

THE OPTIMAL DESIGN, ORGANISATION AND POWERS OF COMPETITION AUTHORITIES

OECD Competition Policy Roundtable Background Note



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Foreword

Recent developments have raised the question of what a modern competition authority should look like and how competition enforcers could or should adjust to meet the challenges of the future. Challenges include, but are not limited to, the importance of technology, global markets and cross-border cases, concentration in many industries and economies, sustainability concerns and support for green policies and the increasing government intervention in markets. Such contemporary challenges may, for instance, affect the urgency of competition enforcers to take appropriate action, can change the ways in which they can or should work, or modify expectations of where and when to play a role.

This background paper discusses how the internal organisation of competition authorities has been, or can be, improved to tackle these contemporary challenges for competition authorities. It focuses in particular on (i) the change in required skills and resources for competition authorities, and (ii) the extent to which new, adjusted or existing tools and powers should be considered in this changing environment.

On the first issue, authorities are seeking additional expertise in different areas, of which knowledge of data and technology seems to have the highest priority for many. To obtain the required skillsets, authorities have embraced diverse strategies, including increasing internal staff capacity, implementing in-house training programmes, and facilitating staff exchanges. Several authorities have established specialised data units for data science and technology skills, similar to how many authorities have established a separate economics unit in past decades. Although the organisational set-up is different from one authority to another, the development of a robust human resource strategy remains integral to effectively attracting and retaining skilled professionals within the field.

On the second issue, different tools and powers are necessary for an agency to be effective. Without attempting to be exhaustive, jurisdictions have seen (i) the introduction of powers to allow a competition authority to impose remedies absent a competition infringement (resulting from a market study or investigation), (ii) regulatory sandboxes gaining traction in various jurisdictions, (iii) the implementation of ex-ante regulation and increased rulemaking, (iv) increased scrutiny of mergers through the review of mergers below the notification thresholds and (v) the increased use of interim measures and guidelines. Finally, competition authorities have expanded their investigative toolkit with new tools, such as digital forensics, artificial intelligence, machine learning and virtual inspections, enhancing the efficiency and effectiveness of investigations.

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1. Introduction

Institutional design is a critical component of competition law and policy. Good competition laws are meaningless without well-designed (and functioning) institutions to enforce them. At the same time, many different models exist and there is not one optimal institutional design. What works well in one jurisdiction may not always work as well in another.

Countries should periodically revisit its existing competition law and policy arrangements and consider how to improve them.¹ Contemporary challenges, trends or developments may prompt jurisdictions to improve their set-up to ensure their institutional design enables it to address those challenges.

A discussion on the optimal design of a competition authority can relate to many different issues as it covers every aspect of the governance of the authority.² It can range from very narrow issues – such as what skills are required to tackle its priorities – to very broad ones, including reflecting on the goals of competition law and policy or how an authority is optimally equipped and governed in relation to its external stakeholders (i.e. the place of the authority in the administrative structure, its relations to other bodies, and its powers and competences).

This background paper focuses on the ‘internal’ organisation, in particular the required skills and resources and tools and powers, that can be of use to tackle contemporary challenges for competition authorities. As such, the discussion will **not** focus on issues that relate to the objectives of a competition authority (or of competition policy more generally), where a competition authority is situated within the government and its independence, the functionalities or mandate of an authority (e.g. single function vs. multifunctional), or the chosen governance model (such as prosecutorial vs. administrative or separation of adjudication and investigation roles). It will also avoid discussing issues in detail that have been discussed in recent OECD events or policy roundtables.

The paper is structured as follows: section 2 will succinctly describe some of the contemporary challenges that competition authorities are faced with in 2023. Section 3 and 4 will then analyse how competition authorities can adjust, and have adjusted, to address (some of) the contemporary challenges, focusing on skills and resources (3) and tools and powers (4). Section 5 presents some conclusions.

2. Contemporary challenges for competition authorities

Competition authorities face a host of challenges, many of which are interconnected, that require their attention and may necessitate a reactive or proactive response. Some challenges may warrant a reflection on possible changes in the institutional design of an authority to better address them now and in the future. While many of the challenges for competition authorities are “timeless”, others are a result of, or linked to, recent developments or events. Addressing such contemporary challenges is important because it enables competition authorities to optimally execute their mandate, including safeguarding competition, innovation and consumer welfare.

2.1. Technology

One of the most prominent challenges, if not the most, is the technological revolution. Digitalisation, marked by the advent of the internet and the rapid and continuous advancement of technology that followed, has transformed industries and economies globally. It has brought about many benefits and advancements, including increased automation, improved efficiency, and the development of new technologies and services across numerous sectors, including communications, healthcare, finance and entertainment. However, it has also introduced numerous challenges, including for competition authorities. Digital markets have given rise to numerous discussions, from what the goals of competition law and policy are and what frameworks of analysis should be used, to the increased importance of ecosystems which go beyond the traditional horizontal/vertical relationships and how to deal with the ever-growing importance of platforms and data, amongst many others.

It can be expected that this process of digitalisation will only accelerate further in the near future. For instance, it is estimated that approximately 90% of data in the world today was created in the last two years.³ The rapid development and deployment of artificial intelligence (AI) is argued to have brought about the newest wave of technological revolution, which will change or even disrupt many industries (Suleyman, 2023^[1]). If not addressed timely and effectively, these technology-related challenges can have significant consequences for the functioning of industries, economies and societies.

2.2. Globalisation and market interventions by governments

The rapid advancement of technology has played an important role in markets becoming increasingly interconnected and global in nature, as companies are operating more and more on an international or global level. Consequently, competition enforcement has become increasingly cross-border as well, creating additional challenges for national competition authorities such as how and when to exchange information and/or co-ordinate investigations or how to collect evidence abroad, just to name a few. International co-operation, co-ordinated efforts and joint or similar approaches are essential to tackle such challenges (see also (OECD/ICN, 2021^[2])).

