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The Political Economy of GovTech

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The digitalization of public services, known as GovTech, can disrupt traditional mechanisms to promote economic development (for example, financial inclusion, education, and health care), improve the delivery of public services, and expedite development objectives. For GovTech to be successful in enhancing the public sector's efficiency, transparency, and inclusiveness, its design and implementation require that private interests be aligned with the overarching goal of a "citizen-oriented" digitalization. Because the interests of the state and private providers are often antagonistic, the social dividends from GovTech remain contingent on implementing the appropriate market structure through adequate property rights and regulatory oversight.

The Scope of GovTech

GovTech involves the use of technology to modernize and transform government operations, decision-making processes, and service delivery to improve government services, transparency, efficiencies, agility with fit-to-purpose technology, and citizen engagement (Amaglobeli and others 2023b). More precisely, GovTech refers to how technology—understood in its largest sense as the link between computer science and its practical applications—can transform government services. GovTech aims to improve how citizens and businesses interact with government services while making the government more efficient, transparent, and agile. Strategies include automating operations and government services and making more data and digital services available across government agencies and to the private sector. GovTech also requires a modification in the way government agencies operate by adopting new ways of thinking about project management (for example, adopting agile approaches), vendor relationships (for example, considering startups and open source), technology adoption (for example, promoting innovation), and data transparency (for example, sharing anonymized data via application programming interfaces). The main forces at play are innovation and control. This note identifies the key actors and institutions in GovTech, proposes a framework for analyzing their interrelation, and outlines policy recommendations to advance GovTech. The note emphasizes the role of the private sector responsible for the technological innovations used by the government. Concurrently, the note highlights the importance of protecting privacy and regulatory oversight so that GovTech remains oriented toward citizens' needs.

During the late 19th century and early 20th century, railroads connected communities and unleashed new opportunities for growth and development. Throughout most of the 20th century, highways brought people and markets closer to each other. The 21st century is the era of digitalization. Today, telecommunications, including the internet, can connect even the most remote areas to the global village (Delaporte and Bahia 2022; Amaglobeli and others 2023a). Digitalization can help modernize the state and create enormous growth opportunities.

GovTech is the latest step in the state's permanent drive to modernize the public sector. What is already being done includes the supply of the enabling digital public infrastructure (for cloud, digital payment, digital identification, and code repositories), the development of internal systems (for example, digitalization of the revenue administration, expenditure policies, public financial management, and data sharing between administrations), and the development of government-user interfaces (for example, online submission of

immigration applications and fiscal declarations, centralized medical records, online voting, and budget monitoring). Several recent applications of GovTech have attracted significant attention and expectations, such as answering citizens' queries to the government with artificial intelligence, or AI (Androutsopoulou and others 2019; Gomes de Sousa and others 2019); registries for securing voting and procurement (Hjálmarsson and others 2018); tax collection; and fraud detection (Engin and Treleaven 2019).

Figure 1 reflects the interplay of the various actors of GovTech on several frames: (1) institutions, formal relationships, and accountability; (2) politics, voting, and legitimacy; (3) economics; and (4) flows of data. Data are not the only valuable resource for GovTech; however, data create new issues for public policies and a whole new array of conflicts between users, the government, private providers of public services, and competitors. Figure 1 also illustrates the centrality of the private providers of public services. Although the delegation of public services to private providers is not a new feature of the GovTech revolution, it becomes ubiquitous with GovTech. Moreover, the role of data creates an array of problems for the direction of GovTech and its governance. These stakeholders constitute the GovTech "ecosystem," which consists of (1) international actors (for example, supply chains—software, hardware, and services), (2) domestic public agencies (including line ministries, such as state security, finance, health, and education), and (3) and domestic service providers (for example, telecom, cloud, and software).

Figure 1. Actors, Relationships, and Transfers in GovTech
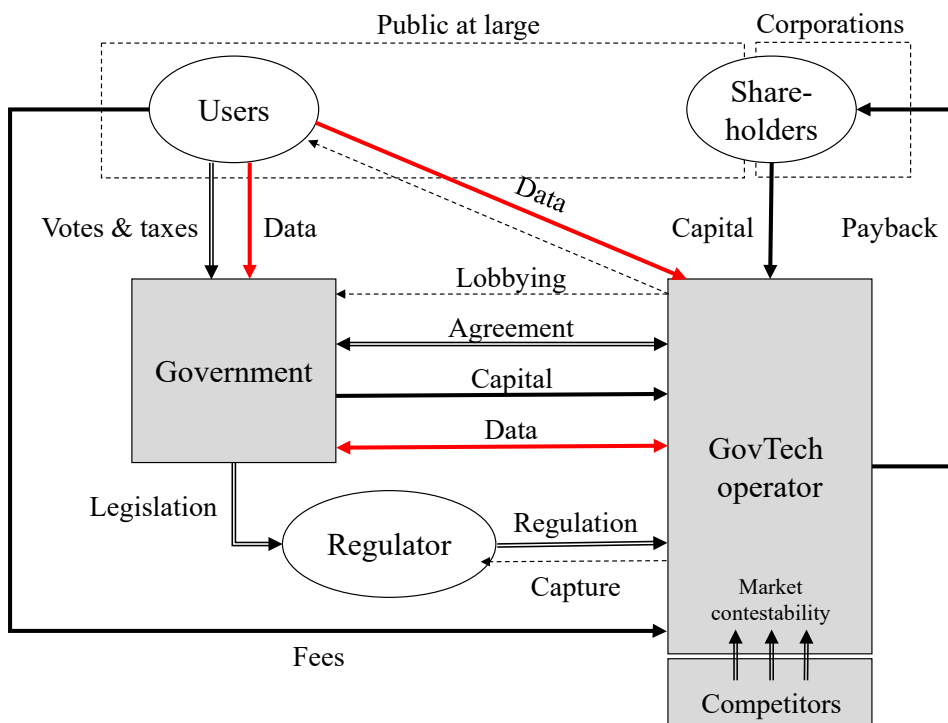
Source: IMF staff.
Note: Double lines represent legal and market relationships, dashed single lines represent informal ties and influences, solid black lines represent capital transfers, and solid red lines represent data flows.

