

NOVEMBER 2022

Implications of the European Union's Digital Regulations on U.S. and EU Economic and Strategic Interests

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A Report of the CSIS Scholl Chair in International Business

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Introduction

In recent months, the European Union has been adopting several sweeping digital regulations, such as the Digital Services Act (DSA) and Digital Markets Act (DMA), while proposing a number of new measures—including the Data Act, the Artificial Intelligence Act, and the Media Freedom Act—a consultation on network usage fees, and new rule book for cloud services called the European Cybersecurity Certification Scheme for Cloud Services (EUCS).

These regulations will shape, likely quite dramatically, the environment for doing digital business in Europe and beyond. They will have profound implications on the leading U.S. digital service providers designated by the European Union as “gatekeepers”—large digital services providers that are expected to adhere to regulatory requirements—as well as these companies’ hundreds of millions of transatlantic European business and individual customers. By impacting primarily U.S. companies instead of Asian or European ones, Europe’s digital policies will also shape U.S. and European global strategic and national security interests.

The purpose of this study is to assess the potential implications of new and proposed EU digital acts on U.S. digital service providers, on their customers in Europe and the United States, and on the EU and U.S. economies and exports. The key conclusions are as follows:

- Depending on the regulatory scenario, the DMA and DSA alone can, even in conservative calculations, entail some \$22 billion to \$50 billion in new compliance and operational costs to U.S. digital services providers, equivalent to 8 to 17 percent of these providers’ EU revenues, and force them to forgo critical business opportunities, such as being able to leverage proprietary data to develop new goods and services or even to offer European firms interlinked services.

- These impacts will in turn likely have effects on the U.S. service providers' European customers, for example, in terms of higher technology expenditures. This study estimates that these cost increases on European businesses could conservatively be €43 billion (\$43 billion) per year and more plausibly €71 billion (\$71 billion) per year, equivalent to 0.3 percent of EU GDP.
- In addition, Europe's new regulations will likely have repercussions on U.S. digital services exports to Europe. If the digital regulations result in lowered spending by European companies on U.S. digital services and, for example, 10 percent lower U.S. information and communications technology (ICT) services exports to the European Union, they would dent U.S. services exports by \$18 billion, equivalent to 2 percent of U.S. global services exports.
- From a national security perspective, since Chinese technology companies are thus far unlikely to be designated as gatekeepers under EU policies, the European Union's acts will likely benefit Chinese firms, particularly as there are no European companies waiting in the shadows with the scale and scope of interlinked services that U.S. companies provide. Europe could see a scenario where European businesses access lesser-quality services at higher cost and increase their reliance on Chinese firms, with associated cybersecurity and national security challenges.
- In addition, since they target primarily U.S. digital services providers while excluding European or Asian firms, the DMA and certain provisions of the DSA may be discriminatory against the United States while helping to grow Chinese tech companies' European market share.
- Moreover, Europe's digital policies could compound Europe's inflationary pressures and exacerbate the gap between Europe and other digital powers such as the United States and Asia in investment in digital transformation and research and development (R&D).¹ Indeed, a majority of surveyed European companies saw a digital services cost increase of 5 to 10 percent as worse than continued supply chain backlogs or current inflation itself.

Positively, however, Europe's regulatory measures have been accompanied by transatlantic leaders' recognition of the need for technology companies in the United States and European Union to collaborate more directly with one another and with allied governments in order to address global security challenges. Forums such as the U.S.-EU Trade and Technology Council and the Declaration for the Future of the Internet have highlighted the broader geopolitical importance for the United States and European Union to work together on technology governance and leadership and provide an alternative to restrictive and protectionist digital policies in a number of global markets. The next papers in this series will consider policy options the United States and European Union could pursue together.

This paper is organized as follows. Chapter 2 summarizes the contents of the European Union's new regulations and their potential implications on U.S. digital service providers. Chapter 3 turns to assessing the second-order effects on European firms and consumers that use U.S. digital service providers. This section measures their relative importance in terms of EU GDP and employment and discusses potential longer-term dynamic effects of these cost increases on Europe's digital transformation, export competitiveness, and market structures. Chapter 4 assesses the potential implications of EU regulations on U.S. businesses that use technologies, as well as U.S. exports to Europe and the market shares of various digital service providers in Europe. Chapter 5 considers the national security implications of EU policies, especially in facilitating the rise of Chinese companies. Chapter 6 concludes.

Europe's Digital Acts and Implications for U.S. Companies

The European Union for years has been taking measures and issuing digital policies that have global implications, such as the sweeping 2018 General Data Protection Regulation (GDPR) and 2019 Copyright Directive. In 2020, the European Court of Justice ruled that Privacy Shield, the data transfer standard between the European Union and the United States, would need to end for presumably failing to protect European citizens' privacy, considerably complicating data transfer from Europe to the United States.²

The European Union has also taken a muscular and controversial approach in enforcing competition policy, especially targeting U.S. companies and imposing large fines for presumed anticompetitive practices. Like many other analysts, the author and others have critically commented on these measures in prior CSIS reports, including gauging the counterproductive effects of these measures on the European Union's own economy.³

In the past few months, the European Union has issued its next wave of rules for the digital economy, presumably aimed to both cement the safety and privacy of users of digital technologies and promote the development of Europe's own technology sector. However, a closer look at these measures suggests that they can also have significant costs and negative effects on U.S. digital service providers and, by extension, the tens of millions of European and American businesses and consumers using these services. The various measures and immediate effects on U.S. companies include:

- The **Digital Markets Act (DMA)** goes into effect in 2024 and is aimed at reshaping competition among digital platforms and focuses in particular on leading "gatekeeper" platforms. The targeted platforms are ones that have

- at least €7.5 billion (\$7.5 billion) in annual average revenue over the past three years or an average market capitalization of at least €75 billion (\$75 billion) in the last financial year;
- activities in at least three EU economies;
- at least 45 million monthly active end users; and
- at least 10,000 yearly active business users in the European Union in the last year.

The DMA creates a number of sweeping requirements for the gatekeepers, but European telecommunications providers—even when they meet these thresholds and provide the covered services—are explicitly excluded from the law. Gatekeepers are required to enable external services and hardware providers to interoperate with the services provided by the gatekeeper. In other words, they are supposed to be open platforms. They are also prohibited from cross-using users’ personal data from their platforms with data from the gatekeeper or third parties’ further platforms. Gatekeepers are also prevented from “self-preferencing,” which Europe deems to consist of using their data to promote their own services and products on their platforms.

Furthermore, gatekeepers are required to provide, on fair, reasonable, and non-discriminatory (what the European Union calls “FRAND”) terms, competing online search engines with access to ranking, query, click, and view data in relation to searches generated by end users on its online search engine—a rather stunning requirement on businesses that have invested hundreds of billions of dollars for years in building their proprietary data assets.⁴ The act undermines the evolution of digital products and services into integrated, interlinked services that are the hallmark of today’s social media and e-commerce platforms and are aimed to convenience users, such as with algorithmic ranking and video editing features.⁵ Designated gatekeepers, likely exclusively U.S. digital service providers, are to comply by Q1 2024; failure to comply can result in fines of up to 10 percent of gatekeepers’ global turnover.⁶

- The **Digital Services Act (DSA)** will go into effect in January 2024 and centers on content moderation on social media platforms and other internet intermediaries such as cloud services, internet service providers (ISPs), messaging, marketplaces, and social networks. Also, the DSA has special rules for “very large” online platforms with more than 45 million monthly active users in the European Union, requiring them to monitor the content on their sites for copyright violations, perform know-your-customer (KYC) checks on merchants using their platforms, and provide visibility into their recommendation systems in their terms and conditions. Violators face fines of up to 6 percent of global turnover.

Both the DMA and DSA can be expected to have significant negative effects on the five largest U.S. digital service providers—Alphabet, Amazon, Apple, Microsoft, and Meta—each of which exceed the annual revenue, market capitalization, and user thresholds (Table 1).⁷ (EU revenue for the Chinese tech companies is not readily available.) The negative effects include compliance costs, operational changes, lost network effects and economies of scale and scope, and potential fines.

For example, if U.S. digital service providers invested just 1 percent of their global revenue in compliance with these acts and still had even a 10 percent probability to be fined—a real possibility given the act’s language, which leaves significant room for interpretation—the total cost incurred by leading U.S. companies could be equivalent to 8 to 13 percent of their EU revenue, equivalent to 34,000 to 56,000 jobs (calculated on the basis of revenue per employee) in these companies (Table 2).

If U.S. companies had a 10 percent probability to be fined under both the DMA and DSA even after investing 2 percent of their revenue in compliance, total costs could be nearly \$50 billion, or 17 percent of these companies' EU revenues. In an extreme scenario where U.S. companies invested 2 percent of revenues in compliance and yet got fined under the DMA and DSA, the losses would be \$248 billion, or 85 percent of these firms' EU revenues.

Table 1: Leading Technology Companies' European and Global Revenues, Market Capitalization, and Active Annual Users in Europe

Company	Global Revenue (2021)	EU Revenue (2021)	Market Capitalization (2022)	Users of Most Popular Service in Europe
Amazon	\$ 469,930,000,000	\$ 56,100,000,000	\$ 1,691,000,000,000	350,000,000
Apple	\$ 365,817,000,000	\$ 89,300,000,000	\$ 2,901,000,000,000	195,200,000
Alphabet	\$ 182,312,000,000	\$ 55,954,000,000	\$ 1,917,000,000,000	450,000,000
Microsoft	\$ 168,000,000,000	\$ 60,702,000,000	\$ 2,522,000,000,000	160,000,000
Facebook/Meta	\$ 117,929,000,000	\$ 29,000,000,000	\$ 935,640,000,000	307,000,000
Alibaba	\$ 133,000,000,000	—	\$ 330,670,000,000	12,900,000
Tencent	\$ 87,370,000,000	—	\$ 562,840,000,000	—
SAP	\$ 37,114,000,000	\$ 29,000,000,000	\$ 166,800,000,000	~ 400,000
Accenture	\$ 32,699,000,000	\$ 17,312,000,000	\$ 261,990,000,000	—
Salesforce	\$ 19,166,000,000	\$ 4,299,000,000	\$ 250,310,000,000	~ 30,000
Spotify	\$ 11,430,000,000	\$ 4,357,000,000	\$ 44,820,000,000	121,000,000
Booking.com	\$ 7,196,000,000	\$ 1,034,000,000	\$ 98,520,000,000	316,000,000
Airbnb	\$ 5,927,000,000	\$ 2,236,000,000	\$ 105,780,000,000	118,100,000
Trivago	\$ 276,000,000	\$ 128,230,000	\$ 780,000,000	4,300,000

Note: Estimates based on company's most popular service.

Source: Data from companies' own financial reports and selected online sources.