Such collaboration may be very important, although potentially more sensitive and complicated, in situations where competition concerns are the result of interventionist governments. Indeed, the different global economic crises in the past two decades have resulted in a renewed interest in industrial policy. In recent years, subsidies have increased, and will continue to increase, in most parts of the world. This escalating trend will persist to create challenges for open markets, potentially leading to inefficiencies and trade tensions, due to the often unlevel playing field that local enterprises are confronted with as a result of foreign state-owned, state-sponsored and government-supported enterprises. Multilateral trade rules and Free Trade Agreements may need to be complemented with expanding enforcement by competition authorities to minimise the distortive effects of subsidies (see also (OECD, 2022^[31])).

2.3. Market concentration

The increasingly digital and globalised nature of many markets and the firms that operate within them are also often considered to be an important (but certainly not the sole) factor for another concern for competition authorities, namely the increase in market concentration in recent decades in many industries and economic sectors (OECD, 2018^[4]). The trend of increasing concentration cuts across diverse sectors, including agriculture, telecommunications, transportation, global container shipping, health services, finance and information technology (see for instance (Koltay, Lorincz and Valletti, 2023^[5]), (Bajgar et al., 2019^[6]) and (The White House, 2021^[7]))⁴. Moreover, economic consolidation has become a trend in many advanced economies, although the levels of significance differ (Koltay, Lorincz and Valletti, 2023^[5]).

While the causes of these changes and the possible policy implications are subject to a large debate, empirical studies conclude that competition may have weakened in many markets, harming workers, small businesses, startups and consumers (see again (Koltay, Lorincz and Valletti, 2023^[5]) and (Bajgar et al., 2019^[6])). Detrimental effects include increasing mark-ups, a rise of superstar firms, lower business dynamism and productivity growth as well as a reduction in labour share of profits. This last concern, a decline in labour share of income, combined with wage stagnation in some countries, has raised concerns about monopsony and buyer power held by employers on the demand side of the labour market (Congress of the United States, 2023^[8]). Many commentators have pointed to the loss of efficiency and harm to workers that take place when monopsony power allows employers to withhold demand for labour (OECD, 2020^[9]).

With digitalisation and globalisation as two factors that may have attributed to the trend of increased concentration, some point the finger at competition authorities who are claimed to have been too lax in its competition enforcement, especially when reviewing transactions. As a result, several competition authorities around the world have adjusted, or are considering adjusting, their strategy, priorities and approaches to avoid any further concentration. This includes increased attention to killer acquisitions (OECD, 2020^[10]), serial acquisition and industry roll-ups ((OECD, 2023^[11]), (OECD, 2020^[10]) and (Congress of the United States, 2023^[8])).

2.4. Climate change

Another contemporary challenge is what some call the “existential” challenge of climate change, even though the role for competition authorities may not be obvious for everyone. Climate change has emerged as a critical contemporary challenge that has slowly but surely transitioned from political discourse to the realm of policy development and implementation. With the increasing recognition of climate change’s profound effects, so-far inadequate policy and regulatory responses, and the rising willingness of businesses to collaborate in addressing climate issues (De Backer et al., 2023^[12]), competition authorities face the pressing need to reconcile competition principles with environmental initiatives.⁵ Examples of the role competition authorities can play include (but are not limited to) clarifying the antitrust approach to

business co-operation with the objective of enhancing environmental sustainability (without undermining competition principles) and including sustainability considerations when assessing dominant firms' practices or a transaction – either as a negative or mitigating factor. Ultimately, competition policy can play a key role by ensuring the efficient allocation of capital, which in turn will contribute to achieving the technological breakthroughs that are needed to reach environmental goals (OECD, 2021^[13]).

2.5. Others

These are just examples of challenges that many competition authorities are grappling with today and that may affect their internal organisation. However, this overview is by no means exhaustive and there are certainly other issues that may be relevant for different authorities when designing their internal organisation. For instance, we have not yet forgotten the significant and urgent challenges for competition authorities posed by the COVID-19 pandemic. Moreover, many look at competition authorities when discussing recent problems of inflation or “stagflation” (simultaneous inflation and recession), rising cost of living, high energy prices and/or poverty reduction, whether this is (fully) appropriate and justified or not.⁶ The next section will discuss the ways in which competition authorities have adapted, or can adapt, to cope with some of these challenges.

3. Skills and resources of a competition authority

Competition enforcement has evolved significantly over time, in turn affecting the required skills and resources in an authority responsible for competition enforcement. A major change has been the shift toward a more economics-based approach at the end of the previous century. For many decades, the main focus of competition law and policy was on legal principles with limited reference to economic analysis, in terms of both theories of harm and methods of analysis. This ‘formalistic’ or ‘legalistic’ approach emphasised the adherence to legal doctrines and the literal interpretation of competition laws. This changed through the growing importance of economic analysis in the 1970s in the United States (Ginsburg and Fraser, 2010^[14]) and from the early 1990s onwards in Europe (Parcu, Monti and Boota, 2021, p. 1^[15]). Today, economic analysis plays a crucial role in competition enforcement, with economists being fully integrated in most competition authorities, even though operational set-ups differ between jurisdictions and authorities.⁷ Looking at the competition authorities in OECD members, approximately 90% of them have created the position of a Chief Economist and/or have established a separate economics unit.⁸

Consequently, the dominant skills needed until recently by a competition authority include (but are not limited to) legal, economic, analytical and communicative skills. Additional skills that many competition authorities have also deployed, dependent on factors like the authority’s mandate or level of experience, include behavioural economics, econometrics, statistics or sectorial knowledge.

However, contemporary challenges, especially those described in the previous section, require many authorities to reflect on whether new skills are needed or whether some of those already present need to be expanded or deepened (section 3.1). If so, the next question is how to obtain these skills most effectively and efficiently, also given the limited resources that all competition authorities are faced with (section 3.2). The final question is how, once acquired, these skills should be embedded in the authority (section 3.3), a question that led to significant (and in some cases still ongoing) debate with regards to economists. Subsection 3.4 summarizes this section.

3.1. Skills increasingly in demand

3.1.1. Data and technology skills

One of the main type of skills that many competition authorities are increasingly (considering) investing in are **data and technology** skills. This is driven by the fact that data are increasingly a tool as much as a worry for competition authorities.

