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Abstract

La regolamentazione delle imprese Big Tech ha progressivamente assunto una posizione sempre più di rilievo nello scenario economico globale, soprattutto per gli enti regolatori delle maggiori economie, in primis Stati Uniti, Unione Europea e Cina. L'impatto che questa tipologia di aziende ha sull'economia è molto vasto e comprende diversi aspetti chiave, tra i principali troviamo: mercato del lavoro e occupazione, competitività dei settori, stabilità dei servizi finanziari e data economics. Ai fini della stabilità e competitività del mercato a livello mondiale, è dunque necessaria una collaborazione fra le varie giurisdizioni interessate che queste siano "host", ovvero paesi dove queste aziende operano e forniscono servizi avendo la sede oltreconfine, oppure "home", cioè paesi dove le aziende hanno la propria sede e forniscono gli stessi servizi. L'approccio globale frutto della collaborazione internazionale permetterebbe di mitigare gli effetti di concentrazione di potere di mercato che hanno caratterizzato i settori di cui fanno parte le imprese Big Tech, permettendo agli enti interessati anche di avere una visione più chiara riguardo il loro recente ingresso nei servizi finanziari e dei potenziali effetti che ne derivano. Affinché questo complesso sistema di operazioni possa avere successo ed essere efficace è necessaria una supervisione diretta di organizzazioni internazionali come il Fondo Monetario Internazionale, in aggiunta a modelli da seguire come il recente Digital Markets Act dell'Unione Europea, che potrebbero portare al raggiungimento dell'obbiettivo finale di approccio globale per quanto riguarda la regolamentazione delle imprese Big Tech.

Summary

Introduction

The relationship between Big Tech firms and regulatory entities has always been a complex topic, the present work tries to cover various areas of interest, and to highlight the concerns and solutions of reaching the ultimate goal of a global regulatory approach:

chapter 1 presents an analysis, supported by historical data sets that span decades, on the impact that Big Tech has had on the global economy through different factors such as productivity, digital data and financial services.

chapter 2 dives deeper into the challenges that regulators face when it comes to these firms, defining at the approaches that have been brought up over the years, with a closer look at the European model and the Digital Markets Act

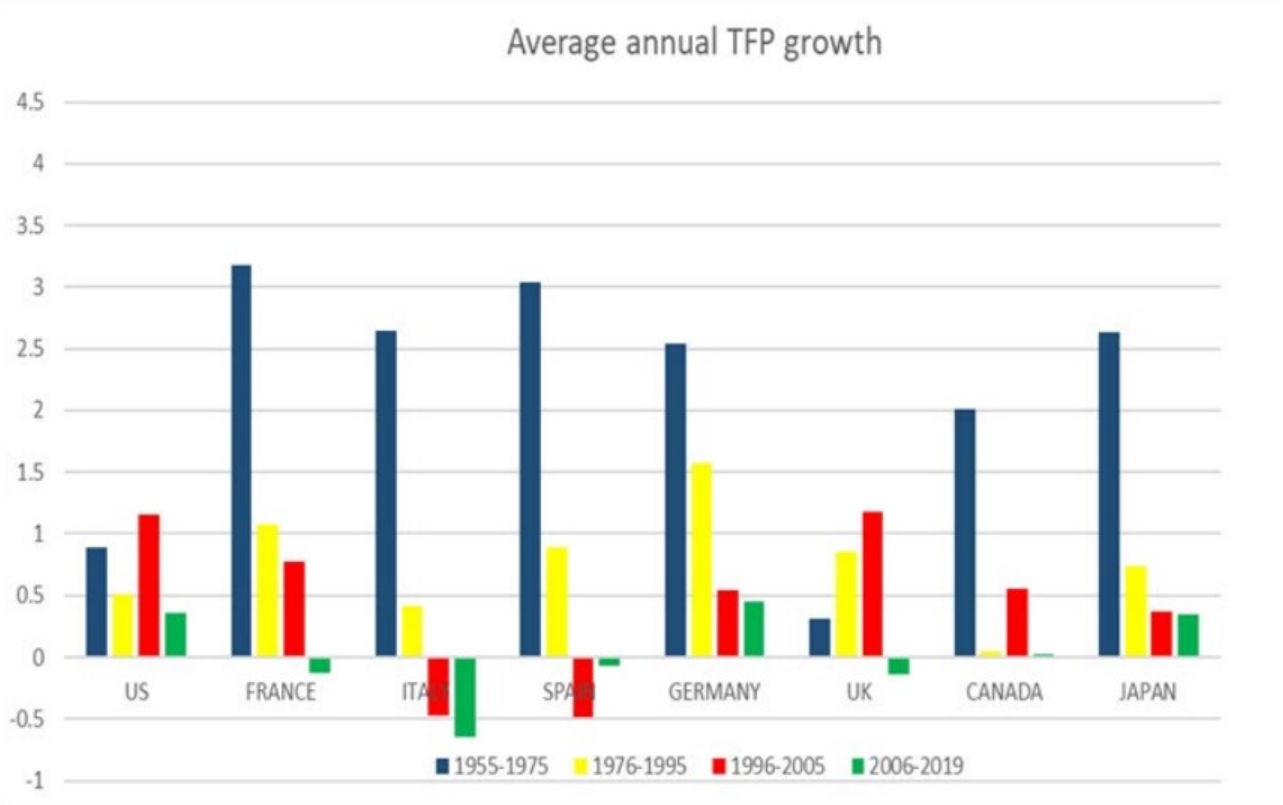
chapter 3 deals with the concerns that rise from the many challenges in regulations and presents possible solutions that could lead to a global effort to pursue effective cross-border regulation.