GovTech certainly has more potential for applications than we can imagine. As with other general-purpose innovations, it will take several years to understand the GovTech sector's full scope and impact on social structures. GovTech can disrupt traditional development mechanisms, improve the delivery of public services, enhance government efforts in combating corruption,[1] promote transparency, and help reach development objectives faster than anticipated. AI can contribute to GovTech with intelligent automation of routine and

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[1] Albeit with nuances: see, for example, Shim and Eom (2008), Adam and Fazekas (2021), and Santiso (2022).

repetitive tasks, data analysis and predictive analytics, natural language processing (for example, AI-powered chatbots or virtual assistants), fraud detection and security, and personalized services. It also threatens the social inclusion of those without the means to acquire the skills to navigate the new technologies. This digital divide creates the risk of increasing inequalities among individuals, sectors, and countries and reducing trust in technology, institutions, and governments (IMF and the World Bank 2018).

The main innovation of GovTech is more social than technological. Typically, GovTech adapts technologies developed for other purposes to transform the relationship among the citizens, businesses, and state.[2] It changes the services that the citizens expect from the state (Dener and others 2021) and the state's accountability to the citizens, thanks to better information for the population. Importantly, GovTech introduces new intermediaries among the citizens, businesses, and state. It also facilitates the development of new industries and threatens others that we can expect to oppose its deployment (Frieden and Silve 2023). As a result, it has political and administrative consequences. The underlying technologies allow new modes of mobilization and social protest (voice). They change patterns of evasion for reluctant taxpayers and political contestants (exit). Through GovTech, they also offer new technologies of control by the state (repression).

Impact on Policies

GovTech affects the implementation of traditional public policies. It streamlines the fiscal revenue collection, expenditure policy, and public financial management. It can help coordinate health and education services. It expands the scope of property rights (in particular, over data). It affects new and more established industries' regulations (see previous examples). The main objectives of the digitalization of public services are the expected efficiency gains in the implementation of public policy; the social dividends of digital adoption in terms of health, education, and gender equity; the coverage of social safety nets; the macro-financial gains of digital connectivity and adoption; and more generally, the quality improvement of public services delivered.

GovTech's success depends on how and in which context (that is, legal framework, innovation environment, digital literacy, and business models) it is implemented. Digitalization has the same objectives as previous attempts to modernize the public sector. It differs because of the specifics of how digital technology can affect administrations' operation. Some of the mechanisms through which GovTech may make public services more efficient are automation, integration, and information of citizens and businesses. However, GovTech is not a silver bullet for efficiency gains in implementing public policies. Better information and different forms of engagement also mean that GovTech has a political dimension. It changes the mechanisms through which governments are held accountable (see next section). These mechanisms can have both positive and negative dimensions. One negative aspect is that GovTech tends to introduce new intermediaries—private providers of public services—among citizens, businesses, and governments, which may blur the public sector's responsibility.

Automation allows administrations to reduce their focus in routine tasks and interactions with citizens and businesses. For instance, the Action Publique 2022 program automated France's 250 most frequent administrative procedures. The resources freed by automation can be allocated to wind down administrations and to move to agile and adaptable public management processes (Mergel, Ganapati, and Whitford 2020).

Automation and, more generally, digitalization also create new responsibilities for the state, such as supplying the digital public infrastructure and improving the population's digital literacy to ensure the wide adoption of its services. A recurring worry of local elected officials is the widening of the digital divide (Sanders and Scanlon 2021), or a persistent share of citizens who find themselves excluded from the delivery of

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[2] In some instances, however, unique technology is developed under the GovTech umbrella, including electronic fiscal devices and fiscal electronic signature devices deployed to large segments of taxpayers.

basic administrative services when there are no remaining analog alternatives to digital ones. Not all citizens are able to use digital tools, and digital access remains unequal across territories, even in industrialized countries.

Integrating information and data across administrations and supplying the enabling digital public infrastructure should help eliminate redundancies and develop the proper policy measures.[3] In doing so, it reduces the administrative burden expected of citizens and the scope for mistakes, inconsistencies, and fraud. Integration is not a silver bullet, however. It also creates some difficulties. The sensitivity of the data held by administrations (for example, health, taxes, assets, and financial data for businesses) requires careful handling of the information flows, careful tracking of who accesses what data, and accountability in data usage.

GovTech may involve gathering new data on citizens and businesses and better integrating information across administrations. It also helps improve the information of citizens and businesses and helps them track and monitor the status of their applications and procedures, including the status of internal processes and cases. Thanks to digitalization, several countries and corporations have transitioned to an "open-book" model. Increased transparency, however, is not a general tendency of administrations, and better access to administrations is by no means an inevitable correlate of digitalizing public services (Margetts 2006). The fact that transparency is not a built-in digitalization feature is rather positive. Transparency is usually but not always advantageous in terms of the costs it may impose on administrations, the protection of public servants' rights, the effectiveness of specific policies (Bannister and Connolly 2011), and state capacity (Halachmi and Greiling 2013). It remains that digital technology can help drive a shift to more transparency in policymaking and implementation on a case-by-case basis, wherever transparency would be overall beneficial (see, for example, Gonzalez-Garcia 2022).