Table 2: Potential Compliance Cost Increases due to the DMA and DSA under Different Scenarios for the Five Leading U.S. Digital Service Providers

EU revenue 2021	\$ 291,056,000,000
Total global revenue 2021	\$ 1,378,416,000,000
Invest 1% of global revenue in compliance - cost	\$ 13,784,160,000
Invest 2% of global revenue in compliance - cost	\$ 27,568,320,000
10% probability to be fined under DMA - cost	\$ 13,784,160,000
10% probability to be fined under DSA - cost	\$ 8,270,496,000

10% probability to be fined under both DMA and DSA - cost	\$ 22,054,656,000
Total expected loss - lower range (invest 1%, 10% probability of getting fined under DSA)	\$ 22,054,656,000
Total expected loss - medium range (invest 1%, 10% probability of getting fined under DMA)	\$ 27,568,320,000
Total expected loss - upper range (invest 2%, 10% probability of getting fined under both DMA and DSA)	\$ 49,622,976,000
1% compliance cost as % of EU revenue	5%
2% compliance cost as % of EU revenue	9%
Lower bound as % of EU revenue	8%
Upper bound as % of EU revenue	17%

Source: Author's calculations using baseline data in Table 1.

These calculations do not account for lost network effects, lost economies of scope and scale, such as interlinked services, or new limitations to use data to develop new goods and services. The revenue gains from integrated services or use of platform data to develop further services are very significant though hard to quantify. However, if the ability to offer integrated services and develop new ones helped drive just 10 percent of current EU revenue, the immediate loss from the inability to leverage these value drivers would amount to another \$29 billion, as well as hundreds of billions of dollars in lost business opportunities over time.

There are several further laws being contemplated by the European Union that will likely compound the impacts of the DSA and DMA on U.S. technology companies:

- The **Artificial Intelligence Act (AIA)** is Europe's proposed law on artificial intelligence (AI). Violators face fines of up to €30 million (\$29.89 million) or up to 6 percent of global turnover. The act places AI applications in three risk categories for regulatory purposes:
 - The first category involves already highly regulated, "high-risk" sectors, such as aviation, vehicles, boats, elevators, medical devices, industrial machinery, and medical devices, among others. Further regulating these requires implementing a risk management process, conforming to higher data standards, producing systematic records, providing more information to users, and enabling human oversight and monitoring.
 - The second category includes further AI systems that the European Union deems "high risk" and that affect human interactions and people's access to opportunities, such as hiring, employee management, credit scoring, access to education and public services, law enforcement, border control, utilities, and legal decisionmaking, requiring these providers to enable users to understand the systems they are using and provide human oversight over their systems.⁸
 - The final category is AI that interacts with humans, such as chatbots and emotion detection systems, leading to global disclosure on most websites and apps.
- The **Data Act** focuses on industrial business-to-business (B2B) data, as opposed to the European Union's GDPR, which focuses on personal data, and the Data Governance Act of 2021, which focuses on the sharing of non-personal data. Among other things, the Data Act pursues four important changes:

- The act mandates data sharing among a data holder of connected products (such as an internet of things [IoT] device manufacturer or a data processor) by the users of these connected products with third parties. For example, a user of a smart home device will be able to share the data produced by the device with third parties and discontinue the relationship with the prior data holder.
 - The act allows data holders to use non-personal data generated by the use of a connected product or associated service only if a written contract is in place, thus undermining data holders' ability to easily use data to improve existing services and develop new ones.
 - The act restricts international data transfers and allows foreign governments' access to non-personal data, thus favoring businesses that operate and process data in Europe (the gatekeeper designation would add further requirements). U.S. technology associations have argued that the proposed requirements will create significant entry barriers for companies headquartered outside of the European Union and EU companies with international or global operations.⁹ This in turn can limit competition and choice.
 - Lastly, the act calls on cloud service providers, again mostly U.S. companies, to enable consumers and businesses to move data and applications to another provider without incurring any costs, thus undermining incentives for cloud service providers to invest in the development of new technologies for their clients. The impacted "data holders" are in many instances U.S. companies such as Google, IBM, Amazon Web Services, Cisco, Hewlett-Packard, Oracle, and Microsoft. Indeed, just three U.S. cloud services providers (Amazon, Microsoft, and Google) are estimated to have 66 percent of the European Union's cloud market.¹⁰
- **The EU Cloud Services Scheme (EUCS)** seeks to harmonize cloud service regulations to EU regulations and international standards. It also calls for service providers to be certified and enables users to be informed about cybersecurity risks of products. The latest drafts include problematic sovereignty principles ensuring that EU law is primary and that maintenance, operations, and data must be located within the European Union.¹¹ There are also discriminatory proposals that would only allow companies with global headquarters in Europe to be certified. U.S. technology associations have appropriately argued that the proposed requirements will create significant entry barriers for companies not headquartered in the European Union and EU companies with international or global operations.¹² This in turn can limit competition and choice in the cloud market and raise costs for European businesses seeking to engage in digital transformation. Adding to this is the European Union's proposed directive on minimum cybersecurity standards to be implemented across the European Union (NIS2), which is extended to cover digital infrastructure and digital providers, such as social networking services platforms and data center services, and which adds new cybersecurity risk management and reporting measures on these entities.¹³
 - **European Telecommunications Network Operators (ETNO)** has renewed attempts to make online services and content and application providers, such as video streaming platforms, pay for network usage.¹⁴ Yet a recent report by the Body of European Regulators for Electronic Communications (BEREC) directly contradicts ETNO's claims about free-riding by large content and application providers on internet services, noting that capital and operating costs for internet service providers that vary with network traffic are very low compared with total network costs.¹⁵ In addition, other reports have noted that content and application providers invest in network infrastructure in order to improve European users' online services.¹⁶

The Potential Impacts of the European Union’s Data Acts on European Firms, Consumers, and the Economy

The DMA, DSA, and the other EU acts affecting U.S. digital services providers may have significant impacts also on their European customers and users, given how valuable these services are to businesses. The following section reviews the use and importance of U.S. digital services providers, especially to European companies, and the potential impacts on these companies if the U.S. providers increased the costs of their services or retired their services entirely.

Importance of U.S. Digital Services to European Companies

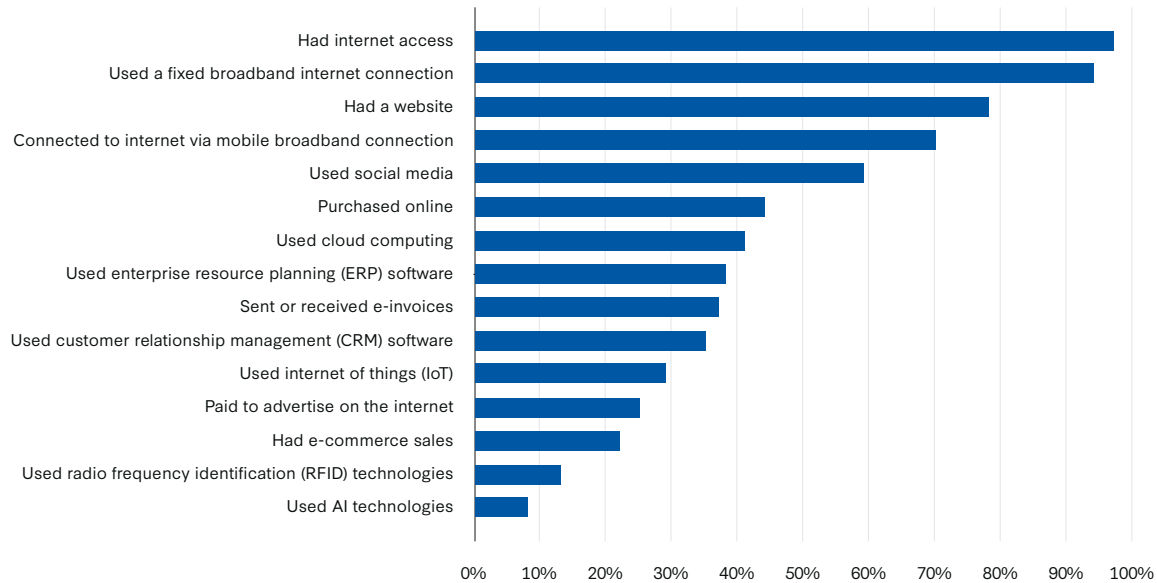
European firms are increasingly using digital technologies to bolster their operations and productivity. According to Eurostat data, by 2021, as much as 94 percent of European firms with 10 employees or more used broadband, 41 percent used cloud computing, 38 percent had enterprise resource management systems, and 29 percent used IoT applications (Figure 1). Midsize and larger firms are further along in their digital transformation, with 37 percent and 60 percent, respectively, using digital technologies “very intensely” or “intensely.”¹⁷ Also, 18 percent of small enterprises reported intense use of digital services.

In an online survey prepared for this report of 500 European firms across various EU economies, about half highlighted further digital transformation as one of top three priorities for their companies in key areas.¹⁸ This especially includes micro and small firms that prioritize digitization of their communications and sales and marketing, while midsize and larger firms, which have already digitized their communications in particular, stress the need to digitize their finance and accounting as well as supply chain management and fulfillment (Figure 2). European firms see various

disruptive technologies such as AI, IoT, and cloud computing as important for their businesses in the next five years (Figure 3).