Chapter 1 – The Impact of Big Tech on the Economy

1.1 Productivity, Labor markets and Employment

When it comes down to Big Tech firms and their economic impact, the focus is typically centered around Data collection, cloud services and digital payments. While those are certainly extremely important, especially in the constantly growing digital world of today, they tend to partially overshadow the more traditional aspects such as productivity, labor markets and employment. Before diving into the present-day analysis, we must first investigate the past and see how those factors evolved over time.

Figure 1: Total factor productivity growth, 1955-2019, percent



Source: Digitalization and the economy, calculations on world bank data, by Dedola, Ehrmann, Hoffmann, Lamo, Gonzalo Paz Pardo, Slacalek, Strasser, 2023.

Starting off in the mid-1950s we see that automation and advancement allowed for big improvements in aggregate productivity growth, especially in Western Europe and Japan. After a time of constant positive outlook, reaching some impressive peaks throughout the 1960s and early

1970s, despite other major advancements, the growth slowed down significantly in all the major economies. Italy in particular stands out as the country most affected by this phenomenon, with the US and the UK providing minor exceptions to this trend. With the advent of personal computers in the 1980s and later the internet becoming available to the public in the 1990s, there was an open field for yet another technological revolution. A lot of the firms who led the charge at the time were mostly US-based, with the now famous Silicon Valley on top, and now many of them are what we refer to as "Big Tech Firms". Western Europe fell quite behind in this race, partially due to the already declining trend and the lack of proper investment from both the private and the public sector. While aggregate productivity growth in the US initially benefited from this breeding ground of new technology and innovation, it quickly reached stagnation in the mid-2000s, just slightly later than Western Europe and Japan.

The advent of Big Tech firms has proven to be a significant contributor to this state of somewhat stagnant growth. The main drivers of this new technology innovation are so-called intangible investments like software, research, and development. Ever since the 1980s, when closely analyzing who has been behind the most prominent investments in those fields, it appears that there never was much competition. In fact, we see that while early adopters get a significant boost in productivity, other firms who come in later and try to compete suffer from a significant gap that is often impossible to close. This is mainly due to the nature of this technological innovation because it presents high fixed costs and rapid growth for early entrants: the combination of these two elements contributes to rising very high barriers of entry. Overall, it's clear that this has led to high concentration of market power in the hands of a small number of players, effectively canceling out the potential boost that would have occurred with the innovation, leading to an ambiguous net effect on aggregate productivity growth in all major economies.

The new technological progress wave led by Big Techs has brought up concerns regarding the future of the labor market. While the effects vary amongst countries, there are certain patterns that remain the same. Since the 1980s there has been a significant widening of the wage gap between high-skilled and low-skilled workers, in the US especially while European countries were able to somewhat mitigate it. In addition to that, middle-skilled workers suffered from a significant shrinkage in job demand due to the computerization takeover of a lot of those positions (Dedola et al., 2023). In recent years, Artificial Intelligence and its related breakthroughs also raised some serious question marks, as the most prominent Big Tech companies are now investing heavily into

it, about what employment overall will look like. Evidence suggests that so far, the combination of effects generating from AI is mixed: tasks automation leads to a destruction of certain jobs and lowers worker's demand, but it can also contribute to improve the productivity of other types of jobs which increases worker's demand. The reason why this is still seen by many under such a negative light is that it could significantly bring further polarization in the job market between the top high-skilled workers and the bottom rest, potentially increasing inequality due to the rise in demand and salary for the former category in contrast with diminishing returns for the latter.

1.2 The economics of Data

Data is one of the most important aspects of today's maybe more-than-ever digitalized economy. Due to its nature, it can be defined as a nonrival input which allows many consumers and firms to access information that was once much harder, if not impossible, to obtain. For society and consumers to truly get the benefits of data, its availability should ideally be as widespread as possible (. However, there are two main issues that clash with this approach: legitimate privacy concerns and "Data hoarding".

The first one is self-explanatory: the public is reluctant to have all of data access be so open to any firms, Big Techs especially. This concern is deeply rooted in many consumers due to the behaviors that these companies have adopted regarding data ever since it became a relevant aspect of the economy. Social media platforms are now front and center of many regulators' concerns because their rise to power in recent times is directly correlated with huge amounts of personal consumer data being at their disposal. This has allowed those types of platforms to position themselves as the primary data collectors, leading to impressive constant financial gains when such data is put behind a paywall and then sold (quite often to other large firms). Facebook, for example, has been subject to lots of investigations and heavy fines by many authorities thanks to their behavior and approach to data collection. What many consumers often neglect is the fact that Big Techs already have access to most of the financially useful data and the widespread availability that the approach up top is suggesting would probably give more benefits to the smaller firms and the consumers themselves. Still, privacy concerns are legitimate and are often at the heart of the regulator's biggest challenges.

"Data Hoarding" presents new sets of challenges, much harder to tackle for regulators. This phenomenon is particularly relevant when it comes to regulation because it's linked to a significant rise in market power concentrated in the hands of a small number of already established Big Tech firms, fitting what has been described as a winner-takes-most structure (Carriére-Swallow et al., 2021). This happens because already large and established firms make use of the collected data sets as barriers of entry to deter competition. Such practices originate in the way Big Techs collect data, taking advantage of the lack of global regulatory cohesion and the consumer's often automatic consent. Once an established large player can gather enough data, it becomes a gatekeeper (a term often used in legislation, for example in the Digital Markets Act of the European Union) and prevents wide access to such data sets in order to secure their market power. We also see that

despite their strong opinions and feelings about data sharing and access, most consumers are willing to exchange their privacy for the most basic online services. In cases of “free\freemium” offerings, we see massive amounts of data being gathered for the firms that operate them, constituting the majority of data sets contributions. These two main issues are strongly correlated and so is their impact on the economy, especially in well developed countries.