Firstly, data has become a fundamental instrument (or opportunity) for competition authorities to better analyse and assess markets and practices. Good data allow a competition authority to better understand what is going on in an industry or market and help detect or assess anti-competitive practices. During an investigation, data analysis can help create a convincing picture (for decision makers or courts) or help with the identification or assessment of remedies. However, in many cases, especially in digital markets, this requires very technical expertise that goes far beyond the more standard economic or econometrics

skills. While early data screens mostly relied on economists, more recent screening tools require technology specialists such as data and computer scientists (OECD, 2022_[16]). Moreover, to facilitate such data analysis, processes within the authority need to be updated to allow for better and more efficient data processing, including the handling of large amounts of documents or data within a limited time.

Secondly, data is increasingly at the heart of what many businesses do and how their business models are designed. As such, specific expertise is crucial to better understand business models and consequent firm behaviour. For instance, the growing use of large datasets, algorithms, machine learning and artificial intelligence by private companies creates the need for competition authorities' staff to have strong technical expertise.

To address the required data and technology skills, different profiles are important. Germany's Bundeskartellamt (BKa) recruited data scientists and IT-experts in 2022, while the Japan Fair Trade Commission (JFTC) appointed four external experts in 2021 as "Digital Special Advisors" and hired new staff with a tech background as digital analysts. Canada's Competition Bureau hired data scientists, intelligence analysts and design thinking experts, and expects that its specialised team will grow over the next few years to about 25-35 employees.⁹ The United States (US) antitrust agencies have publicly announced their desire to increasingly attract data and technology skills. The US Federal Trade Commission (US FTC) mentions in its Strategic Plan for the years 2022-26 to aspire to expand the type of skillsets by, amongst others, attracting technologists and data analysts.¹⁰ Moreover, the US Department of Justice (DOJ) Antitrust Division's Chief Economist has a background in computer science and machine learning, and its Division has already hired technologists and is hiring data scientists and analysts.¹¹

The CMA launched its Data, Technology and Analytics (DaTA) unit in 2019, a specialised team applying the latest techniques in data engineering, machine learning and artificial intelligence to increase the effectiveness of the authority. (Hunt, 2022, pp. 33-35_[17]) identifies four pools of skills for this unit:

- **Data science** – Data science is a relatively new, but rapidly evolving, academic field,¹² that aims to draw insights from the world of big data.¹³ It is an interdisciplinary field that uses traditional estimation and modelling techniques as well as more modern techniques such as machine learning or artificial intelligence (Hunt, 2017, p. 4_[18]). Within a competition authority, data scientists use their skills on individual cases or to create tools that use advanced data techniques (such as digital screens). They draw on a wider pool of practical techniques than econometricians, but econometricians are well-suited to become data scientists (Hunt, 2022, p. 334_[17]).
- **Data engineering** – data engineering is the process of "engineering", or designing and building, systems that allow for the collection and analysis of raw data from multiple sources and formats.¹⁴ As such, they are focused on the infrastructure and data pipelines¹⁵ and deal with issues such as formats, resilience, scaling and security (Hunt, 2022, p. 34_[17]). The role of a data engineer is complementing the data scientists or analysts to build and implement a data-driven solution framework.¹⁶ In an authority, this would for instance include the development of tools and/or software that allows for automatising certain processes, including the handling of large amounts of documents or analysis of large amounts of data.
- **Technology insight** – more qualitative analysis of technical issues by professionals with a strong background in data and technology. Within an authority, such technology insights would support the case team to better understand the implications for the case objectives. Apart from working on cases, these skills also fit well with horizon scanning and the understanding of new technologies.
- **Behavioural in sight** – analysis of people's behaviour and their decision making, drawing from a range of related disciplines including behavioural economics, behavioural sciences (social or experimental psychology or neuroscience), quantitative analysis (e.g. statistics and causal interference) or related disciplines (e.g. anthropology and ethnography) (Hunt, 2022, p. 35_[17]). The importance of behavioural economics for competition enforcement has also recently discussed at the OECD (OECD, 2022_[19]).

3.1.2. Business disciplines and sectorial expertise

Apart from data and technology skills, there are different other disciplines that have become increasingly relevant or useful for some competition authorities to address certain contemporary issues.

Several competition authorities have underscored the importance of better understanding **business strategy**.¹⁷ While there is no unique definition of business strategy, it is fundamentally about firm decision-making.¹⁸ Better understanding strategic decision-making may allow competition enforcers to better evaluate those decisions and the market outcomes that result from it, for instance in markets that demonstrate new business models (e.g. digital markets), new ways in which companies compete (e.g. competition between ecosystems) or analysing how a firm's incentives can be changed (e.g. environmental considerations). A business' strategy is very much linked to its access to, and allocation of, financial resources. As such, some authorities¹⁹ have found it necessary to better understand the world of **corporate finance**²⁰ and **private equity**²¹. Such knowledge may enable competition authorities to better understand decisions of investors – such as private equity firms, wealthy individuals, or institutional investors –, for instance in the case of a merger.

Moreover, while competition policy is firmly grounded in microeconomics²² – focusing on decision-making of individual economic agents such as households, firms and individuals –, certain authorities are strengthening their **macroeconomic capabilities**. This is often driven by the fact that particularly in times of economic crisis, stakeholders in governments request competition authorities to provide evidence on the links between competition, competition policy and macroeconomic outcomes, such as productivity, growth, innovation, employment and inequality (OECD, 2014, p. 1_[20]). The reasoning is that on one hand, macroeconomic factors (such as overall economic stability, employment and inflation) can influence competition and market dynamics, while on the other hand competition policy and enforcement can potentially have macroeconomic implications, particularly in the context of major mergers, industry consolidation, or sector-specific regulation.

Two areas that may intersect with both macro- and microeconomics are **labour economics** and **environmental economics**. With regards to the first, competition authorities have become increasingly concerned with employer monopsony power (OECD, 2020_[9]) and have particularly focused on no-poach agreements and wage-fixing practices.²³ In 2022, the Antitrust Division within the US DOJ has appointed a Principal Economist, an Associate Professor at the University of Pennsylvania School of Social Policy and Practice (SP2) with a primary focus on labour issues.²⁴ With regards to the second, several competition authorities are strengthening their **environmental (economics)** expertise, either in-house or through cooperation with others (competition authorities, environmental agencies or environmental economics experts). Such expertise allows the authority to address environmental considerations more adequately in competition enforcement through a better assessment of green quality, choice and innovation harm and efficiencies.