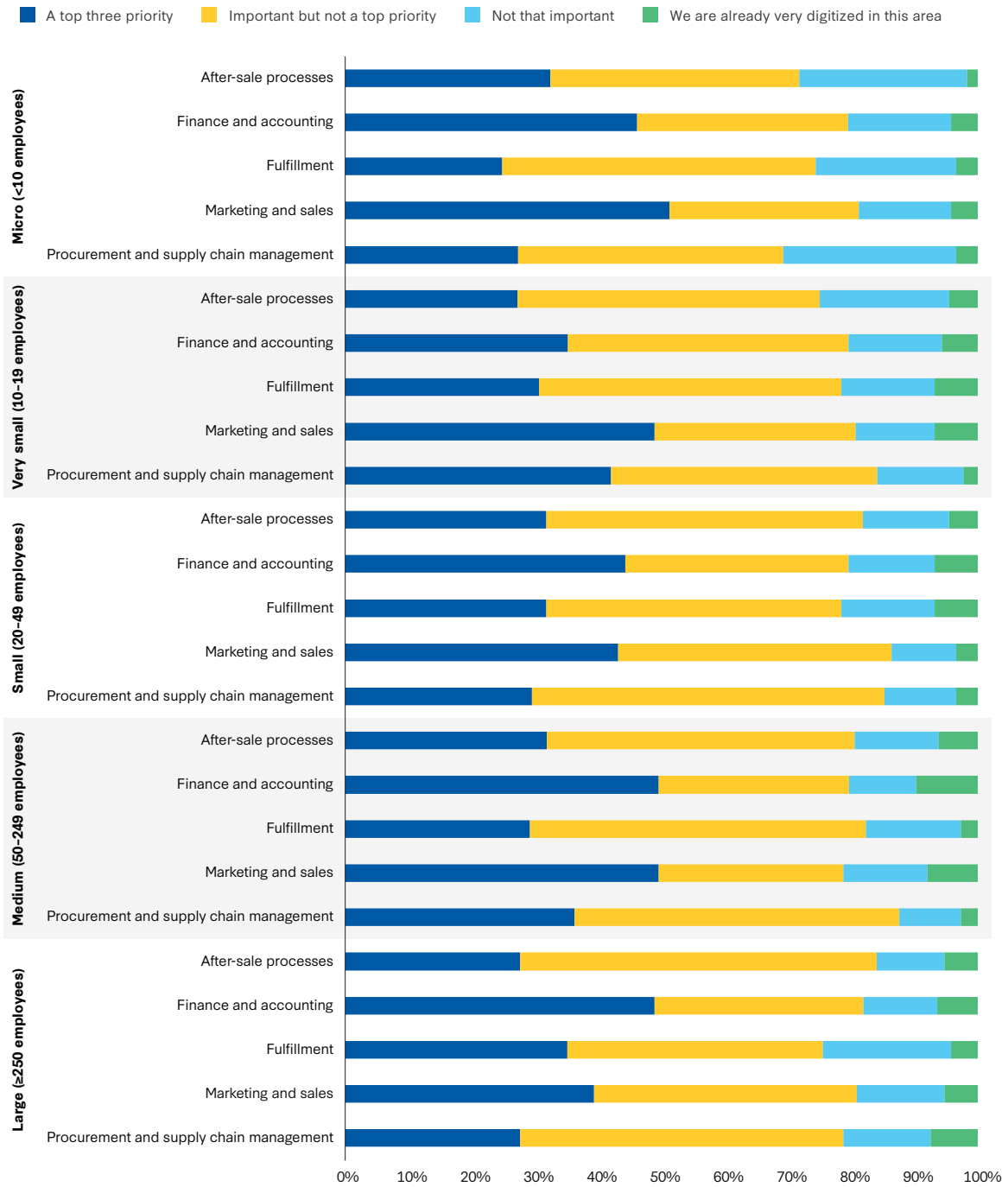
In short, digital services and technologies are ubiquitous, especially among midsize and large European businesses, and both small and large European firms are keenly pursuing further digital transformation.

Figure 1: Technology Use by European Firms (enterprises with at least 10 employees and self-employed people)



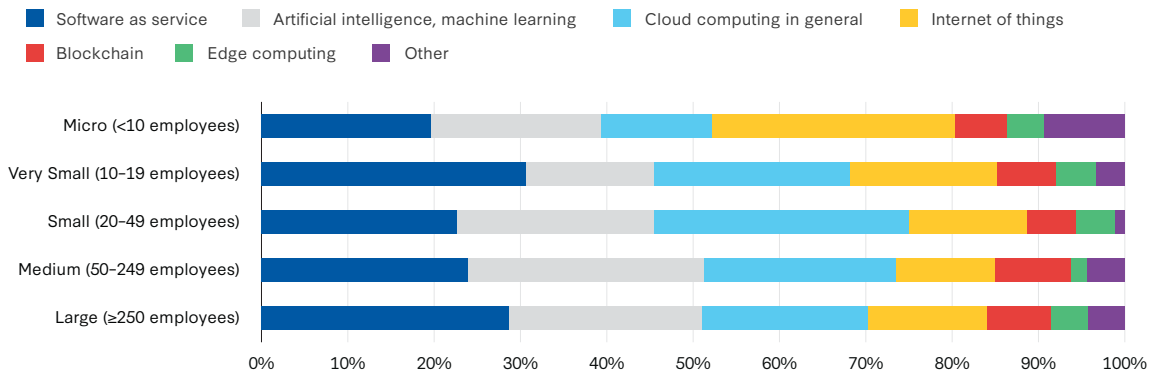
Source: Author's calculations based on Eurostat data.

Figure 2: Importance of Digital Transformation to European Firms, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

Figure 3: Priority Digital Services for European Firms in the Next Five Years, by Firm Size

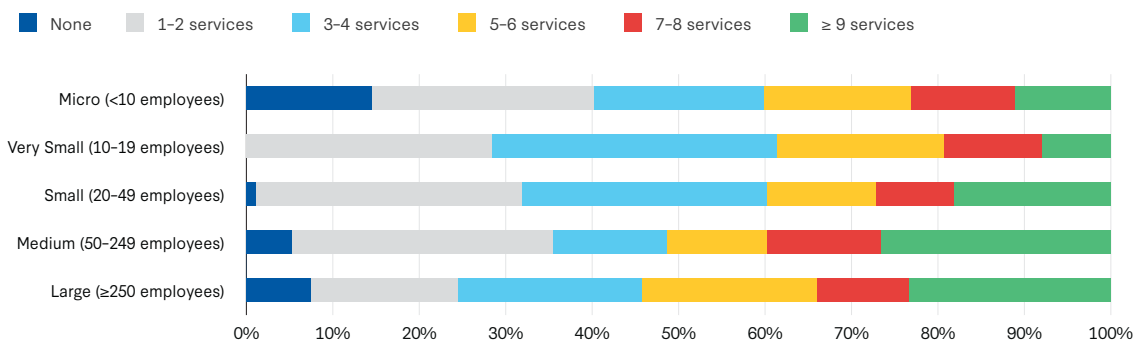


Source: Based on a survey conducted by author with 500 European businesses.

Majorities of European firms that use digital services also use U.S. digital service providers. In CSIS’s survey, over 90 percent of European firms use at least one or two well-known U.S. digital services out of a total of 19 services analyzed; over 70 percent use at least three to four services; over 40 percent use at least five or six services; and over a quarter of small, medium, and large firms use seven or more (Figure 4). Micro and small firms in particular use U.S. social media platforms to market their products and services, while midsize and large companies are more avid adopters of U.S. communications and cloud computing services (Figure 5).

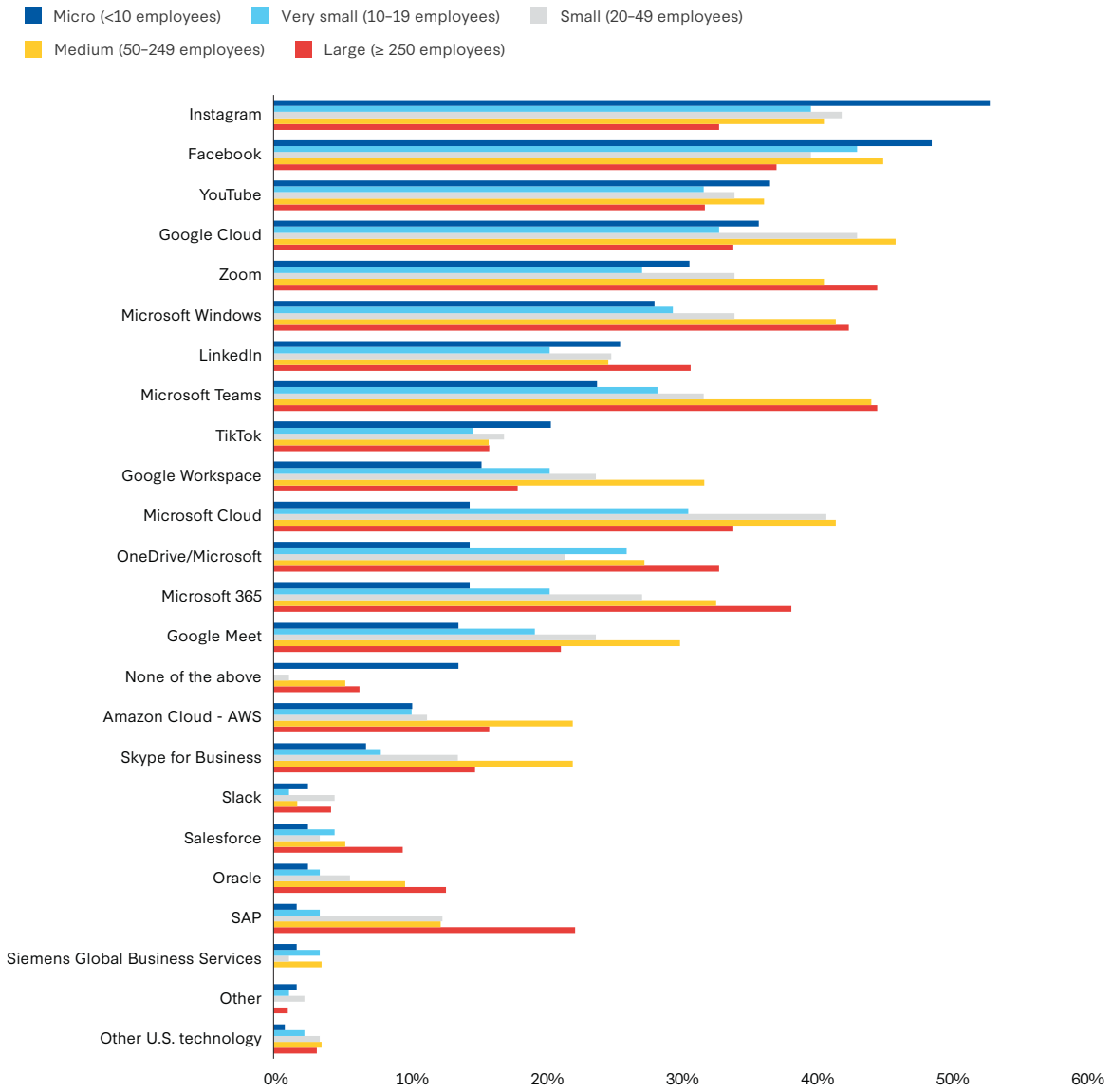
The importance of U.S. digital services in the European economy can also be illustrated by assessing the external sources of digital services in the European Union’s value added of final demand and exports for the manufacturing, agricultural, and services sectors (Figure 6). Some 30 percent or more of the external value added in European companies’ production destined for local consumption or export arises from the United States, followed by the United Kingdom and China. European cars and appliances, in many instances, are embodiments of U.S. digital services.

