developing scenarios for the future and finding ways to hedge against risks and capture benefits should balance sheets be rebalanced and the economic environment change as a result. And it suggests the importance of working toward a rebalancing by growing GDP and redirecting capital rather than risking a mean reversion in asset prices.

This report lays the groundwork for further research in which we expect to address some of these questions, and we invite comments and insights.

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The global economy over the past two decades has been marked by rapid technological change, as digitization has taken hold across sectors and businesses have ramped up investment in intangible assets. While emerging economies have experienced strong growth spurts, that is not the case for many advanced economies, for whom the 21st century—even before the COVID-19 pandemic—has been a tale of financial crises and uneven recovery, forcing central banks to expand their balance sheets in an unprecedented way, and of extremely low interest rates and inflation by historical standards. Given these conditions, how healthy and resilient is the global economy today as we prepare for another recovery? The balance sheet view we adopt in this report raises important questions about economic priorities, investment, long-term stores of value, and future prosperity.

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[27] See Edward Glaeser and Joseph Gyourko, "The economic implications of housing supply," *The Journal of Economic Perspectives*, Winter 2018, Volume 32, Number 1; and Dag Detter, "How cities can lead the way in bridging the global housing gap," World Economic Forum, June 2018.

Can e-commerce help customs agencies fix old problems?

Transformations that aim to unlock more opportunities from e-commerce could also help customs agencies tackle issues they've long wrestled with, including revenue leakage and illicit goods flows.

by Aurélie Barnay, Jonathan Davis, and Sarah Zaidi

While the rollback of COVID-19 pandemic restrictions in some parts of the world may result in more shoppers returning to brick-and-mortar stores, the surge in online sales over the past two years marked a sea change in consumer habits, including growing demand for cross-border business-to-consumer (B2C) e-commerce.[1]

Cross-border B2C e-commerce could open new markets for businesses and help lower costs, especially for small and medium-size businesses. Consumers may also benefit from having more options to choose from and the ability to get bargains beyond their borders where tariffs don't apply. But what is potentially promising for businesses and shoppers is presenting yet another challenge to customs agencies across the globe. And the deluge of online shopping may only intensify.[2] Conservative estimates project that the market for cross-border e-commerce will grow from $300 billion in 2020 to $1 trillion by 2030. In a bolder scenario, the overall market could total $2 trillion by the end of this decade (Exhibit 1).[3]

Many customs agencies may struggle to take full advantage of the e-commerce opportunity for their economies. At the same time, they are wrestling with ongoing problems such as lost revenues from tariffs and taxes due to the misclassification and undervaluation of goods, as well as increased flows of contraband.

Historically, these issues have largely stemmed from the same problem—an inability to sufficiently control and check growing volumes of post and parcels. And while countries around the world are piloting targeted solutions, as things stand, there isn't one that's designed to comprehensively resolve the three main issues we've identified that impact multiple dimensions of customs activity:

Exhibit 1

Cross-border e-commerce is projected to grow to a $1 trillion to $2 trillion market by 2030.

Cross-border e-commerce growth, by scenario
— Base-case scenario — Bold-case scenario
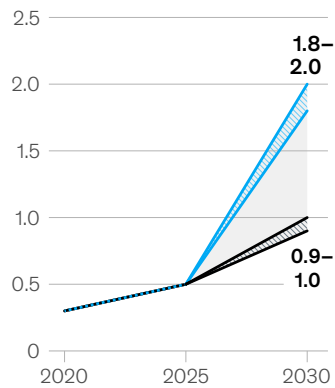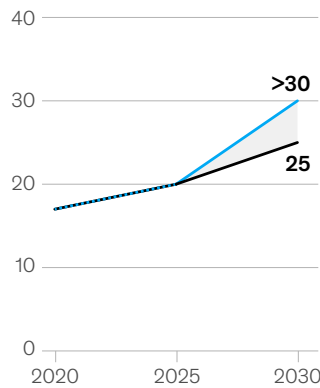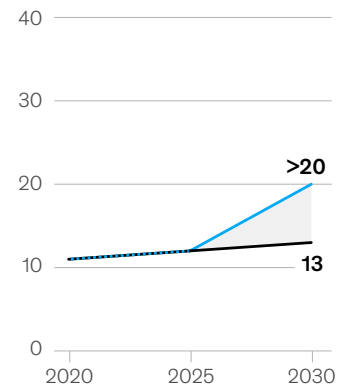
Source: Euromonitor International

[1] Eszter Beretzky, Ludwig Hausmann, Tobias Wölfel, and Tim Zimmermann, "Signed, sealed, and delivered: Unpacking the cross-border parcel market's promise," McKinsey, March 17, 2022.
[2] Ibid.
[3] Ibid.

— low-quality declaration information

— limited data sharing with logistics service providers

— overstretched customs inspection capacities

With a holistic approach in mind, we have analyzed three potential steps customs agencies could consider implementing over the next few years that are likely to help boost their capacity to facilitate smoother cross-border e-commerce flows, tackle long-standing problems, and anticipate future ones.

The challenge for customs agencies

Cross-border e-commerce can involve far-flung participants, making search and coordination between countries more efficient and lowering costs for buyers and sellers alike.[4] But these business opportunities can also present a challenge to customs agencies. There were an estimated 9.3 billion cross-border e-commerce orders in 2020,[5] compared with approximately 3.2 billion in 2015, according to McKinsey analysis. Based on these findings, it's also estimated that parcel shipments, including consignments delivered as packages through express courier and freight services, represented roughly 40 percent of the 2020 total, while postal e-commerce orders shipped as lightweight mail of 2 kilograms or less accounted for the rest.

Beyond growing volumes of post and parcels, customs agencies are also operating at the crossroads of shifting consumer purchasing habits and delivery preferences. Nearly eight in ten consumers globally shopped online at least once a month in 2021, according to the International Post Corporation.[6] And the proportion of consumers shopping online at least once a week increased from 17 percent in 2019 to 22 percent

in 2020—gains that were maintained in 2021.[7] While convenience factors such as delivery time windows offered to buyers remain a top priority, consumers also want to receive their orders quickly. In the United States, over half of consumers are interested in same-day delivery, with 20 percent of them willing to pay more for faster shipping.[8]

But as things stand, more than half of cross-border B2C shipments take eight days or more to arrive at their destinations (Exhibit 2). A key contributor to that lengthy delivery window is the time needed to clear customs inspections.

There are three main factors that can impact the clearance process:

— *Low-quality customs declarations limit the scope for agencies to conduct risk assessments related to safety or fiscal compliance.* Compared with traditional customs declarations—which typically include a variety of data points, such as the type of goods, value, and name and location of recipients—e-commerce declarations are of lower quality. This is due to smaller buyers and sellers having limited knowledge of customs processes and minimal penalties associated with inaccurate declarations (providing incorrect values for B2C shipments, for example). Moreover, the relatively low-value, high-volume nature of individual B2C consignments makes it challenging for customs agencies to follow up with prosecuting specific cases. Low-quality declaration information—when coupled with the huge volumes of e-commerce trade—can make risk assessments difficult to implement. Ultimately, this means that government agencies at the border are often unable to enforce fair taxes and tariffs, and illicit goods are more likely to enter the country.

[4] *Trade dialogues: WTO business focus group 1—MSMEs and e-commerce preliminary report*, International Chamber of Commerce, September 2016.

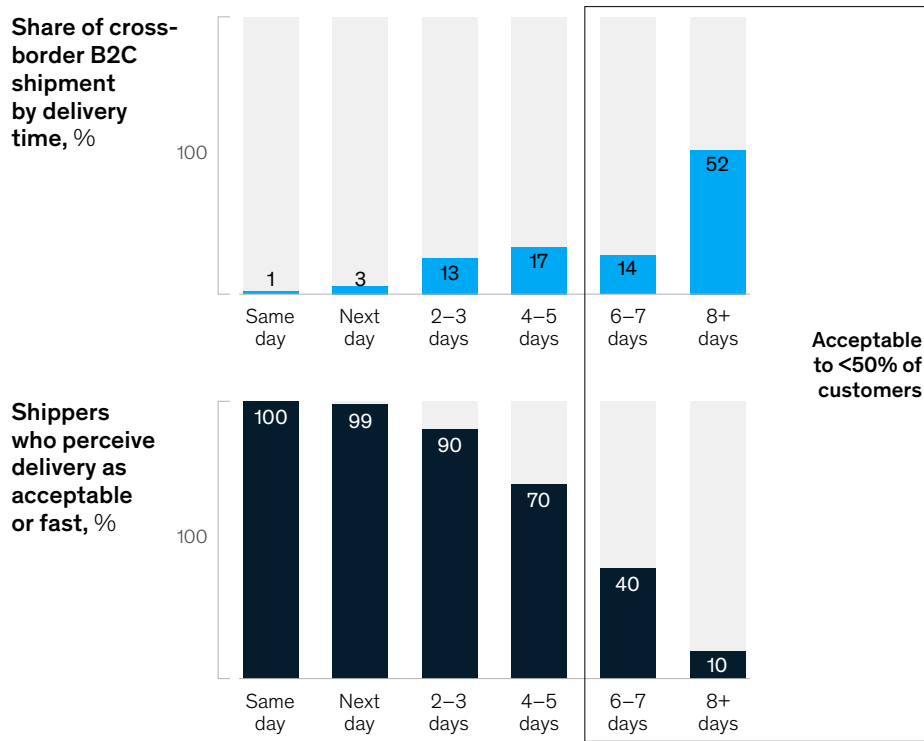[5] "Signed, sealed, and delivered," March 17, 2022.

[6] *Cross-border e-commerce shopper survey 2021: Key findings*, International Post Corporation, January 2022.

[7] Ibid.

[8] Tim Ecker, Malte Hans, Florian Neuhaus, and Julia Spielvogel, "Same-day delivery: Ready for takeoff," McKinsey, January 31, 2020.

Exhibit 2

Slow international postal shipments clash with the expectations of consumers today and even more so tomorrow.

Share of cross-
border B2C
shipment
by delivery
time, %

	Same day	Next day	2–3 days	4–5 days	6–7 days	8+ days
	1	3	13	17	14	52

Acceptable
to <50% of
customers

Shippers
who perceive
delivery as
acceptable
or fast, %

	Same day	Next day	2–3 days	4–5 days	6–7 days	8+ days
	100	99	90	70	40	10

Source: International Post Corporation

— *Limited data sharing with logistics companies.* Poor integration between logistics service providers and customs agencies often leads to key data across the value chain not being shared, making risk assessments more difficult. At the border, government agents often make rapid risk assessments based on a limited set of declaration data that is frequently of low quality. Yet, logistics service providers such as fast parcel operators and carriers often possess more detailed information and tracking details about specific transactions.

— *The COVID-19 pandemic and trade disruptions are further stretching already overburdened customs inspection capacities.* Customs agent absences due to the pandemic and supply chain disruptions are further straining customs inspections capacity, contributing

to delays at ports and border crossings. In addition, some customs units at postal services don't have the necessary infrastructure to conduct full risk assessments of rapidly growing volumes of parcels, such as nonintrusive inspection devices and analytics-based risk engines.

These factors are not simply inhibiting the growth of cross-border e-commerce. Governments may be losing out on billions of dollars a year in taxes and duties from the misclassification and undervaluation of goods. The European Commission estimated annual value-added tax (VAT) losses in cross-border e-commerce of €7 billion due to noncompliance and other factors.[9] Another study found that postal imports in the European Union had a VAT noncompliance rate of 65 percent.[10] Small parcels sent by post or express courier are also a growing

Low-quality declaration information coupled with huge volumes of e-commerce trade make it harder for government agencies to enforce fair taxes and tariffs—and easier for illicit goods to enter the country.

conduit for illicit goods. In a random sample test of third-party sellers, the US Government Accountability Office found that almost 43 percent of the items purchased online in the United States in 2018 were counterfeit.[11] And the Association of Southeast Asian Nations e-commerce market experienced $260 million in retailer losses due to online fraud in 2017.[12]

These issues are expected to intensify in countries where a larger share of shipments may fall below the de minimis value threshold (the minimum value below which imported goods can enter a country without incurring customs duties and taxes). In 2016, the United States increased its de minimis threshold to $800, from $200. The move was designed to facilitate trade by ensuring low-value shipments are not delayed by formal entry or payment requirements, but it also led some sellers to split consignments into many smaller parcels to avoid paying taxes and duties. It also fed a surge in the volume of declarations, with the number of parcels processed in the United States growing from approximately 225 million in 2016 to 771.5 million

in 2021.[13] From 2018 to 2021, the number of total trade seizures, including intellectual-property rights, import safety, and other trade violations, grew by almost 64 percent.[14]

Emerging efforts to tackle growing challenges

As customs agencies respond to the mounting challenges posed by e-commerce, various solutions have emerged. Countries are piloting new technologies, such as blockchain, Internet of Things (IoT), and AI, at different stages of customs clearance to improve monitoring compliance, transparency, efficiency, data sharing, and analytics.

In 2019, Dubai Customs launched a blockchain-based platform for e-commerce clearance to help facilitate cross-border trade. The platform is open to a variety of businesses, including couriers, e-commerce companies, and logistics firms. It enables the various entities involved in a transaction—the shipper, the transporter, and

9 "Modernising VAT for e-commerce: Question and answer," European Commission, December 5, 2017.
10 Bruno Basalisco et al., *E-commerce imports into Europe: VAT and customs treatment*, Copenhagen Economics, May 4, 2016.
11 *Agencies can improve efforts to address risks posed by changing counterfeits market*, US Government Accountability Office, January 2018.
12 *Tackling illicit trade in ASEAN advocacy paper, 2020*, EU-ASEAN Business Council and Transnational Alliance to Combat Illicit Trade, November 2020.
13 *CBP trade and travel report: Fiscal year 2021*, US Customs and Border Protection, April 2022; "Trade statistics," US Customs and Border Protection, updated June 9, 2022.
14 "Trade statistics," June 9, 2022.

government authorities—to provide and access data related to an e-commerce transaction, enabling all of them to trace movements.[15] Japan is working on an AI solution to automatically select e-commerce cargo for physical inspection collected from X-ray inspection equipment and then process it using machine learning.[16] South Korea is testing how to mine data to identify which traders are splitting imports into multiple smaller parcels valued at below the de minimis threshold to avoid paying taxes and duties.[17]

Other countries are partnering directly with logistics service providers. For instance, US Customs and Border Protection selected nine fast-parcel organizations and e-commerce companies to participate in a pilot in which they share cargo origin, content, tracking, recipient, and other information for all e-commerce, including shipments that fall below the de minimis threshold.[18]

Other partnerships with the private sector are spurring new potential solutions and helping to support the effective implementation of existing procedures. In the Netherlands, Customs4trade (C4T), a customs-focused consulting company, is working with Dutch Customs to ensure its centralized software solution is fully automated and aligns with the new Dutch filing system, known as DECO, that automates declarations for e-commerce imports.[19] Similarly, an increasing number of start-ups are developing solutions to ease the management of customs procedures. Estonia-based Eurora Solutions recently raised $40 million by creating a service that claims to allow e-commerce sellers to automatically apply correct VAT and duty rates for the goods they sell online.[20]

While these approaches aim to either fix one or more issues, they are nevertheless piecemeal. Customs agencies seeking to take advantage of

growing cross-border e-commerce opportunities, close the VAT gap, and help stem the flow of illicit goods may benefit from considering the following steps, regardless of how technologically advanced the agency is.

Step 1: Conduct a diagnostic to assess the strengths and opportunities for improvement specific to the agency's needs. An assessment can be done across six key dimensions of customs activity: trade promotion and facilitation, trade risk management, revenue risk management, data and IT infrastructure, operational excellence, and organization and change management. Ultimately, this diagnostic can help to build a fact base for the country to develop a strategic plan (Exhibit 3).

Step 2: Develop a transformation plan over time to tackle key challenges. This could be a multiyear, end-to-end transformation strategy or a targeted transformation on a specific dimension, with phased pilots aimed at the most feasible opportunities for maximizing compliance and improving operational efficiency. Thinking through interactions and system linkages with other government agencies, as well as private-sector players such as shipping and logistics companies, are likely to be critical to the plan's success.

Step 3: Launch transformation initiatives tailored to specific needs across the core dimensions of customs activity. This could include, for example, the following:

— Introduce reduced data sets for low-value consignments to make it easier for importers to submit required data for e-commerce transactions—and by extension improve the quality of information received. This could be inspired by existing efforts such as the European Union's H7 import declaration data set.

[15] Ahmed Mahboob Musabih, "Dubai Customs introduces blockchain-based platform to facilitate cross-border e-commerce," World Customs Organization News, February 2020.
[16] *Study report on disruptive technologies*, World Customs Organization, June 2019.
[17] Ibid.
[18] "Section 321 programs," US Customs and Border Protection, August 2020.
[19] *Inspire Blog*, "How will the new Netherlands DMS 4.0 regulations impact declarants?" Customs4trade, March 1, 2022.
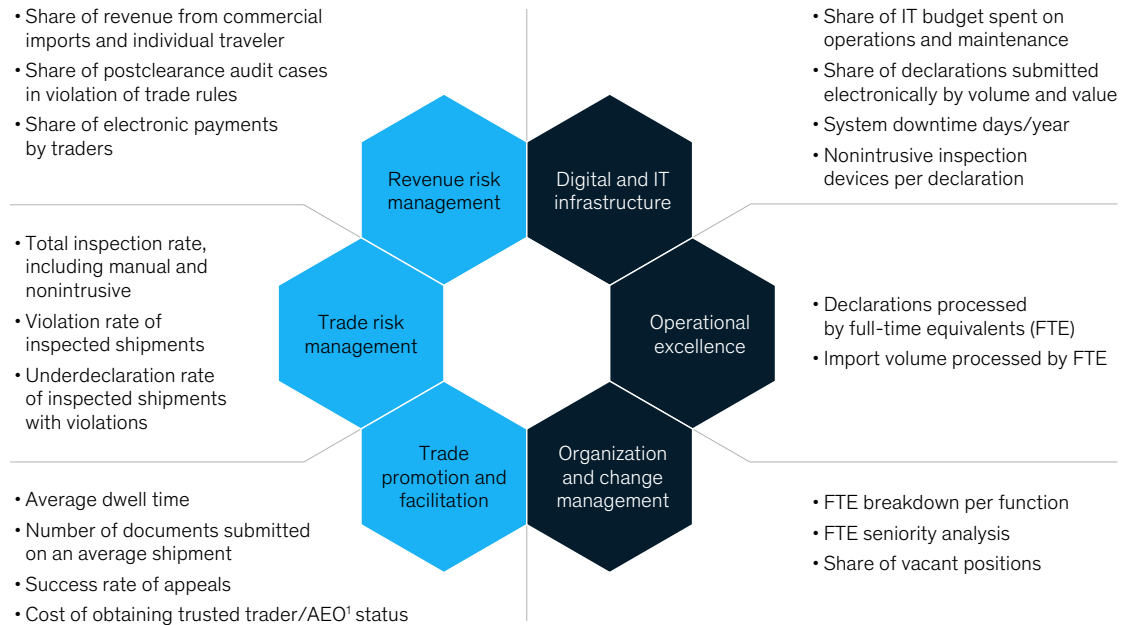[20] Ingrid Lunden, "Eurora raises $40M for its AI-based system to automated EU e-commerce shipping compliance." TechCrunch+, April 27, 2022.

Exhibit 3

Customs and trade agencies could holistically assess their performance across six strategic dimensions of customs activity.

Example metrics assessed, not exhaustive   ■ Strategic pillars   ■ Strategic enablers

- Share of revenue from commercial imports and individual traveler
- Share of postclearance audit cases in violation of trade rules
- Share of electronic payments by traders

- Total inspection rate, including manual and nonintrusive
- Violation rate of inspected shipments
- Underdeclaration rate of inspected shipments with violations

- Average dwell time
- Number of documents submitted on an average shipment
- Success rate of appeals
- Cost of obtaining trusted trader/AEO[1] status

- Share of IT budget spent on operations and maintenance
- Share of declarations submitted electronically by volume and value
- System downtime days/year
- Nonintrusive inspection devices per declaration

- Declarations processed by full-time equivalents (FTE)
- Import volume processed by FTE

- FTE breakdown per function
- FTE seniority analysis
- Share of vacant positions

Revenue risk management

Digital and IT infrastructure

Trade risk management

Operational excellence

Trade promotion and facilitation

Organization and change management

[1]Authorized Economic Operators.

— Enhance data sharing with logistics service providers such as fast-parcel operators and express carriers to ensure that teams are focusing their energies on the highest-risk consignments. By linking existing customs risk engines with IT systems run by logistics service providers, customs agencies could access more real-time data from across the supply chain. This would enable them to focus on the consignments that are most likely to be a risk, while facilitating trade for lower-risk declarations.

— Pilot new technologies using advanced analytics, machine learning, blockchain, and IoT to improve the overall risk-assessment process (see sidebar, "The Netherlands and European Commission: Using AI and data analytics to support customs declarations").

Agencies could also focus on reducing basic noncompliance errors from the beginning of the e-commerce shipping process by introducing automated declaration management checks before submission.

— Expand Authorized Economic Operators or trusted trader programs to a wider array of traders to better inform risk assessments while facilitating trade. A tiered trusted trader program could include small and medium-size companies that can provide customs agencies with data for traders beyond the largest corporates that are typically part of such programs. This tiered approach could enable resource allocation toward B2C e-commerce consignments.