Impact on Politics

GovTech changes how populations hold their governments accountable. This is a consequence of more readily available information, but it is also because GovTech expands how the state can control and sometimes repress the population. The result is that citizens and businesses may quickly lose trust in the technology and the public authorities behind it, thus greatly diminishing the effectiveness of several public policies. Policies need to be adapted to reflect the need to compensate for this perceived threat with greater inclusiveness, engagement, and collaboration when they become digital (Wee and Findlay 2020). Otherwise, the adoption of GovTech will come with an increased perception of authoritarianism and public disengagement, which would be especially detrimental for policies that rely on compliance by citizens and businesses, such as the collection of tax revenue or prevention in health care (Poortinga and Pidgeon 2003; Wong and Jensen 2020).

One aspect through which GovTech affects the accountability of governments is that it gives a prominent role to private corporations in the design and supply of digitalized public services. Previous processes of state modernization remained firmly internal to public agencies in the hands of the administration. Even in its yet-to-be-imagined dimensions, GovTech relies primarily on digital technologies mastered by start-ups and established companies and not so much by public administrations (Vial 2019; Bharosa 2022). For private companies, GovTech represents a large and quickly growing market. A study by McKinsey estimated the sector at $400 billion in 2018 and predicted that it would increase to $1 trillion by 2025 (cited in Santiso 2020). It is no surprise, then, that private providers of administrative services also enter the new political economy equilibrium and must be considered when assessing the impact of GovTech on policies. The presence of these private actors affects the delivery of digitalized public services directly. It also blurs the accountability and responsibility of elected officials and governments for the provision of administrative services.

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[3] See the recent G20 Data Gaps Initiative workplan (IMF, IAG, FSB 2023).

A digital public service is sometimes implemented by the administration directly. More often, it is delegated to a private provider (or several providers) under the supervision and responsibility of the administration and subject to public policy and regulation. These private third parties create an array of political and economic issues that go beyond voice, exit, and repression. By nature, GovTech requires a specific alignment of the state's and private providers' interests. However, it should not be assumed that private interests align with the overarching goal of a "citizen-oriented" digitalization. Although the state is usually guided by a combination of revenue seeking and general interest, firms' decisions relative to the pricing of services are usually profit driven. Firms usually have better information than the state has about technology and demand. In contrast, the state uses fiscal policy and regulation to reach the "second-best" supply, constrained by imperfect information and transaction costs. This issue is by no means new, and the study of the governance of so-called public–private partnerships is now a thriving field of the economic literature. If GovTech generalizes the state's reliance on private providers, many civil servants and politicians will require adequate training.

Blurred accountability between private providers and public administrations may translate into inferior public policies. In well-functioning democracies, technological failures engage the government's responsibility. A prominent example is the Dutch government, which was forced to resign in January 2021 over the grave mistakes of a machine learning algorithm to detect childcare benefits fraud (Hadwick and Lan 2021). It is not necessarily the case in less advanced jurisdictions, however, and even beyond the political blurring of responsibilities, there are reasons to be worried about the detrimental effect of delegating public services to third parties. Private providers of public services can hold up the public in their relationship to their administrative or political principal and, thus, inflate the cost of adapting public services to the changing needs of the public (Gagnepain, Ivaldi, and Martimort 2013). Higher costs and an unclear picture of whom to hold accountable for inadequate service may, in turn, discourage citizens and businesses from asking for necessary adaptations (Hellman 2006).

GovTech can improve public policies thanks to automation, integration, and better information. The way GovTech is implemented is crucial to achieving these objectives. A determinant of its success is to ensure a certain alignment of the interests of the private providers of public services and the public administrations that rely on these private providers.

Challenges in Regulating GovTech

In designing the structure of the supply of GovTech services, the interests of the state and private providers are antagonistic. The state would prefer a competitive private sector, whereas private companies seek market shares and their correlate, market power. The state should be able to implement its preferred market structure through an adequate provision of property rights and regulatory oversight. Not all states, however, are equally able to deliver the appropriate level of regulation to private actors, especially when it involves new technologies and new methods of engagement with the population.

A positive and statistically significant relationship exists between the number of telecom operators, adjusted for the population, and political stability, as measured by the Worldwide Governance Indicators (World Bank, n.d.). This relationship holds for any of the five other indicators of governance of the Worldwide Governance Indicators, namely, Voice and Accountability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption, as well as the United Nations' E-Government Development Index (UN E-Government Knowledgebase 2023). The relationship indicates that **competition increases with a country's institutional strength along various relevant dimensions**. The extent to which private companies obtain their preferred market structures is inversely proportional to the strength of a country's political institutions. Ample evidence already shows that, in practice, private companies tend to obtain concessions from the state thanks to various mechanisms of regulatory capture: campaign financing in exchange for favors in the procurement of public contracts, lobbying, the revolving door, and even outright corruption. More work would be needed to establish whether the relationship between the strength of institutions and competition between operators is causal, and if

so, through which of these mechanisms it operates. However, this is suggestive evidence of the importance of strong institutions for a jurisdiction to benefit fully from digitalization and delegating public services.

Analytical Framework

GovTech comprises capital and business transfers, contractual and legal relationships, and informal ties and influences between public and private agents, involving diverse research fields for which there is a rich literature, including contract and incentive theories, cost-benefit and financial feasibility analyses, public choice, corporate governance, and regulation. A few features distinguish GovTech starkly from previous drives to modernize the state. These features are considered as follows.

Market Power

GovTech has several sources of market power. Market power can come directly from regulation in the interest of specific or incumbent firms, which raises questions about regulatory capture. Market power also comes from two features of any GovTech service (with overlap): when the service involves large upfront investments or economies of scale—what the economic literature has described as a natural monopoly or oligopoly—and when the service is hard or impossible to replicate in another company or from within the administration itself. In GovTech, trade secrets do not necessarily mean superior, unknown technology. They often come down to disposing of the administrative data needed to supply the public service.