Figure 4: Number of U.S. Digital Services Used on Average, Percent of European Firms by Size



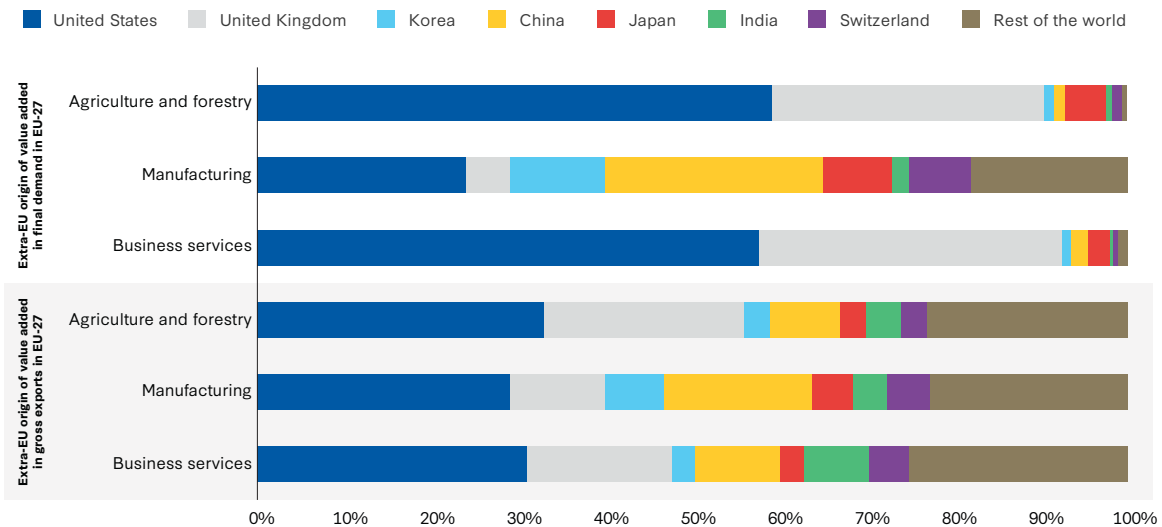
Source: Based on a survey conducted by author with 500 European businesses.

Figure 5: Percent of European Firms Using U.S. Digital Services, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

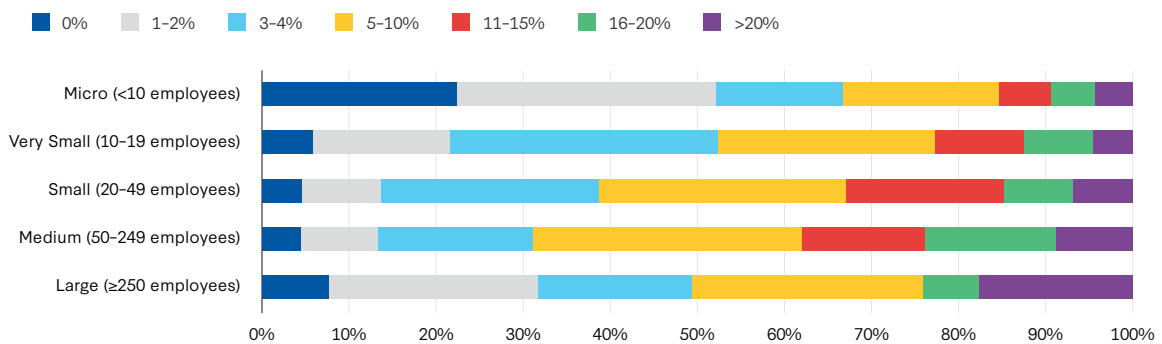
Figure 6: Sources of Extra-EU Digital Services Used to Add Value in European Agricultural, Manufacturing, and Business Services, 2018



Source: Author's calculations based on OECD TiVA Database.

European firms have also expanded their use of these providers significantly. In 2022, some 40 to 50 percent of European companies across size categories reported spending between 6 and 20 percent more on digital services than in 2019, and more than a tenth of European small, medium, and large firms reported spending an additional 20 percent or more since 2019. Overall, over half of European firms report spending 10 percent or more of their revenues on U.S. digital services, with large firms spending the most (Figure 7). In particular, midsize firms and services firms leverage digital services intensely. However, small firms, even ones with fewer than 20 employees, and manufacturing firms are frequent and intense users of U.S. digital services in such areas as sales and marketing, human resource management, and supplier and vendor management.

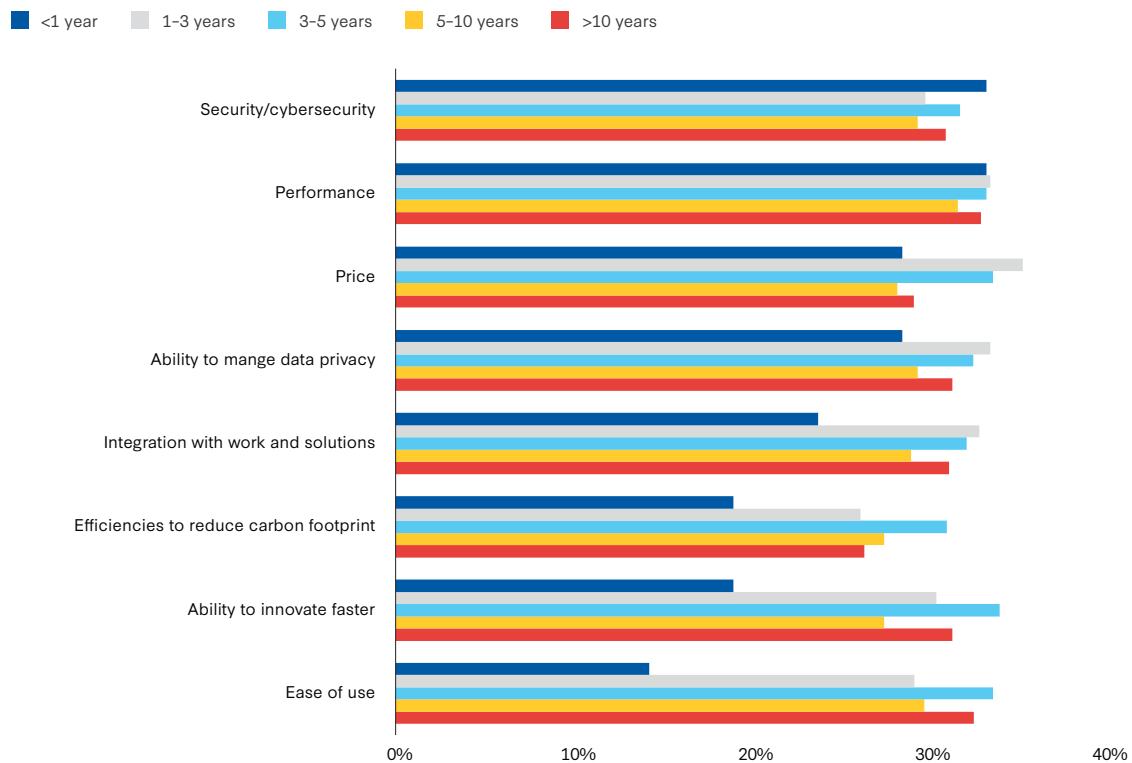
Figure 7: Spending on Leading U.S. Digital Services in 2022 as Share of Revenue for European Firms, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

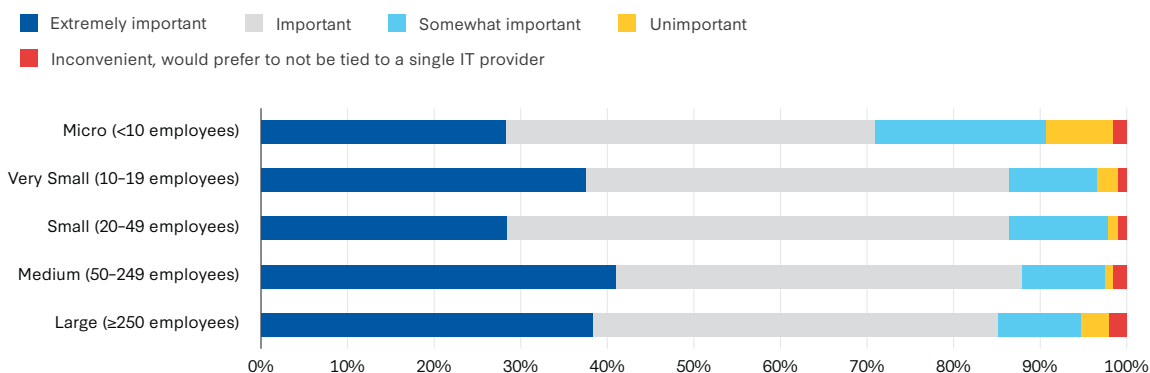
The features European firms particularly value about U.S. services include price, performance, security, privacy, and integration with their own operations (Figure 8). A third of larger and more mature European companies see U.S. digital services as providing especially great benefits for reducing their carbon footprint. European companies also note significant gains from bundled services provided by U.S. digital service providers, such as Google Workspace or Microsoft Teams services. Overall, strong majorities of European companies also find U.S. technologies to be highly beneficial for their business growth and revenue generation and as providing strong value for money (Figure 9).

Figure 8: Percent of European Firms Classifying Benefits from U.S. Digital Services as “Extremely Great” Advantage for Their Business, by Firm Age



Source: Based on a survey conducted by author with 500 European businesses.

Figure 9: Percent of European Firms Stating Cost-Savings Benefits from Integrated Digital Services, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

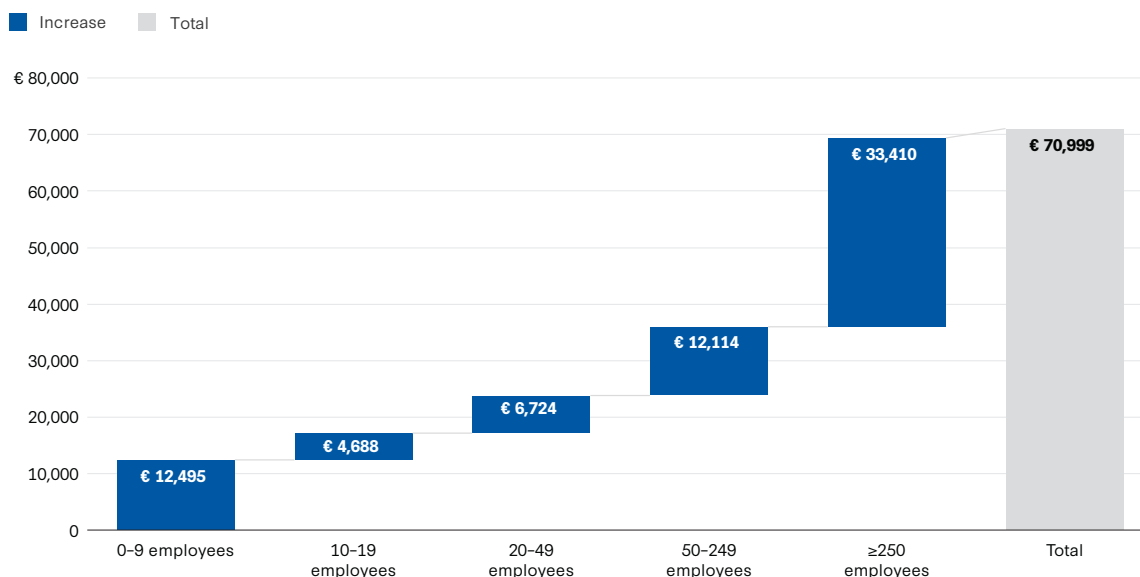
Implications for European Technology Costs

In light of the intense use of U.S. digital services by European firms, sweeping laws that aim to only impact U.S. digital service providers will also affect a large set of EU companies that use these providers' services.