The Netherlands and European Commission: Using AI and data analytics to support customs declarations

The European Commission's PROFILE project seeks to develop data analytics and AI to raise the effectiveness and efficiency of customs risk management. As part of this initiative, Dutch Customs and IBM created a web-crawling system in which AI is used to determine the under- or overvaluation risk level for customs.[1] The system searches for the same product on the web, gathers its price of sale on e-commerce platforms, compares it with the value and description of the goods listed in the declaration, and returns a risk indicator to the targeting officer.[2] It was piloted in real-world experiments, called "living labs," in the Netherlands, Norway, and Sweden.

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[1] *Study report on disruptive technologies*, World Customs Organization, June 2019.
[2] Alessandro Giordani, *Artificial intelligence in customs risk management for e-commerce: Design of a web-crawling architecture for the Dutch Customs Administration*, Delft University of Technology and IBM, 2018.

— Automate workforce planning to increase the productivity of personnel as they tackle exponential declaration growth. To drive a culture of success, agencies could combine qualitative criteria with effectiveness-based KPIs, such as measuring the success rate of physical interventions. This could be supported by a "control tower"—a central team in charge of progress review and delivery—to provide real-time situational awareness for on-the-ground staff.

The cross-border e-commerce market is continuing to grow and evolve, impacting customs agencies and challenging operations with significant implications for businesses, consumers, government revenue collection, and risk management.

While customs authorities are already working to address these issues, a more holistic approach could help them to strike the right balance of efficiency and security when managing cross-border flows. Putting innovation at the center and working closely with other public- and private-sector stakeholders will likely be critical for helping customs agencies manage the growth of e-commerce shipments.

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Using advanced analytics to improve performance in customs agencies

Machine learning and other analytics tools can improve fraud detection and strategic workforce planning, among other potential benefits.

by Ammar Busheri, Chiara Marcati, and Sarah Zaidi

Customs agencies around the world are under immense and growing pressure at a time of rapidly increasing cross-border e-commerce, shifting regulatory environments, and supply chain disruptions, including repercussions from COVID-19 and the war in Ukraine. The good news is that agencies also have an expanding number of digital tools that can improve performance by identifying and tracking issues before and at the border—and even once goods have left.

Deployment of advanced analytics could make a significant difference in a number of use cases. Among other applications, analytics can radically improve fraud detection, minimize revenue leakage, and bring new transparency to audit coverage.

In short, if the work of customs agencies is to find needles in haystacks, machine learning and other data analytics tools could both magnify the needles and shrink the haystacks, making detection faster and more reliable.

The rethinking of risk management strategy

The customs operating model is already stretched, and that tension is likely to grow. Cross-border e-commerce alone is projected to grow from $300 billion in 2020 to $1 trillion by 2030.[1] This will increase declaration volumes and could expose customs agencies to unprecedented levels of security and revenue risk.

Moreover, the COVID-19 pandemic has prompted many companies to rethink their supply chains and the locations of their physical operations. All this has coincided with heightened friction in global commerce as trade disputes have escalated. As a result, customs agencies have made developing new risk management strategies a key consideration.

Some customs agencies are not up to date in their risk management. One leading global customs player used a risk engine driven solely by human input to identify potential risks in imports and, in doing so, would deploy risk profiles that were many years old. When a random inspection exercise was conducted,

the agency found the number of violations to be 20 times larger than predicted by the existing risk engine. Similar limitations in terms of revenue management also became apparent: historical performance, rather than an understanding of up-to-date insights, was used to set post-clearance collection targets. This all led to realizing revenues that were below their full potential. It also prompted excessive auditing that ultimately burdened operations during a time of already heavy demand on customs agencies.

The benefits of deploying advanced analytics

A range of advanced-analytics techniques are being deployed with increasing success. Machine learning in particular can be used to train machines to sift through enormous volumes of data to spot patterns and anomalies, including potential fraud, which is particularly pertinent for customs agencies.

The potential applications of such technologies extend across the trade journey—that is, they can be deployed before the border, at the border, and after the border (exhibit).

Before the border. Advanced analytics can help agencies obtain information about traders early in the value chain. Using existing digital tools such as Microsoft Power BI and Tableau can provide customs agencies with a dashboard for accessing declaration data for all shipments. Analytics can help detect potentially fraudulent importers using historical data or even information from within traders' commercial supply chain systems, including their transport management systems and manufacturing execution systems. Techniques such as natural-language processing can comb through large amounts of text data from declarations and detect anomalies that could help identify illicit trade as early as possible. Such programs can instantly flag suspicious activity—for example, if the trader is a car company but the good being imported is a bed. Natural-language processing can also support traders by giving them tools to ensure they are less likely to make mistakes on their declarations, such as by allowing them to identify the correct commodity code based on a few questions or free text.

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[1] Eszter Beretzky, Ludwig Hausmann, Tobias Wölfel, and Tim Zimmermann, "Signed, sealed, and delivered: Unpacking the cross-border parcel market's promise," McKinsey, March 17, 2022.

Exhibit

Advanced analytics can create value for stakeholders across the entire trade journey.

Potential advanced-analytics use cases

	Before the border	At the border	After the border
Customs and border agencies	"Early warning" fraud detection (eg, at point of declaration submission) Importer compliance risk identification	Audit targeting for operational staff at the border Misclassification and undervaluation identification Health and safety transparency Audit coverage improvement Strategic workforce planning Staff performance assessments	Postclearance audit targeting Revenue collection transparency Revenue leakage transparency Incidents and complaints transparency
Traders	Registration process tracking Commodity code identification Tariff selection	Trade flow monitoring	Customer experience optimization Export and import transparency including predictions

At the border. Use cases at this step include auditing at the border, which can identify manipulation of commodity codes or goods valuation. Analytics can also improve operational performance in areas such as workforce planning, health and safety, and performance assessment of auditors. For example, advanced analytics can direct customs officials to open the right consignments using historical data and inputs from early-warning systems. And analytics can be a potent tool for strategic workforce planning, including in matching workforce schedules with demand.

After the border. Use cases at this step are about identifying and addressing revenue leakage. One case study from a G-20 country highlights the potential upside of analytics. The customs agency in that country was seeking to improve its risk and revenue management by ramping up its audit function and implementing a new targeting team. It recruited about 200 auditors and started conducting about 2,000 post-clearance audits annually, most of which were cases that had been incorrectly identified as compliant.

The agency, quickly realizing that the rate of detected violations was very low, moved to strengthen its risk-targeting engine by building two machine learning models using advanced analytics. The first was a "supervised" model that learned from past audits by selecting similar noncompliant cases and excluding any compliant cases. The second was a more sophisticated "unsupervised" model. This identified noncompliant cases that differed significantly from what was expected, essentially flagging anomalies that had previously gone undetected.

The upshot. After implementation of the post-clearance audit models, the detected violation rate doubled from 30 percent to 60 percent, and the agency's workforce productivity jumped by 75 percent. In all, the customs agency was able to achieve a 15-fold increase in revenue per auditor per year.

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[2] "WCO dedicates 2022 to scaling up customs digital transformation by embracing a data culture and building a data ecosystem," World Customs Organization, January 26, 2022.

Getting started

Customs agencies can consider deploying advanced analytics in the heart of their operations now. The World Customs Organization, for one, is committed to it. Its priority for 2022 is "scaling up customs digital transformation by embracing a data culture and building a data ecosystem."[2]

In the European Union, initiatives are being tested to use advanced-analytics tools to improve customs risk management practices. A project called PROFILE aims to facilitate and accelerate customs agencies' advanced-analytics capabilities, including the incorporation of external data sources to enhance risk profiling of imports.[3] Customs agencies under the program can access data owned by big data providers as well as e-commerce websites.

According to an analysis by the World Customs Organization, the proof of concept for this project is being rolled out in Belgium, the Netherlands, and Norway, among other countries. In the Belgian "living lab," where the testing is taking place, analytics tools are being used to establish risk indicators for traders.

In the Dutch living lab, price information is being collected from peer-to-peer online marketplaces and web stores and compared to average prices in e-commerce declarations. And in the Norwegian living lab, import and export risk is being assessed at the border through analysis of trade data.[4]

Adopting advanced analytics can be challenging, and many consider it an aspiration for the future, rather than something that can be achieved right away.

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One important myth can be challenged: customs agencies do not need perfect data to start their advanced-analytics journeys. They can start by leveraging the data they already collect. Our analysis suggests that many customs agencies could experience the benefits of use-case pilots in as little as 12 weeks, with a tremendous potential impact. In terms of magnifying needles and shrinking haystacks, that is a very short time indeed.

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[3] Juha Hintsa and Toni Männistö, "PROFILE: Enhancing customs risk management," World Customs Organization News, accessed July 18, 2022.
[4] Ibid.

Spending reviews: A more powerful approach to ensuring value in public finances

Spending reviews have the potential to provide significant insight into budget allocations, enabling higher productivity and greater operational efficiency.

by Rima Assi, Jonathan Dimson, Andrew Goodman, and Jens Riis Andersen

March 2019

Governments around the world face an imperative to manage their resources efficiently and provide services at the lowest possible cost. For some governments, this has involved going beyond traditional budgeting and taking a more innovative approach to managing public finances: spending reviews.

Spending reviews have the potential to provide significant insight into budget allocations, leading to recommendations that can enable higher productivity and greater operational efficiency. They also boost transparency, offering citizens more insight into why and how money is spent.

There is no single formula for spending reviews, and governments can tailor their frameworks based on their own priorities. However, there are approaches that can help support sustainability and increase the chance of ongoing benefits. These include establishing granular financial and operational baselines, understanding the underlying drivers of costs, benchmarking the efficiency of spending to identify opportunities for improvement, and making recommendations to improve efficiency or reallocate resources.

Governments that put in place these strategic foundations are likely to succeed in creating a new generation of structured spending reviews that are reliable, effective, and rewarding.

Spending reviews: A powerful tool to manage the budgetary process

Spending reviews can help governments better understand spending and identify opportunities for efficiencies. However, they are distinct from traditional top-down budgetary targets and the political negotiations that are still common in the countries in the Organisation for Economic Co-operation and Development (OECD). Instead, they are detailed assessments of specific areas of spending, with aims of increasing transparency, improving efficiency, and, where necessary, reallocating resources.

Several governments have used spending reviews to enhance expenditure performance.

The UK government has carried out spending reviews every two to five years as part of the budget-setting process. In 2015, HM Treasury, in partnership with government departments, created a new costing unit to conduct rapid six- to eight-week reviews of areas of public spending. The unit has since completed a number of reviews focused on operating expenditure in areas ranging from vocational education to criminal justice.

Denmark has conducted more than 50 spending reviews in services from policing to back-office functions across the government. Reviews have also been integrated into the annual budget process. The Ministry of Finance typically identifies several spending reviews a year. These become the bases for resource reallocation and spending programs, and they inform budget negotiations.

Sweden's spending reviews have primarily focused on capital efficiency (for example, in highways and rail) and delivery of services (for example, through the migration agency).

These spending reviews have had significant impact. In the United Kingdom, they have provided transparency into more than £20 billion of annual spending reviewed and a new approach to visualizing public spending across 25 departments. In Denmark, they have helped to deliver combined annual savings of €1 billion from several cross-government and ministry programs over five years.

Designing a spending review process: Key decisions

There is no blueprint for spending reviews, and governments have formulated their own approaches, reflecting differing priorities and organizational structures. There are, however, three broad areas where governments should make design decisions:

— *Institutional setup.* Governments must decide which ministries or teams are responsible for spending reviews. The entity responsible for the review should be located in an institution with sufficient formal and informal power to coordinate

the process. Countries that have conducted reviews have taken a variety of approaches. In the United Kingdom and Denmark, spending reviews have been led by HM Treasury and the Ministry of Finance respectively, working in partnership with other departments. By contrast, Spain and Italy have assigned responsibility to an independent fiscal authority and a politically appointed commissioner, respectively. Teams tasked with conducting reviews are typically small and comprise a combination of ministry and departmental personnel. In the United Kingdom, HM Treasury's team, consisting of about ten people, often conducts two or three reviews in parallel. It is also helpful to define up front whether review recommendations will be advisory or mandatory.

— *Scope.* Governments must decide on the range of the review body and the subject of the review. Scope is important because it affects the nature of the analysis and recommendations. Reviews of operating costs typically focus on labor costs, external spend, and back-office processes, and reviews of capital projects cover the volume, specifications, timing, and delivery efficiency of projects. Reviews of transfer payments, meanwhile, often look at issues such as eligibility, fraud, and error. Depending on the scope, a different set of skills and capabilities are required: a review of external spend and procurement is clearly different than a review of transfer-payment fraud and error. Countries have chosen to focus spending reviews on different areas of public spending. In the United Kingdom, reviews have mainly dealt with operating expenditure; the government has sought to make 30 to 40 percent reductions in operating costs in some ministries since 2010. In Sweden, reviews were initially focused on capital projects but recently have had a broader scope.

— *Individual-review-selection criteria.* Governments typically conduct up to ten individual spending reviews a year but may use different criteria to select reviews. One important decision is whether to focus on a single ministry/agency or on cross-cutting issues that span multiple areas of government (for instance, criminal justice and social care).

Cross-cutting reviews can address more complex issues—including frictional costs resulting from coordination among ministries—but are more challenging to carry out and implement. Governments also need to decide the size of spend being reviewed: too small, and the review is unlikely to be material; too large, and it may be impossible to generate real insight in the time available. In the United Kingdom, most reviews have focused on areas of at least £1 billion in annual expenditure.

There is no right answer to these design choices, and they should reflect national priorities, governmental structures, and political realities. However, it is important to ensure that the design choices are aligned with each other so that the team conducting the reviews generates useful insight and recommends meaningful changes.

Conducting a spending review

Despite different choices about the institutional setup, scope of, and selection criteria for reviews, governments have converged on a common approach for conducting a spending review. Establish granular financial and operational baselines, understand the underlying drivers of costs, benchmark the efficiency of spending to identify opportunities for improvement, and make recommendations to improve efficiency or reallocate resources.

Reviews are typically conducted by agile teams of five to ten people drawn from both the finance ministry and the ministries delivering services in the area being reviewed. Timelines between six weeks and six months are reasonable, depending on the size and complexity of the review, and there are typically four key stages.

1. Establish granular financial and operational baselines

A spending review is often the first time that comprehensive financial and operational baselines are produced for an area of public spending. In simple terms, the financial baseline shows how much is spent, by whom and on what, while the operational baseline casts light on activities funded by public spending and their outputs.

The first task is to **agree on a standard taxonomy of inputs, outputs, and outcomes** and how the government measures these, allowing for like-for-like comparisons and potentially revealing conflicting targets across ministries or a lack of defined outcomes. Understanding the difference between funding/budget and costs, for example, can reveal deficits or surpluses. The inputs are the funding or budget provided and costs incurred at the levels of cost category (for example, labor, property, and external spend) and cost center (such as an operating unit like a school, hospital, or immigration center), while the outputs are the direct impacts of the spending. Outcomes focus on indirect or more long-term effects.

When the United Kingdom's HM Treasury reviewed the further-education system in England in 2015, it established a common set of cost categories that could be compared across institutions and analyzed at the level of the individual educational institution (that is, the cost center). The Treasury then defined the immediate outputs (such as delivery of a lesson) and the outcomes (for instance, student attainment of qualifications and increase in lifetime income), creating a holistic view of the relationship among inputs, outputs, and outcomes.

The next step is to **develop a comprehensive and granular financial baseline.** This should include all the costs incurred in a particular area of public spending, often across multiple ministries, and should be at the most granular level possible. The financial baseline may reveal that the government is spending significantly more than thought in a particular area. In addition, a comparison of costs and budgets over time can identify structural deficits or surpluses. The review can also be designed to generate a forecast of future costs, based on predictions for underlying drivers (for example, migration figures, criminal levels, and infrastructure-construction projects).

Still, there are significant challenges. In federal systems, a common complexity is in understanding the costs incurred by national and local government entities in a particular area. Outsourced services and public–private partnerships (PPPs) are also more difficult, requiring a level of detail about actual costs incurred rather than just the headline unitary

charge paid by the government. Analysis of the accounts of outsourced and PPP arrangements can help provide some of the detail required.

In the United Kingdom, all departments have been asked since 2015 to produce a "value map" that breaks down annual spending into cost categories and cost centers, providing a basis for a granular financial baseline. The Danish public sector, meanwhile, has developed a new approach to understanding the total cost of ownership in the transport sector, taking into account the maintenance costs of any given strategy.

In parallel to developing the financial baseline, spending review teams must **develop a clear operational baseline,** which is a map of the activities conducted and outputs generated by public spending. Operational baselines help identify areas of greatest volume and complexity, as well as handoffs and potential points of friction in complex cross-government spending. When HM Treasury conducted a spending review of the criminal-justice system in London, it produced an end-to-end map of activity, outcomes, and key performance indicators that included policing, prosecution, the courts service, custody, and resettlement.

2. Identify underlying cost drivers
One of the key benefits of spending reviews is that they can provide ministries with a deep understanding of the drivers of costs and how to manage them.

The first step is to **build cost-driver trees** for the main cost categories. For example, the cost of supporting a fleet of military vehicles will include manpower to drive and maintain, fuel, spare parts, basing, and storage. The cost of spare parts will be determined by the volume of parts consumed and the price of each part. The volume of spares will be determined by the number of vehicles, the distance they travel, maintenance policy, and the mean time between failures. It is possible to model each of these factors to provide a detailed understanding of what drives the costs of supporting the fleet and, in particular, where small changes in a cost driver may have a large impact on overall costs.

Spending reviews can provide ministries with a deep understanding of the drivers of costs and how to manage them.

Part of the process of understanding cost drivers is to **disaggregate fixed and variable costs**. For military vehicles, the costs of basing and manpower may be fixed, while the cost of fuel is variable. One common challenge is distinguishing between contractually fixed costs (for example, a one-year fuel-purchasing contract) and physically fixed costs. In some services, there may also be fixed cost steps—for example, the number of bases required to support vehicles may only change when the number of vehicles rises or falls beyond a certain threshold. An understanding of fixed and variable costs is particularly important in outsourced and public–private support arrangements, where departments need to know how costs vary with usage to determine how much they should pay.

Governments with a detailed understanding of cost drivers are able to **develop unit costs for the provision of services**. Unit costing allows ministries to compare effectively the cost of providing a service either through government or externally. This level of visibility is similar to that expected of the product-level profitability from a private company. When the United Kingdom's HM Treasury reviewed the cost structure of further education, it worked with vocational institutions to understand their cost per qualification hour— the "fully loaded" cost of delivering one hour of a specific qualification—which could then be compared across institutions.

Cost-driver analysis is critical to both assessing the efficiency of public spending and making policy and operational choices. It also allows departments to put a cost on the impact of policy changes— for example, a requirement to teach a specific qualification—or operational changes, such as a decision to conduct additional military exercises.

3. Benchmark spending efficiency and identify opportunities for improvement

Spending reviews can help ministries make more informed decisions about efficiency and productivity improvements.

Armed with a granular picture of costs and cost drivers, review teams can **benchmark efficiency internally and externally** to identify improvement opportunities. Where the same or similar services are provided by a number of different institutions, there is significant potential to benchmark internally. The prior cost analysis allows spending-review teams to standardize costs (for example, on a unit-cost basis) and compare performance across schools, hospitals, universities, and other institutions. In the United States, the requirement to publish the costs of certain medical procedures at individual hospitals could allow patients to make direct comparisons. Governments also often have the opportunity to benchmark costs and performance across regions or localities. In the United Kingdom, the government has defined local authorities that are "statistical neighbors"—those with similar demographic and socioeconomic characteristics—to allow regional comparisons, particularly in education and healthcare. Benchmarking internationally, and to the private sector, can also be helpful in identifying opportunities. The US government publishes faulty-payment rates at paymentaccuracy.gov, allowing other countries to compare fraud and error in payment streams. Similarly, the US Department of Defense publishes the prices it pays for a range of military parts, identified by NATO Stock Number, allowing other militaries to compare prices.

Once spending-review teams have identified the potential opportunity through benchmarking, they can **find levers to realize improvement**. This process is typically complex, requiring a combination of financial and operational analysis, detailed discussions with practitioners, and subject-matter expertise.

There are, however, productivity levers that are proven to be effective. Where the focus is on operating costs, the application of automation at scale—particularly in corporate functions such as finance and HR—is widely used to cut labor costs. For external spend, some ministries use a combination of demand management, contract renegotiation, and consolidation in procurement frameworks. In the United Kingdom, Crown Commercial Service is establishing frameworks for different spending categories.

Where the focus is on capital expenditure, ministries seeking to improve productivity can combine reviews of cross-government pipelines, improvements to specifications of individual projects, and value engineering of projects during their delivery. In the United Kingdom, Infrastructure and Projects Authority maintains a single view of the government's major capital programs. In Sweden, the government has achieved significant efficiencies in highway spending through a standard set of requirements for road projects.

Spending reviews examining transfer payments often focus on levers to reduce the levels of fraud and error in payments.

Using a combination of benchmarks and efficiency levers allows spending-review teams to help ministries locate potential productivity improvements, size the scale of the opportunity, and define actions to deliver efficiencies that can be tested and refined.

4. Agree on recommendations, prioritize actions, and ensure delivery

The ultimate aim of spending reviews is to make a set of recommendations that improve the efficiency and effectiveness of an area of public spending.