Big Techs naturally make great use of such strong established positions in data collection to influence various other sectors, even in cases where there might be a good share of competition. When one of these firms operates a platform where many can display their products or services, the usual practice is to unfairly push its own offerings over those from third party firms, even when the latter ones clearly offer a better option for the consumer. A notable example of this can be found in most e-commerce sites with “recommended” tags (or similar labels) that are put on products directly provided by the platform owner or by favored third parties, to lead consumers towards them and away from the competitors. A similar behavior can be found in most similar platforms such as app stores (Apple’s app store has been closely monitored by regulators). Utilizing collected data about a third-party business product in order to upgrade their own, is another known tactic in use by Big Techs to alter market competition and maintain their power status across the spectrum. Many of the harsher critics have described it as a digital version of borderline industrial espionage. The European Union's Digital Markets Act directly tackles these issues in an unprecedented manner, possibly paving the way for further improvements on this side, although most other major countries have yet to catch up.

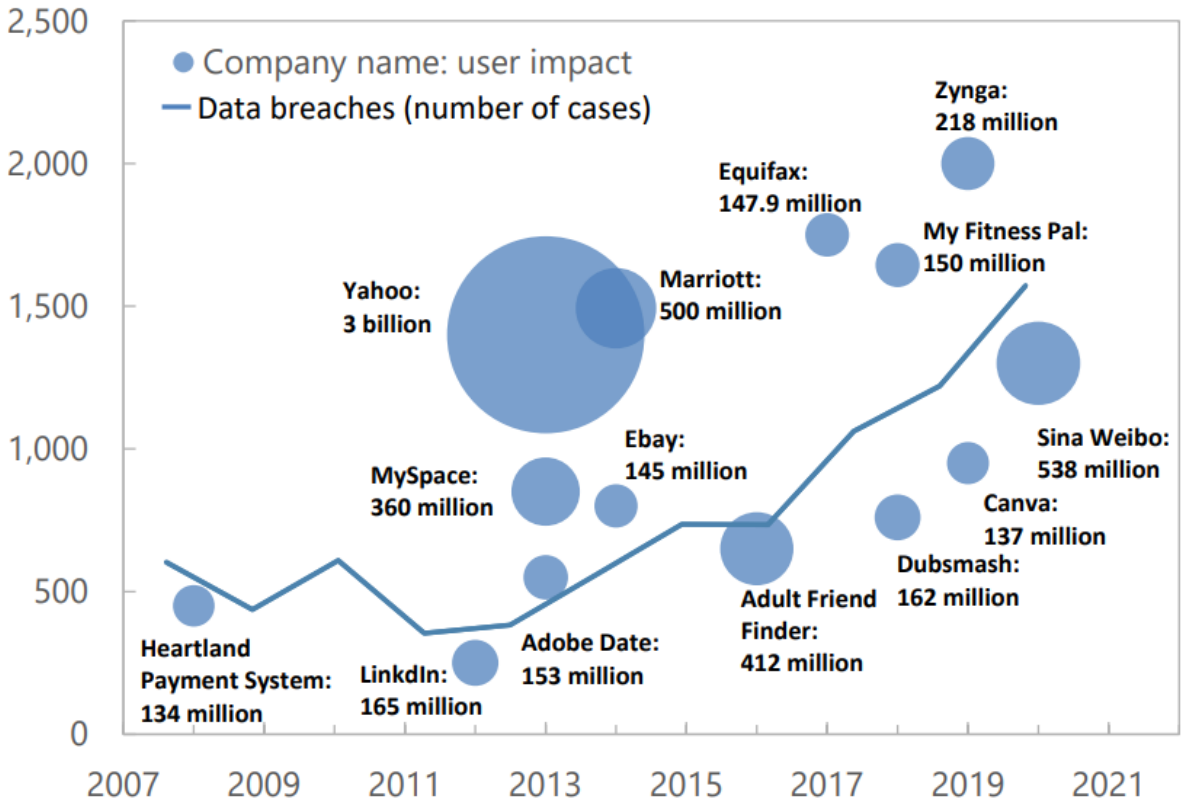
However, it’s not just Big Techs. This situation is far from optimal from a societal standpoint, leading to a significant loss in utility as data access remains restricted. Evidence suggests that if data was more widespread it would allow more firms to discriminate better amongst consumers, leading to more personalized offerings which could cater to the needs of the people more than standardized products or services. In addition to that, consumers could have at their disposal much larger sets of information regarding the firms they interact with, allowing them to ideally make choices that better fit their preferences. These changes will have a significant positive reflection particularly in sectors where partial or imperfect information leads to strong negative outcomes for both firms and consumers. An example of this can be found in financial loans cases where a smaller bank may not have access to enough data to offer a deal that competes with a bigger player, due to

the latter's gatekeeping practices. This will likely result in the customers then turning to such big firms, delivering a loss in market competition and in consumers' utility, because the customers will probably have to face a higher price than they would have if the smaller firm was able to compete.

A lack of appropriate governance regarding the kinds of data that are being used is yet another major obstacle. When looking at evidence from the US insurance sector, financial services, or the housing market, in general there is enough evidence to suggest that inappropriate use of data in relation to certain characteristics of the individual could be the cause of discrimination towards specific groups of people and lead to their exclusion from a bunch of services. This situation can even be worsened by AI models' training coming into play: algorithms are trained on basis and ways set by already expert individuals in those fields, potentially carrying any biases that they might have had into a de-facto locked system and worsening the effects of discrimination and exclusion. For example, in a financial loans case, the AI algorithm that's being used to evaluate the customer has been trained on data coming from individuals who lead to the inheritance of racial bias, the customer also happens to be black. In this case the AI training could lead to an unfair systemic discrimination towards the customer, keeping him/her out of the services provided by the company, leaving no real winners on the table. All of this would significantly bring further overall damage to the relations between those firms, regulators, and the public.