Based on industry interviews, increases in regulatory costs could be estimated to lead to about a 5 percent increase in European firms' spending on technology services. The DMA and DSA alone could imply an immediate cost increase of €71 billion (\$71 billion) on European companies, equivalent to 0.3 percent of EU GDP. Almost half of this would be incurred by European small and medium-sized enterprises (SMEs), equivalent to some 40,000 European jobs (measured as revenue over employment) (Figure 10).¹⁹

In the conservative lower-bound scenario of a 3 percent cost increase, European firms would still incur a collective, one-shot cost increase of €43 billion (\$43 billion); in the upper-bound scenario of a 10 percent cost increase, the total cost increase would be €142 billion (\$141 billion).

Figure 10: Potential Cost Increases Implied by the DMA and DSA on EU Businesses That Use U.S. Digital Service Providers, Assuming a 5 Percent Technology Cost Increase, by Firm Size (in millions of euros)



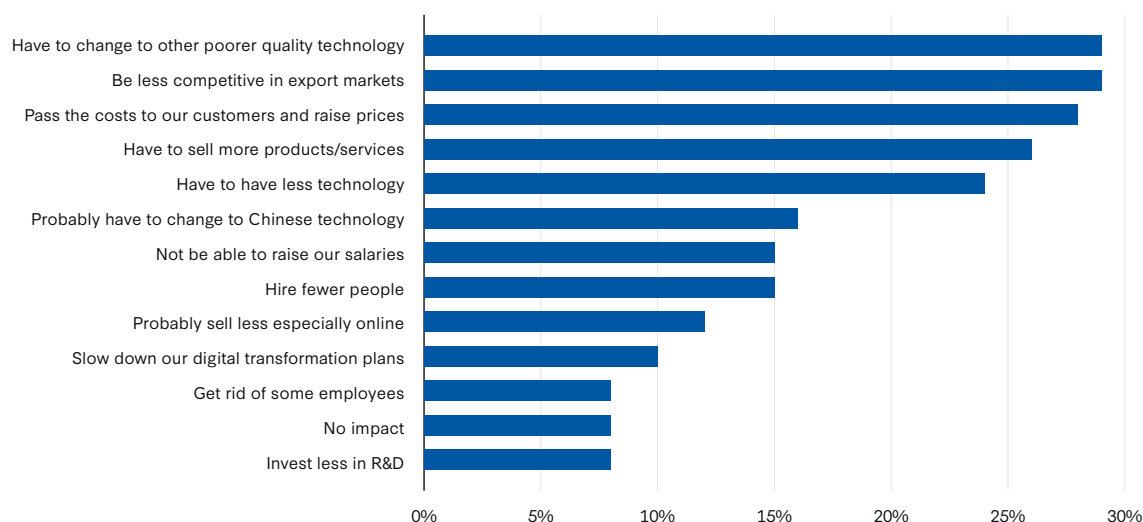
Source: Author's calculations based on Eurostat data.

Dynamic Effects of Digital Services Cost Increases: Wider Digital Divides, Lower Productivity Growth?

Granted, the impacts of these regulations ultimately depend on European firms' elasticity of demand—the sensitivity of European firms to the cost increases in digital services—and these companies' reactions to the cost increases.

The CSIS survey of 500 European firms suggests that these impacts are heterogeneous across firms. For example, 28 percent of European firms facing increased costs would pass the costs on to their own customers, such as other European firms, consumers, and customers in export markets. (This would likely make them less competitive. Some 30 percent would change to other, poorer-quality technologies; a fifth would simply opt to have less technology and decelerate digital transformation plans, rather than absorb the costs and have lower profit margins; and another fifth would opt for technology over employees by ceasing to hire or even firing employees rather than reducing spending on digital services. See Figure 11).

Figure 11: Likely Actions Taken by EU Companies in the Face of a 5 to 10 Percent Increase in the Costs of U.S. Digital Service Providers



Source: Based on a survey conducted by author with 500 European businesses.

The analysis of the impacts on European companies from cost increases incurred by their U.S. digital service providers is of course static and does not account for these heterogeneous reactions by European firms or the dynamic effects resulting from the higher digital services costs incurred by European firms. These dynamic effects can be widespread in a highly digitized economy such as Europe’s, where increases in digital services costs have widespread effects across sectors of the economy and segments of consumers, similar to electricity or transport costs. The dynamic effects may manifest in various ways (all other things equal), such as

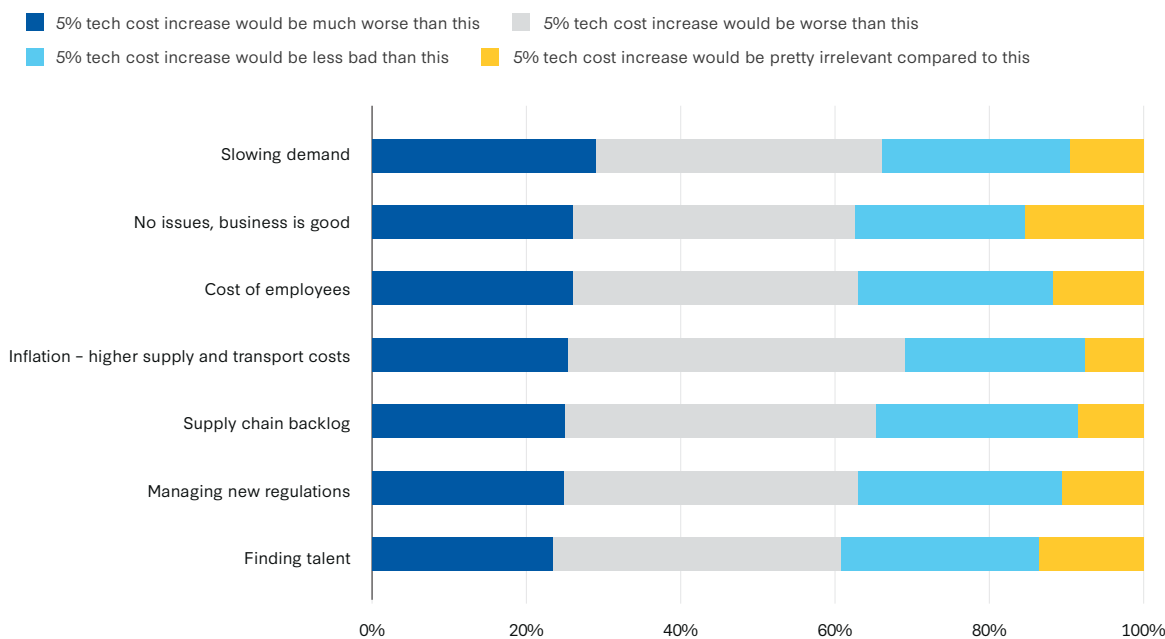
- reducing total factor productivity of European firms, due to reluctance or inability to invest in desired IT services, and reducing labor productivity growth of workers in these firms as workers are unable to use latest technologies;
- lowering returns on capital invested by companies;
- straining or ending customer relationships for firms that pass costs onto their customers;
- lowering export competitiveness of European firms that use U.S. digital service providers intensively—an important consideration given that the European Union’s extra-regional exports are equivalent to some 15 percent of the bloc’s GDP;
- constraining cash flow for firms that opt to bear the cost increases and lowered capacity to hire—at a time when inflationary pressures are already leading to job cuts and hiring freezes, according to the European Central Bank;²⁰
- stunting growth of technology-intensive small European firms that sprang to life during the Covid-19 pandemic that are dependent on U.S. digital services for their customer service and operations;
- shrinking or closing European businesses with narrow profit margins, companies especially impacted by inflation, and companies susceptible to aggravated customer relationships;

- widening Europe’s digital divides as firms that are more digitized (and typically more productive and export driven as well as better able to invest in new technologies) can weather the cost increases while firms that are in early stages of their digital transformation may abandon it in the face of cost increases (during Covid-19, Europe’s smaller companies decelerated their digital transformation), held back partly by limited investments and partly by lack of talent to apply technologies;²¹ and
- decelerating Europe’s path to sustainability, as digital technologies can enable lower carbon footprints and digitized companies have higher productivity and revenues to invest in green technologies.

In other words, in a rather classic outcome from rising input costs, the cost increases may overall dampen aggregate supply (or total production) and decelerate growth. Potential digital services cost increases are a major consideration for EU companies: over 60 percent of micro and small European firms stated that a 5 percent technology cost increase would be much worse or worse than inflation, slowing demand, or supply chain backlogs (Figure 12).

These impacts could be especially high in the digitized northern European firms that report heavy usage of U.S. digital services.

Figure 12: European Firms’ Response to “How would a 5 percent increase in tech costs rate vis-à-vis other challenges for your company this year?”



Source: Based on a survey conducted by author with 500 European businesses.

This “cost-push” inflation resulting from higher digital services costs is of course an unwelcome outcome at a time when Europe’s productivity continues lagging behind that of the United States and many emerging economies, when inflation continues pressuring firms in general, and as the digital transformation lags. Europe is behind in sectors that are producing new technologies, such as IT, and in sectors that are applying disruptive technologies, such as manufacturing.²²

In one survey in 2020, 37 percent of European companies had not adopted any digital technologies, compared to 27 percent of U.S. companies. According to the European Investment Bank (EIB), only two-thirds of manufacturing firms in the European Union report having adopted at least one disruptive technology, as opposed to 78 percent of firms in the United States. Worse yet, if it is European firms (rather than U.S. or Asian firms) that bear the brunt of the cost increases by technology companies, European firms would be at a greater disadvantage because they are already underinvesting in technologies and are burdened by higher operating costs than U.S. or Asian firms. Numerous analyses have noted that European companies underperform relative to those in the United States and East Asia in terms of growth, returns, and investments in R&D.²³ Digital services cost increases are unlikely to improve this picture.