Another type of skills that many competition authorities are increasingly investing in is its **communication capabilities**. The success of competition authorities relies to a significant extent on their ability to communicate effectively with their stakeholders. A clear and consistent communication strategy can increase compliance with competition law among businesses, enhance the understanding of the benefits of competition and can educate consumers to recognise anti-competitive practices (OECD, 2023_[21]). It can also enhance the credibility of the authority and justify the use of the resources. Several competition authorities identify communication as one of the focus areas in their strategic plans, for instance through including “plain language initiatives” (OECD, 2023, pp. 22-23_[21]), targeting specific audiences²⁵ or using new or different communication channels²⁶.

Finally, **sector-specific knowledge** continues to be relevant for many authorities, partly depending on the local relevance of certain sectors in competition cases and the institutional set-up (whether the authority combines competition enforcement with regulatory functions in certain sectors).

3.2. Ways to obtain new skills

Competition authorities have different ways in which they can get access to newly required skills. Apart from hiring additional staff, competition authorities can, and do, find other solutions, including in-house training or upskilling of current staff, co-operating with other government agencies (for instance to pool or exchange resources), hiring external experts/consultants/academics (short term or by way of a partnership) or joining efforts with international counterparts.

3.2.1. Hiring additional staff

Budgetary constraints hinder competition authorities to hire all the staff that they may need. Authorities' budgets do increase over time, but this is often linked to an increase in its mandate (i.e. activities) and/or to correct for inflation. OECD data indicate that on average, budgets of competition authorities increased with 4.3% per year in the period 2015-22).²⁷ However, when adjusting the budgets for inflation, the increase in the aforementioned period was 0.9% per year. Average numbers of staff increased in the same period with 2.2%. As a result, competition authorities need to carefully reflect on how to obtain access to resources.

3.2.2. In-house training

Different examples of upskilling exist, including government-wide programs for upskilling workers, academics training staff, within agency training (staff teaching other staff), between-agency training (agencies providing training to other agencies), use international courses and conferences as in-house training (see Box 3.1 for a few examples).

Box 3.1. Select examples of in-house training

Singapore has established a Government Technology Agency (GovTech), including a Data Science and Artificial Intelligence Division (DSAID).^{*} They support the growing demand for data science and data engineering capabilities in public agencies by providing capabilities and training in new technologies, including focusing on application design, data science and cybersecurity. This is a “whole-of-government” effort to educate and train government employees in data analytics, and CCCS staff participate in regular training sessions on data analytics techniques as part of this initiative.

In **Australia**, apart from a studies assistance programme that provides financial support for staff to take time off to study, the ACCC has rolled out a “Data literacy and digital literacy programme” which targets different types of staff with different types of training, depending on the extent to which they need to work with data and digital tools.

The **US** DOJ Antitrust Division had launched an initiative in 2020 to offer attorneys and economists training offered by the MIT Sloan School of Management in blockchain, AI and machine learning to develop a basic understanding of how business use of the technologies might affect competition.

In **Korea**, forensic experts at the Digital Investigation and Analysis Division provided training for KFTC employees, thereby improving the KFTC's overall capability for investigating digital evidence.

Note:

^{*} In mid-2014, the Government Analytics Team was established as an experimental unit in the Infocomm Development Authority. This small multidisciplinary team of seven policy analysts, data scientists and software engineers was tasked to explore how data could be more effectively analysed for the public good. After some early successes in demonstrating the game changing potential of data science in the public sector, the unit evolved into the Data Science & Artificial Intelligence Division (DSAID) in GovTech and the team rapidly expanded to support the growing demand for data science and data engineering capabilities in public agencies.

Sources:

Singapore: <https://www.tech.gov.sg/> and <https://www.tech.gov.sg/capability-centre-dsaid>, https://www.apec.org/docs/default-source/publications/2022/7/project-summary-report-capacity-building-on-data-science-tools-for-sector-regulators-and-competition-authorities/222_ec_capacity-building-on-data-science-tools.pdf

Australia : [AEWG Webinar "Shaping agency digital transformation: the role of of digital experts"](#), 15 March 2022.

US: [Remarks Assistant Attorney General Makan Delrahim at Thirteenth Annual Conference on Innovation Economics](#)

Korea: G7 Germany (2022^[22]) Compendium of approaches to improving competition in digital markets, p. 113, https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Others/G7_Compendium.pdf?__blob=publicationFile&v=4.

Civil Service College Singapore (2019^[23]), p. 50, Issue 21; July 2019, <https://file.go.gov.sg/ethos-issue-21.pdf>

3.2.3. Staff exchanges

Staff exchanges, either between competition authorities and other government agencies or internationally between competition authorities, can contribute to improving skills, building relationships between authorities and overall enhancing informal co-operation. Such secondments take different forms and can be aimed at different profiles. For instance, the CMA has organised for a number of years secondment programmes for competition lawyers and economists from the private sector.²⁸ Moreover, in July 2023, the UK government has announced a new digital secondment programme to improve its digital, data and technology knowledge by attracting workers from industry (e.g. tech giants) and academia into government on a secondment basis.²⁹ Finally, the CMA actively seeks to arrange secondments between the CMA and sector regulators to mutually share expertise and transfer knowledge (CMA, 2023^[24]).