In order to have an impact, the spending-review team should **agree on a set of recommendations** with the ministries that are going to implement them. Recommendations often include changes to policies, funding arrangements, and operations, but without clear stakeholder agreement, they are unlikely to be implemented.

Once the spending-review team has made a set of recommendations, it can work with the relevant ministries to **prioritize actions**. This process can include defining a road map for the next three, six, and 12 months and beyond. Recommendations may also require additional funding—for example, capital investment in automation to deliver ongoing operational efficiencies. These funding arrangements may take the form of a performance contract between the finance ministry and the line ministries responsible for delivery.

Finally, spending reviews are most effective when the spending-review team **follows up to ensure delivery**, based on frameworks that define key performance indicators and include timetables for subsequent reviews and annual reviews of review-team impact across the portfolio of projects.

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Spending reviews—as pioneered in Australia, Denmark, Italy, and the United Kingdom—offer a powerful new approach to ensuring value in public spending. Deploying a small, mixed team over a fixed period to review a defined area of public spending has consistently been able to provide deep insights into the cost base and identify efficiencies. For countries that have yet to seize this opportunity, reviews offer a realistic and attainable route to getting more value from public spending.

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How developing economies can get more out of their infrastructure budgets

Governments in developing economies often lack the capacity to conduct thorough reviews of proposed capital projects. A streamlined approach can identify those ready for funding.

by Rima Assi, Nicklas Garemo, and Arno Heinrich

In developed economies, policies and practices for balancing diverging interests in public infrastructure spending are well established. South Korea, for example, established the Public and Private Infrastructure Investment Management Center in 1999 to conduct feasibility studies on large public investments and expanded its mandate to include appraising and managing public–private infrastructure partnerships in 2005. Since then, the center has reduced project overruns by 82 percentage points. Similar units include the United Kingdom's Infrastructure and Projects Authority, Germany's Bundesrechnungshof, and Australia's Infrastructure Australia.

But in developing markets, many governments have yet to build a capacity for conducting extended project reviews and feasibility studies, because talent is scarce or internal priorities conflict. As a result, these governments often end up funding ill-prepared, poorly designed capital projects, whose scope often diverges from real demand. Overlaps between projects are not uncommon—and actual project costs often exceed forecasts. In fact, nearly 40 percent of the money devoted to global investments around the world is spent ineffectively as a result of bottlenecks, a failure to innovate, or market failures.[1] In developing economies, these ineffective expenditures amount to over $1 trillion a year.

It may be too much to ask that every proposal get a full-scale, in-depth evaluation that takes months to complete. Even in developed markets, that's not always possible. But it is possible for finance ministries to conduct more streamlined financial assessments of the preparedness and design of projects in only days or weeks. Indeed, we have seen developing countries in the Middle East and Africa embark on such programs by adapting centralized control units and the required level of governance to their own circumstances.

The initial assessment of project preparedness

As a first step, a government must ensure that all projects have been thought through at a sufficient level of detail. This may sound obvious, but projects that fail to describe their rationale properly, don't evaluate alternative solutions, or lack detailed

budget plans are hardly uncommon. What's more, implementing ministries often lack strong capabilities in project planning, and rely instead on the private-sector organizations that design and implement such projects to review their own work. The resulting incentive structures, far from optimizing costs, tend to inflate the scope and specifications of these projects.

When the finance ministry in one African country reviewed proposals to build new roads, for example, it found a number of them significantly exceeded benchmark costs—often coming from design firms that consistently produced designs with higher costs. When a more thorough evaluation isn't feasible, a streamlined one- or two-day review can help. Typically, an oversight body would pose a series of straightforward questions assessing how clearly a problem is defined, along with a capacity and demand analysis and a consideration of alternative solutions. This kind of evaluation would examine a proposal's financial aspects, like planned budgets and cash-flow requirements. It would also probe the operational elements: a realistic implementation plan, compliance with regulatory requirements, and interdependencies and overlaps with other projects. Knowing that it lacks this capability, the government of the country in the example is now setting up an in-house unit to oversee contracts with design companies and challenge their products.

The impact can be considerable. One government in another developing economy took this approach with more than 250 projects in its portfolio and found that only a quarter of them were adequately prepared. Most frequently, project owners failed to quantify the capacity–demand analysis and alternative ways of meeting future demand. As a result, they were granted only enough of their requested budget to conduct studies to increase their preparedness.

A deeper review of project design

Once the initial assessment—often of hundreds of projects— narrows down the pool, finance ministries can conduct a more thorough review of each project's overall design. That, too, can be streamlined. The finance ministry of the country in

the example developed a way to conduct reviews that lasted just two weeks. In that time, it identified opportunities to reduce costs by an average of 20 to 40 percent, without reducing outputs. During the reviews, which will now be a standard part of the annual budgeting process, the cost-review unit of the finance ministry met with owners of projects and tested their design through a series of questions aligned with the initial assessment exercise above. These included the following:

— *Public priorities.* Does the scope of a project focus on services and features that people really want? Is there evidence that the project is truly needed and meets the country's socioeconomic objectives?

— *Capacity and demand.* Does capacity match future demand? Are the expectations for demand realistic? Can alternative solutions reduce demand?

— *Costs.* Do unit costs reflect benchmark levels? Can costs be cut by adjusting a project's time frame (to reduce the need for tight deadlines) or by calibrating the schedule to the availability of capital?

— *Productivity.* Could existing assets improve operations?

— *Funding.* Are the funding requirements realistic? Are there any opportunities for private-sector funding? Will the assets generate revenues that could fund the project? Can implementation be deferred or slowed down to stretch out the need for funding?

These project reviews can be significant: a two-week review of a public convention complex, for example, identified $1.7 billion in potential savings (Exhibit 1). Elsewhere, one ministry of health's $300 million request for additional beds for intensive-care units (ICUs) was nearly halved after reviewers considered benchmark utilization data. They found that the proposal's assumptions about the average length of stay per ICU bed were twice as high as the benchmark, mainly because facilities lacked intermediate beds and had nowhere to send discharged patients. As result, the ministry of health

was advised to procure lower-cost intermediate beds and fewer ICU ones.

Or consider a proposal by another country's housing ministry to develop affordable housing. In-depth reviews found that the proposed design included features—such as skylights, longer driveways, and larger bedrooms—that increased costs but would not necessarily be valued by residents. The optimized design featured more bathrooms, but (unlike the original proposal) with showers instead of tubs; more but smaller bedrooms; and shorter driveways with less internal parking. These homes were better aligned with the expectations of likely residents, but cost 15 percent less—so the ministry could build more homes on its $4 billion total budget.

These two-week reviews are not the only way to improve a project's value. Others include standardized project design and materials; value engineering, which aspires to make design specifications reflect the expected life span of projects; frame (or framework) agreements to procure frequently used materials over time; and stage gates to ensure project overviews. When there's enough time, a more targeted three-month review of project portfolios can also be powerful (Exhibit 2).

Lessons learned

As with any project review, the time spent on assessments must be weighed against the resulting need to delay critical projects. In our experience, any such effort must necessarily be conducted transparently. The examination of the portfolio should be informed by public priorities, a realistic assessment of demand and funding, and detailed cost modeling. In addition, any capital-planning process should take into consideration some simple and intuitive lessons.

— *Review projects as early as possible.* The sooner projects are reviewed, the greater the opportunity to influence their scope without incurring significant opportunity costs. Once groundwork begins, it will be too late for significant changes. Ideally, reviewers should be involved during a project's idea-generation phase and ought to undertake their first deeper
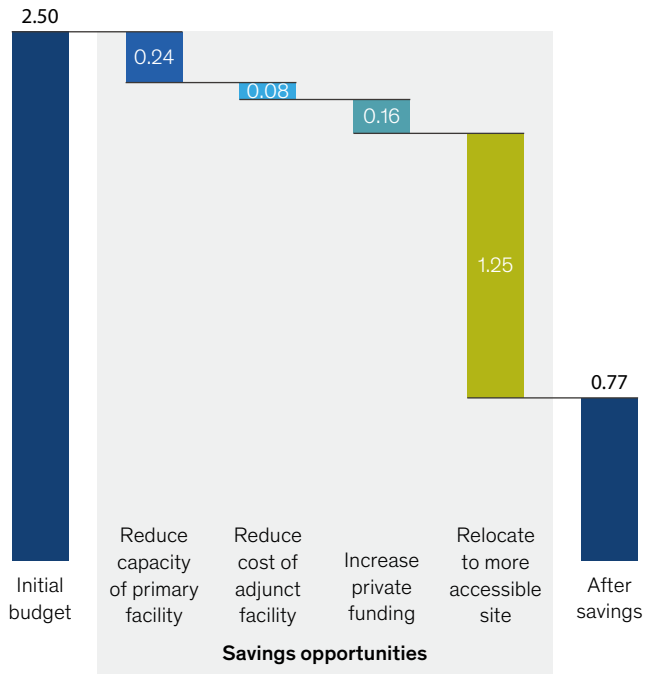
McKinsey on Public Finance

Exhibit 1

A two-week capital-expenditure review of a public convention complex identified $1.7 billion in savings.

Capital-expenditure review

	Lever	Key question
Capacity-demand analysis	Aligning capacity with future demand	Do capacity estimates meet or exceed benchmarks?
	Reducing demand	Are there less expensive alternatives that would reduce demand?
	Utilizing current assets	Can some demand be met by or diverted to current assets?
	Optimizing scope	Is project unnecessarily complex?
Budget estimates	Optimizing costs	How do unit costs compare with regional and global averages?
Multiplicity of solutions	Considering alternative sources of funding	Can contributions from not for profits and private donors be solicited?
Implementation plan	Assessing timing and options value	Can some costs be deferred?
Other	Generating revenues	Can usage fees generate revenue to support construction?

Potential savings impact, $ billion

Waterfall chart: Initial budget 2.50 → Reduce capacity of primary facility 0.24 → Reduce cost of adjunct facility 0.08 → Increase private funding 0.16 → Relocate to more accessible site 1.25 → After savings 0.77. Savings opportunities.

assessments on the initial business plan and high-level design.

— *Proceed concurrently with no-regrets moves.* Even a two-week process can be time-consuming when many projects must be reviewed. To avoid significant delays in implementing projects, managers can conduct parallel, agile assessments in the early phases. No-regrets tasks, such as conducting pilot studies, can continue concurrently as projects await thorough assessments.

— *Give the reviewing entity a strong mandate.* Project owners need strong incentives to collaborate with the review process. The strongest one, in our observation, is to link reviews directly to funding decisions: no review, no funds.

Governments that don't have a dedicated function specifically intended to conduct full-scale reviews of capital projects can conduct more streamlined ones. That will help ensure that only well-prepared, well-designed proposals are funded and that they are aligned with public priorities.

[1] Jonathan Woetzel, Nicklas Garemo, Jan Mischke, Priyanka Kamra, and Robert Palter, Bridging infrastructure gaps: Has the world made progress?, McKinsey Global Institute, October 2017, McKinsey.com.

Exhibit 2

When time allows, a fuller review of capital-expenditure proposals can be invaluable.

Demand-to-capacity analysis over 3 months

Systemwide objectives
- Identify and select systemwide objectives
- Define performance metrics for system and entire sector

Zoning system
- Define nodes
- Group nodes into transport zones
- Define main transport corridors for country

Socioeconomic model
- Gather socioeconomic data for goods and people
- Develop socioeconomic models and forecasts that embody country's strategic targets

Current network model
- Model current transport network with software support
- Input current socioeconomic data

Current demand (real)
- Collect people and freight-traffic data (through GPS data, mobile-phone data, traffic counters, etc)
- Consider all transport modes
- Run model to assess current demand vis-à-vis network supply
- Calibrate model outputs by using data collected

Future demand (synthetic)
- Set strategic outputs on basis of country's overall objectives, as well as sector-specific strategies
- Set time horizon for forecast and analysis
- Input forecasted socioeconomic data for transport zones
- Conduct selected interviews to define end users' transport preferences

Reiterate/
syndicate

Future network
- Conduct capacity gap analysis on current network
- Analyze sector-specific strategies to harmonize interventions across modes
- Run model for future state
- Define and prioritize interventions to bridge gap and maximize country's economic returns

Interface analysis
- Identify and analyze major intermodal nodes
- Assess current and future need for intermodal hubs and links

Financial assessment
- Define high-level budget estimate for selected projects
- Define capital-deployment plan

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Using public real estate to fuel a postpandemic recovery

As deficits mount, governments can use their real estate holdings to create breathing room.

by Dag Detter, Ali Abid Hussain, and Jonathan Woetzel

The public sector has responded to the COVID-19 crisis with staggering outlays, in some cases up to 40 percent of GDP, to save lives and livelihoods. On balance, the spending seems likely to serve its purpose—by keeping economies going until a vaccine and therapeutics can be developed and distributed. But it will also likely produce a $30 trillion deficit by 2023, which will put pressure on operational budgets and result in service cuts. In the United States, for example, 66 percent of counties have cut or delayed infrastructure maintenance and 54 percent have cut or delayed new infrastructure projects.[1] Many states are facing a future in which spending on important everyday services—mass transit, adult and elderly care, mental health support, substance-abuse programs, school programs like special education, children's health insurance, and more—will become more difficult.

Governments are borrowing to plug the gaps. Public debt is set to expand dramatically this year, by 16 percent in advanced economies, and 17 percent in emerging middle-income countries.[2] The new obligations come at a time when public-debt levels in many nations are already at their historical peak. A high debt burden limits a government's ability to raise the financing required to fund growth; many have debt thresholds they cannot breach. Today, many governments are unable to raise more debt. Further, such a burden makes default more likely if operating cashflows shrink. Three countries have already defaulted in 2020, and more are likely.[3]

How will governments maneuver between the rock of service requirements and the hard place of financial default? One possible passageway is through financing mechanisms that remain largely untapped. Governments have an opportunity to reimagine their finances by focusing on one of the most underappreciated public assets—their real estate holdings and operations. In this article, we will outline the possibilities and discuss three structures that allow governments to manage and invest their

real estate assets. Each of these have proved effective in different settings around the world. They are not, however, recommendations, as every public context has its own requirements. Moreover real estate is only one aspect of the broader question of public wealth, which we will address in upcoming research.

The opportunity of public real estate

Government is a huge holder of real estate, as well as a tenant. For example, the US federal government owns about 885 million square feet of building space, and it leases another 254 million square feet.[4] For cities, some estimates suggest that the entire public portfolio of real estate within a city has the same value as the city's GDP and could represent a quarter of the total market value of real estate.[5]

Governments can realize the value of public real estate in two ways—earning their passage through a modern-day version of the Greek legend of Scylla and Charybdis. First and most important, they can increase the value of the asset through better management or rethinking its use. For example, in Rio de Janeiro, Brazil, Escola Municipal Doutor Cícero Penna is an ordinary public school in an extraordinary setting. It's located on Avenida Atlântica, the famous stretch facing Copacabana Beach, surrounded by luxury high-rises on perhaps the most expensive land in the country. Education is of course vital, but it could be conducted a couple of blocks away on much cheaper land, in an environment that might also be more conducive to students' learning. The city could realize the highest value of the beachfront property, while still retaining ownership. It could build an equivalent or better school with part of the revenue from developing the more valuable property; the remainder would flow into the general account. Cities around the world have thousands of similarly overlooked opportunities.

[1] *Comprehensive analysis of COVID-19's impact on county finances and implications for the U.S. economy*, National Association of Counties, July 2020, naco.org.
[2] *World economic outlook update, June 2020: A crisis like no other, an uncertain recovery*, International Monetary Fund, June 2020, imf.org.
[3] "Sovereign defaults set to hit record in 2020," Fitch Ratings, May 12, 2020, fitchratings.com.
[4] Federal Real Property Profile Summary Report Library, US General Services Administration, October 4, 2019, gsa.gov.
[5] Dag Detter and Stefan Fölster, "Unlocking public wealth: Governments could do a better job managing their assets," *Finance and Development*, March 2018, Volume 55, Number 1, pp. 44–7, imf.org.

Despite the benefits, governments have not been able to tap into the hidden goldmine of their real estate portfolios for several reasons.

A second kind of fiscal space is created if governments are able to issue debt secured by their real estate portfolios and held in special-purpose vehicles (SPVs), which may be more appetizing to investors than sovereign debt or general-obligation bonds, as well as to governments, as both of these can affect a government's credit rating. For example, assume that an issuer can raise 30 percent of the portfolio's value in debt, as is typical for investment-grade bonds in the United States. If the portfolio is equivalent to about 50 percent of a city's GDP, and provided they can create sufficient SPVs as discussed below, cities can raise additional debt of about 15 percent of GDP. Both levers create additional cashflow that in turn could pay for the services that governments must continue to provide.

Why this hasn't happened so far

Despite the benefits, governments have not been able to tap into the hidden goldmine of their real estate portfolios for several reasons. First, there are the technical problems of accountancy. Many national governments don't produce true financial statements that would recognize assets or amortize investments, among other features. Instead they rely on annual budgets and the deficits and surpluses they produce. That kind of short-term thinking hampers the development of debt policy or a true capital investment program.

City and state governments do produce financial statements, but they have their own accounting problems. In the United States, subnational governments follow Governmental Accounting Standards Board (GASB) guidelines in preparing their financial statements. The guidelines hold vast sway, since creditworthy debt cannot be issued without financial statements that adhere to them. GASB guidelines presume that the main purpose of government assets is to provide services as opposed to generating cashflow. This approach overlooks the ways that service needs change over time, and it does not recognize the value of the asset based on its potential to generate cash. Most cities record real estate at its book value rather than at market value. The difference can be enormous: in the city of Boston, indicative market value was shown to be almost 40 times[6] book value and in Pittsburgh, 70 times.[7]

A second problem is multiple and overlapping layers of government. Real estate assets are governed and managed by hundreds or even thousands of discrete agencies and authorities. Many local governments do not have a consolidated list of their assets. It's no accident that Singapore is so often cited for its sound public-sector management. The absence of multiple layers of government along with its geographic concentration result in unitary management, which alone would allow for much stronger financial thinking.

[6] *World Bank Blogs*, "Paying for development—Governments are sitting on a 'goldmine,'" blog entry by Dag Detter and Marco Scuriatti, April 10, 2019, blogs. worldbank.org.
[7] Hanan Amin-Salem, Ian Ball, Dag Detter, and David Walker, "How smart public assets management can drive the post-COVID-19 recovery," Citi, October 15, 2020, publicwealth.se.

Two other challenges stand out in some parts of the world. Unlike Singapore—where an apolitical, professional cadre of civil servants is considered a norm and highly valued—other countries suffer from a politicization of government that deprives them of access to the best minds. Historical norms around government compensation and incentivization may also make it difficult to recruit and retain financial talent. Finally, privatization, though it provides that access, must bear in mind the crucial differences between public and private context. Defining and maintaining the mandate to provide public goods is a critical challenge that when ignored has left citizens justly suspicious of privatization efforts.

Three structures to realize public real estate value

Creating dedicated organizations that will professionalize the management of governments' real estate assets will create value and fiscal space. Three distinct structures—a centralized government unit, an SPV governed by a public entity, and an

arm's-length institution—offer one or more of three benefits (exhibit).

The three structures represent a progression in the rewards from and potential impact of public real estate. Each also incurs setup costs including the need for talent, market-based information, and regulatory change.

The centralized unit offers the promise of enhanced accountability for operating assets, which could be sufficient for property management. The SPV adds the benefit of an independent balance sheet—which may be needed to raise new debt that sits on a separate balance sheet, thus minimizing the impact on the government's credit rating and enhancing its debt-raising capacity. An SPV also has potential to attract top talent through performance-linked incentives and agility in procurement of subdevelopers and contractors. Finally, the arm's-length institution provides both accountability and an independent balance sheet, as well as the third benefit of creating a truly sustainable and

Exhibit

Governments can choose among three institutional options.

	Centralized government unit	Special-purpose vehicle	Arm's-length institution
Relevant use	Property management	Land development	Financing and development of real estate and infrastructure
Benefits			
Enhanced accountability	●	●	●
Independent balance sheet		●	●
Autonomous governance			●
Implementation requirements	Access to top talent; empowered mandate; budgetary support	Access to top talent; ownership of income-generating assets; independent accounting (financial statements)	Access to top talent; independent board; access to capital markets for funding; independent accounting (financial statements)

autonomous model for real estate asset management. Private-capital mobilization may even require arm's-length institutions to assure private markets that project selection is done on a commercial basis and is not subject to political influence.

Centralized government unit

Centralizing management of the government property portfolio in a single unit can unlock value by reducing the misuse of real estate assets, such as schools on beachfront property.

The centralized unit needs adequate authority to influence the ministries that own real estate and other government entities that use public property. That authority can be derived either from direct sponsorship by the highest political office or through ownership of the property titles in the unit-managed portfolio.

In 2011, New Zealand centralized public property management in the newly created Government Property Group (GPG), which covers property owned or leased by 62 government agencies, including all office accommodation and public-facing areas. Between 2011 and 2017, GPG saved $275 million in rental and facilities management. Some was hard savings, and some was cost avoidance achieved by reducing the size of the government's office requirements by 207,121 square meters, which is equivalent to 30 football fields. The unit also lowered the average rental cost per employee to $5,066, versus a comparable private-sector average of $7,328.

GPG strives to achieve efficiency in property management, typically by promoting collaboration between agencies and thus a more effective public service. Co-locations are one way agencies can share resources, work more closely together, and deliver more cohesive public services. In 2020, GPG opened four new office buildings in Christchurch; three have several agencies co-located in them. These modern buildings are showing other agencies how they can share facilities, help reinvigorate the central city, and provide seamless services to the public.

