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Article

Geopolitics of the Digital Economy: Implications for States and Firms

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The lack of boundaries in cyberspace contributes to geopolitical disputes, as data and technology are weaponized across borders, and hacking of critical infrastructure becomes pervasive. But we lack a framework for understanding the tangible impact of geopolitical tensions and digital proxy conflict on states and firms. We argue that governments and companies can gain insights into these tensions by examining who controls the main structural power pillars of the international political economy: production, security, knowledge, and finance. Based on this approach, we consider how policymakers and practitioners can engage and navigate digital geopolitics in an age of uncertainty.

THE GEOPOLITICS OF DATA AND THE DIGITAL ECONOMY

As data-driven digitalization transforms business models and societal norms, states and firms vary in the level of control exercised. While states grapple with digital economy oversight, cyberspace remains borderless. Consequently, data are the foremost and most fundamental assets of the digital world, underpinning corporate success and national security. They are a driver of business development, bolstering the creation of new business models and markets. Big data and digital technology have revolutionized international business, and many global platform-based businesses, such as Amazon and Uber, are founded on the ability to access and harness both (Ghauri, Strange, & Cooke, 2021). As firms increasingly monetize data through processing, managing, and selling (Opher, Chou, Onda, & Sounderrajan, 2016; UNCTAD, 2019), data have become crucial assets for firms' dynamic learning capabilities. Contemporary geopolitical power is also increasingly based on access to and the use of data and technology, but the source of this power is often contested. Since firms and governments are fundamental actors in geopolitical power dynamics, we discuss the practical implications of these digital power dynamics based on Strange's (2015) power structures. In this case, data are tilting the power dynamics in favor of those who possess them, posing uncertainties for how data ownership changes the power balance between firms and governments. This has been illustrated in recent high-profile disputes between big tech and government, particularly in Europe.

We argue that developments in geopolitical power dynamics, and the related impact on international business, can be better understood by revisiting the international political economy (IPE) pillars of structural power: production, security, knowledge, and finance (Lawton, Rosenau, & Verdun, 2019; Strange, 2015). This approach suggests that actors wielding control and influence over one or more pillars of the global political economy gain structural power, that is, "the power to choose and to shape the structures of the global political economy within which other states, their political institutions, their economic enterprises, and (not least) their professional people have to operate" (Strange, 1987: 565). Structural power is found in the aforementioned four distinct but interconnected pillars. Data cut across all four pillars, but the borderless aspect of the digital economy highlights the need for these to be updated to account for their impacts on international business practice. In the past, access to these pillars was typically regulated by the state within its borders, or shared with other parties, domestically or internationally. The borderless aspect of the digital economy is changing the way in which the structural power pillars manifest. Table 1 presents these pillars as they were originally conceived and indicates how data is bringing about change.

PRODUCTION PILLAR

The production pillar's power emanates from a nation's ability to combine productive resources to generate wealth. In the digital economy, this ability is no longer dependent on geographic or demographic variables. This is because

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Table 1. Structural Power Pillars and the Digital Economy

Pillar	Original Concept	Digital Variant	Implications for IB
Production	The power to create wealth and shift the distribution of social and political influence.	Who possesses or controls data, creates wealth. Data are regarded as invaluable inputs for production.	Policymakers are challenged to welcome new forms of work, while practitioners are pushed towards more aligned or integrated strategies with governments and other firms.
Security	The power to secure the existence and limit the choices of others.	Security now includes the virtual realm. Privacy and data security are two of the main risks today.	Policymakers are challenged to produce integrative and robust regulations, while practitioners forge new ways to cope with heterogeneous institutional environments.
Knowledge	The power to disseminate (or restrict) information and communication.	Who possesses data, possesses knowledge, and controls the diffusion of information.	Policymakers are challenged to manage globally diffused knowledge, that often resides with nonstate actors (firms). Practitioners must rethink knowledge management structures.
Finance	The authority to create credit that influences purchasing power.	Digital technologies, cryptocurrencies, and digital tokens imply that credit creation is no longer the sole preserve of the state and the banking system.	Policymakers face the challenge of regulating and rethinking their role in credit creation, while practitioners seek new sources of cheap and less regulated credit (like cryptocurrencies).