Economies of Scale

To avoid the pitfall of a GovTech sector that does not serve citizens on the wrong side of the digital divide, governments must ensure that the enabling infrastructure and public services are available to virtually all constituents.

Economies of scale are often associated with setting up the infrastructure—here, the infrastructure that underlies GovTech and the broader digital economy. For instance, the extension of 4G coverage, the connection of schools to the internet, and the procurement of lithium and rare earths (that enter, respectively, in the production of batteries and magnets) imply large fixed costs that reduce the scope for competition between private suppliers. Economically, it is socially optimal to regulate suppliers to avoid oligopolistic or monopolistic pricing, encourage innovation, and increase infrastructure supply to existing and new users of digital services. Regulation should enforce a healthy degree of competition or keep markets contestable whenever applicable.

In the case of GovTech, public services can create economies of scale, especially when GovTech aims at automating procedures and integrating services across administrations. The cost of training large algorithms makes it difficult for other corporations to contest the position of an incumbent private provider. This might make certain GovTech markets effectively noncontestable (Kang and Miller 2022), except in the extreme case of large-scale failures of policy implementations (in particular, risk prediction, apparently often misused by a diverse set of administrations, as suggested in Wang and others [2022]). Economies of scale in GovTech are closely related to the difficulty of replicating an incumbent's services with a trained algorithm and superior data—the trade secrets of the digital age.

Personal Data and Private Providers of Public Services

Companies have a general tendency to propose services that are hard to replicate, which is especially true in GovTech. In the more general context of digital services, companies generate troves of personal data that they may combine to gain an edge over competitors, with which it is almost impossible to catch up. Such sensitive data, unavailable to contestant firms, entrench the advantage of the incumbent provider. They give early providers a sizeable first-mover advantage that is hard to regulate (Simon and Sichelman 2017; Fromer 2019; Levine and Sichelman 2019).

The incumbent's advantage over data is especially problematic because GovTech can create more sensitive data. In liberal democracies, citizens are usually more inclined to share sensitive personal information with the state than they are to share that information with private companies, as an integral part of the social contract (Chatillon 2008). For instance, financial statements of firms, thorough descriptions of individuals' various sources of income, and health data are shared under the assumption that such data can help the state fulfill its mandate and ensure fair participation of all in revenue collection but that the state will not use such sensitive information with any nefarious intent. In GovTech, the line is blurred by the partnership between the state and private companies, even though GovTech is likely to generate much more data than the state had before. The provider need not gather the data itself in exchange for superior services and the consent of users. Instead, it obtains data collected by the administration or collects information under the state's auspices (and sometimes refuses to share it with the administration), which calls for a particularly demanding oversight of the usage and storage of data raised by private providers of public digital services (Thomas and others 2019).

The central role of personal data creates its own set of unresolved issues. How do we allocate property and usage rights over the personal data of GovTech services in matters of education, health, and immigration? The General Data Protection Regulation in the European Union (Council Regulation 2016/679)[4] and its equivalents in other countries take away some rights from businesses (although not from states) in their control and handling of personal data. Whether in the hands of private firms supplying a digital service in the name of the state or in the hands of the state itself, the personal data generated by GovTech are and will remain a concern for privacy and a threat to several human rights.

With the importance of personal data in GovTech, how can governments ensure competition among providers of public services? Even when individuals remain in control of their data (Lazaro and Le Métayer 2015), it does little to threaten the incumbent providers' advantage over their competitors. Individuals who reclaim control of their private data cannot force machine learning algorithms to "untrain" themselves. Even if they could, it would have only a marginal impact on the algorithms' function. Then their data would need to be aggregated again for another company to offer a service able to compete with the incumbent (Geradin and Kuschewsky 2013). To ensure fair competition, or even contestability, administrations must remain in control of the information that businesses and individuals have agreed to share with the government and not with a particular private contractor.[5] They must develop the in-house knowledge to ensure that competitors can use this information to propose different and, hopefully, superior services. They must be willing to implement this competition. So far, national government regulations have not kept pace with technological change (Wu 2014).

The General Data Protection Regulation also addresses an international dimension. How do we trade digital sovereignty with the appeal of global networks and value chains? The geostrategic importance of the data generated by digital services and GovTech is also likely to grow considerably in the following years.

The Direction of GovTech

Real challenges encountered during the deployment of GovTech include the following:

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[4] Council Regulation 2016/679 of April 27, 2016, Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, 2016 O.J. (L119) 1. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN.

[5] Other policies that governments can pursue to keep markets contestable consist of enforcing a strong competition policy that prevents anticompetitive practices, encouraging innovation, and maintaining a level playing field in the tech sector. These policies include monitoring and addressing monopolistic behaviors, mergers, and acquisitions that may reduce competition; predatory pricing tactics; diversifying tech providers through the procurement process; encouraging innovation and entrepreneurship; strengthening regulatory processes; building digital infrastructure; and developing digital literacy. In low-income countries, governments may prioritize investing in digital infrastructure and promoting digital literacy to create a foundation for contestable markets. In contrast, middle- and high-income countries may focus on strengthening regulatory frameworks, diversifying tech providers, and fostering innovation.