Impacts of the DMA and DSA on EU Consumers

Europeans derive a considerable consumer surplus from U.S. technologies—in 2019, European students reported that they would pay €536, €97, and €59 (or \$534, \$97, and \$59), respectively, per month on average for access to WhatsApp, Facebook, and digital maps instead of losing access to these services.²⁴ While these services are free, the consumer surplus expressed by the students indicates the importance of digital services for European consumers and the losses in surplus if these services disappeared or cost more, not unlike how an import tariff on vehicles would undermine their consumer surplus and deter consumers from, for example, buying an imported vehicle as their first car.

What would then be the impact and repercussions of the DMA and DSA on European consumers? While most of the U.S. digital services Europeans use are free, European consumers also use many paid services such as Google Play, Microsoft Windows, and Amazon Video and could be impacted if the costs of these services increased. Consumers could also incur losses of access to bundled services and a variety of other services if U.S. digital service providers had to retire some of their own offerings to comply with the acts.

European consumers would also be impacted if the European Union's business-to-consumer (B2C) businesses passed on the increased costs to their customers. After all, European consumers also use a great many paid services and goods that embody U.S. digital services. In a back-of-the-envelope calculation, assuming 50 percent of firms are in B2C markets and 28 percent (per survey data) passed the cost increase in its entirety to individual customers, the immediate cost increase assumed by these consumers would be €10 billion (\$10 billion).

This would undermine Europe's poor, who, according to a recent International Monetary Fund working paper, are particularly hurt by the increase in the cost of living stemming from higher gas prices and their repercussions on goods and services.²⁵

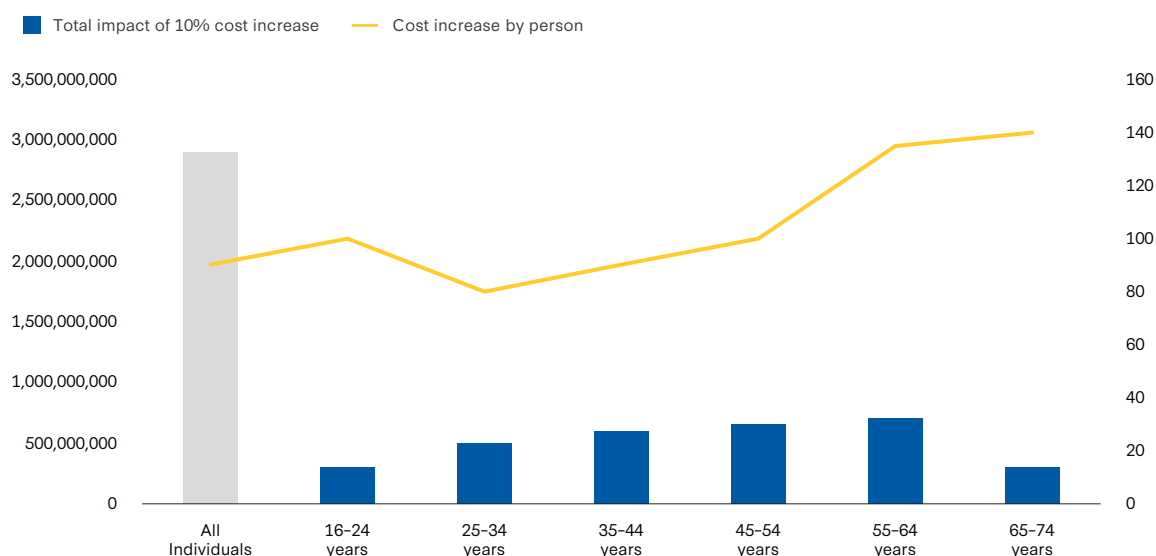
These impacts may be further compounded by the Data Act, which mandates that users of connected products can share proprietary data among a data holder of a connected product and third parties. It also forces cloud service providers to let users of these connected products move their data to another provider without incurring any costs and limits cross-border transfer of data.

While seemingly empowering European consumers and firms to manage and move the data their IoT devices and services produce, the Data Act can, just like the DMA and DSA, raise the costs to the

providers of IoT devices or services, the majority of which are U.S. technology companies, as well as undermine their incentives to leverage data to build new products and services.

What would, say, a 10 percent increase in IoT services costs imply to Europeans? European firms and consumers are increasingly using IoT products and services. According to Eurostat data, in 2020, 43 percent of Europeans used the internet on an internet-connected TV in their homes, 17 percent used internet-connected game consoles (the share rises to 38 percent for young Europeans), and 8 percent of Europeans used some type of smart home solutions for energy management (Figure 13). The total consumer market for IoT devices is estimated at €29 billion (\$29 billion). A 10 percent cost increase would thus translate into a total additional cost of €2.9 billion (\$2.9 billion), especially impacting younger Europeans who have less disposable income.

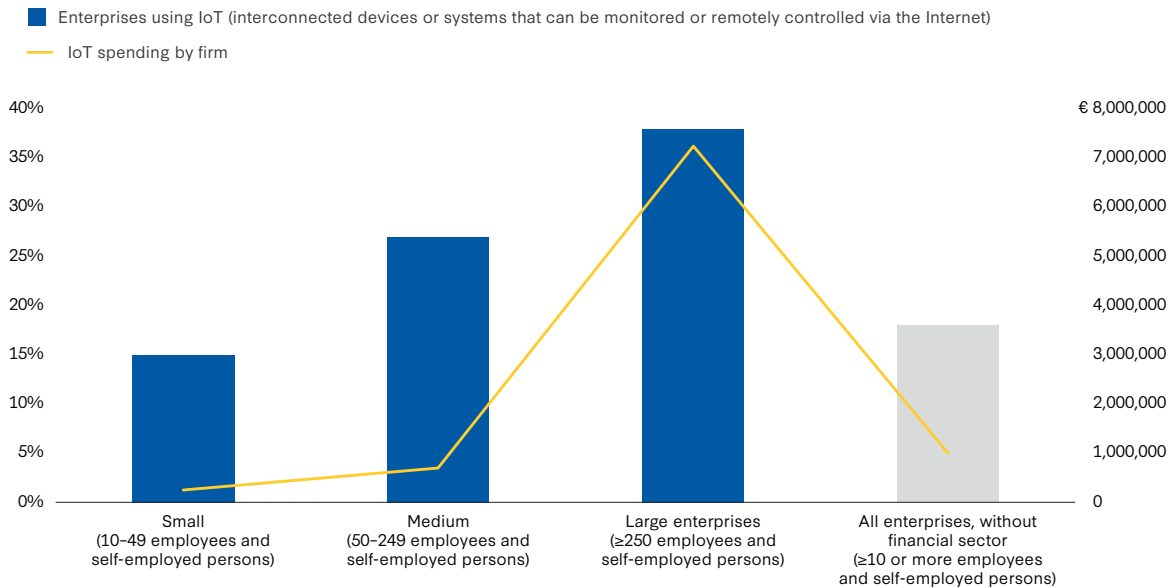
Figure 13: Implications of a 10 Percent IoT Cost Increase to European Consumers, by Age (counted on the basis of users of smart home devices)



Source: Author's calculations based on Eurostat data.

European companies also use IoT extensively, to the tune of more than €200 million (\$199 million) in 2021; per Eurostat data, as much as 16 percent of small firms and 38 percent of large companies used “interconnected devices or systems that can be monitored or remotely controlled via the internet” (Figure 14).²⁶ Europe’s enterprise IoT market is growing rapidly at double digits per annum as European firms seek to set up smart factories and automate their operations and gain insight from data. In the CSIS survey, majorities of European firms reported already using IoT and spending on average 3 to 4 percent of their revenue on IoT. Almost a fifth of European businesses see IoT as the most important technology for their growth in the next five years.

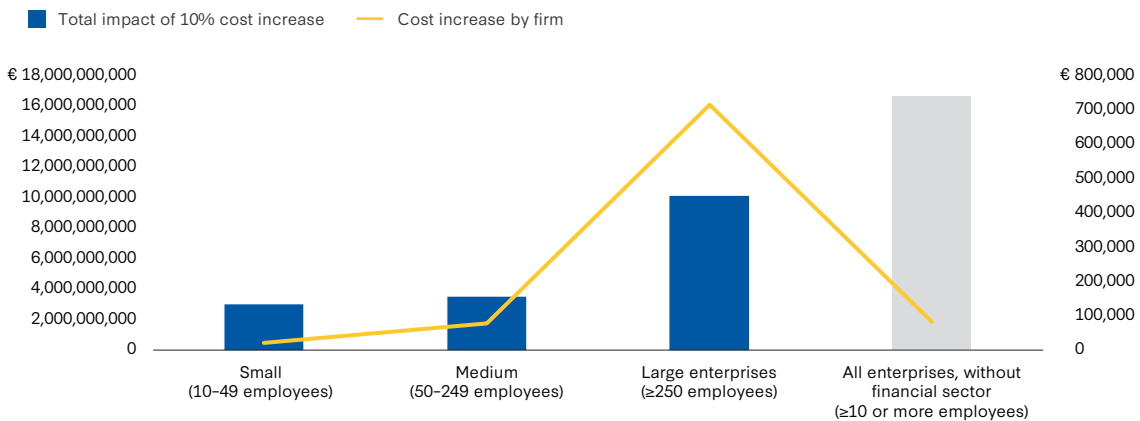
Figure 14: Use of IoT by European Firms, by Firm Size



Source: Author's calculations based on Eurostat data.

A back-of-the-envelope estimate suggests that a cost increase of 10 percent in IoT services by the current users would translate into a total cost of nearly €16.6 billion (\$16.5 billion) (Figure 15). IoT cost increases could dampen firms' interest in investing in IoT and undercut the uptake of IoT solutions by other firms. Indeed, the CSIS survey indicates a cost increase of the order of 5 to 10 percent. This would be equivalent to €10,000–€20,000 (\$9,962–\$19,924) for a small EU firm or €350,000–€700,000 (\$348,675–\$697,232) for a large one. This would freeze the IoT investment plans for about 20 percent of EU firms. Over time, the Data Act could also undercut the incentives of investors in Europe to invest in start-up IoT companies, as these firms would not be able to monetize the data their products and services generate and would not have incentives to build new goods and services.

Figure 15: IoT Cost Increase Implications to European Firms, by Firm Size



Source: Author's calculations based on Eurostat data.

Results in Sum

So far, this study has cataloged operational and compliance cost increases incurred by technology companies and their customers once regulations fall into place. These include

- total compliance costs and fines conservatively amounting to between \$22 billion and \$50 billion for U.S. digital service providers operating in Europe;
- tens and likely hundreds of billions of losses over time for U.S. digital services providers resulting from limitations to being able to leverage proprietary data to develop new goods and services or to offer European firms and consumers interlinked services;
- cost increases of 5 percent, a plausible estimate, to European firms using U.S. digital service providers, translating into a total cost of €71 billion (\$71 billion) for European firms;
- direct and indirect costs to European consumers as users of U.S. technologies and as users of European services and goods that embody U.S. technologies and affect European providers, such as in IoT; and
- various potential dynamic effects, such as deceleration of European firms' digital transformation, reduction in export competitiveness, and widening of digital divides between small and larger firms.