The ACCC has also indicated that secondments have been useful between the ACCC and other government departments in Australia or international counterparts.³⁰ The US has established its International Fellows Program, offering staff exchanges with non-U.S. competition, consumer protection and privacy agencies³¹, while Canada has established its Interchange Canada Program that facilitates temporary work assignments of individuals in and out of the core public administration.³²

3.2.4. External expertise and international co-operation

External expertise is being utilised by practically all competition authorities in numerous ways. Many do so more on an ad hoc (short term) basis, such as through economic consulting firms, rather than a more long-term strategic choice. In some cases, however, a long(er) term collaboration could be considered of strategic importance, for instance acquiring specific knowledge or skills through collaboration with academic institutions, as such hubs can be an enormously valuable source of information.³³

International co-operation can, and should, also be key to obtaining and developing certain skills and resources. This avoids competition authorities spending resources on the same issues and allows for faster development of tools and solutions (building on each other's knowledge and experience). Authorities can share technical expertise and experience bilaterally, formally or informally, or multilaterally, for instance in international fora, like the OECD and the International Competition Network (ICN), as well as in conferences.³⁴

3.3. How to organise new skills internally

Many different set-ups are possible to structure an authority so to maximise its effectiveness, efficiency and flexibility (ICN, 2019, p. 19^[25]).³⁵ The integration of newly relevant skills may depend on this existing organisational structure. However, generally, as we have also seen with the integration of economists in the past decades, competition authorities face the choice whether to centralise or decentralise (across other teams in the organisation) certain skills, or choose a hybrid of the two. Such a choice depends on

several factors, including the size of the authority, the required amount of new skills (including the amount and type of cases in which these skills are required), the nature of the skill (e.g. level of specialisation) and the role of these skills within the authority (e.g. required collaboration, use of the skill, etc.).

3.3.1. *Separate data units*

The question of how to integrate new skills is most relevant today for data and technology skills, given the fact that, as mentioned in section 3.1, such skills are increasingly, and significantly, acquired by competition authorities around the world. Consequently, many, if not most, have been confronted with the question of whether to centralise, decentralise or “hybridise” such skills within the internal organisation.

There are several advantages of centralising data and technology skills within an authority:³⁶

- Increased specialisation – centralising a broader set of data and technology specialists allows for specialisation within team roles, such as data scientist, machine learning engineer, data engineer, etc. Consequently, individuals can go deeper into their role, pursue specific training and learn from dedicated communities.
- Improved leadership and influence – by having data and technology specialists report to a central executive, these skills are positioned as a key function in decision-making at the leadership level.
- Better teamwork and mentoring – centralising data and technology specialists provides more opportunities for teamwork and collaboration amongst peers. This enables peer feedback, mentorship, onboarding assistance and opportunities to learn from each other.
- Improved connections – a central unit brings together datasets and analyses from different parts of the authority, allowing for connections to be made between enforcement areas and providing for economies of scope. Data and technology specialists can benefit from leveraging work on related analyses and developing common libraries and tools to share.
- Flexibility – centralising data and technology specialists allows for a more flexible deployment, based on where the need for this skill is the highest.

There are also advantages from decentralisation. An important advantage is the improved and more immediate access to enforcement. Being placed in an enforcement team allows a better knowledge or understanding of that enforcement area, as well as a better relationship with the enforcement teams. This can provide helpful when analysing datasets and making recommendations, but also allow a data and technology specialist to be more proactive in proposing certain avenues for analysis.

Many authorities have established one or more separate units that deal with digital and data issues, but their names (e.g. digital unit, data unit, digital economy unit, digital markets unit, data analytics unit, digital enforcement unit, digital intelligence unit, IT forensics unit, etc., including all sorts of combinations), the skills of the staff working there and their role within the authority vary greatly.

Some units are focused on, or mostly occupied with, the enforcement of new ex-ante regulatory rules for digital markets (OECD, 2021, pp. 29-30^[26]) – possibly but not necessarily including new data and technology skills such as big data analysis, artificial intelligence and machine learning. The establishment of such “digital units” was a general key recommendation in a number of high-profile reports by experts appointed by governments and regulators in recent years.³⁷ They include functions such as becoming a centre of expertise on digital markets, monitoring and scrutinising digital platform markets, supporting enforcement action and advocacy functions, undertaking inquiries on digital matters or implementing new ex-ante regulations.

Other dedicated “data units” focus more on “hard” data and technology skills. Such data units would be tasked with things like data gathering and cleaning, developing data driven tools, providing technological expertise to teams working on cases concerning digital data and markets, doing research and identifying and analysing emerging trends and developments. While digital units may include more traditional skills

such as economists, lawyers and policy makers, data units mostly include data scientists, engineers and technology specialists.

When looking at the competition authorities within OECD members, in 2023 approximately half of them have established a data unit and over 40% have appointed a Chief Data/Technology Officer.³⁸

Data units fulfil roughly five roles to contribute to a competition authority, out of which the first four aim to feed directly into case work (Hunt, 2022, p. 5_[17]):

- Provide expert data and technology advice – provision of expert data and technology advice in i) market studies and investigations ii) antitrust cases iii) consumer enforcement iv) merger cases. Technologists help better understand the technology, which also makes cases progress more rapidly and more robustly. Technologists can also help develop specific data or technology focused theories of harm in mergers or help assess technical remedies.
- Data acquisition and data science – this includes three main roles i) big data handling and data science for cases (manage large data sets and use data science techniques to extract insights more effectively), ii) building and maintenance of data pipelines³⁹ to provide better data insights for enforcement and iii) web scrapping (get data from websites to monitor and detect issues).
- Data-driven tool development – data units can develop tailored tools and software that help automate certain aspects of an authority, which drive effectiveness and efficiency.
- Provide advice on behavioural science – provision of behavioural science insights helps authorities better understand consumer behaviour in order to effectively address demand-side issues. Consumer behaviour often plays a crucial role in digital platform markets as digital firms have the infrastructure and capacity to optimise their platform designs based on consumer behaviour.
- Research, horizon scanning and case pipeline development – Horizon scanning allows data units to identify new trends and developments in technology and markets.⁴⁰ Research allows for understanding the potential implications of those new developments for competition and consumers. These activities can help competition authorities to prepare to intervene and can feed directly into the identification of potential cases (case pipeline⁴¹).

Although many competition authorities are expanding their focus and expertise on the digital economy and their capabilities in the field of data science, there is no “one-size-fits-all” solution that will work for every authority. A variety of approaches have been employed by different agencies to integrate digital and data roles into specialised units.

Some agencies have opted, similar to the CMA, to include all, or most, of the aforementioned five roles under the same unit, such as the Competition Bureau in Canada and the Autorité de la Concurrence in France. Others have (for now) focused more on a number of the aforementioned five roles. See Box 3.2 for examples of digital and data units within competition authorities.