On a similar note, cybersecurity risks and financial services data-related issues have risen significantly in the last decade due to a lack of adequate regulatory presence. Today's whole financial system relies heavily on a complex digital data infrastructure, specifically large sets made up of sensitive individuals' data, that needs the proper amount of protection.

Figure 2: Data breaches per company, 2007-2021



Source: Hill and Swinhoe, 2021; and IMF staff calculations.

The problem is that private firms such as Bug Techs are handling much of this data, and while they might have some incentives to protect them from cybersecurity threats for their own reasons, there's usually not enough investment coming from their side to fully secure the financial system properly

1.3 Financial services

Closely related to the Economics of Data is the relationship between Big Tech Firms and Financial Services. Ever since the advent of new digital technologies, small startups started to take front and center on the innovation stage, especially with the so-called "unbundling" phenomenon: splitting the classic financial services offers into smaller sets of activities, bringing more specialization and competition in the marketplace, ultimately leading to better and cheaper choices for consumers, as well as rapid growth for the firms themselves. More recently however, the expansion of Big Techs into the financial sector, with the advantage of their dominance over consumer data, has reversed this phenomenon: everything a consumer needs in this sector can be found under the Big Tech's expanded umbrella. While their share of the sector is still relatively small, it's growing at a rapid and constant pace, naturally gaining further attention from regulators. This shift in market composition occurred as a combination of different but strongly related trends: accelerated digitalization of the sector and growing interests in acquiring smaller fintech startups.

The first trend came as a natural evolution of the whole market of course, but the transition occurred at a much faster pace than it was originally anticipated because of the Covid-19 Pandemic. As with practically every aspect of the economy, financial services also had to rely on exclusively digital activities, operations, and relations with customers, effectively paving the way for Big Techs to breach into the market easier and in a more effective way than before. Data and cloud services dominance allowed them to be several steps ahead of the more traditional firms old-school firms and despite still being quite behind in terms of market share, this situation created by the pandemic is helping them close the gap. The second trend began when small fintech startups started to be the main innovation and development hubs for the financial sector, surpassing lots of incumbents on those fronts, which in turn gathered the interests of Big Techs. Buying their way into financial services instead of trying to compete with more innovative smaller firms was the best option for them as it allows them to quickly secure some level of market power.

While there are a few benefits in terms of convenience and timesaving for consumers, it's safe to admit that the advent of Big Tech firms brings a new wave of risks to Financial Services (Bains et al., 2022), amongst the key ones we find:

- Market dominance that could hurt innovation in favor of markups.
- Reduced options for consumers (reversing the "unbundling", a.k.a "rebundling").
- Threats to overall financial stability due to working on too many activities at the same time, concentration of cloud services, interconnectedness with incumbents.
- Harder challenges in regulation, in particular towards firms whose core business can't be defined in financial services.
- Impossible or ineffective cross-border regulation and potential dangers for the system integrity as the situation could facilitate crimes such as fraud and money laundering.

Big Tech expansion concerns all aspects of Financial Services, but depending on the country or economic region, some take center stage and others take a back seat. In the United States, the focus has been predominantly on payments and credit with the three major companies of Alphabet, Amazon and Microsoft also providing cloud services, making them major players in the market. Similar tendencies can be found in the EU with a stronger regulatory framework. In China, Big Techs have a stronger presence in other aspects other than the ones mentioned earlier, also covering banking, lending, and insurance, with Alibaba, Tencent and Baidu as the most prominent firms in terms of market power. In Japan we see a slower takeover than in the other major economies, perhaps due to the less dynamic flow of the market in general, with NTT DoCoMo and Rakuten leading the way primarily in payments and insurance. Finally, in emerging economies such as the Latin American nations, India and the major African powers, Big Tech firms are making serious gains in financial services at an impressive pace, led by large telecommunications conglomerates who face even less competition than their western counterparts. Overall, when taking all of this into consideration, strong arguments have been made about a need for improvements in regulation, not just at a country level, but on a global scale.

Chapter 2 – Regulatory Approaches to Big Tech: The Digital Markets Act and the European Strategy

2.1 Challenges in regulation

Regulation is key, and as mentioned in the previous chapter, it's a complicated subject matter to tackle on a global scale due to the differences amongst countries' legislations. While each jurisdiction has their own way of dealing with Big Tech firms, despite differences at national levels, two main approaches can be identified across the world: entity-based and activity-based.

The first approach refers to regulations being applied to licensed entities or groups engaging in regulated activities such as lending, payment facilitation etc. The imposition of regulatory requirements occurs at the entity level and can span from governance to prudential and conduct aspects, with a particular focus on financial stability. Offsite monitoring and onsite inspections are typically carried out by supervisors as necessary measures to ensure that the interested parties respect all the requirements. Overall, this approach allows for more flexible regulations based on principles and pre-established arrangements rather than enforcement actions, that being said supervisors are allowed to also take such actions if justified to achieve the regulatory goals. The primary example for this type of approach is China, which, due to the rapid growth of Big Tech in payment and lending services, has drawn significant outlines at the entity-level, expanding governance requirements under their complex regulatory umbrella (e.g.: requiring Big Tech firms to set up financial holding companies so that each specific business line can be evaluated on prudential and governance terms).