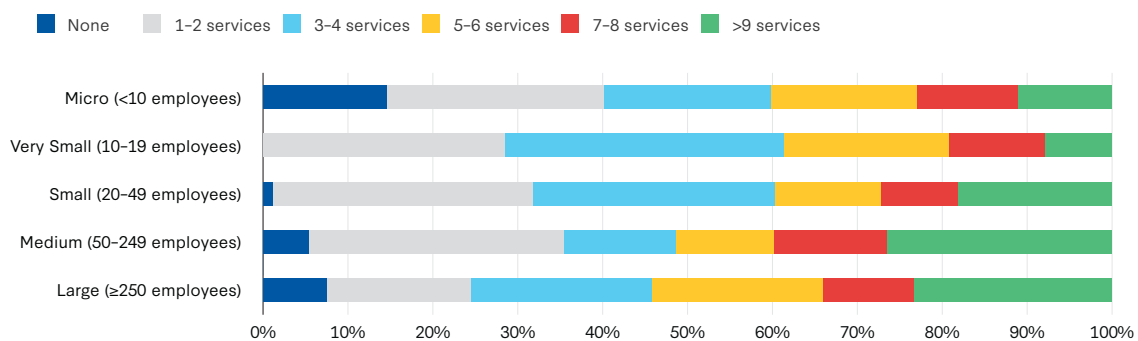
These effects would also negatively reflect on U.S. digital service providers selling to Europe and overall on U.S. companies doing business with European clients. The next section addresses these concerns.

Potential Impacts of the DMA and DSA on U.S. SMEs, Consumers, and Exports

Impacts on U.S. Businesses

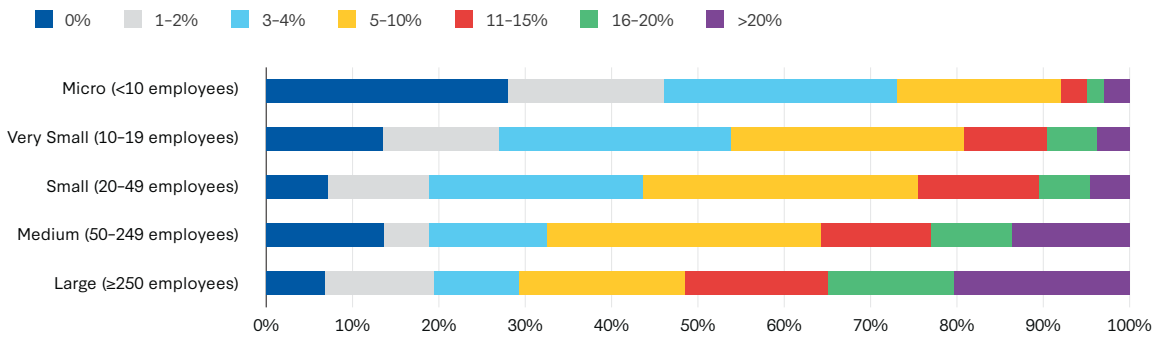
Like European firms, U.S. companies across sectors and size categories use U.S. digital services, though more intensely than European firms. In the CSIS survey, three-quarters of U.S. small enterprises use three or more of the 19 digital services analyzed, as do three-quarters of medium and large companies (Figure 16). Small, medium, and large U.S. firms typically spend well above 5 percent of their revenues on these digital services; micro and very small firms typically spend 3 percent or more (Figure 17). Over 40 percent of U.S. firms report significant benefits in cost and time savings from U.S. technologies in their businesses (Figure 18).

Figure 16: Number of U.S. Digital Services Used on Average by U.S. Firms, by Firm Size



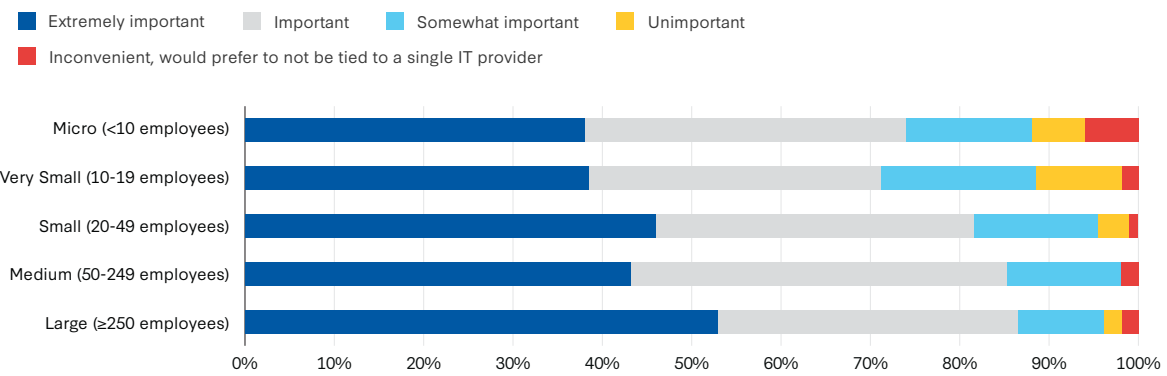
Source: Based on a survey conducted by author with 500 European businesses.

Figure 17: Spending by U.S. Firms in U.S. Digital Services in 2022 as Share of Revenue, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

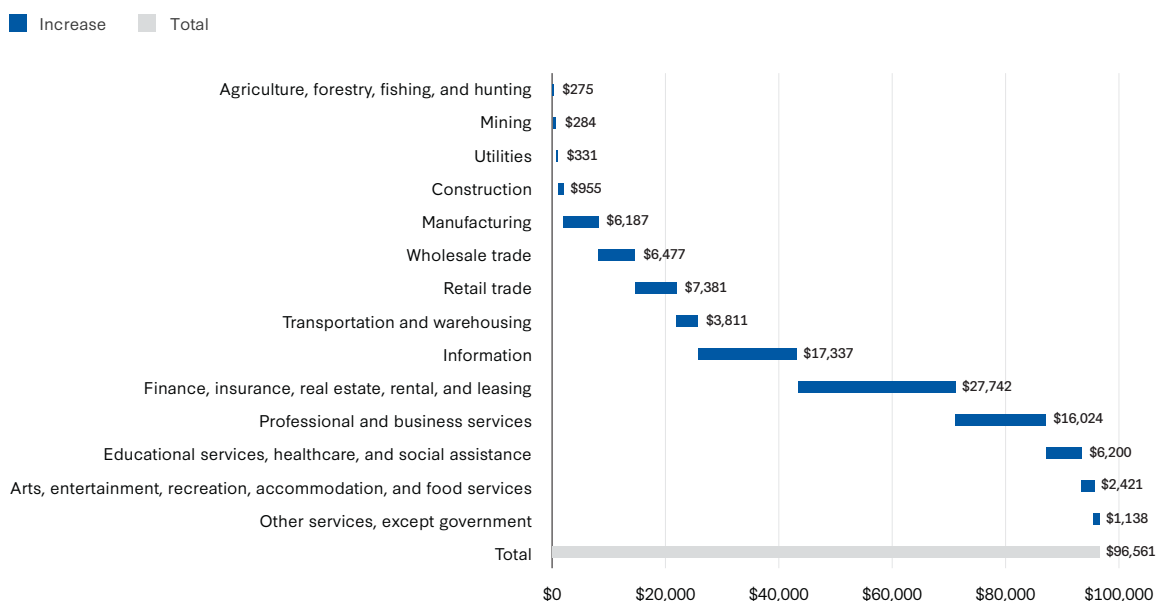
Figure 18: Cost Savings Expressed by U.S. Firms from U.S. Digital Services, by Firm Size



Source: Based on a survey conducted by author with 500 European businesses.

The most immediate impacts from the European Union’s acts on U.S. companies could echo those in Europe, namely cost increases for U.S. firms and consumers that use U.S. digital services. If faced with a price increase on the order of 5 percent, U.S. SMEs could incur \$45 billion more in digital services costs, or almost 50 percent of the overall \$97 billion in costs leveraged on U.S. companies; sectors such as manufacturing, information, financial services, and professional services would also incur significant costs (Figure 19).

Figure 19: Potential Cost Increases Implied by EU Regulations on U.S. Businesses That Use U.S. Digital Service Providers, by Sector

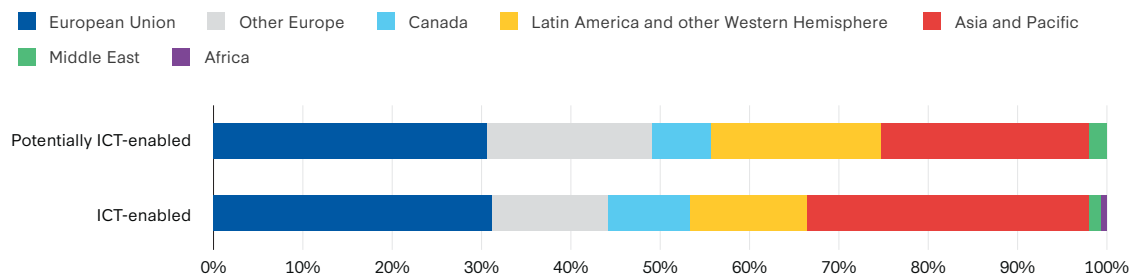


Source: Author's calculations based on EuroStat data.

Potential Impacts of the European Union's Digital Regulations on U.S. Exports to Europe

The United States is the world's largest and most competitive services exporter, and a major growth driver for services exports is digital services exports, which reached \$594 billion in 2021, 13 percent above 2019 levels. A subcategory, ICT-enabled services, consisting of services delivered over ICT networks, made up \$89 billion. The European Union is a leading market for U.S. digital services exports, absorbing over 30 percent of the total, led by Germany, the Netherlands, and France (Figure 20).

Figure 20: U.S. Digital Services Exports in 2021, by Market as a Share of Total U.S. Services Exports



Source: Author's calculations based on Bureau of Economic Analysis data.

The European Union’s digital regulations can have three types of impacts on U.S. exports to Europe:

- Most immediately, if the digital regulations result in lowered spending by European companies on U.S. digital services, U.S. ICT services exports, if dropping by 10 percent to the European Union, would dent U.S. services exports by \$18 billion, or 2 percent of U.S. global services exports and 0.7 percent of U.S. total exports. They would also entail a loss of to U.S. companies of 5 percent of market share of Europe’s digital market, including in sub-sectors key to the United States such as cloud computing (Table 3), thus possibly making way for Asian providers unbound by the DMA and DSA.