Adapted from Strange (2015) and Lawton et al. (2019).

data and technology are substituting people, and wealth generation is not attached to territories in the same way as with physical resources (The Economist, 2023). Many tasks, such as market trading and data gathering, can be carried out remotely and performed more efficiently through artificial intelligence. Thus, the control of cyberspace is also the control of global production in the digital era. While states seek to promote their institutional preferences through a variety of democratic and non-democratic ideals, which often take the form of varying levels of control over freedom of expression, protection of property rights, and national security (Powers & Jablonski, 2015), all states seek to protect their sovereignty. The concepts of ownership and sovereignty are being challenged by the borderless nature of data flows (UNCTAD, 2021). Hence, geopolitical battles over cyber regulation and standards that shape the boundaries between nation-states may create hierarchies that marginalize those that do not control the firms operating in the system. Figure 1 shows the submarine cable connections between countries, which implies not only the level of connectedness of the country but also the level of data flow that passes through it. This figure also shows that the regions marginalized from the digital infrastructure are similar to those historically marginalized from the production pillar.

SECURITY PILLAR

Information about citizens and businesses is generally a matter of sovereignty and state security. In the bricks-and-mortar era, this information was mostly held by the state. Inter and intrastate communication and the operation of key industries were also digital-free. Big archives and small network ramifications were the rules which gave the state the power over data while state forces maintained security. Cross-border data exchange was done through submarine cables, mail, or in person. Thus, not much data was held by the state because when data was used, its purpose expired once the transaction was complete. As the digital economy emerged, we became increasingly comfortable when surrounded by devices connected to cyberspace. From our smartphones, laptops, and production lines to refrigerators and automobiles, we never shared so much data and information in human history (UNCTAD, 2021). This fact raised questions about internet freedom, privacy, cybersecurity, and cyberwar, as the battle for information resources grows (Powers & Jablonski, 2015). Digital espionage and remote access to key infrastructure are increasing security issues. It is especially hard for individual states to cope with such threats since the source of the threat can be located far from their borders. For instance, in May 2021, during the Covid-19 pandemic, the Health Service Executive (HSE) of Ireland suffered a major ransomware cyberattack that caused all of its information technology systems nationwide to be shut down (HHS, 2022). It became the most significant cyberattack on an Irish state agency, as well as the largest known attack against a health service computer system in history. Conti ransomware, most probably emanating from Russia or neighboring countries, was responsible for the incident (HHS, 2022; HSE, 2021).

KNOWLEDGE PILLAR

Knowledge is capable of shaping all other structures of power (production, security, and finance) because it creates asymmetries of information, which produces privileges for one party over another (Jacobs, 2016). Thus, power resides in producing, controlling, and transforming data into knowledge. The knowledge generated can challenge states' concepts of national security and market competitiveness.