- **National Digital Initiatives.** By definition, consolidation of any national digital service must reduce the agencies' autonomy (for example, digital public infrastructure, shared services, national data centers). Although efficiency gains may indeed be significant (of which there are positive examples), many risks are especially prominent among low-income and fragile countries. These include the capture of state institutions by the techno-savvy elite with ties to industry (for example, oligarchs), redirection of productive technology budget to unproductive central digital authorities, blocked organic growth within the agencies affected, reduction in the overall quality of public services delivered, and heightened levels of fragility among individual agencies (for example, external reliance on digital public infrastructure representing single points of failure and targets for cyberattacks, "brain drain" toward central agencies and the private sector, especially from fiscal agencies to the banking sector).
- **Migration of services to deal with corruption to or from government agencies and service providers.** In some countries, it is known that severe corruption problems exist within government information technology (IT) departments. Moving the respective data or services to a commercial cloud provider could be helpful as an anticorruption measure. Conversely, private service providers in other countries have deep connections to influential figures that have captured state agencies through control of IT operations and data. In these instances, migrating from these private services back to direct control by the affected agencies can be beneficial. As such, migrations of services can also generate opportunities for corruption and data loss or breach. They should be envisaged with extreme caution and limited to the minimum necessary.
- **Information security, including cybersecurity.** Increasing the number of actors engaged in delivering public services multiplies security risks. Low-income and fragile countries cannot deal with these challenges, which significantly limit GovTech's potential. In practice, directed cyberattacks in the fiscal space increasingly target ecosystems rather than state institutions.[6] Although some countries benefit from having security and intelligence agencies handle cyber issues, the effectiveness of these agencies beyond pure technological matters is limited because they often do not understand the ecosystems being targeted and do not have operational expertise in the domains they protect (for example, the actual business of revenue administration rather than its technological aspects).

The conflict of interest between private providers and the state is compounded by the agency that private interests exert over the scope of the GovTech sector. Private companies acting as innovators will often lobby the administration for the adoption of a new digital service that they designed. They will likely steer the sector toward services that make it easier to retain market power and limit fiscal pressure to the detriment of other activities that would generate more fiscal revenue and would be more easily replicable and competitive.

In general, technical change being biased toward the interest of capital is a concern for redistribution, inequality, and ultimately political unrest (Acemoglu 2002; Caselli 1999; Rosenberg 1969). More specifically, in this case, innovation can be suspected to be biased toward market power. Market power also means public services would be supplied below the socially optimal level. Adequate regulation may prevent a provider from taking advantage of this market power. The prospect of adequate regulation may, in turn, discourage warping the direction of technical change. Again, this is more of a concern in weaker institutional environments.

The scope of GovTech must not be left to the discretion of private companies. Private providers would favor the provision of more profitable services and services that would allow them to entrench their market position, which means less competition and contestability and underprovision of public services. Furthermore, the dynamic relationship between the state and private providers of public services would inevitably evolve as the private providers develop capacities that the public sector cannot control (Allen and others 2005; Bharosa 2022). Policy and regulation are also susceptible to being captured by private interests. This economic concern is compounded by a concern about the nature of the underlying resource: personal or business data, often collected by the state itself, willingly given to a public authority and for a public purpose that ends up in the

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[6] For example, "NotPetya" in Ukraine in 2017, which targeted large businesses and the revenue system. See McQuade (2018).

hands of private interests with other goals, which creates specific privacy issues. In other words, GovTech is a genie that must be kept in its bottle.

Nevertheless, the choice of digitalized public services should not be left to the state's discretion. As GovTech helps generate more data, there is a risk that jurisdictions will use these data for purposes other than openness and transparency, as initially advertised in the collection phase, such as interjurisdictional competition for the location of companies (Barns 2016). More worrisome is that as GovTech creates new surveillance tools, there is a threat that they will be used to restrict liberties and curb human rights (Goncharenko and Khadaroo 2020; Gussarova 2021).

If GovTech is to fulfill its goal of "citizen orientation," then the design and development of GovTech services should be collaborative and involve multiple stakeholders, with citizens at their center. Blockchain and related technologies could give control of personal data back to citizens. Digitalization could enable the "coproduction" of public services involving citizens and other civil society organizations (Edelmann and Mergel 2021). Involving citizens and the most vulnerable within a community in the digitalization of public services is relatively frequent at local levels of government, particularly in the design of smart cities, but less so at the national level. However, coproduction is not the only mode of public services production. In particular, the goals stated earlier may focus the digitalization efforts on efficiency and the effectiveness of the internal production of public services, which would lead GovTech in different, albeit not necessarily incompatible, directions (Cordella and Paletti 2018).

Governance, State Capacity, and Public Legitimacy

The delegation by the state of GovTech services to companies creates a direct relationship between private interests and citizens. Beyond the difference in their motives and how they weigh the delivery of public policies and profits, this direct link creates legitimacy issues as well as a dilution in responsibility when standards of care still need to be met (Janowski, Estevez, and Baguma 2018).

This diffusion of responsibility may reinforce itself dynamically. In outsourcing the provision of digitalized public services, the state may entrench the superior know-how of private companies and the deterioration of state capacity. GovTech has the potential to improve the delivery of public services to citizens. However, the situation may deteriorate quickly if the state's degree of understanding of the underlying technologies is not maintained. If citizens start having the impression of an inadequate administration, they may also start questioning the legitimacy of fiscal policy, the welfare state, and democracy.

Diverse as it is, GovTech creates several common issues that an encompassing institutional framework should address. First, it must remain citizen oriented, against its natural tendency to adapt to the goals of businesses and governments.

Second, it must be inclusive, against its natural tendency to create a digital divide within and among countries, which may mean limiting the sector's scope and keeping more traditional supplies of public services open to citizens who are on the other side of the digital divide. Although digitalization may help streamline the provision of several services, it must not create a two-tier society.

Third, it must remain competitive, despite the forces toward personal data concentration and sectoral consolidation.

Fourth, it must maintain and protect the direct relationship of citizens with the state to ensure the legitimacy and efficiency of public policy and social safety nets. A particular concern is that digitalized services may blur governments' accountability to citizens by adding layers of intermediate responsibility and blaming automated decision-making in case of wrongdoing.

Governing Demand

The implementation of GovTech should ensure the broadest possible adoption of the new digital services but should avoid excluding nonadopters. Broad adoption requires citizen-oriented innovation (for example, in public policy innovation labs), transparent governance, clear accountability for possible implementation flaws (through the introduction in public administrations of a "citizen service" culture centered on citizen satisfaction and citizen feedback), and a significant investment in the digital education of the population at all ages.