The second approach refers to regulations being applied to any person or firm engaging in some type of regulated activity like investment facilitations or operating lending services. In this case the regulatory framework is built to cater more towards market conduct and is heavily reliant on fines and enforcement actions rather than the monitoring and supervisory structure that characterized the entity-based approach. While this makes room for perhaps more competition, it might also bring harm on the innovation side due to the rules possibly not being neutral enough about potential technological advancement. Another downside to this is that it leaves too much of a gray area for firms to operate in if the regulation isn't specific enough, also leading to non-effective cross-border outcomes unless stronger international agreements are put into place. The primary example of activity-based regulation is the path taken by the European authorities, which as of late have

specifically targeted platform providers and online gatekeepers with the Digital Services Act and, more notably and to a larger extent, with the Digital Markets Act. In contrast with China, which focuses on somewhat direct oversight by financial authorities and incumbents over Big Tech, the EU takes a broader scan across all operations, not just those concerning the financial and payment sectors. This differences are understandable due to the political differences amongst China and the EU, but they can also be traced back to China being a "home" for the vast majority of the firms interested by such regulations, meaning that they both operate and have headquarters within that jurisdiction, while the EU is a "host" in most cases, meaning that a lot of those firms operate in the area but their headquarters are located elsewhere (e.g.: the US is often their "home" country) (Bains et al., 2022).

While seemingly alternative to each other, these two approaches are mixed together, or at least some of their key aspects, rather frequently, leading to what has been classified as the "hybrid" approach. In this case there is a middle ground where the benefits of the two other approaches could rise and the negative sides of both could diminish as a result of the combinations of their regulatory strengths. In fact, with enhanced cooperation between authorities and a clear allocation of responsibilities between home and host jurisdictions, firms would potentially be subject to entity-based regulations at home and activity-based requirements in other locations. An example of a hybrid approach that could be implemented through international cooperation is the combination between US entity-based regulation and EU activity-based enforcements. This would guarantee effective results on most major Big Tech firms since a lot of them are headquartered in the United States, with advantages for both regulatory entities: the European Union would be more satisfied since their activity-based "host" efforts would be backed by a stronger entity-level control in the "home" jurisdiction and the US regulators would have a greater hold on keeping the foreign activities of these firms in check, granting both more regulatory power and efficiency across the spectrum. A similar case could be made for Chinese Big Techs, which are already being kept under an entity-based umbrella at home, to be subject to more effective activity-based regulation from South-east Asia nations, that can be classified as a major "host" jurisdiction for a lot of those firms, especially Vietnam and Thailand, due to their position as economic strongholds of the fast-growing region.

In an ideal world the hybrid approach would be applied everywhere swiftly to get the best possible situation when it comes to regulating Big Tech firms. However, in the real world there are many obstacles that prevent true regulatory success in effectively implementing everything that's needed.

For starters, in the US-EU collaboration example regarding the hybrid approach, the biggest issues concern the US authorities and their struggles to deal with any type of entity-based regulation on a nation-wide scale: a lot of times these types of issues are left to the single states to deal with, and it makes successful implementation a lot harder, especially with Big Tech giants. This is a long-lasting problem that has seen some small progress recently under the current Biden Administration, although the focus has been on data and privacy with minor improvements on the financial services, which is overall still far from the ideal entity-based efforts. On the European side there has been significant progress on both approaches: the Digital Markets Act in particular tackles issues at both entity and activity levels, marking the most important piece of legislation passed by the Union regarding Big Tech firms and other related issues.

Global collaboration towards a hybrid approach becomes even more complicated when other major economies like Japan and China are considered, as both present other different kinds of challenges. Chinese authorities are in fact the least likely to resort to such collaborations, in particular with the EU and the US as partners, due to well-known political reasons. In addition to that, while Chinese Big Techs could be subject to activity-based enforcements in South East Asia, as mentioned in the other example above, the economic policies structure and systems in those countries might not be strong enough yet to provide the effectiveness that's needed, not only because of the levels of corruption and turmoil still present despite major improvements from the past, but also because they have yet to reach the regulatory weight of their western counterparts.

Major obstacles are also due to how fragmented Big Tech Firms' business activities are, which makes even comprehensive and well-balanced plans from authorities hard to implement. For example, Amazon is a platform e-commerce service, but also a direct seller, an entertainment studio with a strong streaming service, and also one of the two biggest players in the cloud services sector. All of these services can be classified "Big Tech core services" that have to all be regulated differently from one another. In cases such as the European Union model, the Digital Markets Act represents just the last of many attempts at successfully tackling this issue, since it takes a long and very well detailed program to not give Big Tech firms loopholes in any of these categories. Fragmentation keeps getting progressively more intense as seen by the boost that occurred during the pandemic and in the coming years it'll become one of the toughest obstacles to fully comprehensive global regulation.

2.2 The European model

In the context of the European Union, Big Tech firms have been front and center of the main regulatory action over the last decade, with the already mentioned Digital Markets Act (DMA), the Digital Services Act (DSA), and prior to those the General Data Protection Regulation (GDPR) and the Digital Operational Resilience Act (DORA). Overall, one of the main targets is Data protection, with the GDPR as a notable standout and the DMA as the newest enforcer of data sharing obligations and privacy concerns, followed by safeguarding and ensuring a proper market structure, via elements that promote fair competition over monopolistic or oligopolistic practices that can be found in the DMA and DSA especially, in addition to also preventing abuse of market power and unfair practices from large conglomerates.

Operational resilience is also a growing concern, as the DORA directly tackles this issue, focusing on the prevention of operational risks that can send shockwaves through the financial system if the supervision is lacking, and facilitating a swift response in case financial services are disrupted (Crisanto et al., 2021). This Act came into force in January 2023, and it targets the way third-party ICT service providers conduct management and their engagement with certain users. Big Tech firms represent both providers and users, especially in terms of financial operations, and are directly placed under EU-level oversight where the Lead Overseer (appointed by regulators) conducts further assessments and pushes unprecedented requirements. For example, a cloud computing service provider can be solicited by the Lead Overseer to give out to regulators all kinds of documentation deemed necessary and can be subject to general investigations and even penalties if it's found in violation of the established requirements. There are also discussions about bringing these firms under the Financial Conglomerates Directive (FICOD), an already existing framework that could provide mitigation to some existing issues related to Big Techs stability in financial markets, however the discussion is still on hold because it might not be able to capture all the newer cross-border and cross-sectoral risks that such entities bring to the table. While all of these elements can be found in many other jurisdictions outside of the European Union, there are a significant number of crucial aspects that make these legislative actions, taken inside this specific jurisdiction, differ from the rest of the world.