Many countries have succeeded with centralized government property-management units. Australia's Property and Construction Division (PCD), part of the department of finance, manages the nondefense portfolio of government properties, including commercial office buildings, law courts and other special-purpose properties, public-interest properties, heritage buildings, residential properties, and vacant land. In 2008, Dubai established wasl as part of the government's Dubai Real Estate Corporation (DREC) to manage and expand its real estate portfolio. The unit's main objective is to establish Dubai's position as a premier location to live and work and an attractive destination for tourists.

The special-purpose vehicle

Federal, state, and local governments can set up corporatized entities—with their own balance sheets, profit and loss, transparency, and professional management—to develop real estate, manage assets, and raise financing. The corporate entity can then use its property assets, booked at market value, as collateral to raise debt. The proceeds can be used to provide services, invest in new infrastructure development, or for other suitable ventures. By placing some or all of its real estate portfolio in an SPV under a publicly owned and professionally managed entity, the government can raise capital and also create visibility into its real estate assets and the value those assets can create.

Many governments have set up SPVs over the years. For example, the city of Copenhagen was able to monetize some unused land at Ørestad by transferring it to the Copenhagen (CPH) City & Port Development Corporation (the Corporation). Following the transfer, the local government rezoned the land for residential and commercial use. By borrowing against the value of this newly acquired land, the Corporation was able to make a one-time payment of $2 billion to Metro Construction Company to fund the expansion of a transport system.[8]

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[8] Bruce Katz and Luise Noring, *The Copenhagen City and Port Development Corporation: A model for regenerating cities*, The Brookings Institution, June 2017, brookings.edu.

Today, the Corporation continues to use funds borrowed at low cost against its balance sheet of assets and enabled by the city's AAA credit rating and a central bank guarantee to achieve greater leverage than comparable private-sector entities. In its 2019 annual report, the Corporation reported debt of $2.3 billion against a total asset base of $2.4 billion (a 95 percent debt-to-asset ratio; most investment-grade companies' leverage is less than 50 percent[9]). However, because the Corporation's financing is guaranteed by the central bank, it still burdens the government with higher costs and potentially affects the sovereign credit rating, which would not be the case if the guarantees were issued by an arm's-length financial institution. Moreover, while its corporate status allows it to make decisions independent of electoral and political concerns, the Corporation is still subject to state oversight.

The arm's-length financial institution

Governments can finance development of new real estate assets and associated infrastructure through an autonomous financing institution that unlocks private-sector financing by either finding ways to share risks with private investors, such as guarantees, or cofinancing along with the private sector. Some of the new assets in which the arm's-length institution invests may be built on land the government owns and sells to the institution, creating fiscal space for the government. Such an institution requires the highest level of accountability and talent but also promises the greatest return for governments.

To ensure that financing decisions are based on a robust appraisal of the project and assessment of its risks, rather than political considerations, three critical success factors need to be in place:

— *A clear mandate.* Institutions need to have a clearly defined mandate to be able to balance often-competing objectives (for example, creating "additionality" [that is, incremental financing that does not simply crowd out the private sector] versus maximizing financial return).

— *Operational autonomy.* The institution needs an independent board that appoints professional managers.

— *Talent attraction.* The institution must offer a compelling proposition to top talent. The ability to structure commercially viable deals and underwrite credit risk is a key differentiator between high-performing institutions and others.

The Canada Infrastructure Bank (CIB) was set up in 2017 as a Crown corporation with an independent and professional board that reports to the parliament through the minister of infrastructure and communities. Its mandate is infrastructure, not real estate. The ownership structure and governance of the CIB was designed to ensure the three critical success factors above. As of March 2020, the CIB is participating in nine transformational projects that are in the public interest, linked to national economic priorities, and delivered in partnership with public-sector sponsors and private and institutional investors. All projects will generate revenue, and all are commercially viable, having satisfied commercial due diligence requirements including private-sector investment.

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In the wake of the COVID-19-induced shortfall, governments need to create fiscal space in coming years. Public real estate is a notable opportunity to meet this requirement and to enhance accountability and fiscal performance of the public sector.

[9] Richard Cantor and Albert Metz, *Moody's Special Comment: The distribution of common financial ratios by rating and industry for North American non-financial corporations: July 2006*, Report Number 98551, Moody's Investors Service, August 2006, moodys.com.

Unlocking Africa's $100 billion public-finance opportunity

African governments face stagnant tax revenues and rising public debt. Yet they have wide scope to reform tax systems and improve spending efficiencies. Across Africa, public-finance transformation could deliver $100 billion a year in new revenues and savings.

by Yaw Agyenim-Boateng, Acha Leke, Francisco Mendes, and Aurelien Vincent


October 2019

A perfect storm: Africa's public-finance challenges

A long-term view reminds us that Africa's economic fortunes are on the rise. Real GDP growth, which barely topped 2 percent a year on average during the 1980s and 1990s, leaped ahead to 5.2 percent in 2000–2010, making Africa the world's second-fastest-growing region after emerging Asia. In the late 1990s, private capital flows to Africa (including foreign direct investment, equity, and debt) overtook aid inflows and remittances for the first time in decades. Rising productivity and investment reflected the increasing diversification of Africa's economies away from resources exports[1].

After this heady decade, however, Africa's growth slowed sharply—to an annual rate of 3.3 percent between 2010 and 2015. This was prompted by the twin shocks of the Arab Spring, which halted growth altogether in Egypt, Libya, and Tunisia; and the collapse of oil prices, which caused growth to fall sharply in oil-exporting countries including Algeria, Angola, and Nigeria. The recovery from that slowdown is still underway: Africa's GDP growth is forecast to reach 3.8 percent in 2022 and 4.1 percent in 2024[2]. Although key African economies such as Ethiopia and Ghana are now among the world's fastest-growing, the continent overall will feel the effects of slower growth for some time to come (Exhibit 1).

Exhibit 1

Africa's GDP Growth

GDP growth, %
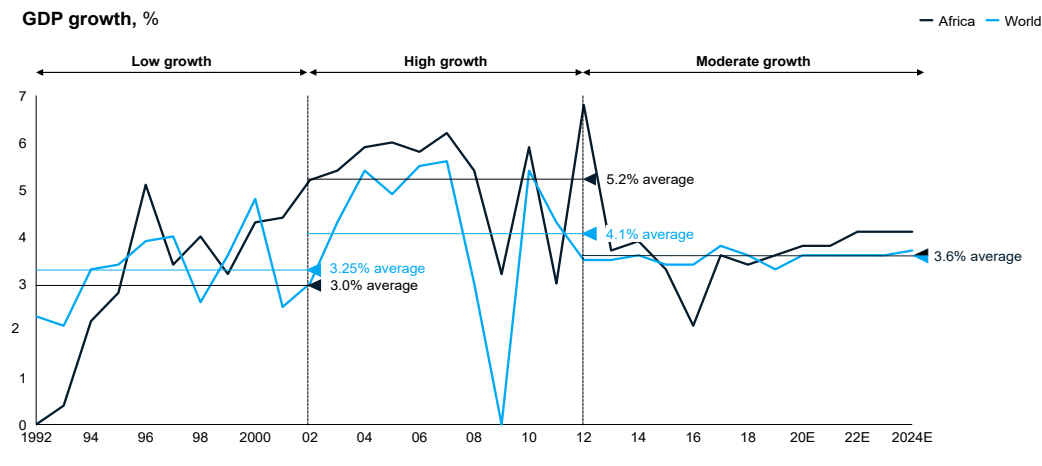
Source: IMF Data mapper

[1] Acha Leke et al, op cit
[2] Figures drawn from IMF data

The economic slowdown has been matched by a sharp rise in fiscal deficits. The average fiscal deficit, which stood at 2.5 percent in 2010, ballooned to over 7 percent in 2015. Although the picture has since improved, deficits remained high at 4.8 percent in 2018 (Exhibit 2). That reflects the fact that growth in public expenditure has consistently outpaced revenues in recent years. In 2018, Africa's public spending amounted to $555 billion, but government revenues came in at only $443 billion—resulting in a fiscal deficit of $112 billion[3].

Exhibit 2

Africa's fiscal deficit

%

2010	11	12	13	14	15	16	17	2018E
-2.5	-3.5	-2.6	-4.4	-5.4	-7.1	-7.2	-5.8	-4.8

Avg **-4.8%**
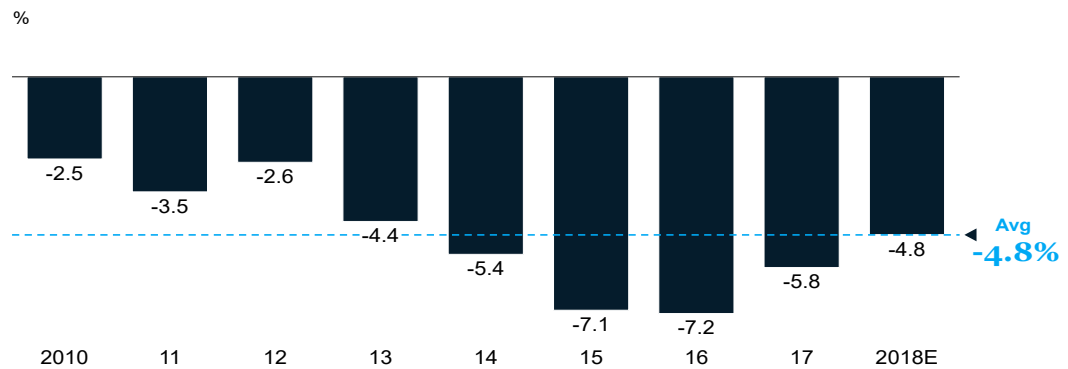
African countries' $443 billion government-revenue take in 2018 represented only 19 percent of the continent's GDP, down from 23 percent in 2010[4]. That decline reflects the impact of declining revenues from natural resources—including oil, which saw a sharp fall in prices in 2013-2014 and is still far from earlier peaks. As we discuss below, some countries collect more than others; nonetheless, Africa's overall low ratio of public revenues to GDP makes it a global outlier. By contrast, the ratio of public revenues to GDP in most non-African emerging countries stands at between 25 percent and 35 percent—for example, 30 percent in Brazil. In the majority of advanced countries, the ratio stands at between 35 percent and 55 percent—for example, 37 percent in the UK and 53 percent in France. These comparisons make it clear that Africa as a whole is not "monetizing" its economy as much as it could (Exhibit 3).

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[3] Figures based on McKinsey analysis and IMF data
[4] These figures are projected from IMF data and national publications.

Exhibit 3

Africa has a less 'monetized' economy than other key markets

GDP		Revenue	Rev/GDP
Africa, 2018	2,300[1]	443[1]	**19%**
Emerging, 2017 — India	2,652	530	**20%**
Emerging, 2017 — Brazil	2,053	616	**30%**
Advanced, 2017 — UK	2,640	977	**37%**
Advanced, 2017 — France	2,588	1,381	**53%**
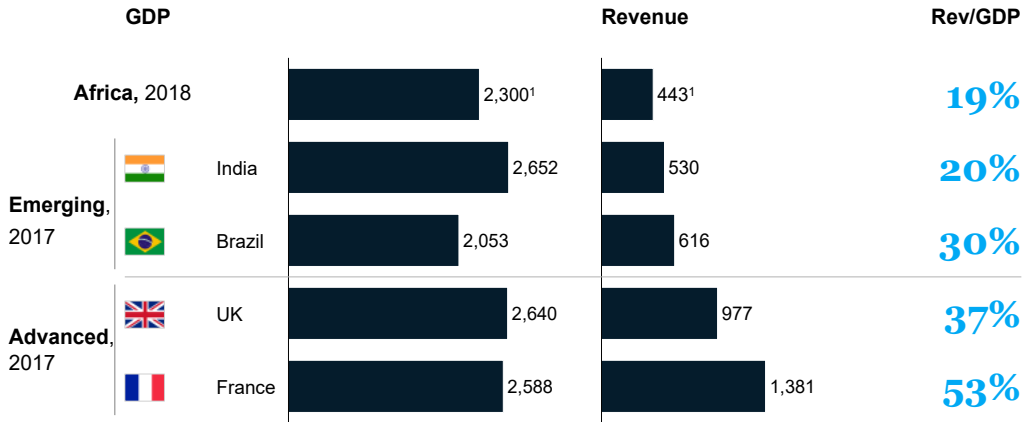
Source: IMF, National publications, African Development Bank

1 2018 figures

Just as African governments have faced challenges in revenue collection, there has been upward pressure on public spending, which has outstripped revenue growth. Debt-servicing costs constitu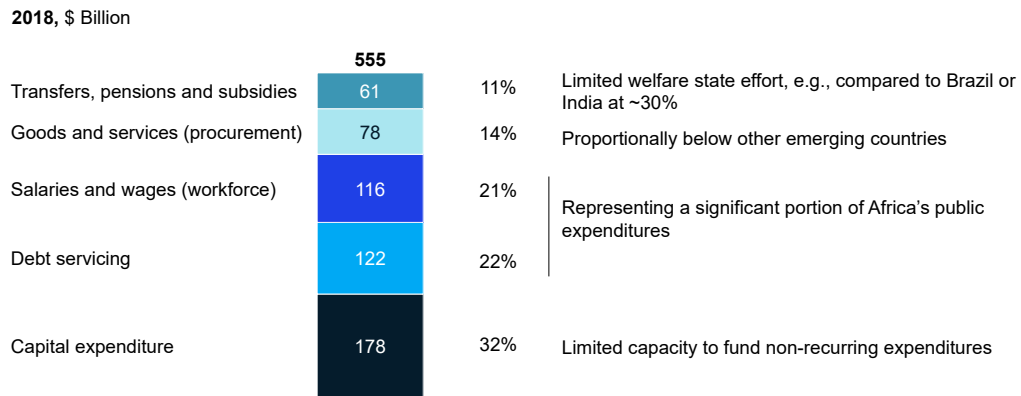te 22 percent of that expenditure. Public-sector salaries and wages make up 21 percent of government spending, a higher proportion than in other emerging regions. Conversely, Africa's government budgets reflect a relatively low contribution to capital expenditure (32 percent) and pensions and subsidies (11 percent) compared to peer nations (Exhibit 4).

Exhibit 4

Aggregate African government expenditures

2018, $ Billion

555

Transfers, pensions and subsidies	61	11%	Limited welfare state effort, e.g., compared to Brazil or India at ~30%
Goods and services (procurement)	78	14%	Proportionally below other emerging countries
Salaries and wages (workforce)	116	21%	Representing a significant portion of Africa's public expenditures
Debt servicing	122	22%	
Capital expenditure	178	32%	Limited capacity to fund non-recurring expenditures

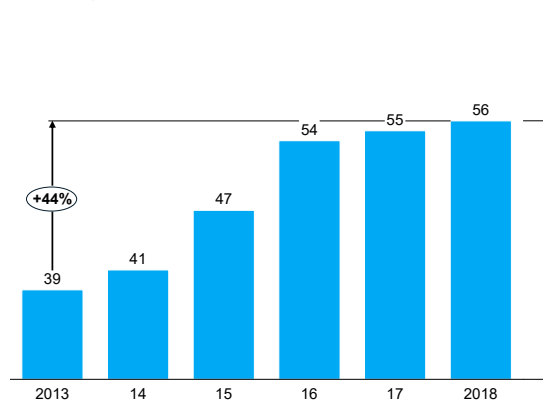Source: McKinsey analysis, African Development Bank

African countries' revenue and expenditure challenges, along with the accompanying fiscal deficits, have inevitably resulted in a growing public-debt burden. In 2018, Africa's cumulative public debt stood at a historical high of 58 percent of GDP—up from 40 percent five years previously. That continent-wide picture has been reflected in rising debt levels in nearly all of Africa's largest economies (Exhibit 5).
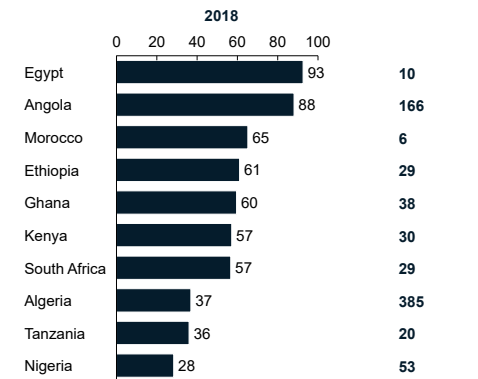
Exhibit 5

Change in indebtedness of African economies

Africa's public debt

Source: IMF Data Mapper 2019

%, 2013-18 Change

Debt to GDP ratios of 10 largest African Economies

2018

		2013-18 Change
Egypt	93	10
Angola	88	166
Morocco	65	6
Ethiopia	61	29
Ghana	60	38
Kenya	57	30
South Africa	57	29
Algeria	37	385
Tanzania	36	20
Nigeria	28	53

Nonetheless, Africa's debt-to-GDP ratio is still considerably lower than that of advanced economies such as Japan (where it stands at 235 percent), France (99 percent) and the UK (87 percent). It is also lower than that of many emerging countries. Yet Africa's debt-servicing as a ratio of public expenditures is significantly higher than that of major emerging countries such as Brazil, India, Mexico and Vietnam owing to the high cost of African debt. That underlines the fact that Africa has more of a debt-servicing challenge than a debt problem (Exhibit 6).

Exhibit 6

Africa's debt and debt servicing vs. selected emerging countries

2017, %

Total debt, (as a % of GDP)

Africa	India	Brazil	Mexico	Vietnam
55	70	88	54	58

-15% ◀ Ø 65 — A total debt 15% lower …
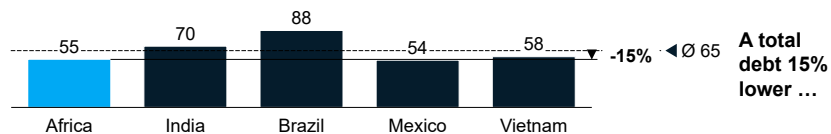
Debt servicing, (as a % of total government expenditure)

Africa	India	Brazil	Mexico	Vietnam
22	8	11	17	16

+49% ◀ Ø 15 — … but a debt servicing 50% higher
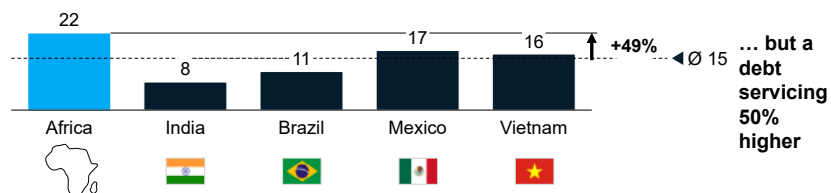
Source: International Monetary Fund (IMF), World Bank

Africa's $100 billion public-finance improvement opportunity

Given the sobering numbers set out thus far, it is urgent for African governments to look at how they might strengthen their public finances. Most countries have considerable scope both to increase revenues through tax modernization, and to improve efficiencies in public spending. Some African countries have already made real progress in these public-finance reforms, delivering billions of dollars in additional revenues, along with significant savings. In McKinsey's experience of working with several African countries on such reforms over the past five years, it has seen each country deliver annual revenue improvements of between $1 billion and $5 billion, or budgetary savings of at least 5 percent of total budget, or both.

That points to the fact that the solutions to Africa's public-finance challenges do not need to be invented from scratch: many are already proven. If scaled up across the continent, such solutions could eliminate Africa's entire budget deficit. Alternatively, these reforms could unlock sufficient funding to close Africa's $100 billion infrastructure-spending gap. Moreover, such reforms could be enacted relatively quickly. They could generate substantial new revenues and savings within three years—without increasing tax rates or reducing the impact

of government spending in critical areas such as education and health. But as we discuss in the next section, many African governments will need to face up to deep-seated barriers to implementation if they are to deliver this prize. That will require a true transformation in approaches to public finance.

McKinsey's analysis shows that, launched at scale, efforts to improve tax-collection performance and public-spending efficiencies have the potential to deliver recurring annual impact of between $85 billion and $125 billion a year for Africa's governments (Exhibit 7).