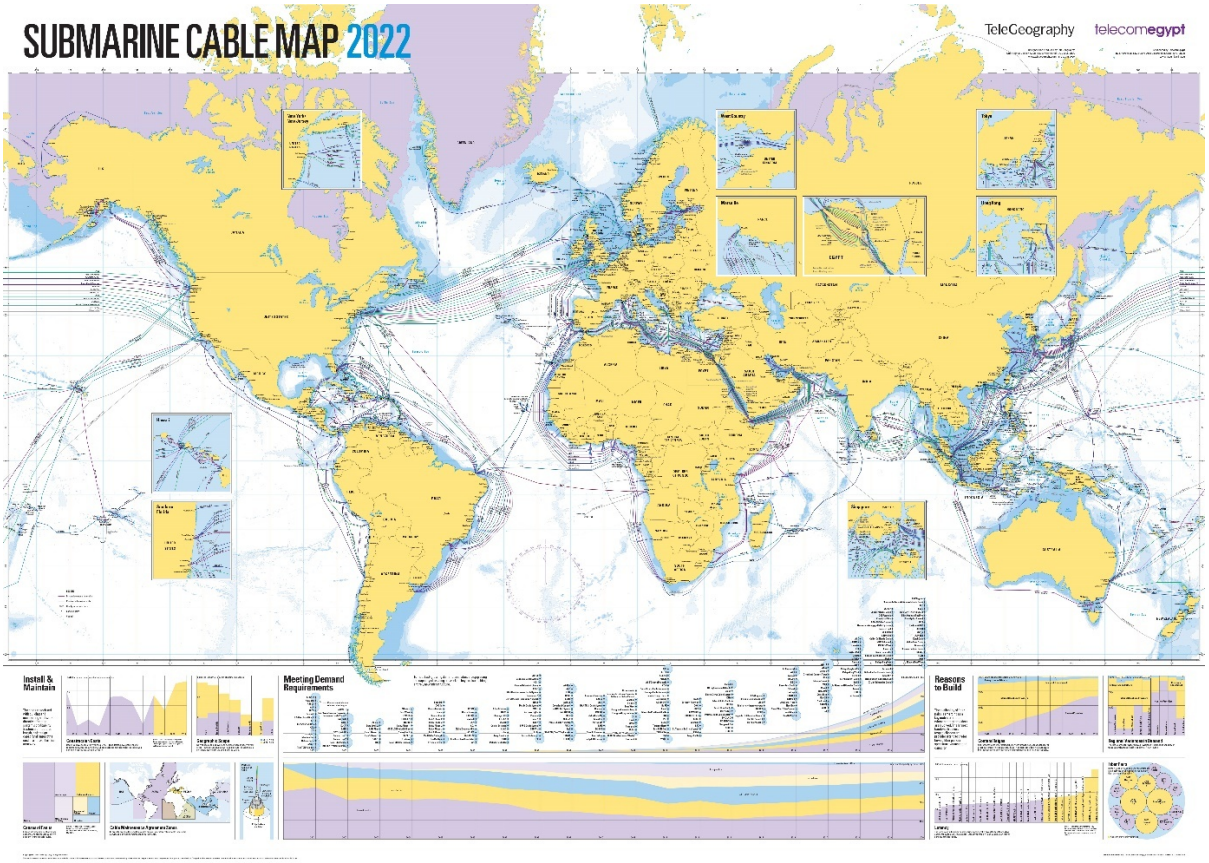

Figure 1. Submarine cable map in 2022

Source: TeleGeography (2022).

This was shown in the case of Google's operations in the European Union (E.U.), where the global tech giant endured successive E.U. sanctions for practices (Reuters, 2019) that are not directly linked to data protection but to data analytics management with anti-competitive purposes.

But knowledge can also be related to understanding soft power for firms and governments. Big tech corporations such as Amazon, Alphabet, Apple, Meta, and TikTok are not just *de facto* monopolies in terms of their market power but increasingly represent intellectual monopolies because of their control over the knowledge that comes from data. At the same time, each of these firms has its origins and technologies located in a given country. In this aspect, states seek to protect their citizens' data and may use the available data to gain influence over other countries. When states lose the ability to control data, this can enhance the bargaining power of large tech firms. States can respond through soft power (Nye, 1990), for instance, by creating attractive legal conditions for digital business operations.

FINANCIAL PILLAR

In the fourth and final pillar, power emanates from the ability to create credit. Traditionally the responsibility for regulating the money supply rested with the State and the mix of public and private banks and other credit-creating institutions that came under its supervision. Globalization of the financial system has already changed the financial system from one dominated by states with some international links to a predominantly global system with some local variation (Strange, 1990). The advent of the digital economy, underpinned by data and disruptive technologies, threatens to change this further. The emergence of Bitcoin, Ethereum, and other cryptocurrencies and tokens disrupts the traditional pillar of credit creation. Even now, at the beginning of these technologies, many firms are relying on initial coin offerings (ICOs) to raise capital. This method is largely unregulated by the State and is based on the emerging digital aspect of credit. Thus, it reduces the role played by the State in the financial pillar. However, this does not mean that more power will shift into the hands of specific firms, as regulation is at the community level under the blockchain environment. Nevertheless, policymakers are looking for a way to regulate crypto assets to make them less dependent on the firms holding crypto market knowledge.

IMPLICATIONS FOR INTERNATIONAL BUSINESS POLICYMAKERS AND PRACTITIONERS

In an age of uncertainty and volatility, these new aspects of structural power pillars brought about by the emergence of the digital economy can be thought of as impacting international business practice through the geography of dig-

ital infrastructure and the durability and heterogeneity of data. These features will shape the prospects for cooperation and the outcome of interactions between international businesses and states going forward. We next discuss these main insights deriving from the structural power pillars, recognizing that they are interconnected and overlap.

PRODUCTION: INCENTIVIZING NEW PRODUCTIVE STRUCTURES

Policymakers: The unequal spatial distribution of power in the digital economy, as indicated in Figure 1, has the potential to perpetuate data inequality. Data and digital technologies require physical assets, such as servers, data centers, and other hardware, and many developing and emerging economies still lack the infrastructure for data, such as submarine cables, and the structural power to influence their development. States that harness this infrastructure can incentivize the creation of new productive structures, enhancing the country's production power and benefiting from infrastructure-related externalities. Additionally, how the state regulates immigration and digital work can impair or boost the production of wealth, causing the country to be more or less attractive to the digital economy production structures. See, for example, the case of many European countries that created special visas for digital nomads and freelancers.