Table 3: Export Losses by U.S. Digital Services Providers Exporting to Europe, as Implied by EU Regulations

	Total loss	% of total global exports of potentially ICT-enabled services	% of total global services exports	% of total global exports	% of U.S. GDP
If they lose 10%	\$ 17,910,000,000	-3.0%	-2.2%	-0.7%	-0.08%
If they lose 25%	\$ 44,775,000,000	-7.5%	-5.6%	1.8%	-0.19%
If they lose 30%	\$ 53,730,000,000	-9.0%	-6.1%	-2.1%	-0.23%

Source: Author’s estimation based on U.S. export data from the Bureau of Economic Analysis and World Trade Organization.

These effects could be compounded by the EU Cloud Services Scheme (EUCS), which states in its latest draft that maintenance, operations, and data for cloud service providers must be located within the European Union.²⁷ U.S. technology associations have appropriately argued that the proposed requirements will create significant entry barriers for companies not headquartered in the European Union and EU companies with international or global operations.²⁸ This in turn can limit competition and choice in the cloud market and raise costs for European businesses seeking to engage in digital transformation.

Granted, there can be further effects on U.S. exports if the European Union’s regulations result in cost increases on European firms and dampen their demand. In this case, U.S. companies that export any goods and services to EU markets could experience dampened demand. U.S. companies currently export \$272 billion worth of goods and non-digital services to Europe. Just a 5 percent reduction of goods imports by European firms and consumers would amount in a loss of more than \$13 billion, close to 1 percent of all U.S. goods exports.

In addition, Europe’s digital policy measures further fragment the global digital economy. They exacerbate a trend of countries around the world adopting divergent digital rules that in turn complicate export prospects, especially for U.S. and European small firms and beyond that struggle to meet challenging and conflicting regulations in various markets.

The National Security Implications of the European Union’s Digital Acts

If the United States Loses, China Gains

By targeting U.S. digital services companies, EU digital regulations will advantage large Chinese technology companies first and foremost. While some European companies may benefit from the European Union designating U.S. companies as gatekeepers, there are no European heirs to U.S. providers that are able to provide the scale economies and scope of services U.S. companies provide to European businesses and consumers.

China, however, does have such companies. It has helped cultivate such giants as Baidu (search and related services), Alibaba (e-commerce), Tencent (messaging, gaming, social media, and owner of WeChat, which has 1.2 billion users around the world), and Xiaomi (devices).²⁹ This so-called BAXT, if not designated as gatekeepers, would have much freer rein than U.S. companies in Europe and be well placed to offer the scalable, interlinked services U.S. tech companies would now be barred from offering.

Europe could see a scenario where European businesses access lesser-quality services at higher cost and increase their reliance on Chinese firms, with associated cybersecurity and national security challenges. This report is not the first to raise this prospect—it echoes numerous analysts and also U.S. congressional leaders who have already discussed this suboptimal outcome for the European Union, European consumers, and the national security of individual EU countries.³⁰ Among others, Adam Kovacevick gave a great example of the practical implications: if the DMA made U.S. companies unable to incorporate their own products into their services, Apple could not pre-install iMessage and FaceTime on the iPhone and Google could not install Google Search as the default on the Google Pixel, but Huawei would be allowed to preinstall its own Petal search engine on its devices.³¹

In designating U.S. companies as gatekeepers, Europe risks tilting the playing field in favor of Chinese competitors and inadvertently facilitating China's efforts to undercut competitors with state subsidies. Europe also risks discriminating against the United States under the World Trade Organization rules and possibly enabling Europeans' personal data to sit on Chinese servers, locking European companies into using Chinese tech companies' services and further enabling China to run parts of Europe's critical infrastructure.

These scenarios have already manifested in various ways. For example, the Associated Press recently ran a story about Nuctech, a leading Chinese provider of cargo and vehicle scanning technologies that has become deeply integrated in Europe's airports and key transit points—even though it has been barred in the United States for years due to national security concerns.³²

In contrast, the United States has taken a more restrictive approach to Chinese tech companies. In 2021 alone, the United States took various measures to address the threats posed by Chinese technology companies:

- In March 2021, the U.S. Federal Communications Commission (FCC) designated five Chinese tech companies—Huawei, along with ZTE, Hytera Communications, Hangzhou Hikvision Digital Technology, and Dahua Technology—as posing an “unacceptable risk” to national security.³³ The Biden administration also imposed new 5G license restrictions on some Huawei suppliers out of concern that Huawei 5G equipment could be used by Beijing to spy on U.S. residents.
- In November 2021, the Biden administration added a dozen Chinese companies on a trade blacklist due to national security concerns, such as alleged roles in assisting the Chinese military's quantum computing efforts and acquiring or attempting “to acquire U.S. origin-items in support of military applications.”³⁴
- In December 2021, the U.S. Treasury Department's Office of Foreign Assets Control (OFAC) identified eight Chinese technology firms as actively supporting the biometric surveillance and tracking of ethnic and religious minorities in China. These companies included Cloudwalk Technology Co., Ltd.; Dawning Information Industry Co., Ltd.; Leon Technology Company Limited; Megvii Technology Limited; Netposa Technologies Limited; SZ DJI Technology Co., Ltd.; Xiamen Meiya Pico Information Co., Ltd.; and Yitu Limited.

Many Europeans share these concerns, and governments have put in place mechanisms to screen foreign companies' planned investments in Europe.³⁵ These, however, have covered fewer than two dozen Chinese companies so far.³⁶

Many of these EU policies reference the gatekeeper designation, and as such, the competitive disadvantage for U.S. firms—and competitive advantage for Chinese firms—will snowball over time as more policies are enacted.

Conclusion

The European Union and the United States have a symbiotic and interdependent economic relationship, especially in the digital economy. This study has shown that European firms use, prefer, and benefit from U.S. digital service providers and that European goods and services sold in Europe and around the world embody U.S. technologies and are competitive as a result. Meanwhile, U.S. consumers buy and love European products and services, which often contain U.S. digital services.

Today, the European Union's digital policies are challenging this relationship by shaping the cost and operational considerations of U.S. digital service providers and likely having repercussions on European firms and consumers. This study has found that:

- Depending on the regulatory scenario, the DMA and DSA conservatively entail some \$22 billion to \$50 billion in new compliance and operational costs to U.S. digital services providers and force them to forego critical business opportunities, such as being able to leverage proprietary data to develop new goods and services or even to offer European firms bundled services.
- In turn, these impacts will likely reflect on the U.S. service providers' European customers, for example, in terms of higher technology expenditures. This study estimates these cost increases on European businesses would conservatively be €43 billion (\$43 billion) per year and more plausibly €71 billion (\$71 billion) per year, or equivalent to 0.3 percent of EU GDP. Almost half of this is incurred by European SMEs.³⁷ These costs would be compounded by both the loss of integrated technology services and cost savings resulting from U.S. providers' current scale economies.
- These immediate losses could be exacerbated by the dynamic effects resulting from the higher digital services costs incurred by European firms. This may include reduced labor productivity and total factor productivity of European firms due to subsequent reluctance or inability to invest in

desired IT services; stunted growth of European scale-ups that rely on technology for their growth; and lower export competitiveness for European firms that use U.S. digital service providers intensively (indeed, almost 30 percent of EU firms fear loss of export competitiveness as one result of price increases).

- Taking a step back, Europe's digital acts could compound Europe's inflationary pressures and exacerbate the gap in investment in digital transformation and R&D between Europe and other global players such as the United States and Asia.³⁸ Indeed, majorities of European companies in the CSIS survey see a digital services cost increase of 5 to 10 percent as worse than continued supply chain backlogs or current inflation.
- U.S. companies will likely incur new digital services cost increases as a result of the EU policies. If U.S. digital services raised their costs on U.S. companies by just 5 percent due to EU regulation, U.S. companies could incur over \$97 billion in new costs, with \$45 billion carried by SMEs.
- Most immediately, if the digital regulations resulted in lowered spending by European companies' U.S. digital services and, for example, 10 percent lower U.S. ICT services exports to the European Union, they would dent U.S. services exports by \$18 billion, or 2 percent of U.S. global services exports and almost 1 percent of U.S. total exports. This would entail a loss of 5 percent of the share of Europe's digital market, including in sub-sectors key to the United States such as cloud computing.
- In addition, the European Union's gatekeeper designation criteria come across as uniquely targeted at U.S. companies and thus as discriminatory. It hardly promotes European tech companies—there are none waiting in the wings that would have the economies of scale and magnitude of the United States' leading technology giants or be able to provide similar quality and scale of digital services to Europe's businesses and consumers as provided by U.S. companies. Rather, the EU policies would privilege Chinese tech companies that do have such potential, making Europe vulnerable to Chinese cybersecurity and national security threats.

Many European firms are unlikely to turn away from U.S. digital technologies—such technologies offer notable advantages, such as quality, efficiency, and cybersecurity, among others, and there are no obvious European companies to serve as replacements. Those firms that opt to shift providers will likely find willing Chinese sellers ascendant in the global digital economy. Europe could see a scenario where European businesses access lesser-quality services at higher cost and increase their reliance on Chinese firms, with associated national security challenges.

Seeking global technology leadership and digital sovereignty is Europe's right. However, the current trajectory only pulls Europe further away from the former and risks forfeiting the latter. And the process could decelerate the digital transformation of European businesses. Much more could be gained from technology cooperation between the European Union and the United States. Further studies in this series will outline this approach.

About the Author

Kati Suominen is an adjunct fellow with the CSIS Europe, Russia, and Eurasia Program and focuses especially on digitization, disruptive technologies, and trade. She is also the founder and CEO of the Los Angeles-based Nextrade Group, which helps governments, multilateral development banks, and Fortune 500 technology companies enable trade through technology. Nextrade's clients include the World Bank, International Finance Corporation, Inter-American Development Bank, Asian Development Bank, U.S. Agency for International Development (USAID), UK Foreign, Commonwealth and Development Office, Mastercard, Visa, Google, and eBay, among many others. Dr. Suominen has built dozens of data and analytical products and pilot initiatives, as well as eight global initiatives and public-private partnerships to enable digital trade, the most recent being the Alliance for eTrade Development I and II between 14 leading companies and USAID to enable small and medium-sized enterprise (SME) e-commerce in developing nations. She also serves as adjunct professor at the UCLA Anderson School of Management. Earlier in her career, she was a trade economist at the Inter-American Development Bank. Suominen is the author and editor of over 100 papers and 10 peer-reviewed books with leading academic presses, most recently *Revolutionizing World Trade: How Disruptive Technologies Open Opportunities for All* (Stanford University Press, 2019). She holds a BA from the University of Arkansas, an MA from Boston University, an MBA from the University of Pennsylvania's Wharton School, and a PhD from the University of California San Diego. She is a life member of the Council on Foreign Relations.

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