First, the European Union has to deal with the fact that there are many differences within its jurisdiction on a country-by-country basis such as the large economic and technological development discrepancies between western and eastern Europe. This already puts more pressure on regulators than the ones in other major world powers such as China or the US, therefore building a successful program on a complex subject such as Big Tech firms' regulation already makes it stand out. On another note, the EU, unlike the US and China, is mainly a host for the vast majority of these firms, making entity-based enforcements harder to implement and to combine with the already present activity-based obligations, which makes landmark legislations such as the DMA even more impressive considering the combination of requirements from both approaches while having to deal with large businesses who are primarily headquartered overseas. Lastly, while many other major economies have tackled similar issues, the EU has provided perhaps the most complete and balanced package, especially in recent times with the Digital Markets Act, which covers all of the topics mentioned earlier in detail, focusing a lot of attention on market stability and competition enforcements that can actually have a lasting impact not only when it comes to the digital world and financial services, but on the economy as a whole.

2.3 The Digital Markets Act as the new Gold Standard

When the focus is shifted towards the European Union, the Digital Markets Act stands out as their new approach is considered by many to have set an example for others to follow. This key piece of legislation is based on a proposal from the European commission in 2020, and after going through multiple stages determining its key characteristics, its obligations for the designated "gatekeepers "came into force in March 2024. "Gatekeepers" is a term that refers to all those firms that meet the determined quantitative thresholds who provide such core platform services: online intermediation, search engines, social networking, video-sharing, operating systems, web browsers, virtual assistants, cloud computing, online advertising and number-independent interpersonal communications (The European Parliament and the Council of the European Union, 2022). The quantitative thresholds set by this regulation concern primarily the number of users, the percentage share of market power, and the total value of a firm's output. Naturally, Big Techs are the primary targets of the DMA, due to their market power and influence over all the services mentioned above, which has led to many of them criticizing this move by the European Union, as it puts quite a bit of new and improved regulatory restrictions and obligations on those targeted firms.

The rules established by the Digital Markets Act concern various aspects of the internal market's economy, focusing on fair digital competition, abuse of market power, data collection and sharing, privacy and consumer's rights. In regard to safeguarding competition, the DMA directs strong attention towards the different ways that gatekeepers use to favor certain services over others on their platforms, typically giving special treatment to their own or to those of preferred third parties over other regular competitors, utilizing their position as platform providers to unfairly alter the whole scenario in their favor. Examples of this behavior are everywhere on the digital platform space: pre-installed software applications that the end user isn't able to remove, default settings in operating systems and web browsers that cater towards other services also owned by the same firm, ranking products in better positions on e-commerce platforms using suspect criteria, and many more. Under this new legislation there are significant improvements: gatekeepers are forced to allow end-users to uninstall pre-installed apps unless they are essential to the proper functioning of the service itself, they are also obliged to easily allow change in default settings and to not engage in any form of preferential treatment when it comes to ranking, indexing and crawling, making their conditions for said lists fair and transparent. In order to make sure that such obligations are respected, the European Union utilizes a system of fines, penalty payments and remedies, which can vary depending on the gravity and timeline of the violations. The most basic fines can go up to

10% of the firm's total annual turnover for one-time offenses, and those are usually the most used by regulators, but they can go even further up to 20% in cases of repeated infringements. If the firm persists with long-lasting and non-compliant behaviors even after the fines, then periodic penalty payments up to 5% of the average daily turnover may be implemented as a stricter measure, which can even add further financial remedies on a case-by-case basis. As a last resort option, the regulators might decide to impose non-financial remedies concerning the company's structure and assets and potentially having a direct intervention on their overall market position.

For all those reasons and for its completeness and versatility, the Digital Markets Act can truly be classified as a landmark piece of legislation, the new Gold Standard of Regulation when it comes to Big Tech firms.

Chapter 3 – The Future of Regulation on a Global Scale

3.1 Effective cross-border regulation: concerns and possible solutions

Cross-border effectiveness is the key when it comes to Big Tech firms' regulation and, as listed in the previous chapter, it brings a lot of challenges to the table. A successful global strategy has yet to be agreed upon, but there are some concerns regarding these conglomerates that could bring all regulators together and start making some significant progress. Disclosure of Big Tech financial services could represent a great starting point for such discussions for a number of reasons:

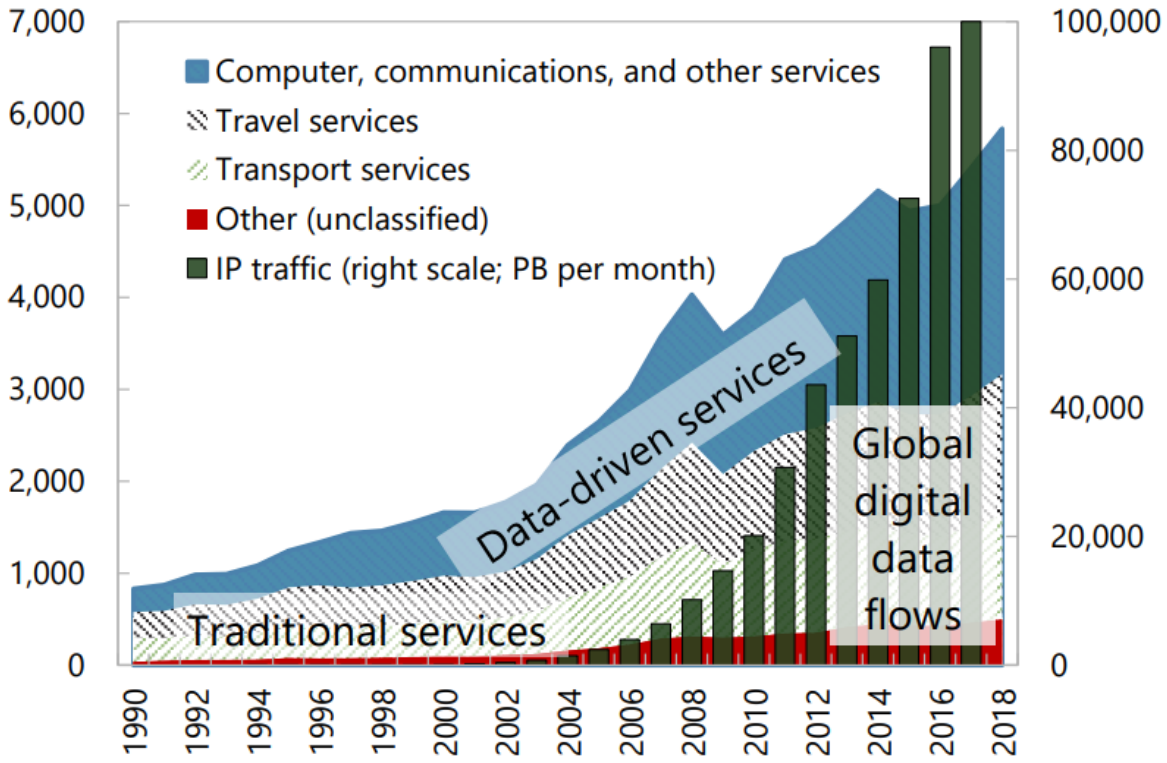
- Growing partnerships with incumbents, which normally take all the credit and liquidity risks, prompting a big rise in financial transactions on their platforms.
- Major exposure to reputational risks, as many of these platforms are built around user's trust in service quality.
- Lack of transparency on a global scale, that makes it hard to quantify the costs of a potential systemic disruption between Big Tech firms and financial incumbents.

The risks associated with these elements can all be mitigated via enhanced requirements of disclosure in all the interested jurisdictions, comprehensive of all financial services and affiliated issues, including reputational risks. It's in the interest of all regulators from all jurisdictions to act together on this specific topic as the beginning of a potential global approach. In fact, as demonstrated with the 2008 crisis, avoiding an unquantifiable systemic collapse in the financial system benefits all countries, especially the major economies.

In the case of global policy cooperation, Data flows and data protection have a central role to play. Global trade in data-driven services has increased exponentially since the 1990s and it underlines a growing range of economic activities that was made possible by the ability to move data across borders for international trade purposes (Carriére-Swallow et al., 2021). This constant growth over the last three decades has of course brought up new concerns when it comes to effective cross-border regulatory practices. First, the flow of data that occurs in and out of jurisdictions makes it hard to quantify and come up with comparable levels of privacy protection; In addition to that, data processing and related services are one of the most important exports for developing countries, and whenever advanced economies choose to tighten up restrictions, they have to either comply and adopt the new standards, therefore increasing their exporting costs, or not follow the regulatory

dispositions and lose market access. For these reasons, many developing nations could suffer from excessive regulation coming from the more advanced economies, that could also be looked at as protectionist barriers depending on how strict they are, which implies a need for moderation and careful considerations when these necessary cross-border measures are implemented.

Figure 1: Global trade in data-driven services, 1990-2018, in billions of US dollars



Source: Toward a global approach to data in the digital age by Haksar, Carrière-Swallow, Giddings, Islam, Kao, Kopp, Quirós-Romero, 2021; World Integrated trade Solutions and World Bank, 2021.

In terms of protection of individual's data, international agreements could be built on already existing principles such as the OECD Principles on Privacy (1980 and amended 2013), with additions that amplify the main definitions and characteristics to further reflect today's more complex digital economic space. Principles on interoperability and data portability could also be approached in the same manner as well as those on data sharing amongst jurisdictions for more defined regulatory purposes. The G20 has also been vocal about this for a while has expressed in 2021 the need to access private data sources for public policy purposes: finance ministers and central banks governors requested the IMF and other international organizations to put together a

proposal for the G20 Data Gaps initiative, which includes “access to private data sources” as one of the main four areas of priority. This latest initiative of course is more catered toward the needs of the world’s most advanced economies that make up the G20, but it’s still a good starting point to further expand on international cooperation and potentially leading to more effective agreements on future global data policy.

Despite the lack of a real global data policy framework, there have been some collaborations and partnerships amongst countries specifically aimed to reach that goal or at least something close to it. In general, multilateral trade treaties such as the World Trade Organization (WTO) oversee exchanges of data in commercial and financial services, although it’s very limited in practice and it mainly constitutes formal arrangements between countries. The WTO e-commerce initiative, while still at an early stage, makes up another attempt to put into place some cross-border rules regarding exchanges of data while ensuring privacy protection in particular when it comes to platforms such as the amazon or apple store and social media sites. Bilateral agreements such as the EU-US Privacy Shield agreement have also attempted at tackling data flows with direct cooperation between major economic powerhouses, but unfortunately it was invalidated due to the Schrems litigation: a high-profile case regarding major Big Tech firms, such as Facebook, transferring European citizens’ data to the US without any proper consent, undermining the trust necessary to make that cooperation work. This provides an example of how hard it can be to reach certain levels of agreements when it comes to handling cross-border data flows, especially when the interests of two different jurisdictions collide even if they hold a strong relationship such as the US and the EU.