Box 3.2. Select examples of digital and data units within competition authorities

In 2021, the **Canadian** Competition Bureau has created the '*Digital Enforcement and Intelligence Branch*' (or CANARI – Competition through Analytics, Research and Intelligence). It aims to strengthen the Bureau's work at every stage of investigation and acts as a centre of expertise for intelligence collection and analysis, behavioural insights, remedies and monitoring, data science and analytics, digital tools for investigators, technology insights and design thinking to support ideation and innovation.

The **French** Autorité de la Concurrence created the '*Digital Economy Unit*' in 2020. The unit is tasked with developing in-depth expertise on all digital subjects, collaborate on investigations into anti-competitive practices in the digital economy and contribute to studies on new issues related to developments in digital technology. The team is also responsible for developing new digital investigation tools, based in particular on algorithmic technology, big data and artificial intelligence. The unit includes a wide range of profiles, such as engineers, lawyers, economists and data science specialists.

The **ACCC** has created a '*Digital Platforms Branch*' as well as a '*Data and Intelligence Branch*' (which includes a Strategic Data Analysis Unit (SDAU)). The Digital Platforms Branch, formed in 2020, monitors and reports on the state of competition and consumer protection in digital platform markets, which includes identifying enforcement action and undertaking inquiries. The team has about 25 to 30 staff that have a mixture of legal economic and policy backgrounds and work closely with the SDAU. The SDAU was established in 2017 to provide analytical advice and support to help the ACCC's market inquiry work. In 2021, SDAU was combined with several other teams to form the Data & Intelligence Branch. This branch includes data analysts, data scientists, legal technologists and digital forensics specialists as well as backgrounds in statistics, economics, maths, social sciences, actuarial, finance degrees and lawyers.

In 2019, the **German** BKA restructured its General Policy Division to create a dedicated '*Digital Economy Unit*' to further support the authority's work especially in the digital area and on data-related issues. The BKA has also several specialist units which deal with data analytics such as the Chief Economist Team and the IT Forensic Unit. In addition, data science is also used within the General IT Division, which reinforces the BKA's capabilities in this area. Data analysts and data scientists within those units work particularly closely with decision divisions.

In 2020, **Mexico's** COFECE created a '*Digital Markets Unit*' with the purpose of advancing its comprehension of the digitisation of the Mexican economy. Additionally, COFECE has a '*Market Intelligence Unit*' with a team specialised in data science who have developed several projects that rely on computational tools for the detection and enforcement of anti-competitive conducts. This unit is also in charge of conducting technical analysis in highly complex competition investigations.

In 2019, the **United States** FTC created a '*Technology Enforcement Division*' to monitor competition and investigate potential anti-competitive conduct in markets in which digital technology is an important dimension of competition. In 2023, the '*Office of Technology*' was launched to bolster the FTC's ability to keep pace with technological challenges by strengthening and supporting law enforcement investigations and actions, advising and engaging with FTC staff and the Commission on policy and research initiatives and engaging with the public and relevant experts to understand trends and to advance the Commission's work. The office includes experts in security and software engineering, data science, artificial intelligence, machine learning, human-computer interaction design and social science research relating to technology.

In April 2020, the **JFTC** established the “*Office of Policy Planning and Research for Digital Markets*”, which conducts activities such as collecting information on digital markets through fact-finding surveys and other means, and the “Senior Investigator” who specialises in investigating digital platforms.

The Korea Fair Trade Commission (**KFTC**) reorganised its ICT taskforce into a ‘*Digital Market Response Team*’ in 2022 to strengthen law enforcement capabilities in the ICT sector. In December of that same year, the KFTC established an ‘*Online Platform and Policy Division*’ to respond more systematically to policy issues related to online platforms.

Sources: (G7 Germany, 2022^[22]) ; (Schrepel and Groza, 2023^[27]); <https://www.cofece.mx/wp-content/uploads/2020/03/COFECE-013-2020-DIGITAL-STRATEGY-Vf.pdf>; <https://www.cofece.mx/wp-content/uploads/2023/01/PDV-GuiadeAreas2023.pdf>; <https://www.ftc.gov/about-ftc/bureaus-offices/bureau-competition/inside-bureau-competition/ftc-technology-enforcement-division>; <https://www.ftc.gov/about-ftc/bureaus-offices/office-technology>; https://www.ftc.go.kr/www/selectReportUserView.do?key=10&report_data_no=9836&rpttype=1; AEWG Role of digital experts webinar 2022 <https://www.youtube.com/watch?v=m6sb8YssSqM>

3.3.2. A human resources strategy is crucial

The issue of obtaining the right (amount of) resources is not (only) about mechanically increasing staff numbers. Given that resources are almost by definition scarce for competition authorities, it is more about how to attract, improve and keep talent.

This becomes even more challenging when for some types of skills, notably the data and technology skillsets, there is a significant cultural element to consider. Incoming ‘technologists’, possibly with limited or no knowledge or experience with competition law and policy, may not fit easily within the existing organisation with its more traditional skillsets. Consequently, they may not easily ‘fit in’ and/or don’t necessarily see themselves working for a longer period for a competition authority and instead leave the authority for a similar or related job (as specialist), for instance in the private sector. This problem is amplified when remuneration packages at the competition authorities are less competitive compared to similar roles in the private sector.

However, this problem is not new. To address this issue effectively, it is important to develop a clear human resource strategy (Lowe, 2008, p. 11^[28]). An important factor in such a strategy should be how to develop career paths for specialist (technologist) profiles. In this regard, it is not unlikely that technologists may (or should be able to) take on senior positions in coming years, similar to how economists have taken on more leadership positions in competition authorities in the past two decades. Secondly, the competition authority will need to (continue to) find other (non-monetary) ways to reward employees, such as internal mobility, training programmes, flexibility and possibilities to travel.

3.4. Section summary

To address present-day challenges, authorities are seeking additional expertise in different areas, of which knowledge of data and technology seems to have the highest priority for many authorities. To obtain the required skillsets, authorities have embraced diverse strategies, including augmenting internal staff capacity, implementing in-house training programs and facilitating staff exchanges. Several jurisdictions have established specialised data units for data science and technology skills, similar to how many authorities have established a separate economics unit in past decades. Although the organisational set-up is different from one authority to another, the development of a robust human resource strategy remains integral to effectively attracting and retaining skilled professionals within the field.