Governing Supply

Fiscal policy and regulation should adapt to the market structure of digital services.[7] The state should tax less than it would if it was only guided by domestic revenue mobilization—and should arguably subsidize GovTech services that it does not wish to provide itself. Fiscal incentives are compounded by how wide ranging this spillover is expected to be (in other words, how general the purpose of the service is). In this situation, the state should also favor entry and increase competition. The state should tax more a service that may have negative externalities or does not serve citizens' interests. Suppose the private sector would not provide a satisfactory service or supply it in a way that allows private companies to skirt regulation and avoid taxation. In that case, the state should step in, supply the service itself, and prevent the entry of private operators. The state must also ensure that the supply of digital infrastructure and connectivity does not hinder the demand for digital services.

Concluding Remarks

Digital development strategies should make connectivity accessible, affordable, open, and safe while reducing the risk of regulatory capture, inequality, and market concentration (Figure 2). The extension of GovTech can increase inclusion, efficiency, and innovation in public policy. For example, it can improve public access to higher-quality and more integrated health care and education and can empower populations still disadvantaged by systemic and institutional discrimination. It may help reduce differences in access to public services among urban and rural areas, genders, and education levels.

The benefits extend to the macro economy, micro-level effects, and government legitimacy and political stability. In each sector, however, the social dividends of GovTech will remain contingent on the implementation of the appropriate degree of fiscal policy (for example, investment in infrastructure and subsidies) and regulation (for example, regarding market structure and privacy) to foster accessibility, affordability, and safety.

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[7] See Frieden and Silve (2023) for a careful consideration of the trade-offs.

Figure 2. Goals, Social Dividends, and Risks of Digital Connectivity
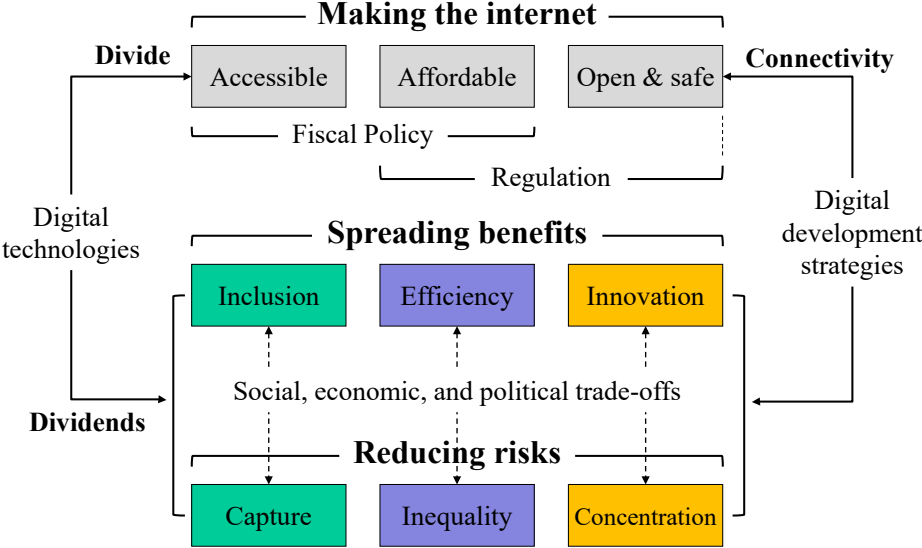
Source: IMF staff, based on World Bank (2016).

References

Acemoglu, Daron. 2002. "Directed Technical Change." *Review of Economic Studies* 69 (4): 781–809. https://academic.oup.com/restud/article/69/4/781/1551628

Adam, Isabelle and Mihály Fazekas. 2021. "Are Emerging Technologies Helping Win the Fight Against Corruption? A Review of the State of Evidence." *Information Economics and Policy* 57: 100950. https://doi.org/10.1016/j.infoecopol.2021.100950

Allen, Barbara, Luc Juillet, Gilles Paquet, and Jeffery Roy. 2005. "E-government and Private-Public Partnerships: Relational Challenges and Strategic Directions." In *Practicing e-Government: A Global Perspective*, edited by M. Khosrow-Pour. Hershey, PA: IGI Publishing. https://www.igi-global.com/chapter/government-private-public-partnerships/28103

Amaglobeli, David, Mengfei Gu, Mariano Moszoro, Yue Zhou, and Patricia L. Escalante. 2023a. "Internet Adoption Trends during COVID-19." IMF Note 23/001, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/IMF-Notes/Issues/2023/03/31/Internet-Adoption-Trends-during-COVID-19-531506

Amaglobeli, David, Ruud de Mooij, Andualem Mengistu, Mariano Moszoro, Manabu Nose, Soheib Nunhuck, Sailendra Pattanayak, and others. 2023b. "Transforming Public Finance Through GovTech." IMF Staff Discussion Note (forthcoming), International Monetary Fund, Washington DC.