It’s important to note that while the best option would be an effective global framework, cooperation can also occur simultaneously at a bilateral, sectoral or regional level. A successful global framework doesn’t mean that smaller ad-hoc fireworks should not be pursued, in fact, it might be beneficial if their development and implementation occurred at around the same time because of the rising fragmentation concerns: the regional ones could be a great aid to the global framework when the cross-border exchanges get too specific in terms of the sectors or jurisdictions involved. For example, if the jurisdictions involved are small developing economies and the area of concern only constitutes a small fragment of a Big Tech firm’s worldwide operations, the Global framework might be too wide and generalized to fully cater to these needs, but a resolution can be achieved via the regional framework that is sector specialized in such cross-border flow.

3.2 How to achieve a worldwide hybrid approach

The hybrid approach presents a potentially optimal solution when it comes to Big Tech firms' regulation; however, it requires a lot of problems to be solved before it can be successfully implemented on a global scale. The proposed cooperation and agreements suggested in the second chapter between home and host jurisdictions is certainly a good start, however, to fully achieve worldwide effectiveness there must be more support to build around that idea.

In the case of EU (host) and US (home) jurisdictions, the discussion could be enlarged with the inclusion of others that act as a host for US-based firms the same way the EU does: the UK, Australia & New Zealand and most Latin American nations could easily qualify for this cooperative expansion, with the LATAM countries also working as a bridge between the western world countries and the developing economies' interests. Building macro regional cross-border agreements first can help mitigate the worries and concerns that developing nations might have towards new proposed rules by their western counterparts, allowing for a structural foundation of trust for future global cohesion. The same principles can be applied in other parts of the world with the respective home and host jurisdictions that come into play, the main concerns start to rise when there are new agreements that depend on difficult and complex relations between economic powerhouses such as EU (host) and China (home). Despite the difficulties that situations like that present, they are not impossible to overcome, as seen earlier in this chapter when it came down to disclosure of financial services and cross-border data flows, which can help lay the groundwork for similar elements in regulation towards a global hybrid approach.

Once the macro regional agreements are put into place and their effectiveness is verified, one way to proceed is to utilize the International Monetary Fund (IMF) to full strength and its loan system as a tool for enforcement of new regulations, with the EU's DMA as the new gold standard, in the same way that reduction of tariffs and market liberalization have been pursued worldwide. As mentioned earlier, the inclusion of developing nations in the first type of agreements before reaching full global cooperation is going to also help in case the procedure chosen goes through the IMF. This is because in many instances, dating back to the earliest days of the IMF, there has always been a conflict of interests between already established major economies and developing nations, due to the former's regulatory proposals often being seen by the latter as protectionist practices and attempts to stun their growth (e.g.: every negotiation regarding agriculture's international trade barriers). Other than the IMF, other international organizations could be used in

the path to reach global cohesion, although, taking the WTO as an example, it hasn't proven itself to be neither as efficient and as relevant when it comes to policy enforcements on a worldwide scale when compared to the IMF, which, due to its structural functions and workings, makes up the best option to oversee the rise of a global hybrid approach towards Big Tech Firms' regulation.

3.3 Global implications

After having analyzed all the data, history, pros and cons regarding Big Tech firms' regulation, it's possible to start drawing some outlines of the implications that are going to follow whether successful global cooperation in this matter is achieved or not. In the instance where this issues aren't tackled successfully worldwide the risks of unfair market competition and monopolistic/oligopolistic practices are going to increase significantly as we are already seeing today how that has affected the digital economy that is growing at a very fast pace: the small fintech startups that in even recent history have been the center of development and innovation are almost all going to be bought out and brought under one of the Big Tech conglomerates' umbrella, which is also going to hurt consumers in the long run.

Financial stability is also at risk worldwide, as the expansion of these large firms into payment, lending, and other related services has grown significantly everywhere in the last decade. Even if the single major economies such as the US, EU and China decide to implement the needed regulatory actions, if they are not coordinated with each other or if they aren't able to get developing economies on board, the issues generated from a potential collapse in this system are still unknown and could be disruptive, not just for the digital world, but for the global economy overall.

In the opposite scenario, all the jurisdictions are successful in implementing comprehensive policy agreements on how to regulate Big Tech firms. As long as the regulatory frameworks that are built are balanced and not excessively compensating the other scenario, the global results would positively affect market competition, e-commerce platform prices and product quality, and overall customer's choice. Another positive outcome would be the financial system benefitting from more stability and interoperability, as disclosure of these fast-growing Big Tech financial services is implemented globally, also generating more security and protection from potential crises, allowing the system to be better prepared for said situations. In addition to these results, this worldwide success would encourage jurisdictions to collaborate more often and tackle economic and financial challenges together, building bridges to close the gaps in regulation and stability between the major economies and developing countries.

Concluding remarks

The present work has tried to provide a detailed analysis on Big Tech firms' regulation and the global situation regarding the areas related to this complex topic. The focus of has been on how to solve the main challenges in order to obtain a successful and effective global approach, based on historical data sets, legislative examples, research papers and media articles, with particular attention given to the EU and the Digital Markets Act as the main case study. The primary sources came from research archives of various institutions the International Monetary Fund and the European Central Bank, while other information was gathered via other sources like legislative material from the European Parliament and the Council of the European Union. Readings from media outlets like Reuters and The Guardian have provided, to a lesser degree, interesting inputs and ideas as well. The results of this work show that while some progresses have been made in various if not all aspects of Big Tech firms' regulation, there's still a lot of work to be done and international cooperation at the highest institutional levels is the key to unlock the path towards balance and success in Big Tech firms' regulation.

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