Programs to enhance tax and tariff-collection performance have the potential to deliver between $45 billion and $65 billion in additional annual tax and customs collection within three years. That translates into additional revenues of between 2 percent and 3 percent of GDP—without changes to tax rates or trade tariffs. In addition, programs to improve public-spending efficiency have the potential to deliver between $40 billion and $60 billion a year from expense efficiencies, such as implementing leaner capital expenditure practices, revamping procurement procedures and eliminating "ghost" workers. Those savings represent between 8 percent and 12 percent of the aggregate budgets of African governments.
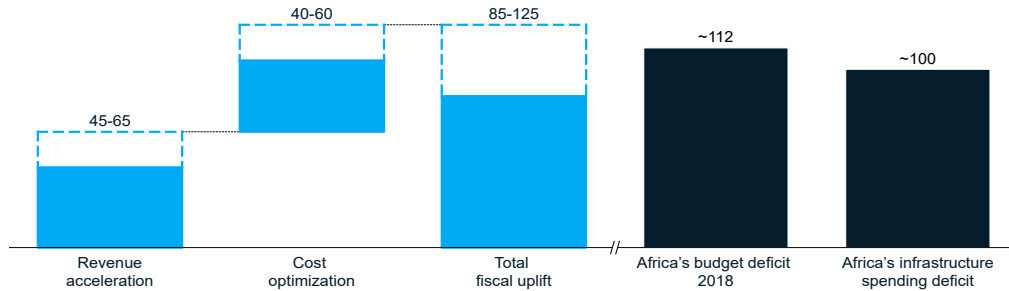
$1-5 billion per country

in additional annual revenue per country, delivered through recent tax-system reforms in Africa

Exhibit 7

Africa's public fiscal transformation opportunity

Annual public revenue increase and expense savings potential[1], 2017, $ bn

1 Before accounting for annual GDP growth; Resource rents are excluded from tax analysis

Source: IMF country desks (AFR Economic Outlook and Fiscal Monitor reports); Africa Growth Initiative at Brookings; ICTD / UNU-WIDER Government Revenue Dataset; World Bank WDI indicators; McKinsey Global Institute analysis; Country budgets; McKinsey analysis

Mobilizing domestic resources for development: Africa's revenue opportunity

Today, tax collection levels are highly uneven across the African continent. For instance, South Africa's tax-to-GDP ratio stood at 25 percent in 2018, and Kenya's at 16 percent—but countries such as Ethiopia and Ghana gathered only about 11 percent of GDP in taxes. In oil-exporting nations such as Nigeria, tax collection excluding resource rents still makes up less than 10 percent of GDP, despite bold efforts to improve tax administration in recent years (Exhibit 8). That wide variance in tax-to-GDP ratios points to a significant opportunity to increase revenues in many African countries.

Research by the McKinsey Global Institute (MGI)— as well as by institutions such as the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD)— has highlighted several factors driving Africa's generally low tax rates. Government revenue authorities typically have limited data on the number of potential taxpayers, lack effective tracking tools, and have gaps in capabilities and resources. In

addition, tax collection processes are often complex and burdensome. The time required by firms to pay their tax is longer in Africa than in regions such as East Asia and OECD countries, although there are exceptions to this general rule including Kenya, Morocco, and South Africa[5].

MGI estimated that African governments could boost tax revenue substantially if they were to eliminate non-compliance including fraud, neglect, error, and non-payment. The opportunities include reducing informality to increase registration of taxpayers, and strengthening the administration of tax systems by improving data collection, using data to drive risk-based compliance, and better enforcement.

Such steps need to form part of an integrated, comprehensive transformation program that embraces the full tax-administration value chain, from registration through to debt collection (Exhibit 9). In customs, likewise, an end-to-end transformation may be required (Exhibit 10). There are significant improvement opportunities at each stage of these value chains.

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[5] Lions on the Move II: Realizing the potential of Africa's economies, McKinsey Global Institute, August 2016

Delivering such a transformation also requires strong leadership and disciplined execution. The experience of successful tax modernization programs in Africa and elsewhere in the world points to three distinct components of such a transformation:
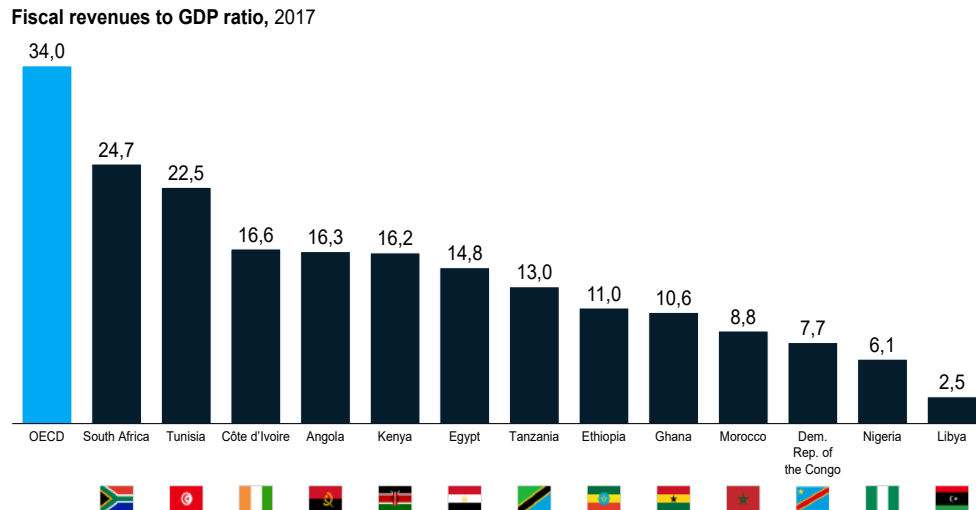
— *Improving the tax system to strengthen long-term sustainability.* One key step is to review and close the loopholes in corporate income tax—including taking steps to prevent tax-base erosion and profit shifting by companies from one jurisdiction to another. Another key step is the simplification and improvement of VAT regimes—including reducing exemptions and launching electronic invoice programs. Other levers include designing specific tax regimes for micro-activity and informal businesses, and redesigning exemption regimes to ensure that they actually drive investment and economic development.

— *Reforming tax and customs administration to improve enforcement and collections.* Key steps include ramping up inspections and audit processes and capabilities, including leveraging advanced-analytics techniques and third-party data—for example, from banks, utilities, and retailers. Governments and tax authorities also have the scope to make debt-collection processes more stringent.

— *Improving compliance.* Levers available include launching or strengthening initiatives to drive registration of businesses and individuals. Authorities can also reduce barriers to compliance, for example by enabling greater use of remote payments and pre-filing—and, where appropriate, by allowing defaulting taxpayers a "clean start". Longer-term levers include the launch or strengthening of taxpayer education programs delivered through mass media.

Exhibit 8

Fiscal revenues to GDP ratio across the largest economies in Africa[1]

Fiscal revenues to GDP ratio, 2017

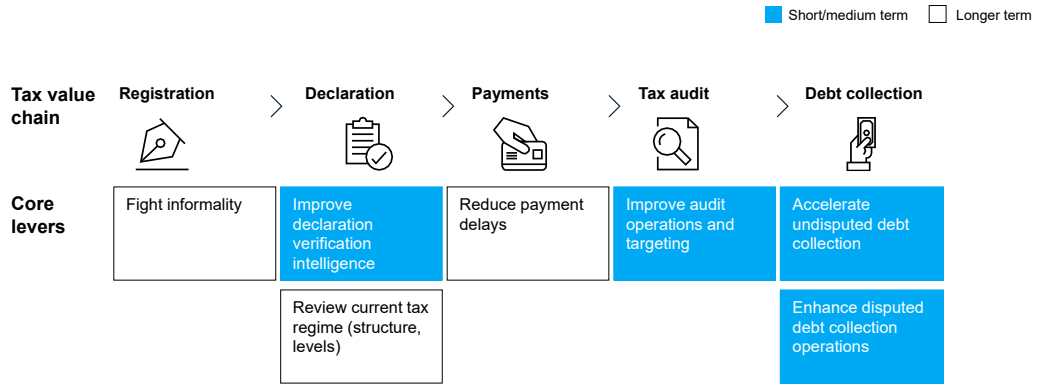| OECD	South Africa	Tunisia	Côte d'Ivoire	Angola	Kenya	Egypt	Tanzania	Ethiopia	Ghana	Morocco	Dem. Rep. of the Congo	Nigeria	Libya
34,0	24,7	22,5	16,6	16,3	16,2	14,8	13,0	11,0	10,6	8,8	7,7	6,1	2,5

1 Non-exhaustive list

Source: Economic Commission for Africa – African Statistical Yearbook

Exhibit 9

Africa's tax revenue acceleration opportunity

■ Short/medium term ☐ Longer term

Tax value chain	Registration	Declaration	Payments	Tax audit	Debt collection

Core levers	Fight informality	Improve declaration verification intelligence	Reduce payment delays	Improve audit operations and targeting	Accelerate undisputed debt collection
		Review current tax regime (structure, levels)			Enhance disputed debt collection operations

Source: McKinsey analysis

Exhibit 10

Africa's customs revenue acceleration opportunity

■ Short/medium term ☐ Longer term

Customs value chain	Registration	Declaration	Inspections	Post Clearance Audits	Debt collection

Core levers	Improve procedures, e.g., trusted partners registration	Improve fraud detection (e.g., under valuation, mis-classification)	Enhance risk engine to improve identification and control of high risk cases and maximize hit rate		Accelerate undisputed debt collection
		Review current tariff regime	Improve field inspections operations		Enhance disputed debt collection operations

Source: McKinsey analysis

Several of these levers can deliver impact in a space of months, not years—as the experience of a West African country shows. In just six months, it increased tax and customs revenues by 23 percent—and nearly doubled the tax compliance rate while improving debt recovery from defaulting taxpayers five-fold. The country achieved these results by redesigning customs processes with a focus on compliance; and creating a centralized task force focused on debt collection.

A notable driver of this country's rapid improvements was its decision to set up an "audit factory". This new unit strengthened inspection capabilities and introduced an audit "risk engine" that helped prioritize high-value audits of both company and individual taxpayers. Before the country's tax transformation, only the 200 largest taxpayers had been regularly subjected to tax auditing, and there were widespread discrepancies in tax auditing procedures. To address those gaps, the audit factory put in place a rigorous approach to standardize and extend auditing processes, with leadership and coaching to set weekly goals and help team leaders achieve them. The result was a fifteen-fold increase in the number of tax notices resulting from audits, from 165 in the year prior to the program launch, to nearly 2,500 in the third year of the program.

Many countries also have the opportunity to launch more broad-based revenue-improvement efforts— and again, there are powerful existing examples to learn from. For instance, Angola launched a five-year tax transformation program between 2011 and 2015 that resulted in an 80 percent increase in non-oil revenue. The country used a combination of both structural reforms, including a redesigned tax code, and a massive improvement in tax and customs collection and enforcement. To achieve the latter, the country revamped its tax administration, deployed advanced analytics tools to maximize information sharing, created digitized tax processes, and implemented a comprehensive cultural transformation across the government.

In just six months, a West African country increased tax and customs revenues by 23 percent.

Delivering more for less: Africa's public-spending efficiency opportunity

On the expenses side, African governments have opportunities to deliver substantial savings in most of the major categories of public expenditure (Exhibit 11). In our experience, this is generally an opportunity that is overlooked. Those opposed to notices include the following:
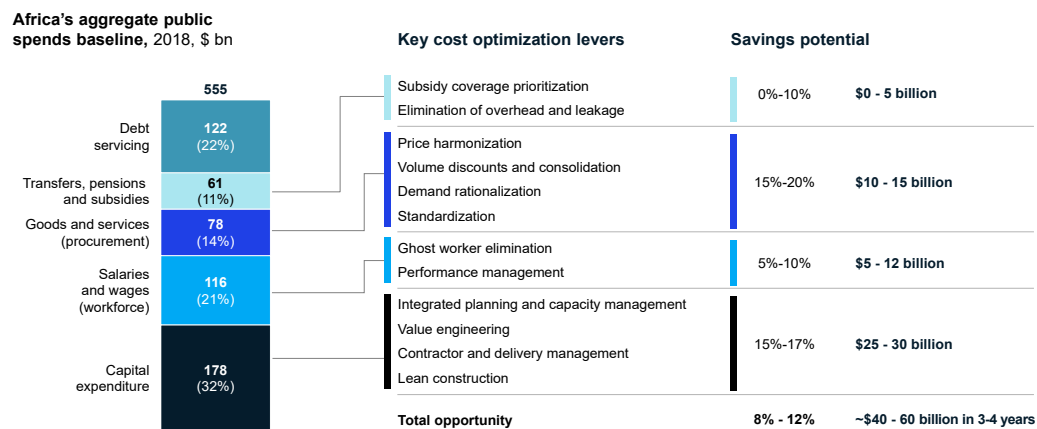
— *Transfers, subventions and subsidies.* Potential steps include leveraging digital technologies to create transparency on how subsidies are applied, and thus eliminate leakage and reduce overheads. Many governments also have scope to reduce costs of transfers based on a reassessment of beneficiary agencies' true financial needs.

— *Procurement.* Governments can undertake targeted initiatives including the centralization and harmonization of procurement processes for common categories of goods or services procured by government entities. Another

opportunity is to define a price index allowing for the selection and enforcement of a reference price by type of goods.

— *Workforce.* Governments have several levers available to them to reduce workforce costs without resorting to reducing headcount. One is to eliminate "ghost workers"—salaries paid for non-existent roles, a problem common to many African countries—by bringing transparency to the government payroll. Another lever is the implementation of revamped performance-management practices.

— *Capital expenditure.* Governments can improve capital expenditure (capex) planning, including through enhancing planning and prioritization processes. And they can strengthen delivery initiatives—for example, through monitoring and auditing of contractors and systematic implementation of legal contractual safeguards such as the enforcement of performance contracts.

Exhibit 11

Africa's public expenditure savings opportunity

Africa's aggregate public spends baseline, 2018, $ bn	Key cost optimization levers	Savings potential	
555			
Debt servicing **122** (22%)	Subsidy coverage prioritization / Elimination of overhead and leakage	0%-10%	**$0 - 5 billion**
Transfers, pensions and subsidies **61** (11%)	Price harmonization / Volume discounts and consolidation / Demand rationalization / Standardization	15%-20%	**$10 - 15 billion**
Goods and services (procurement) **78** (14%)	Ghost worker elimination / Performance management	5%-10%	**$5 - 12 billion**
Salaries and wages (workforce) **116** (21%)	Integrated planning and capacity management / Value engineering / Contractor and delivery management / Lean construction	15%-17%	**$25 - 30 billion**
Capital expenditure **178** (32%)			
	Total opportunity	8% - 12%	**~$40 - 60 billion in 3-4 years**

Source: IMF; Country budget documents; McKinsey analysis

Several African countries have already delivered significant efficiencies by applying these levers. For example, a West African country achieved a public expenditure efficiency program that led to a 5 percent reduction in absolute government expenditure in just 18 months. Key efforts to achieve that result included the following:

— *Capex planning and scrubbing initiatives.* These included technical counter-expertise interventions for major projects to reduce time and costs. Steps were also taken to reduce operations and maintenance costs, for example through the implementation of multiyear road-maintenance contracts. To ensure the improvements were sustained, the government implemented a new capex review procedure that allowed for systematic investment capex optimization.

— *Reduction in costs of goods and services.* The government introduced a centralized, standardized and streamlined procurement function and associated processes, with a focus on real estate, vehicles and travel expenses. In the vehicles category, for example, it centralized vehicle purchasing; negotiated longer-term, lower-cost contracts for fuel supply and repairs and maintenance; introduced vehicle sharing; and sold off under-used vehicles.

— *Redesigned investment framework.* This removed unnecessary exemptions and implemented targeted controls to review the enforcement of tax exemptions. The new controls helped uncover numerous fraudulent situations, including companies benefiting from tax exemptions years after the exemption period had expired—and applying the exemptions to a wider scope of goods and services than was authorized by the law.

Other countries have delivered substantial impact in targeted categories of public spending by leveraging data and analytics. For example, Nigeria's federal government launched the Integrated Payroll and Personnel Information System (IPPIS) in 2016 to automate the payroll of civil servants and eliminate ghost workers. In one instance of the impact of this change, the government was able to eliminate more than 80,000 ghost officers from the Nigeria Police Force after integrating the force's payroll into IPPIS[6].

This example is a reminder that corruption and fraud remain a serious drain on Africa's public finances—and that governments need to take bold steps, including through technology-enabled solutions, to tackle this problem. The African Union has estimated that as much as $150 billion is lost to corruption every year across the continent, in the form both of losses from the public purse and bribes paid by individuals and businesses.

5%

reduction in government expenditure delivered by a West African country in 18 months

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[6] Victor Ekwealor, *Unified database uncovers over 80,000 ghost workers in the Nigeria Police Force*, Techpoint.africa, March 27, 2018, https://techpoint.africa/2018/03/27/nigerian-police-ghost-workers/

From opportunity to action: designing and delivering a major fiscal transformation program

The lessons learnt from successful public-finance transformations in Africa show that solutions are widely known, but that implementation can be difficult. These implementation hurdles include vested interests, silos in organizations, a lack of focus, and gaps in capabilities. We have seen governments deploy six components to overcome these barriers:

1. The right leaders in place for the transformation and across relevant institutions—not only must these leaders have the right technical capabilities, they also need to inspire others and serve as role models for the entire organization.

2. Strong political will and discipline throughout the transformation—including active championing of the effort by political leaders, made visible across the government.

3. Active engagement of key stakeholders, including the private sector and development partners.

4. A compelling change story communicated throughout the public service to foster understanding of the purpose of the transformation and conviction that the change is beneficial and meaningful.

5. Balanced focus on aggressive revenue growth and on cost control—with sustained pressure to maximize impact on both sides of the equation.

6. Technology as a key enabler of the transformation: digitization allows governments to increase transparency radically, and it enables better decision-making.

Meaningful public-finance transformations typically require action by multiple departments, agencies, ministries, and other stakeholders. These entities are often asked to move faster than they are accustomed to moving, collaborate in joint teams and initiatives, and experiment with bold new approaches.

Meaningful public-finance transformations require action by multiple departments, agencies, ministries, and other stakeholders.

To tackle these challenges and ensure effective coordination, several governments manage transformation via newly established "delivery units"—small, agile, cross-functional teams comprising exceptional personnel who have direct access to top government leadership and are fully dedicated to driving delivery. While some units are established for just a few years to manage the delivery of specific programs, others have more permanent roles spanning multiple administrations. Successful delivery units have been led by a senior official or business executive with a peer-like relationship with ministers. They have also been staffed by talented people—from either the public or the private sector—who are effective problem solvers, communicators, and influencers.

An example is the Prime Minister's delivery unit team in an East Africa country, set up to oversee the implementation of improvement initiatives in both tax policy and tax administration. It supports the Prime Minister with high quality data and reporting transparency, enabling efficient steering of the public-finance transformation and rapid debottlenecking of barriers to implementation. The team has delivered rapid impact, including a $200 million increase in tax revenue in the first year of its existence.

A McKinsey survey of nearly 3,000 government officials involved in transformations found that efforts that were centrally coordinated by a dedicated team were twice as likely to be successful than those that were delivered through standard government organizations[7]. But the key challenge for leaders of public finance transformations is not merely to set up a central coordinating unit—it is to make sure this unit is effective.

By way of an analogy, consider the difference between a music critic and an orchestra conductor. Many central program-management offices are more akin to the critic: they carefully observe and assess a performance, and after the fact they report its successes and flaws in a standardized template. Truly effective delivery units, on the other hand, are like conductors: they actively coach the players, providing real-time feedback that constantly improves the performance[8]. These units are designed and staffed to share responsibility for delivery and impact.

––––––––––

African governments face serious fiscal challenges, but they also have tremendous opportunities—realizable in the near term—to reform public finances. With sufficient commitment to transformation, governments can create new headroom to pursue spending priorities without threatening fiscal sustainability.

Given the major funding needs to meet the continent's development goals, the time to act is now. Finance ministers who take the lead can oversee a robust assessment of their countries' opportunities to increase tax and customs revenue and improve the efficiency of public spending. And they can then design an effective delivery machine to translate this potential into tangible, sustainable gains.

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[7] *Delivering for citizens: How to triple the success rate of government transformations,* McKinsey Center for Government, May 2018
[8] For more on this topic, see *Reframe to Reform: Putting people at the center of government transformations*, McKinsey Center for Government, January 2019

Target net zero: A journey to decarbonizing the public sector

Government organizations can shape decarbonization policies but also help reduce global emissions by transforming their own operations and supply chains.

by Hauke Engel, Alastair Hamilton, Libbi Lee, and Jonathan Woetzel

© Maskot/Getty Images

Under the 2015 Paris Agreement, 192 countries adopted a bold goal: to reduce greenhouse-gas (GHG) emissions enough to limit the rise of global temperatures in the 21st century to "well below 2°C above preindustrial levels" while working to limit global warming to 1.5 degrees Celsius. According to the agreement, based on the best available science, the world must reach net-zero GHG emissions early in the second half of the present century. That will require the transformation of economies and societies alike.[1]

To date, 136 of the signatory countries, responsible for 83 percent of global emissions, have made net-zero pledges.[2] However, the latest *Emissions gap report* from the UN Environment Programme (UNEP) found that new and updated nationally determined contributions fall far short of the reductions required to meet the Paris Agreement's goals. In fact, the UNEP found that current climate commitments would put the world on track for a temperature rise of 2.7 degrees Celsius during this century.[3]

As the world wrangles with how to amplify global decarbonization efforts, public-sector entities will play an increasingly critical role not only in setting but also in realizing bolder agendas. Public-sector spending accounts for 47 percent of GDP in the European Union, 44 percent in the United States, 39 percent in Japan, and 18 percent in India. Reducing public-sector emissions could be a vital component of most national decarbonization strategies.[4]

Public procurement wields significant purchasing power: approximately 12 percent of GDP among the member countries of the Organisation for Economic Co-operation and Development (OECD).[5] Public-sector entities could help to scale up solutions and to increase demand for low-carbon products and services by including their supply chains in decarbonization efforts.

Some governments have already acted to reduce emissions from their operations. However, many public-sector entities could do more to promote full decarbonization and fuel the worldwide transformation toward net zero (see sidebar "Ireland: Greening the public sector to foster broader decarbonization").

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[1] The text of the Paris Agreement, adopted December 12, 2015, is available on the UN website.
[2] Net Zero Tracker, accessed August 10, 2022.
[3] "Updated climate commitments ahead of COP26 summit fall far short, but net-zero pledges provide hope," UN Environment Programme, October 26, 2021.
[4] "Government spending to GDP by country | G20," Trading Economics.
[5] "What is public procurement?," Organisation for Economic Co-operation and Development, 2019.