Androutsopoulou, Aggeliki, Nikos Karacapilidis, Euripidis Loukis, and Yannis Charalabidis. 2019. "Transforming the Communication between Citizens and Government through AI-Guided Chatbots." *Government Information Quarterly* 36 (2): 358–67. https://www.icsd.aegean.gr/publication_files/980795393.pdf

Bannister, Frank, and Regina Connolly. 2011. "The Trouble with Transparency: A Critical Review of Openness in e-Government." *Policy & Internet* 3 (1): 1–30. https://doi.org/10.2202/1944-2866.1076

Barns, Sarah. 2016. "Mine Your Data: Open Data, Digital Strategies and Entrepreneurial Governance by Code." *Urban Geography* 37 (4): 554–71. https://doi.org/10.1080/02723638.2016.1139876

Bharosa, Nitesh. 2022. "The Rise of GovTech: Trojan Horse or Blessing in Disguise? A Research Agenda." *Government Information Quarterly* 39 (3): 101692. https://doi.org/10.1016/j.giq.2022.101692

Caselli, Francesco. 1999. "Technological Revolutions." *American Economic Review* 89 (1): 78–102. https://www.aeaweb.org/articles?id=10.1257/aer.89.1.78

Chatillon, Georges. 2008. "Confidence in e-Government: The Outlook for a Legal Framework for Personal Data and Privacy." In *Electronic Government: Concepts, Methodologies, Tools, and Applications*, 4085–102. Hershey, PA: IGI Global. https://www.igi-global.com/chapter/confidence-government-outlook-legal-framework/9984

Cordella, Antonio, and Andrea Paletti. 2018. "ICTs and Value Creation in Public Sector: Manufacturing Logic vs Service Logic." *Information Polity* 23 (2): 125–41. https://content.iospress.com/articles/information-polity/ip170061

Delaporte, Anne, and Kalvin Bahia. 2022. *The State of Mobile Internet Connectivity 2022*. Global Systems for Mobile Communications Association. https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf

Dener, Cem, Hubert Nii-Aponsah, Love E. Ghunney, and Kimberly D. Johns. 2021. *GovTech Maturity Index: The State of Public Sector Digital Transformation*. World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/407011631858919493/executive-summary

Edelmann, Noella, and Ines Mergel. 2021. "Co-Production of Digital Public Services in Austrian Public Administrations." *Administrative Sciences* 11 (1): 22. https://www.mdpi.com/2076-3387/11/1/22

Engin, Zeynep, and Philip Treleaven. 2019. "Algorithmic Government: Automating Public Services and Supporting Civil Servants in using Data Science Technologies." *Computer Journal* 62 (3): 448–60. https://doi.org/10.1093/comjnl/bxy082

Frieden, Jeffry, and Arthur Silve. 2023. "The Political Reception of Innovations." *Economics & Politics* 35 (2): 595–628. https://doi.org/10.1111/ecpo.12228

Fromer, Jeanne C. 2019. "Machines as the New Oompa-Loompas: Trade Secrecy, the Cloud, Machine Learning, and Automation." *New York University Law Review* 94 (4): 706–36. https://www.nyulawreview.org/wp-content/uploads/2019/10/NYULAWREVIEW-94-4-Fromer.pdf

Gagnepain, Philippe, Marc Ivaldi, and David Martimort. 2013. "The Cost of Contract Renegotiation: Evidence from the Local Public Sector." *American Economic Review* 103: 2352–83. https://www.aeaweb.org/articles?id=10.1257/aer.103.6.2352

Geradin, Damien, and Monika Kuschewsky. 2013. "Competition Law and Personal Data: Preliminary Thoughts on a Complex Issue." *Concurrences* 2. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2216088

Gomes de Sousa, Weslei, Elis Regina Pereira de Melo, Paulo Henrique De Souza Bermejo, Rafael Araújo Sousa Farias, and Adalmir Oliveira Gomes. 2019. "How and Where Is Artificial Intelligence in the Public Sector Going? A Literature Review and Research Agenda." *Government Information Quarterly* 36 (2): 101392. https://doi.org/10.1016/j.giq.2019.07.004

Goncharenko, Galina, and Iqbal Khadaroo. 2020. "Disciplining Human Rights Organisations through an Accounting Regulation: A Case of the 'Foreign Agents' Law in Russia." *Critical Perspectives on Accounting* 72: 102129. https://doi.org/10.1016/j.cpa.2019.102129

Gonzalez-Garcia, Jesus R. 2022. "Improving Sovereign Financing Conditions through Data Transparency." IMF Working Paper 22/230, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2022/11/18/Improving-Sovereign-Financing-Conditions-Through-Data-Transparency-525742

Gussarova, Anna. 2021. "Beyond the GovTech: The Pitfalls of Kazakhstan's Digitalization Agenda." In *Digital Silk Road in Central Asia: Present and Future*, edited by Nargis Kassenova and Brendan Duprey. Cambridge, MA: Davis Center for Russian and Eurasian Studies. https://daviscenter.fas.harvard.edu/research-initiatives/program-central-asia/digital-silk-road-central-asia-present-and-future

Hadwick, David, and Shimeng Lan. 2021. "Lessons to Be Learned from the Dutch Childcare Allowance Scandal: A Comparative Review of Algorithmic Governance by Tax Administrations in the Netherlands, France, and Germany." *World Tax Journal* 13 (4): 609–45. https://dialnet.unirioja.es/servlet/articulo?codigo=8527235

Halachmi, Arie, and Dorothea Greiling. 2013. "Transparency, e-Government, and Accountability." *Public Performance & Management Review* 36 (4): 562–84. https://www.tandfonline.com/doi/abs/10.2753/PMR1530-9576360404

Hellman, Matthew. 2006. "Does Privatising Public Service Provision Reduce Accountability?" *Economics Working Paper* 997, Department of Economics and Business, Universitat Pompeu Fabra, Barcelona, Spain. https://dx.doi.org/10.2139/ssrn.1002830

Hjálmarsson, Friðrik Þ., Gunnlaugur K. Hreiðarsson, Mohammad Hamdaqa, and Gísli Hjálmtýsson. 2018. "Blockchain-Based E-Voting System." Paper presented at the 2018 IEEE 11th International Conference on Cloud Computing (CLOUD), San Francisco, CA, 983–6. https://ieeexplore.ieee.org/document/8457919

International Monetary Fund (IMF), Inter-Agency Group on Economic and Financial Statistics (IAG), and Financial Stability Board (FSB). 2023. "G20 Data Gaps Initiative 3 Workplan: People, Planet, Economy." Washington, DC. https://www.imf.org/-/media/Files/News/Seminars/DGI/Home/g20-dgi-3-workplan-people-planet-economy.ashx.