Practitioners: From a firm's perspective, as they are the holders of most of the data and servers and are profit-driven, firms are inherently the "data as information" producers. Although, in theory, this production can take place anywhere, in the real world, the production power of the firms is subjected to the other pillars, especially because data security and data-specific knowledge can retain the production. In this sense, most corporate actions in the digital economy must consider a certain level of government involvement.

SECURITY: FRAGMENTED REGULATION WILL INFLUENCE INVESTMENT LOCATION

Policymakers: Our evaluation of the security pillar indicates the increasing structural power of big tech corporations and their home countries since it is not only about servers, infrastructure, and data but also the power to regulate access. As firms hold most of the data, they are responsible for most of their security. This means that state power will be increasingly dependent on private infrastructure. But the state designs the rules of the game under which firms operate. Hence, the state sets the boundaries of individual rights versus data exploitation. Nevertheless, data are seen as assets with longer durability and are characterized by heterogeneity. This means that datasets are not equal and represent one-of-a-kind assets. For this reason, a common regulation on data flows is very difficult to develop, representing a challenge for policymakers.

Practitioners: Consequently, our framework indicates that in terms of regulations, governance modes will be even more fragmented, varying from approaches that restrict and control data to those focused on the free flow of data (UNCTAD, 2021). This situation may incentivize or deter data-driven business. Some firms will prefer to locate in more restricted environments, while others will build their business model on the unrestricted use of data. Over the long term, this could push firms and governments to cooperate on global minimum standards to protect sensitive data.

KNOWLEDGE: INCREASING POLITICIZATION OF GOVERNMENT AND FIRM INTERACTIONS

Policymakers: Our framework indicates that in the digital economy, states and private firms will increasingly share structural power, as Stopford and Strange (1991) predicted more than 30 years ago in their work on the mutual interdependence of states and firms in the global political economy. The geopolitical implications of this for international business are increasingly apparent. The borderless aspect of the virtual realm makes it easy to share - authorized or not - firm knowledge. Hence, new competitors and threats to both firms and states are likely to emerge. More than that, as education is a public policy matter and it is crucial to keep evolving the knowledge pillar of structural power, governments are increasingly aware of the need to protect knowledge from its inception, particularly relative to strategic geopolitical adversaries. Witness, for instance, increased U.S. government concerns about the intent and ultimate employment of Chinese students at U.S. universities, particularly those on programs that develop dual-use technologies with both commercial and military applications (Anderson, 2021; Mervis, 2018). This raises questions about the free flow of knowledge, fostering geopolitical issues and tensions.

Practitioners: Witness how clashes between Apple, Samsung, Huawei, and Xiaomi in the smartphone sector, or Tesla and BYD in the electric car business, become politicized and engage host country governments. Thus, although firms hold knowledge, governments have the power to regulate it through public policies, making the governments an important player in supporting or impeding the emergence of new private players in the technology sector, for example. That is, firms may rethink their knowledge management and distribution when operating globally.

FINANCIAL: FUNDING DIGITAL INFRASTRUCTURES TO WIDEN THEIR BENEFITS

Policymakers: The digital economy financial pillar influences the credit available to build the necessary infrastructure. The high costs of funding facing developing economies and the vulnerabilities associated with the U.S. dollar's dominance of the global financial system (BIS, 2020) will increase the attractiveness of parallel currencies for the Global South. At the same time, the existence of parallel currencies, such as Bitcoin and Ethereum, limits the state's role as the only provider of credit in the economy. In countries such as El Salvador and Venezuela, cryptocurrencies are being adopted not only to escape governmental and international control but also to cope with high in-

flation and intrusive regulation. Policymakers must rethink the government's role in this new configuration of credit.

Practitioners: Moreover, the adoption of initial coin offerings (ICO) as means of funding digital firms reduces the state intervention in a market that is historically led by governments. This opens a new avenue for firms to operate. Nevertheless, the lack of trust and stability in these markets also opens a window of opportunity for governments and central banks to either establish digital currencies or partner with firms and the digital community. Firms face the challenge of bringing more stability to the market with the minimum (or non) intervention of the state.

CONCLUSIONS

We argue that as the digital economy grows, and control over its infrastructure becomes more contested, cooperation between states and firms will be necessary. Geopolitical stability requires countries that hold structural power to exercise this power with due consideration for those that do not. The production, knowledge, security, and finance aspects of data call for intertwined management of the virtual realm. Since our discussion suggests that neither firms nor governments can exert power alone, there is an urgent need for firms to cultivate political capabilities, while governments must acknowledge the need to share structural power with firms and build channels to cooperate not only with other nation-states but also with global corporations.

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