Ireland: Greening the public sector to foster broader decarbonization

In July 2021, Ireland passed its Climate Action and Low Carbon Development Act to achieve climate neutrality by 2050.[1] The government introduced five-year carbon budgets for the entire economy, including emissions ceilings for each sector. It has set itself two core targets: to reduce total emissions by at least 51 percent and to improve the public sector's energy efficiency by 50 percent as of 2030.[2]

The Irish government plans to achieve these targets by, for instance, retrofitting public buildings, embedding climate considerations in the budgeting process, and using sustainability criteria to evaluate procurement choices.[3] Such measures could help Ireland meet its net-zero emissions goal while fostering decarbonization in the private sector. Retrofitting public buildings, for

example, could nurture the growth of products and services that could help make 500,000 homes more energy efficient by 2030. Mandating the use of green considerations in public-sector procurement decisions can motivate contractors to adapt their services and hasten the shift to sustainable offerings.[4]

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[1] Climate Action and Low Carbon Development (Amendment) Act 2021.
[2] *Climate action plan 2021: Annex of actions*, Government of Ireland.
[3] Ibid.
[4] Ben Ikenson, "'Cool' roofs, cooler designs as the building industry embraces energy sustainability," *Washington Post*, June 8, 2021.

The challenges of decarbonizing the public sector

Pressure and incentives to adopt sustainable organizational strategies are weaker in the public sector, partly because limited competition among public services leaves stakeholders little leverage to encourage more sustainable conduct. Public-sector entities are also more constrained in changing their services and can be less agile than their private-sector counterparts. Adopting digital health services may, for example, reduce overall emissions by reducing the amount of travel required for patients and healthcare workers; however, it could negatively affect people who lack access to reliable broadband or connected devices.

There will also be second-order implications for the sustainable choices that public-sector entities might make. It may, for example, make sense to move a government agency into a new net-zero office, but that will not reduce overall emissions if a private-sector entity takes over an energy-inefficient building.

The lack of integration among public-sector entities can stymie comprehensive decarbonization, as well. Local, regional, and national authorities; state-owned enterprises; and other organizations (such as schools, hospitals, and transportation systems) often operate independently. A failure to share information might make it difficult to leverage the overall scale of the public sector and bring to bear its collective resources, skills, and knowledge.

In addition, public-sector organizations face difficulties monitoring their climate impact. The significant reorganizations that agencies and institutions undergo make comparing emissions meaningfully complicated at best. Many public-sector organizations, for example, struggle to define a base year and to articulate a rationale for their emissions calculations (see sidebar "The challenge of estimating the public sector's impact").

Sustainable strategies for the public sector

Despite the challenges, some public-sector agencies are beginning to decarbonize. An increasing number track and report their performance against a wide range of environmental measures, including GHG emissions. The United Kingdom's Greening Government Commitments, for example, outline the actions that government departments and their partners will take to reduce their impact on the environment through 2025. These commitments include mitigating climate change, working toward net zero by 2050, minimizing waste, promoting the efficient use of resources, reducing water use, procuring sustainable products and services, helping nature to recover by making space for plants and wildlife, and reducing the environmental impact of digital, information, and communications technologies.[6]

The challenge of estimating the public sector's impact

Calculating emissions in the public sector is difficult, and it's easy to underestimate their impact. The United Kingdom, for example, estimated its total territorial emissions at 454.8 million metric tons of carbon dioxide equivalent ($MtCO_2e$) in 2019. In this reckoning, the public sector directly accounted for less than 2 percent of that total. Its top emitters were health, education, public administration, and social-security services.[1]

However, these figures account only for scope 1 and 2 emissions. If public transportation (often operated by private firms under contract) and other scope 3 emissions were included, these numbers would be substantially higher.

The United Kingdom and many other governments may therefore underestimate their carbon footprints and the size of the opportunity to improve their environmental sustainability. Better visibility into the public sector's environmental impact might more accurately reveal its true magnitude along the value chain and help decision makers prioritize decarbonization opportunities.

[1] "2019 UK Greenhouse Gas Emissions, Final Figures," UK Department for Business, Energy, & Industrial Strategy, February 2, 2021.

Public-sector organizations that have developed a GHG inventory are better positioned to participate in policy making and the development of standards.

Progress in decarbonization can allow public-sector entities to answer the call (by citizens and civic organizations alike) for more disclosure of GHG information, identify cost-effective solutions, comply with new reporting mandates, and prepare for emerging regulations and policies. Moreover, public-sector organizations that have developed a GHG inventory are better positioned to participate in policy making and the development of standards.

Sustainable strategies for public-sector organizations could involve multiple initiatives, categorized into "scopes" by the Greenhouse Gas Protocol, a widely used international standard for corporate accounting and reporting of emissions.[7] Scope 1 includes direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling. Scope 3 includes all other indirect emissions (such as employee travel and the actions of suppliers) in an organization's value chain.

The measures that could help public-sector entities to decarbonize their operations and become more sustainable include these:

1. *Decarbonizing buildings and operations (scopes 1, 2, and 3).* To decarbonize existing buildings, public-sector organizations could use a number of levers. These include improving insulation, maximizing the use of LED lighting, replacing oil and gas boilers with heat pumps, certifying buildings, and adopting technologies (such as lighting and temperature control sensors) to reduce energy consumption. Internal campaigns could make employees more aware

of energy consumption and encourage new kinds of behavior. Public entities could also opt for carbon-neutral designs in new buildings and install green roofs, which could reduce energy consumption, improve water management, and foster biodiversity.

For example, New Zealand's Carbon Neutral Government Programme, backed by the NZ $200 million (US $130 million) State Sector Decarbonisation Fund, is working to make the country's public-sector agencies carbon neutral by 2025. The program will finance the purchase of electric vehicles and the replacement of fossil fuel boilers with cleaner alternatives.[8] In addition, it requires new public-sector buildings to meet energy efficiency standards and public-sector agencies to begin measuring and publicly reporting their emissions by 2025 and to offset those they cannot cut.[9]

2. *Creating more sustainable travel policies and fleets (scopes 1 and 3).* Organizations could introduce sustainable practices, such as using environmentally sustainable hotels, encouraging flight classes with lower CO_2 footprints, replacing flights with train travel, introducing stricter criteria for necessary business travel, offsetting essential travel with carbon credits, and choosing more sustainable airlines. Public entities with truck fleets could adopt solutions to decarbonize them, such as switching to liquid natural gas or compressed natural gas, piloting hydrogen or battery-electric vehicles, or switching to double-deck trailers. They could also improve internal

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[6] "Greening Government Commitments 2021 to 2025," UK Department for Environment, Food & Rural Affairs, October 28, 2021.
[7] "What are Scopes 1, 2 and 3 of Carbon Emissions?," Plan A Academy, June 12, 2022.

awareness of efficient driving habits and perform regular maintenance to ensure that vehicles are in optimal driving condition.

3. *Introducing new procurement criteria (scope 3).* Integrating environmental, social, and governance (ESG) goals and principles into internal procurement processes is just a start. Public entities could embed ESG criteria in their procurement practices and decision making by, for example, adding ESG metrics to their requests for proposals and adding CO_2 pricing to their procurement-decision logic. They could also consider decarbonizing their supply strategies by, for example, selecting local service providers and updating their supplier codes of conduct. Introducing new requirements and collaboration models with suppliers to promote sustainability throughout the value chain can ensure access to innovations that would meet demands, by customers and markets alike, for sustainable products and technologies.

Some countries have already set new norms for procurement. Singapore's public sector, for instance, has committed itself to taking the lead in driving green efforts, such as setting ambitious targets incorporating sustainability considerations in its infrastructure, operations, and procurement decisions.[10]

4. *Promoting new workforce behavior (scope 3).* The world's public sectors collectively employed about one-third of the global workforce in 2021.[11] Governments could influence emissions generated by their employees at work, and in transit to and from work, with incentives such as cycle-to-work campaigns and continued work-from-home arrangements. Public-sector entities could also encourage (for example, through incentives) or even directly subsidize their employees' switch to zero-emissions vehicles for commuting or business travel. Encouraging the adoption of sustainable "microbehaviors"—such as recycling and conserving power by turning

off lights and programming thermostats—could also contribute significantly to an organization's cumulative sustainability. Public entities could engage their key internal influencers to help promote it their organizational culture.

Planning the journey to net zero

Public-sector organizations have so many opportunities to reduce their emissions (and those generated across their value chains) that the prospect of a transformation may quickly become overwhelming. We have therefore identified five key steps to help guide decarbonization in the public sector.

1. *Define the aspiration.* The first step is to assess the organization's environmental goals in the light of national and industry strategies for achieving net-zero emissions and of the global target of limiting warming to 1.5 degrees Celsius above preindustrial levels. Because public-sector operations are often structured in hierarchies and individual organizations exercise varying levels of autonomy, defining the appropriate organizational roles and responsibilities is a key step to ensure that the right divisions or agencies are involved.

Once these roles have been defined, a government entity could assess its sustainability footprint, detailing its emissions by scope, identifying the largest emissions sources, and determining their impact on the value chain. It could then prioritize actions for the short, medium, and long terms by identifying the opportunities, risks, and costs of critical emission reduction levers.

2. *Build a performance infrastructure.* Strong governance may prove essential for ensuring accountability while increasing sustainability. Management oversight and the creation of incentives could encourage the successful delivery of a decarbonization strategy. An organization could establish a clear accountability structure, including the impact of the strategy on

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[8] "Public sector to be carbon neutral by 2025," Government of New Zealand, December 2, 2020.
[9] Ibid.
[10] "Public sector taking the lead in environmental sustainability," National Environment Agency, November 14, 2021.
[11] Zahid Hasnain et al., "What we've been reading about public sector employment and wages," World Bank Blogs, October 20, 2021.

decision making, roles and responsibilities, the information flow, spans of control, communications channels, and relationship management. A sustainability team could be created, with a team leader in charge of setting goals, proposing and piloting strategies to address environmental concerns, communicating with the organization, and embedding sustainability in its culture.

Policies, processes, and key performance indicators (KPIs) could be critical for making information transparent and communicating expectations to the workforce. A net-zero measurement framework could provide information for decision making at the strategic, tactical, and operational levels. Since full decarbonization depends on reducing emissions along the value chain, organizations can collaborate with sustainable suppliers and use funding and financial incentives to encourage them to reduce emissions. Once governance for external and suppliers is in place, automation, advanced analytics, and connected solutions could create new opportunities to cut emissions.

3. *Engage the workforce.* Communicating environmental ambitions coherently, and regularly reporting on progress, could help embed change throughout an organization and keep the workforce energized and engaged in the transformation. To help employees better understand and commit themselves to decarbonization, internal messaging and social-media campaigns could include stories offering personal perspectives about why changes are needed. To develop the necessary skills, capability-building programs on sustainability could be included in existing training plans at every level of the organization.

4. *Build alliances.* Government entities could accelerate and magnify their impact by working with other public-sector organizations on similar sustainability journeys. By collaborating and

building climate-focused partnerships and sector alliances, organizations could develop new service and delivery solutions and spark innovation. For example, Practice Greenhealth, a membership and networking organization for sustainable healthcare, delivers environmental solutions to hospitals and health systems across the United States. Its virtual cohorts of sustainability and healthcare professionals learn from their peers, exchange information, and develop new strategies to meet common sustainability challenges.[12]

5. *Report and recognize progress.* Transparent, balanced reporting on the progress of decarbonization in meeting KPIs such as reducing emissions could promote accountability, encourage progress, and keep stakeholders informed. Clear, comprehensive disclosures that celebrate innovation and highlight necessary actions, areas for improvement, and barriers to progress may prove essential for long-term momentum and success. External, independent reviews could enhance the credibility of reporting. To increase external recognition, organizations could calculate and disclose their overall societal impact on sustainability, going beyond environmental considerations by explaining how their decarbonization efforts benefit local communities, diversity, and inclusion.

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As climate change continues to create a broad array of socioeconomic effects, leaders around the world may be increasingly compelled to incorporate the management of climate risk into their strategic planning and decision making.[13] Achieving the aims of the Paris Agreement may require unprecedented commitment, collaboration, and transformation for companies, economies, and societies alike. Public-sector organizations have a unique opportunity to show leadership in this collective undertaking by setting and meeting the requirements for a more sustainable future.

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[12] "What is a virtual cohort?," Practice Greenhealth.
[13] "Confronting climate risk," *McKinsey Quarterly*, May 15, 2020.

Transforming government in a new era

How engaged public servants, enabled by technology, can deliver better outcomes in a time of disruption.

by Roland Dillon, Elizabeth Murray, Scott Blackburn, and Neil Christie

Never before have governments and their workforces been asked to do so much, so fast. As a result, public-sector leaders are seeking transformational improvement in citizen services, policy outcomes, and regulation. But government transformation is hard to pull off in a context of fiscal challenges, public mistrust, and workforce fatigue. McKinsey's recent survey of public-sector leaders finds that nearly 80 percent of major change efforts fall short of meeting their objectives. (see sidebar, "About this study").

That makes it critical to pinpoint the common success factors of transformations that do deliver. Our survey finds that the success rate is triple among programs that apply the following five disciplines of government transformation identified in McKinsey's previous research:

— committed leadership

— clear purpose and priorities

— compelling communication

— capability for change

— cadence and coordination in delivery

Our new research shows that the impact of these "five Cs" is amplified by two cross-cutting imperatives: first, meaningful engagement of public-sector employees; and second, effective use of digital tools.

In leadership, there is now greater emphasis on compassion and care for employees' well-being, while purpose and priorities need to be co-defined with teams and made meaningful to individuals. Digital tools and techniques can now drive more engaging communication, as well as better cadence and coordination in delivery. And today, capability for change is underpinned by powerful learning journeys for employees and an understanding of how data and analytics can help drive innovation.

Our latest analysis also shows that governments that consistently apply the five Cs with an explicit focus on employee engagement and digital technologies

are more resilient to shocks—and are better able to adapt and evolve their change programs when faced with disruption.

To step up delivery and face the challenges of the future, governments can seek out ways to connect with their employees' sense of purpose and harness digital tools to strengthen innovation, collaboration, and delivery.

Many governments are struggling to transform—and to engage their workforces

There are many examples of how the COVID-19 pandemic prompted far-reaching government transformations and brought out the best in the public sector. HMRC, the United Kingdom Tax and Customs Agency, needed to build technology and operational solutions rapidly during the pandemic—in one example, it worked in a partnership with a private-sector consortium to build and launch a national digital customs service in 12 weeks to enable Northern Ireland businesses to trade with both the Great Britain mainland and the European Union.[1] The Australian Federal Government undertook the largest mobilization of staff in working memory with the redeployment of more than 2,000 public servants across the areas of greatest need during the pandemic.[2] And numerous countries achieved impressive rates of vaccination in previously unimaginable timeframes.

However, our survey findings show that relatively few government transformation efforts achieve such breakthroughs. Of the change programs in our sample, 22 percent delivered their objectives fully and on time—virtually at the same rate as in our previous survey, when 20 percent of programs reported success (Exhibit 1). Our survey also found that transformation in the public sector is substantially less effective than in the private sector, where the success rate is around 30 percent.

Our survey went further to identify challenges that have been amplified by recent events. For example, three-quarters of respondents said employees were concerned about the nature of hybrid work, and more than 70 percent said they were facing

[1] "Written evidence submitted by the Trader Support Service (NIP00250)," Trader Support Service, UK Parliament, April 21, 2021.
[2] "Management of the Australian public service's workforce response to COVID-19," Australian National Audit Office, December 1, 2020.

About this study

The findings presented here draw on comprehensive and longitudinal evidence on what makes government transformations succeed. McKinsey surveyed 1,360 leaders and managers involved in public-sector transformation initiatives from 2019 to 2022. These transformation leaders were located across the globe—Australia, Brazil, Canada, Germany, India, Japan, Singapore, Sweden, the United Kingdom, and the United States (exhibit). Respondents came from government at all levels (federal, state, and local), state-owned enterprises, and the social sector. The survey findings were complemented with 18 interviews with leaders of successful government transformations and 30 case studies drawn from diverse settings and regions. This research builds on an earlier survey and interview series conduct-ed by McKinsey in 2017 and 2018, allowing us to track valuable insights on the elements of successful government transformations that have proved enduring in very different contexts. Insights on the factors that have increased in importance with recent chang-es—COVID-19 and the "Great Attrition" as two examples—were also identified.

Exhibit

Global research offers valuable insights into how governments achieve successful transformations.

■ Countries surveyed in 2017 and 2021

~1,400
public servants surveyed across 10 countries in 2021

~2,900
public servants surveyed across 18 countries in 2017

18
interviews in 2022 with senior public sector and government leaders across 7 countries representing 200+ years' collective experience

110
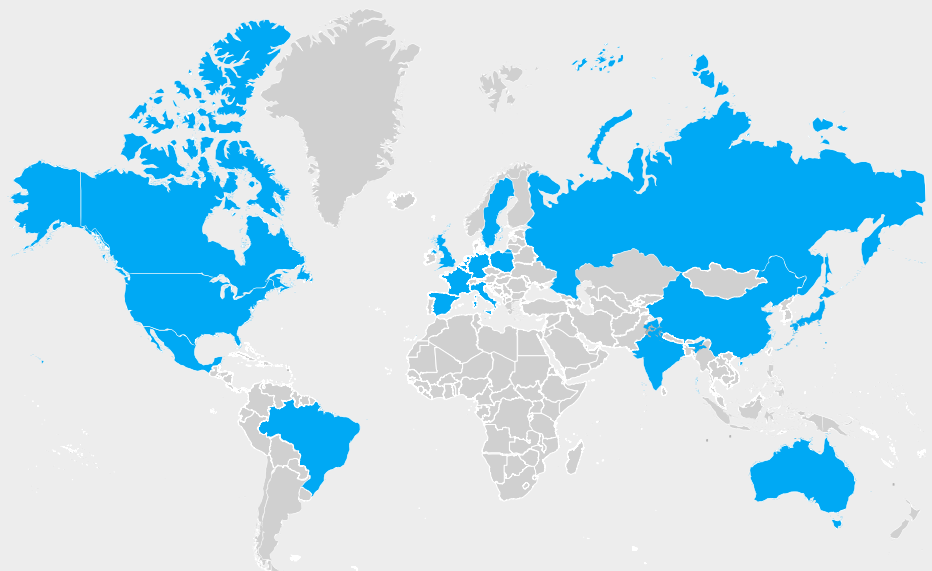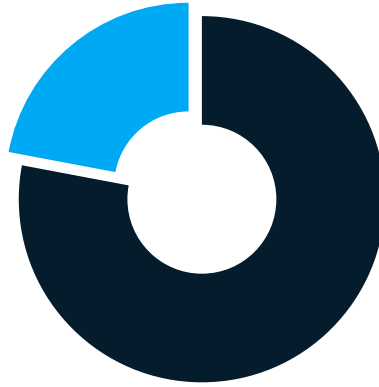case studies from 2017 to 2022 across 50 countries and 5 continents

Exhibit 1

Twenty-two percent of government transformations meet their objectives fully and on time.

22%

successful:
Objectives met or exceeded
on time and on budget

78%

unsuccessful:
Objectives missed, took
longer than allocated time

Source: McKinsey Center for Government Transformation Survey, 2021

labor shortages and skills mismatches between jobs and availability (Exhibit 2). Almost every respondent to the survey—94 percent—said they were experiencing at least one of these challenges. And less than a third were confident that they could handle these issues successfully.

Many governments, like their counterparts in the private sector, are facing the Great Attrition, which could hamper governmental transformation efforts and broader organizational health. In Australia, for example, 35 percent of public-sector employees surveyed by McKinsey in 2022 said they were at least somewhat likely to quit their jobs in the next three to six months. The drivers of this disengagement include work that does not feel meaningful, lack of potential for career development, and leadership that fails to inspire.

How to drive change: Meaningfully engage employees and enable them with digital tools

In the light of these challenges, how can public-sector leaders give themselves the best chance of successfully driving positive change?

The research finds that engaging employees is more important than ever. Public servants are searching for renewed purpose and meaning, better career-development opportunities, and more inspiration and care from their leaders.

Today, successful leaders of transformation engage employees around the larger purpose of their work, link that purpose to day-to-day activities, and give people autonomy in initiative design. As one former leader of a large services delivery department put it, "because the culture and values of our organization were about helping people, I conveyed constantly, consistently, and meaningfully to people that the changes underway were about helping people— because of this connection, people went above and beyond to deliver."

It is particularly striking, at a time when many public servants are experiencing fatigue and burnout, that a focus on mental wellness has become one of the strongest markers of successful transformations. In recent years, there has been a surge in research and investment into how employers and leaders can support this priority. Key actions that leading employers (both public and private) are taking

Exhibit 2

Organizations are facing newly emerging challenges—employees are deeply concerned.