International Monetary Fund (IMF) and World Bank. 2018. "Disruptive Technologies and the World Bank Group – Creating Opportunities – Mitigating Risks." Development Committee Paper, DC2018-0010, Washington, DC. https://www.devcommittee.org/sites/dc/files/download/Documents/2018-09/DC2018-0010 Disruptive Technologies.pdf

Janowski, Tomasz, Elsa Estevez, and Rehema Baguma. 2018. "Platform Governance for Sustainable Development: Reshaping Citizen-Administration Relationships in the Digital Age." *Government Information Quarterly* 35 (4): 1–16. https://doi.org/10.1016/j.giq.2018.09.002

Kang, Karam, and Robert A. Miller. 2022. Winning by Default: Why Is There So Little Competition in Government Procurement? *Review of Economic Studies* 89 (3): 1495–556. https://doi.org/10.1093/restud/rdab051

Lazaro, Christophe, and Daniel Le Métayer. 2015. "Control of Personal Data: True Remedy or Fairy Tale?" *SCRIPT-ed* 12 (1): 32. https://inria.hal.science/hal-01247056/

Levine, David S., and Ted Sichelman. 2019. "Why Do Startups Use Trade Secrets?" *Notre Dame Law Review* 94: 751–820. https://scholarship.law.nd.edu/ndlr/vol94/iss2/6/

Margetts, Helen. 2006. "Transparency and Digital Government." In *Transparency: The Key to Better Governance?*, edited by Christopher Hood and David Heald. Oxford University Press. https://eprints.gla.ac.uk/113409/

McQuade, Mike. 2018, August 22. "The Untold Story of NotPetya, the Most Devastating Cyberattack in History. *Wired*. https://www.wired.com/story/notpetya-cyberattack-ukraine-russia-code-crashed-the-world/.

Mergel, Ines, Sukumar Ganapati, and Andrew B. Whitford. 2020. "Agile: A New Way of Governing." *Public Administration Review* 81 (1): 161–65. https://doi.org/10.1111/puar.13202

Poortinga, Wouter, and Nick F. Pidgeon. 2003. "Exploring the Dimensionality of Trust in Risk Regulation." *Risk Analysis* 23 (5): 961–72. https://doi.org/10.1111/1539-6924.00373

Rosenberg, Nathan. 1969. "The Direction of Technological Change: Inducement Mechanisms and Focusing Devices." *Economic Development and Cultural Change* 18 (1): 1–24. https://www.journals.uchicago.edu/doi/abs/10.1086/450399

Sanders, Cynthia K., and Edward Scanlon. 2021. "The Digital Divide Is a Human Rights Issue: Advancing Social Inclusion through Social Work Advocacy." *Journal of Human Rights and Social Work* 6: 130–43. https://link.springer.com/article/10.1007/s41134-020-00147-9

Santiso, Carlos. 2020. Moving toward Start-Up States? GovTech Start-Ups and the Transformation of Public Action. IGDPE Editions Publications. https://www.economie.gouv.fr/igpde-editions-publications/thearticle_n7

Santiso, Carlos. 2022. "GovTech against Corruption: What Are the Integrity Dividends of Government Digitalization?" *Data & Policy* 4 (e39). https://doi.org/10.1017/dap.2022.31

Shim, Dong Chul, and Tae Ho Eom. 2008. "E-Government and Anti-Corruption: Empirical Analysis of International Data." *International Journal of Public Administration*, 31 (3): 298–316. https://doi.org/10.1080/01900690701590553

Simon, Brenda M., and Ted Sichelman. 2017. "Data-Generating Patents." *Northwestern University Law Review* 111 (2): 377–437. https://core.ac.uk/download/pdf/231045066.pdf

Thomas, Manoi A., Joseph Cipolla, Bob Lambert, and Lemuria Carter. 2019. "Data Management Maturity Assessment of Public Sector Agencies." *Government Information Quarterly* 36 (4): 101410. https://doi.org/10.1016/j.giq.2019.101401

UN E-Government Knowledgebase. 2023. "E-Government Development Index." https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index.

Vial, Gregory. 2019. "Understanding Digital Transformation: A Review and a Research Agenda." *Journal of Strategic Information Systems* 28 (2): 118-44. https://doi.org/10.1016/j.jsis.2019.01.003

Wee, Alicia, and Mark Findlay. 2020. "AI and Data Use: Surveillance Technology and Community Disquiet in the Age of COVID-19." SMU Centre for AI & Data Governance Research Paper 2020/10. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3715993

Wang, Angelina, Sayash Kapoor, Solon Barocas, and Arvind Narayanan. 2022. "Against Predictive Optimization: On the Legitimacy of Decision-Making Algorithms That Optimize Predictive Accuracy." SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4238015

Wong, Catherine Mei Ling, and Olivia Jensen. 2020. "The Paradox of Trust: Perceived Risk and Public Compliance during the COVID-19 Pandemic in Singapore." *Journal of Risk Research* 23 (7-8): 1021–30. https://doi.org/10.1080/13669877.2020.1756386

World Bank. n.d. "Worldwide Governance Indicators." https://info.worldbank.org/governance/wgi/.

World Bank. 2016. "World Development Report 2016: Digital Dividends," Washington, DC, May 17. https://www.worldbank.org/en/publication/wdr2016

Wu, Yuehua. 2014. "Protecting Personal Data in e-Government: A Cross-Country Study." *Government Information Quarterly* 31 (1): 150–59. https://doi.org/10.1016/j.giq.2013.07.003

PUBLICATIONS

The Political Economy of GovTech