4. Tools and powers of a competition authority

Skills and resources of a competition authority are tightly linked to a competition authority's tools and powers – its authority-granted abilities and legal mechanisms that enable them to gather evidence, analyse data, assess potential violations of competition law and take action where needed. Such tools and powers are unique in every jurisdiction and depend on many different factors, most notably the existing legal framework.

Many contemporary challenges may not require a change in the existing tools and powers of a competition authorities because the current 'toolkit' suffices. However, for some others, new or strengthened tools or powers may seem warranted. This section (4.1-4.7) will address, without attempting to be exhaustive, some of the recent changes, or renewed interest, in tools and powers to optimally address certain of the contemporary challenges discussed in Section 2. Subsection 4.8 summarises this section.

4.1. Pro-competitive intervention powers

Competition enforcement addresses behaviour, agreements or transactions that have (potential) adverse effects on competition. The competition authorities investigate the cases and take appropriate action where needed. However, in recent years, some jurisdictions have introduced pro-competitive intervention powers that allow the competition authority to take certain measures, even absent a competition infringement. This may be especially relevant in fast-moving markets, such as digital markets. Such intervention results from a market study – a traditional tool used extensively by nearly all authorities to follow complex, problematic, important and/or rapidly developing markets – that has signalled an imperfect market structure. Currently, relatively few authorities possess the legal powers to directly impose market structure remedies via market study instruments (OECD, 2020, p. 27^[29]).

Box 4.1. Select examples of jurisdiction with pro-competitive intervention powers

In Germany, the 11th amendment to the Act against Restraints on Competition, passed by the German parliament on 6 July 2023, gives the power to the BKA to intervene in a market in which it was found that competition has been disrupted, even when there is no infringement of antitrust law. This allows the BKA to impose behavioural or structural remedies, including divestments (as a last resort), to address "significant and continuous disruptions of competition", irrespective of the underlying's compliance with competition law. This new 'fourth pillar' of German competition law (alongside anti-competitive agreements, abuse of dominance and merger control) is meant to fill a perceived enforcement gap in situations where harm to competition is not attributable to anti-competitive conduct but to other market characteristics, such as imperfect market structures.

Such powers to impose remedies following a market investigation are also present at the CMA. The CMA's market investigations consider whether there are features of a market that have an adverse effect on competition (AEC). If there is an AEC, the CMA has the power to impose its own remedies, which may include behavioural ones and structural. It can also make recommendations to other bodies, such as sectoral regulators or the government, for instance when legislation might be required.

In Mexico, the Comisión Federal de Competencia Económica (COFECE) also possesses powers to impose competition enhancing remedies following a market investigation. Specifically, Article 94 of the Federal Law of Economic Competition empowers COFECE to conduct a market investigation to determine the existence of i) barriers to competition and free market access, or ii) an essential facility in a specific market. With regards to the first, to eliminate such barriers to competition, COFECE may impose behavioural and structural remedies (including the possibility of divestment of assets, rights or stock) with the objective of creating or restoring competition conditions in the market. With regards to the second, in the case of essential facilities, COFECE may establish rules for access and use by other economic agents. As such, Article 94 is not intended to sanction anti-competitive practices, but to identify and correct structural problems.

The European Commission (EC) had also contemplated a stand-alone new instrument to study and address structural competition problems in specific markets to address gaps in EU competition rules (the New Competition Tool). However, this stand-alone tool has been abandoned, at least for now, and introduced within the market investigation powers of the Digital Markets Act.

Sources: [Press release](#) by the Bundeskartellamt; EC initiative: [Single Market – new complementary tool to strengthen competition enforcement \(europa.eu\)](#) CMA: (Wish, 2020^[30]) and Mexico: (OECD, 2020^[31]).

4.2. Regulatory sandboxes

Regulatory sandboxes are a relatively novel approach to regulatory oversight and innovation in different industries, most importantly in the financial and digital sectors.⁴² A regulatory sandbox generally refers to a regulatory tool that allows businesses to test and experiment with new and innovative products, services or business models under supervision of a regulator for a limited period of time (Madiaga and Van de Pol, 2022^[32]). During this period of time, the regulatory oversight is eased for the businesses in the sandbox to support their development and testing of innovations which are subject to regulation (Leimüller and Wasserbacher-Schwarzer, 2020, p. 4^[33]). Sandboxes are often used in industries where traditional regulatory frameworks struggle to keep pace with technological advancements.

According to a World Bank study, in 2020, 57 countries were operating 73 fintech sandboxes (World Bank Group, 2020, p. 15^[34]). Technology sandboxes may not be as numerous, but they are certainly gaining ground. Several competition authorities have recently implemented/experimented with regulatory sandboxes (see Box 4.2 for some examples). They can serve as a crucial tool for fostering innovation, promoting regulatory compliance, and striking a balance between encouraging business growth and protecting consumer interests.

Box 4.2. Select examples of regulatory sandboxes

The Greek HCC introduced in 2022 a sustainability sandbox with the aim to promote goals of sustainability and competition in the Greek market. It aims to “[...] increase legal certainty regarding the application of competition law for undertakings willing to invest in green transformation, to create new green products, to set green standards for the production of products, services, energy, etc., by facilitating their development through this initiative, for instance in order to raise funds from financial markets.” The sandbox allows the HCC to “[...] fully and ex ante evaluate commercial practices by the HCC (even before the implementation of the project) in order to enhance legal certainty for companies, while [...] enhancing competition compliance with and act[ing] as a deterrent to “green-washing” phenomena in the Greek economy.”

The Netherlands Authority for Consumers and Markets (ACM) in the Netherlands proposed a sustainability sandbox to test innovative solutions in the energy field – participants can propose projects that might otherwise be prohibited by regulation.

In the UK, the CMA established a 6-year privacy sandbox with Google in 2022. It is focused on how Google develops the post-cookie ad targeting. The aim is to promote competition while safeguarding consumer privacy.