Challenges faced during change program and perception of resilience, % of respondents

	Impact of challenges % of those who agree they are experiencing challenges	Expected resilience % of those who strongly believe they will be successful in handling each challenge
Employees concerned regarding the future hybrid work mix	76	**29**
Labor shortages	72	**28**
Skills mismatch between jobs and workers available	72	**24**
Price increases	65	**31**
Supply-chain disruptions	61	**27**
Total	94[1]	

[1]Obtained by considering respondents who somewhat agree or strongly agree they are experiencing at least one challenge.
Source: McKinsey Center for Government Transformation Survey, 2021

include use of better assessments of employee stress, promoting open discussions and clear processes to support mental wellness, and broadening mental health coverage for workforces.[3]

The other shift relates to the use of digital tools and enablers. The most successful government transformations are much more likely to use real-time data than other programs (Exhibit 3), and to deploy cutting-edge digital tools such as hybrid work platforms to strengthen their collaboration, communication, and decision making. These can improve the speed and effectiveness of decision making, according to ministers and public servants. As Noureddine Boutayeb, Morocco's former minister of interior, put it, "Speed matters more than ever. We no longer talk about changes that take years, we talk about months or even less."

A senior civil servant who served in the governor's office in a US state noted: "The use of real-time intelligence was dramatically accelerated by the COVID-19 challenge. We established a COVID-19 collaboration cell across our state

government agencies, and we also included outside stakeholders from the state's healthcare system. This approach enabled transparency on information and a common operating picture to drive decisions."
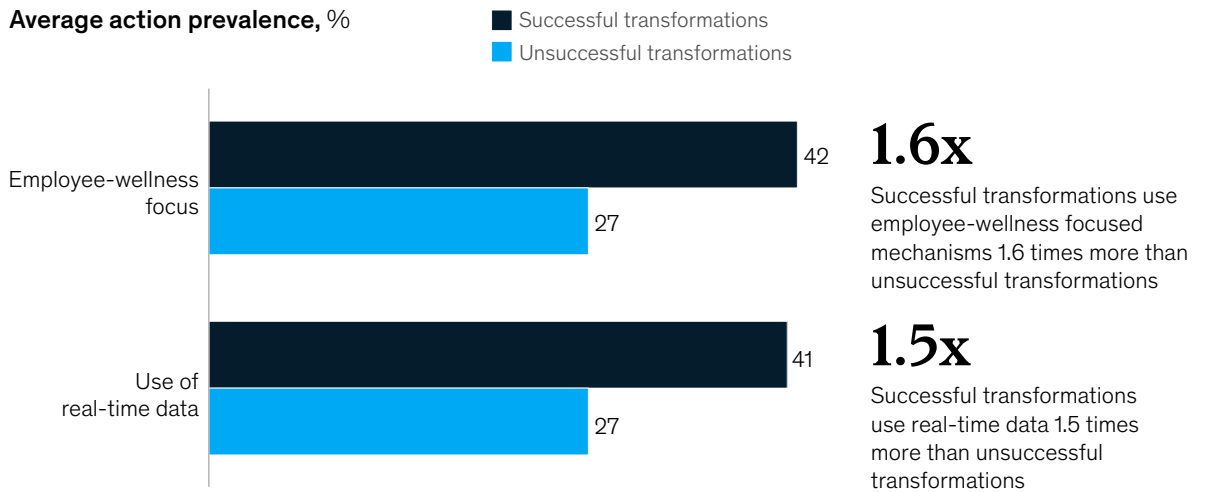
The evolving themes of employee engagement and digital enablement are common to all the enduring five Cs of successful transformations: committed leadership, clear purpose and priorities, compelling communication, capability for change, and cadence and coordination in delivery. Today, as in our 2018 report, our research finds that government transformations are three times more likely to succeed when all the five Cs are applied (Exhibit 4). They are seen as universal—each being a key driver of transformation successes regardless of the geography, trigger, scope, or structure of the change effort.

Our survey, along with our interviews with government leaders from around the world, highlights the key people-centric and digital interventions that make a difference in government transformations—in each of the five Cs.

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[3] "Addressing employee burnout: Are you solving the right problem?" McKinsey, May 27, 2022.

Exhibit 3

What differentiates successful from unsuccessful transformations is the focus on employee engagement and use of real-time data.

Average action prevalence, %

■ Successful transformations
■ Unsuccessful transformations

Employee-wellness focus
- 42
- 27

1.6x
Successful transformations use employee-wellness focused mechanisms 1.6 times more than unsuccessful transformations

Use of real-time data
- 41
- 27

1.5x
Successful transformations use real-time data 1.5 times more than unsuccessful transformations

Source: McKinsey Center for Government Transformation Survey, 2021

Committed leadership: Leading with empathy, humility, and adaptability

Previous research has made it clear that the most successful transformations are driven by extraordinary leaders who make personal and professional commitments to achieve the targeted outcomes. Our new research underscores this finding and adds an extra dimension: committed leaders who displayed compassion, care, and adaptability were the most important factor for ensuring successful transformations and for ensuring that those transformations are resilient to future shocks.

General Sir Nicholas Carter, former chief of the UK defence staff, said in an interview with McKinsey, "To have an effect as a transformational leader, it's so important that you care for and motivate those that you're leading … you've got to have empathy and humility." Often, this kind of leadership needs to be shaped through in-depth development programs. In the UK military, he told us, this involved "the creation of an army leadership center, a leadership doctrine,

and a whole philosophy of trying to get people to look downwards rather than upwards."

Role-modeling behavior changes can be crucial, as can be effective resource allocation to support the implementation of change program initiatives to avoid workforce fatigue and burnout. As David Thodey, former chair of the Independent Review of the Australian Public Service, told us, "We need to stare into the challenges of working in the public service and understand our future needs—and then be willing to fund and invest in that change." Our survey found that allocating enough people to get the job done was an action 1.9 times more prevalent in successful transformations than in their unsuccessful counterparts.
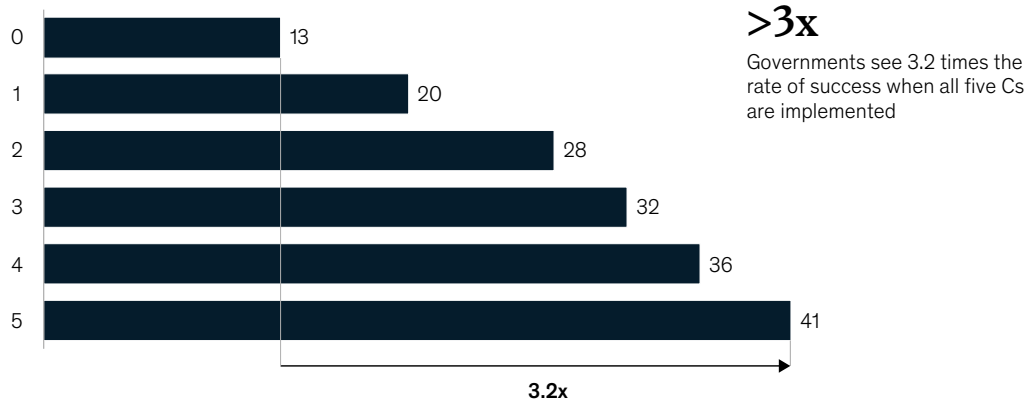
Clear purpose and priorities: Shared definition of success and making change meaningful to the people delivering it

Successful transformations have crystal-clear purpose and priorities, which translate into a few measurable outcomes. During the pandemic

Exhibit 4

Embedding the five Cs more than triples the likelihood of success in government transformations.

Number of five Cs implemented during transformation effort
% of transformations ranked as completely successful

>3x
Governments see 3.2 times the rate of success when all five Cs are implemented

0 — 13
1 — 20
2 — 28
3 — 32
4 — 36
5 — 41

3.2x

Note: Based on most relevant action for each of the five disciplines; 2021 sample: (0:409, 1:274, 2:236, 3:163, 4:111, 5:76).
Source: McKinsey Center for Government Transformation Survey, 2021

response, clearly articulated purpose helped to galvanize government response. Kristina Murrin CBE, former director of implementation at Number 10 Downing Street in the UK Government, told us,"I focus heavily on purpose—and we managed to get people to just do extraordinary things during the COVID-19 period because it mattered."

Our latest findings bring an important new dimension: the most consequential action to support the success of transformations is now ensuring that purpose is translated into individual meaning. This can involve co-designing the organization's purpose with employees, and then linking their incentives to it. Our survey finds that programs that align individual incentives to purpose are nearly twice as likely to succeed as other transformation efforts.

A recent example of co-designing purpose can be seen in a large US government department. Through a series of working sessions, employees explored the organization's imperatives and desired shifts. Together employees crafted an overarching purpose

statement that translated into a series of focus areas and ultimately a series of tangible metrics for success.

Sarah Webber, COO of the state of Arizona in the United States, described the value of employees owning purpose, not only in delivering government transformations but in retention: "Besides just resources, for people to keep showing up to work you have to provide purpose: allowing folks to feel that they can make that impact and take control of that, is critical."

Compelling communication: Harnessing digital tools to engage and listen
A compelling future vision, communicated to teams by visible leaders, is a key component of successful transformations. Our latest survey underlines the importance of engaging employees' hearts and minds—the communication of a meaningful change story by senior leaders across their organization is an action 1.5 times more prevalent in successful transformations.

However, methods of communicating are increasingly disrupted by new patterns of work and digital delivery. Communication must now be omni-directional and multi-channel: new digital tools give leaders new ways to communicate with employees, but also open up new mechanisms to listen and demonstrate authenticity. As one former head of a major government financial agency emphasized: "You're most successful if you're listening, if you can authenticate your mission with staff. I was a leader that used Twitter—it allowed me to give a little bit of myself and to listen."

Today's most effective government transformation programs are deploying digital tools in imaginative ways, both to communicate progress and to generate support. In the German federal government's drive to digitize public services, for example, the transformation team created a digitization-laboratory demonstration that allowed citizens, journalists, and public servants to experience the new approach. It also invited ministers to take part in user tests of digital prototypes.[4]

Our survey respondents confirmed the importance of compelling communication. "Engaging employees more through two-way communication" and "focusing more on engaging the front line" were two of the top three actions that leaders of unsuccessful transformations wished they had focused on more (Exhibit 5).

Capability for change: Building adaptive, digitally enabled talent

Successful transformations actively invest in building public servants' talents with the skills needed to deliver change, and to respond to the unexpected. These include capabilities in digital and data analytics as well as adaptive leadership—defined by Ronald Heifetz of the Harvard Kennedy School as "the practice of mobilizing people to tackle tough challenges and thrive."[5]

Many governments are investing to create unique learning experiences and journeys—development opportunities that cannot be accessed elsewhere and that cultivate these essential capacities. Her Excellency Huda AlHashimi, the United Arab Emirates' deputy minister of cabinet affairs for strategic affairs put it this way: "Training's not the right word. It's changing the mindset and providing the right methodologies and tools to employees at all levels. The main thing is that we are asking them to constantly learn. And this constantly learning is critical."

Consider the example of Namyangju, a city in South Korea, that launched an initiative to train all its staff on the use of a smart-city platform to drive operations. Led by the mayor, the program of employee training and education supported multiple innovative new projects on citizen convenience and efficiency via improved data collection and analysis.[6]

Finally, our survey shows that the staffing of transformation programs can itself be a powerful engine for capability building. The most effective transformations assign high-potential employees or managers to lead the change: those who do so are 1.5 times more effective than those who don't.

Cadence and coordination in delivery: Agility in transformation

Akin to a rowing team with a coxswain calling a regular rhythm of progress, effective transformations have highly collaborative teams and a central point of coordination. For example, our survey found that dedicated central teams charged with coordinating all change-related activities were 1.5 times more prevalent in successful transformations. Programs that harness dynamic digital tools—such as live dashboards—are also more likely to achieve effective coordination.

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[4] Matthias Daub, Axel Domeyer, Abdulkader Lamaa, and Frauke Renz, "Digital public services: How to achieve fast transformation at scale," McKinsey, July 15, 2020.

[5] Alexander Grashow, Ronald Heifetz, and Martin Linsky, "The practice of adaptive leadership," *Harvard Business Press*, 2009.

[6] Michael J. Ahn, Younhee Kim, and Suenghwan Myeong, "Smart city strategies—technology push or pull? A case study exploration of Gimpo and Namyangju, South Korea," MDPI, December 24, 2020.

Exhibit 5

In hindsight, leaders of unsuccessful transformations would have set clear targets and focused more on communication.

What respondents of unsuccessful transformations would do differently in retrospect
% of responses

■ Communication activities

Set clearer targets	45
Engage employees more through two-way communication	43
Focus more on engaging the front line	42
Ensure that the right skills and capabilities get deployed in the right areas	39
Allocate more resources from the start	36
Review progress more frequently or thoroughly	33
Engage more with citizens or stakeholders	27
Spend more time thinking about how the organization can continue to improve	26
Spend more time aligning the top team	25
Spend more time developing and communicating a change story	24

4 of the top 10 'biggest regrets' of unsuccessful transformations were communication related

Source: McKinsey Center for Government Transformation Survey, 2021

Many government transformations coordinate across multiple government agencies using agile approaches such as cross-functional teams. As the COVID-19 pandemic showed, governments can be very effective at cross-agency coordination during crises—but this is challenging to maintain beyond the immediate emergency.

One leader who has marshalled such cross-government coordination is G. Edward DeSeve, who oversaw several government-wide agile efforts. He reflected, "We had to use agile techniques along the way with a lot of customer involvement, a lot of teams, a lot of deadlines, and things like that." This, he told us, was key to the program achieving results according to an aggressive schedule.

An increasingly common feature of successful transformations is the use of simulation planning and piloting of initiatives before they are scaled up. This was the approach followed in the digital

transformation of Canada's social services. John Knubley, the former deputy minister of innovation, science and economic development of Canada, told us, "Social services needed to be much more digital and accessible, but they didn't do it all at once—they tested and piloted, and then they kept their long-term goals in mind when scaling."

## Building resilience to the challenges of the future

One of the clearest lessons of the COVID-19 pandemic, according to our survey, is that it is very difficult for governments to anticipate how future changes might impact on their priorities and change programs. Indeed, increasing global uncertainty driven by pandemic risks, cyber incidents, and unforeseen events underline the importance of building resilience as a core business of government (Exhibit 6).

Exhibit 6

Global uncertainty is growing, requiring increasing resilience.

3–5x higher global uncertainty level in 2020 compared to 1990s, World Uncertainty Index (WUI)[1]
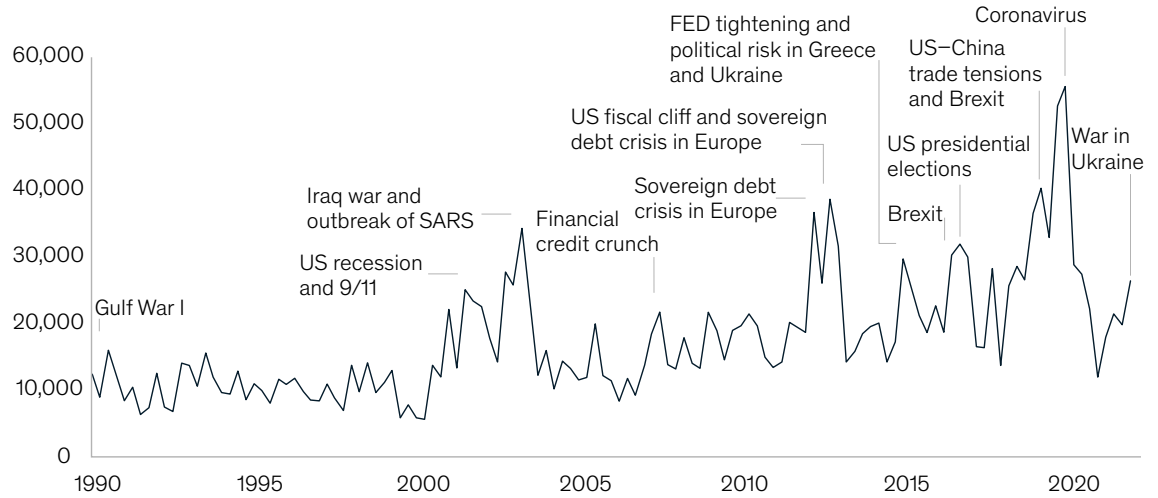
[1]Based on percent of word "uncertain" (or its variant) in the Economist Intelligence Unit (EIU) country reports (source: World Uncertainty Index). The WUI is then rescaled by multiplying by one million. A higher number means higher uncertainty and vice versa. For example, an index of 200 corresponds to the word "uncertainty" accounting for 0.02 percent of all words, which—given the EIU reports are on average about 10,000 words long—means about two words per report.
Source: McKinsey Center for Government Transformation Survey, 2021

Many governments recognize that they need to build resilience to external shocks and uncertain futures—and our research offers insights on how they might do so.

Even given the COVID-19 pandemic, government transformation programs that embedded the five disciplines set out in this article experienced greater resilience than those that did not. Importantly, our survey also suggests that consistent application of these transformation disciplines can improve organizational resilience against a broader set of challenges such as supply-chain disruptions, price increases, and labor shortages (Exhibit 7).

Of the five Cs, committed leadership was the most important factor in predicting resilience. We defined one in five of the transformation programs in our study as "very resilient"—and among those, 72 percent applied the discipline of committed leadership.

To promote resilience, government leaders can cultivate an "adaptive mindset"—in themselves and their teams—by recognizing that complex and changing environments will require repeated iteration and problem solving in both policy and delivery. Adaptiveness can help move people from simply enduring a challenge to thriving beyond it.[7]

As Douglas Millican, chief executive of Scottish Water, observed, this investment can create a virtuous cycle: "Investing heavily in leadership development drives employee engagement, which gets people on board to deliver great performance."
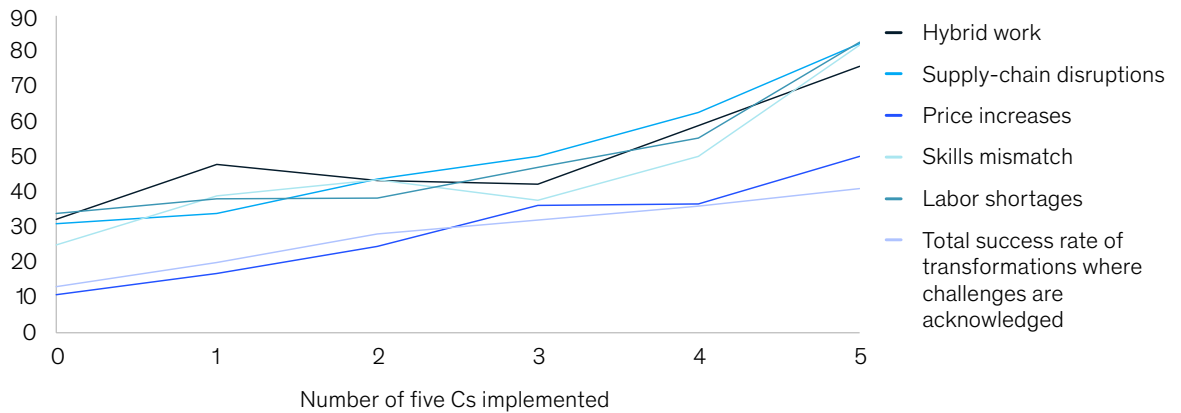
The leaders interviewed emphasized that such actions not only support successful transformations, but also improve organizational health and employee engagement across government. As David Thodey put it: "There are many challenges. But if you create a great place for people to work,

[7] "Future proof: Solving the 'adaptability paradox' for the long term," McKinsey, August 2, 2021.

Exhibit 7

Transformations that consistently apply the five Cs will likely be more resilient to global challenges.

Survey respondents who agreed that identified challenges existed and experienced resilience
% of transformations where survey respondents strongly agreed

Number of five Cs implemented

— Hybrid work
— Supply-chain disruptions
— Price increases
— Skills mismatch
— Labor shortages
— Total success rate of transformations where challenges are acknowledged

Source: McKinsey Center for Government Transformation Survey, 2021

if you are purpose driven, and the quality of the work you do is impactful, and people are valued for who they are—if all these attributes are present, then it will be a great place to work—and in that environment, people don't leave easily."

———————

Faced with the disruptions of COVID-19, many governments found ways to unlock new capabilities—such as digital tools and real-time data—that today can position them to drive the next transformations of public services. Many public servants are in need of reconnecting and re-energizing after two years of navigating the pandemic. Governments that succeed in engaging their people in meaningful change efforts, and bring real care to their mental well-being, can galvanize their organizations to tackle their societies' most pressing challenges.

Governments' experiences of COVID-19 have underlined just how important it is for public-sector change programs to inspire their workforces with compelling purpose, nurture adaptive leadership, and focus their efforts on building the capabilities of the future. Governments that can "bottle the best" lessons of recent years—and focus with renewed vigor on supporting talented public servants—will be better placed to deliver the quality services that citizens require, and the innovations that a fast-changing world demands.

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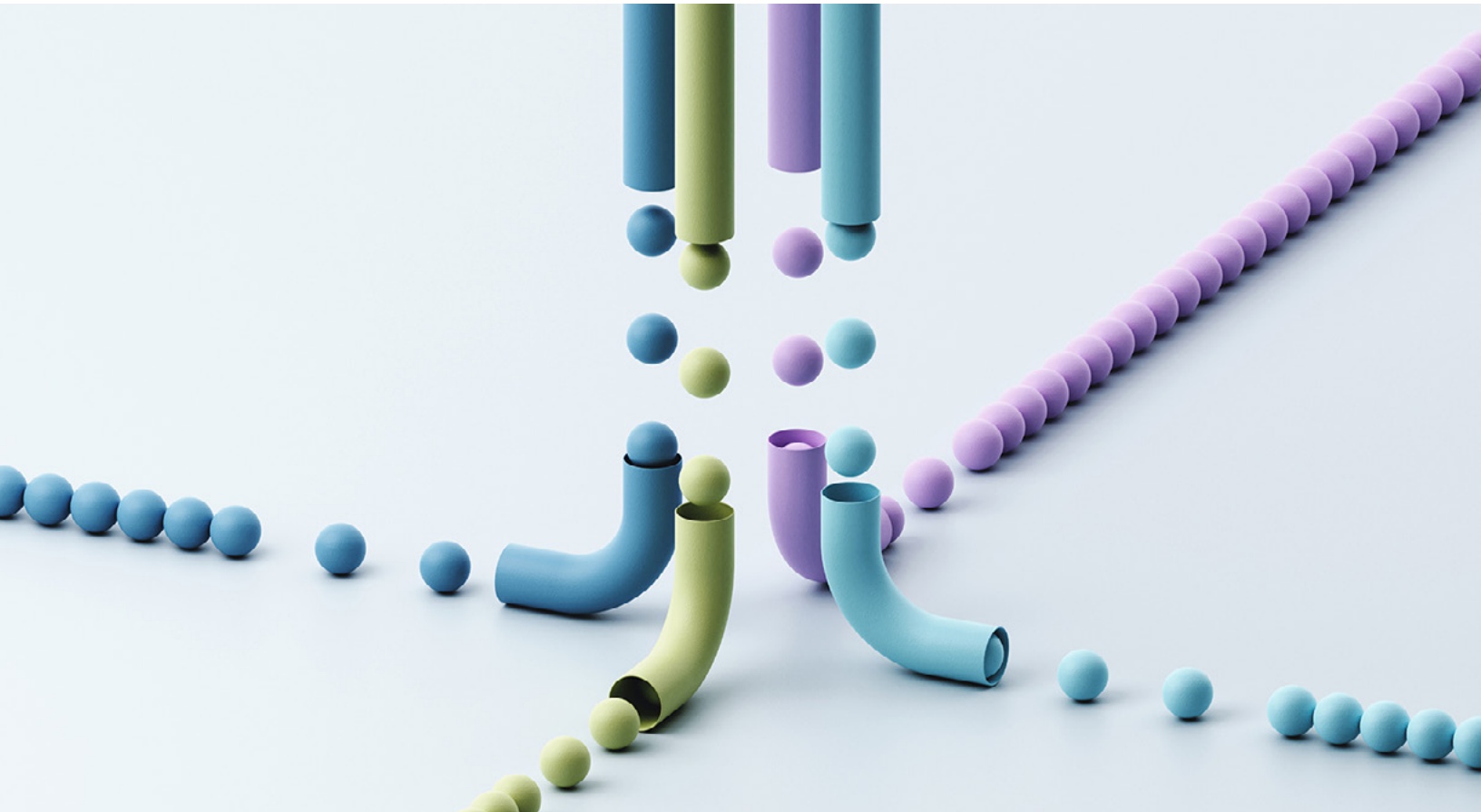
Accelerating data and analytics transformations in the public sector

A data and analytics transformation is particularly hard for organizations in the public sector, given their scale and operating constraints. But some are making progress and offer valuable lessons.

by Ankur Ghia, Meredith Langstaff, David Ware, and Rob Wavra

An increasing number of organizations are embarking on programs to embed data and analytics at the heart of their operations, aware of the potential to transform performance. The McKinsey Global Institute estimates data and analytics could create value worth between $9.5 trillion and $15.4 trillion a year if embedded at scale—and $1.2 trillion of that in the public and social sectors.[1] But there is a long way to go. A recent McKinsey survey shows that half of the respondents are still not using artificial intelligence (AI) anywhere within their organizations.[2]

Adopting data and analytics is never easy. A transition to new technologies, new ways of working, and a new, data-driven culture are among the challenges. So too is a shortage of data and analytics talent. Yet all are arguably of greater magnitude in the public sector and more difficult to address (see sidebar, "Data and analytics transformation in the public sector: A bigger and trickier challenge").

For instance, few private-sector companies are the size of government institutions: the US Department of Defense is the largest employer in the world.[3] Government bodies are notoriously slow to approve new projects or reallocate resources. Receiving authority to operate on US government information systems can take a year or more due to security restrictions and protocols. And given budget constraints and hiring timelines, governments will often lose in a war with the private sector for top analytics talent.

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[1] "Notes from the AI frontier: Applications and value of deep learning," McKinsey Global Institute, April 17, 2018, McKinsey.com.
[2] "The state of AI in 2020: McKinsey Global Survey results," November 17, 2020, McKinsey.com.
[3] Henry Taylor, "Who is the world's biggest employer? The answer might not be what you expect," World Economic Forum, June 17, 2015, weforum.org.

Data and analytics transformation in the public sector: A bigger and trickier challenge

The hurdles public-sector organizations face implementing digital and analytics transformations are no different than those encountered by private-sector ones, but they are often of greater magnitude. Moreover, public-sector organizations tend to have less flexibility in overcoming the challenges.

— *Scale:* The sheer scale of many public organizations makes a transformation harder. Further, while private-sector companies tend to have a single mission, large public-sector ones may have several, making it harder to focus digital and analytics strategies.

— *Technology:* Integrating new technologies can be particularly difficult and time-consuming in the public sector, where bureaucracy and risk-aversion can lead to restrictions and lengthy protocols and vetting processes. In addition, public-sector organizations often have a number of disparate technology foundations operating simultaneously, making it harder to organize and scale efforts.

— *A new operating model:* The transformation depends upon a new, agile operating model that pilots and scales efforts swiftly and funds them accordingly. Public-sector bureaucracy can make it difficult to reallocate resources in this way.

— *Talent:* Public-sector institutions often struggle to compete with the financial incentives offered in the private sector, as well as the speed with which private companies can hire.

— *Culture:* In the public sector, years of institutional knowledge are highly regarded and critical to delivering on the mission. That can make it challenging to persuade employees that data-driven decisions are sometimes sounder than those based on experience.

— *Leadership tenure:* Data and analytics transformations are long-term efforts, but leadership in many public-sector organizations changes frequently as jobs are rotated and administrations come and go.

— *Privacy, ethics, and civil liberties:* A higher bar tends to be set for public institutions, which must be transparent about how they use data and how dollars are spent. Yet the complexity of some analytics techniques, such as AI and machine learning, can make transparency difficult, and it can be hard to ensure outcomes are bias-free.

Even so, a few public-sector organizations are making good progress harnessing the power of digital and analytics. Learning from them, as well as from successful commercial organizations, we propose a five-part framework that should help more government organizations make more progress.

Set a bold aspiration—but one you can measure

Many public-sector organizations have data and analytics strategies. But many of those strategies share a common weakness: they are too broad. A strategic aspiration to, say, improve operations or use taxpayers' money more efficiently will prove hard to realize without clear, quantitative targets, no matter how much money is invested. Instead, numerous small pilots will likely be launched that fail to scale, as the goalposts have been set too wide. One public-sector agency hired a chief data officer who soon spent more than $20 million on new data infrastructure and launched four interesting, but unrelated, analytics projects. None made it to production. Within a year, the whole program was under scrutiny with serious questions raised about the return on investment and how scale would ever be achieved.

To be clear, the starting point for transformational change has to be a bold aspiration that will help further the organization's mission, and it must have unequivocal leadership backing. But it must also be measurable. Hence, the strategy should address two separate questions: What do we want to achieve, and what does success look like? For one organization, the answer might be a reduction in costs while maintaining or improving service, with success measured as a 20 percent cost reduction without denting satisfaction scores. For another, it might be faster operations while maintaining quality, measured as an 80 percent backlog reduction and a 20 percent increase in quality metrics.

Efforts stay focused when the strategy is formulated in this way, and people across the organization understand what will be gained—the first step toward winning workforce support.

Anchor use cases to the aspiration, not technology

With the aspiration clear, the next task is to select data and analytics use cases for deployment.

Too often, the lure of exciting new technologies influences use-case selection—an approach that risks putting scarce resources against low-priority problems or projects losing momentum and funding when the initial buzz wears off, the people who backed the choice move on, and newer technologies emerge. Organizations can find themselves in a hype cycle, always chasing something new but never achieving impact.

To avoid this trap, use cases should be anchored to the organization's (now clear) strategic aspiration, prioritized, then sequenced in a road map that allows for deployment while building capabilities. There are four steps to this approach.

First, identify the relevant activities and processes for delivering the organization's mission—be that testing, contracting, and vendor management for procurement, or submission management, data analysis, and facilities inspection for a regulator—then identify the relevant data domains that support them.[4]

Second, draw up a list of potential data and analytics use cases for the activities and processes. Use cases should be framed as questions to be addressed, not tools to be built. Hence, a government agency aspiring to improve the uptime of a key piece of machinery by 20 percent while reducing costs by 5 percent might first ask, "How can we mitigate the risk of parts failure?" and not set out to build an AI model for predictive maintenance. The question-based framing ensures that use cases drive toward the aspiration and are not determined by the latest piece of technology. Importantly, several questions with corresponding use cases may nest behind the first "macro" one. For instance, to understand how to mitigate the risk of machine-parts failure, the organization might first have to ask, "How can we detect parts failure in operational data?"; then, "How can we predict parts failure?"; and finally, "What is the best action to take when we predict parts failure?"

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[4] Data domains are clusters of cleaned data that holistically represent a subject area. The personnel data domain would, for example, contain all data related to personnel—the name, date of birth, training undertaken, and so on, for each employee.

Each of these questions has a separate data or analytics use case that builds on the previous one. Understanding the sequence helps companies organize resources and personnel effectively (exhibit).

Third, prioritize use cases from the potentially hundreds that could drive results, using three criteria:
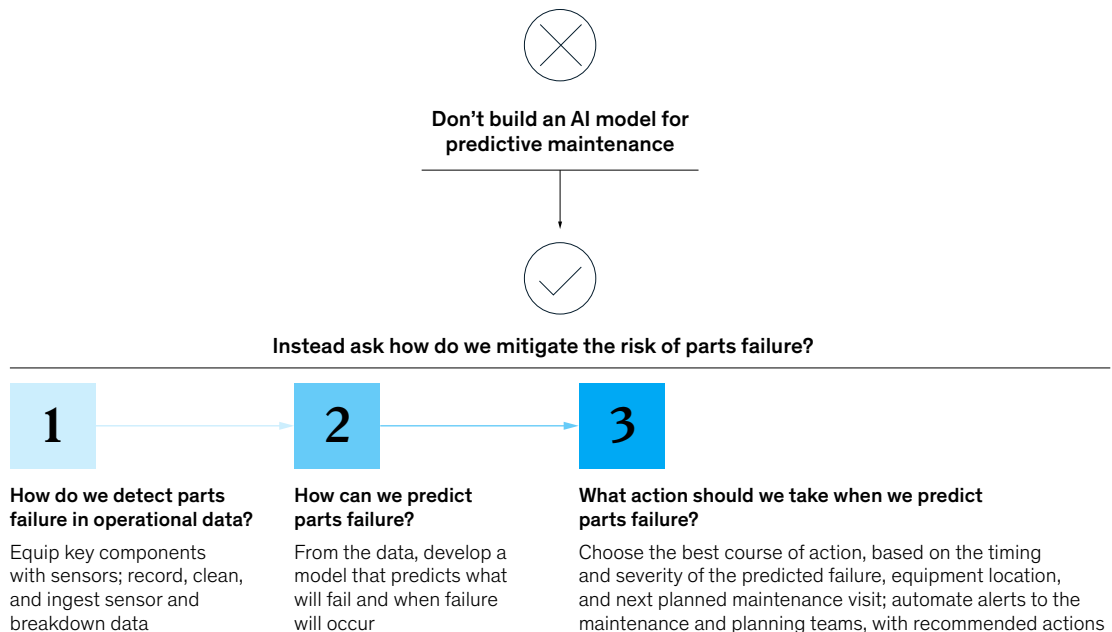
— *Impact:* The value that can be captured relative to the aspiration and the timing.

— *Feasibility:* The organization's ability to execute the use case. For example, does it have the right data, talent, and technology?

— *Amplification:* The extent to which a use case builds the organization's ability to execute more of them—perhaps because it cleans data that can be used again or builds useful data architecture or skills. One public-sector agency chose a use case aimed at answering common, resource-consuming requests for information. A request by a departmental leader for spending figures, for example, could cascade into dozens of requests to people lower down in the organization to collect the data from different programs in the unit's portfolio. A data and analytics project to build a dashboard with real-time answers to a range of questions not only captured efficiencies but also ingested, cleaned, and imposed order on a significant quantity of program, finance, and contracting data for other use cases.

Exhibit

To anchor use cases to the aspiration, frame them as questions to be addressed, not tools to be built.

Reframing a complex issue into its constituent questions (illustrative)

Don't build an AI model for predictive maintenance

Instead ask how do we mitigate the risk of parts failure?

1

How do we detect parts failure in operational data?

Equip key components with sensors; record, clean, and ingest sensor and breakdown data

2

How can we predict parts failure?

From the data, develop a model that predicts what will fail and when failure will occur

3

What action should we take when we predict parts failure?

Choose the best course of action, based on the timing and severity of the predicted failure, equipment location, and next planned maintenance visit; automate alerts to the maintenance and planning teams, with recommended actions

Finally, sequence the prioritized use cases in a road map. Successful road maps do not necessarily begin with the highest-impact initiatives. Instead, use cases are sequenced with a view to their collective force. Those that require similar data or data systems can be grouped together to speed deployment. But many best-in-class organizations build a lighthouse—that is, they implement 10 to 15 use cases within one organizational unit or focused upon one topic. The concentration delivers change that can be seen, not incremental improvements, and so builds support for broader adoption. The US Air Force recently created such a lighthouse with the aim of improving aircraft readiness to deploy and allocating resources more efficiently. The goal was 80 percent readiness, a higher level of performance than military fleets often achieve. By sequencing multiple use cases for two platforms, it achieved the readiness goal for priority units six years earlier than originally projected.[5]

Build the data infrastructure incrementally

Organizations will, without doubt, have to invest time and resources cleaning data and building infrastructure. But it is important not to get bogged down in the endeavor and waste resources. We have seen organizations spend years trying to aggregate and clean raw data in a single location—previously a data-enterprise warehouse and now more often a data lake—before beginning to execute use cases, only to discover the data lake has become a data swamp, full of poorly organized and governed data that is of limited use. The approach also risks locking in old technologies or delivering outdated solutions. One public-sector organization spent so long trying to build a single data repository that other units built their own solutions in the interim, further frustrating consolidation efforts.

A better approach is to ingest data and build the architecture incrementally.[6] There are three considerations:

— *Architecture strategy*

- Consider whether bespoke data architecture is needed, perhaps due to specific security concerns or unique systems, or whether platform-as-a-service or off-the-shelf solutions will suffice.

- Add the elements of the data architecture incrementally, in line with the use case road map. Not everything has to be in place from the start. Make sure, however, that the architecture is flexible enough to add new capabilities, as data and analytics needs scale.

— *Data ingestion and cleaning*

- As with the architecture, clean and ingest data as and when it is needed to support use cases in the road map, not before.[7]

- Design landing zones and data integration layers for raw data.

- Create a conformed data layer—that is, a layer between the raw-data layer and the analytics tools and dashboards—where the data can be cleaned and integrated. The layer can serve as the source of truth—the gold standard of data for that domain.

[5] Rachel Cohen, "Pathfinder paves way to a more ready Air Force," *Air Force Magazine*, May 22, 2020, airforcemag.com.
[6] Anusha Dhasarathy, Ankur Ghia, Sian Griffiths, and Rob Wavra, "Accelerating AI impact by taming the data beast," March 2, 2020, McKinsey.com.
[7] Ibid.

— *Data governance and ethics*

- Create a data-governance strategy for determining where data is located, who has access, and how it is being used. Best-in-class government data and analytics efforts create a central unit to establish policies and processes, and appoint data stewards—typically from a function familiar with the data—who are then responsible for ingesting, cleaning, and structuring the data domains. They also adopt iterative principles in day-to-day governance. For example, a backlog of known data-quality issues will be reviewed daily to decide which to prioritize, with the aim of maximizing the benefit to the organization.[8]

- Implement tools and processes to ensure data is used ethically, and bias is mitigated. Failure to do so is a huge reputational risk that can lead to a loss of public trust. Data governance and models must therefore embody explicit ethical principles that are guided and enforced by a risk-management framework, with controls to test fairness and ensure ethical outputs.

Design an empowered analytics function

A successful data and analytics transformation depends upon top leadership support. But those leaders then need to ensure that the function has the authority needed to move swiftly and with impact. There are two common public-sector missteps. One is failure to make the data and analytics lead a senior post, sending out a message that data and analytics projects are low priority, thereby slowing down progress if requests for approval have to escalate through layers of bureaucracy. Problems are compounded if the function then sits within IT, as the two functions often have conflicting interests. IT may want to reduce costs while data and analytics will likely be requesting bold investments to achieve transformational outcomes.

The second common misstep is to appoint a chief data or chief analytics officer but withhold sufficient decision-making and policy authority, enforcement ability, or budget. Without this organizational leverage, they will struggle to deliver a fast, wide-scale transformation. Funding can be a particular challenge for public-sector organizations, where budget cycles sometimes dictate that requests for funds have to be made two to three years in advance. Establishing a seed fund on which the data and analytics leader can draw at any time helps ensure use cases aren't put on hold while awaiting fund approval.

Other organizational choices are important too. There will need to be a clear, agile operating model that determines processes, decision rights, and accountability to help teams work fast while minimizing risk.[9] Structure also matters. If the data and analytics function is too centralized, business units can feel sidelined and that data and analytics are being forced upon them. If too decentralized, it can be hard to prioritize data and analytics resources or to standardize and scale them across the organization. Often, successful organizations start with a center of excellence to focus efforts, then move to distributed models with data and analytics embedded in the business units as their analytics capabilities mature.

Talent is another key issue, and one that can be particularly challenging in the public sector (see sidebar, "Data and analytics talent: Who you need and where to look").

Invest in changing the way people think and work

Some public sector leaders report that persuading employees to let go of entrenched ways of working proved harder than identifying and executing use cases. Despite all the investment, new tools sat unused.

Six measures can help build a culture that embraces data and analytics and its power to aid decision making.

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[8] Bryan Petzold, Matthias Roggendorf, Kayvaun Rowshankish, and Christoph Sporleder, "Designing data governance that delivers value," June 26, 2020, McKinsey.com.
[9] Jim Boehm and Joy Smith, "Derisking digital and analytics transformations," January 5, 2021, McKinsey.com.

Data and analytics talent: Who you need and where to look

The use case road map and data-infrastructure requirements will determine talent needs—the numbers, the roles, and the level of expertise. Analysis of the organization's current skills will determine where gaps lie.

Some public-sector organizations tend to focus too heavily on hiring data scientists. Success with data and analytics requires cross-functional, agile teams that also include data engineers, data architects, data-visualization experts, software developers, and data translators.[1] The latter can prove pivotal, as they define business problems that analytics can help solve, guide technical teams in the creation of analytics-driven solutions, and embed solutions into business operations. In short, they ensure analytics initiatives have impact, which has the added benefit of keeping data scientists fulfilled and more likely to stay in the organization. That, in turn, can ease the stress of trying to recruit data scientists, for whom competition is particularly fierce.[2]

Too often, government organizations find themselves at a disadvantage when recruiting because of slow hiring cycles, pay caps, and security requirements. There is no easy fix. Retraining people from within the organization can help—be they data warehouse experts, operations researchers, statisticians, or other experts—and is a solution often overlooked. Contractors can also help jump-start data and analytics transformations, giving the organization time to build in-house capabilities as use cases are scaled.

[1] Nayur Khan, Brian McCarthy, and Adi Pradhan, "Executive's guide to developing AI at scale," October 28, 2020, McKinsey.com.
[2] Nicolaus Henke, Jordan Levine, and Paul McInerney, "Analytics translator: The new must-have role," February 1, 2018, McKinsey.com.

Many best-in-class organizations build a lighthouse—that is, they implement 10 to 15 use cases within one organizational unit or focused upon one topic. The concentration delivers change that can be seen, not incremental improvements, and so builds support for broader adoption.

— Create a communications plan to share the organization's aspirations for data and analytics and introduce the use cases and the new way of working. Everyone, from frontline workers to senior leaders, needs to understand why they are being asked to replace old working habits with new tools. And everyone needs a tailored message that explains how the transformation makes their own jobs easier and raises the level of service they can provide to colleagues and citizens.

— Ensure leadership backs the new approach publicly, making clear that achieving the organization's goals depends upon it. Think of it as pushing outcomes that require analytics, rather than pushing analytics.

— Elect a business sponsor responsible for driving implementation and adoption of use cases. If a lighthouse unit or topic area has been chosen, the sponsor will be a leader from that unit or area.

— Identify change leaders at all levels of the organization to champion initiatives and use cases and influence peers and direct reports.

— Train the consumers of the use cases—those who are expected to make different decisions based on the outcome of the analytics or to operate differently. They will need to learn how to use new tools, relying on a smart alert to schedule timely equipment maintenance, for example, rather than instinct.

— Establish and monitor metrics for success so the organization is held accountable for performance improvements, not just for data and analytics spend and deployment.

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The framework described here does not diminish the effort, and ultimately the resources, that public-sector organizations will need to devote to harnessing the power of data and analytics. It does, however, suggest an approach that helps them plot a surer path toward that goal, overcoming the challenges that can dog the public sector and ensuring that effort and resources have lasting impact.

Additional reading

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Unlocking the potential of public sector IT projects
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