Other countries have regulatory sandboxes led by different authorities. For example, Norway and the UK have regulatory sandboxes by the data protection agency and the financial conduct authority (FCA), respectively, the latter one on AI. In June 2022, Spain and the EC had presented the first regulatory sandbox on AI, with the aim to bring competent authorities close to companies that develop AI to define best practices that will guide the implementation of the future EC’s AI Regulation (Artificial Intelligence Act).

Sources: [Sustainability Sandbox \(epant.gr\)](#); [Press Release – Creation of the Sandbox for sustainable development and competition \(epant.gr\)](#); [First regulatory sandbox on Artificial Intelligence presented | Shaping Europe’s digital future \(europa.eu\)](#)

4.3. Regulation and rulemaking

In light of some of the contemporary challenges, there is a growing sense in many jurisdictions that conventional, case-based (and mostly ex-post), competition enforcement is insufficient to protect and promote competition in certain sectors of the economy. Firstly, there has been extensive debate on the merit of ex-ante regulation in digital markets, influenced by a number of high-profile reports by experts appointed by governments and regulators in recent years (OECD, 2021, p. 7_[26]).

Different jurisdictions have indeed introduced, or are (contemplating) introducing, ex-ante regulation, often adding additional responsibilities to competition authorities. Examples are the Digital Markets Act (DMA)⁴³ and the Digital Services Act (DSA)⁴⁴ in the European Union, the proposed Digital Markets, Competition and Consumers Bill in the United Kingdom and the Act on Improving Transparency and Fairness of Digital Platforms (“TFDPA”) in Japan.⁴⁵ The consequences of new ex-ante regulation for competition authorities are oftentimes significant, although they depend on the chosen institutional set-up.⁴⁶

Besides, there has been increased attention in recent years for rulemaking, a process in administrative law by which administrative authorities adopt binding rules of general applicability to further its statutory mandate. Some competition authorities have rulemaking authority, for instance in their (additional) capacity as sector regulator⁴⁷, or establishing presumptions and safe harbours (OECD, 2017_[35]).

The increased attention for rulemaking can be largely attributed to the recent practice of the US FTC to supplement antitrust enforcement through its rulemaking authority⁴⁸ to issue industry-wide regulations to

deal with common unfair, deceptive or anti-competitive practices. Specifically, President Biden's Executive Order on 9 July 2021 urged the FTC to employ its rulemaking authority to restrict the use of non-compete agreements. Furthermore, on 11 October 2023, the FTC announced that it is exploring a rule to address so-called "junk fees" (unnecessary, unavoidable, or surprise charges) in the US economy.⁴⁹ The reasoning behind the increased use of rulemaking is that reliance on case-by-case adjudication is assumed to have rendered insufficient results⁵⁰, and that a rule (or "competition catalyst") can potentially have much faster results than competition enforcement.

4.4. More stringent jurisdictional rules for merger control

The concern of industries becoming too concentrated have led many jurisdictions to explore ways in which they can enhance jurisdiction over mergers, in particular review more (smaller) mergers. This trend is partly influenced by the concern for "killer acquisitions" and "reverse killer acquisitions", specifically in the digital and pharma sectors.⁵¹

In recent years, different options have been chosen or explored by governments and competition authorities. Firstly, certain jurisdictions have introduced thresholds based on the value of the transaction (e.g. Germany and Austria in 2017 and Korea in 2021⁵²) as an alternative to more traditional revenue-based or market share-based thresholds (OECD, 2020^[10]). A second alternative is the singling out a specific list of undertakings to whom a special regime should apply, such as in Norway (OECD, 2020, p. 46^[10]) or more recently in Turkey⁵³.

Thirdly, several jurisdictions have more recently introduced or expanded powers to allow competition agencies to review mergers below relevant merger notification thresholds. While some jurisdictions already had such powers, jurisdictions that have recently introduced or expanded these powers include China, EC, Ireland, Italy, Japan and the US (see for examples Box 4.3).

Box 4.3. A selection of recent changes in merger control regimes to bolster below-threshold review powers

In China, the amended Anti-Monopoly Law that came into force on 15 April 2023 now explicitly recognises that SAMR has the power to investigate a transaction that falls below notification thresholds if there is evidence that it has or may have the effect of eliminating or restricting competition (until then, this authority was only provided for in regulations), suggesting that SAMR may more actively investigate below-threshold deals going forward.

In March 2021, the European Commission published a guidance paper* that encouraged national competition authorities to refer certain transactions to the EC for review, even where they do not meet the national merger control thresholds of the referring Member State(s). Article 22 of the Merger Regulation 139/2004 enables such referral, namely when national authorities consider that a transaction affects trade between member states and threatens to significantly affect competition within the territory of the member state(s) making the request. Apart from a referral at the initiative of a member state, the Commission can also encourage member states to present such a request. In July 2022, the General Court of the European Union upheld the EC's decision to review Illumina's acquisition of Grail after a referral by the French competition authority. This was the first use of the EC's revised approach with regards to Article 22.

In Ireland, the 2022 amendment to the Competition Act, which came into force on 27 September 2023, provided the Competition and Consumer Protection Commission (CCPC) with a range of new merger

control and enforcement powers, including the introduction of the power to call in below threshold mergers for review.

A new competition law amendment in **Italy** that entered into force on 27 August 2022 allows the Italian Competition Authority to review below-threshold deals (up to six months post-closing).

In the US, a new omnibus resolution, approved by the FTC in August 2022, expanded the FTC's scope to investigate below-threshold transactions. The resolution enables the FTC to fast-track even non-notifiable transactions by allowing a single Commissioner, rather than a majority of sitting Commissioners, to authorise the issuance of demands for data, documents and testimony (Breed and Loughlin, 2022^[36]).

Note:

* https://ec.europa.eu/competition/consultations/2021_merger_control/guidance_article_22_referrals.pdf

Sources:

[Below-threshold deals increasingly face review - Allen & Overy \(allenoverly.com\)](https://www.allenoverly.com/insight-our-thinking/japan-1-competition-amendment-act-2022-de-te/); <https://www.whitecase.com/insight-our-thinking/japan-1-competition-amendment-act-2022-de-te/> (enterprise.gov.ie); <https://www.ftc.gov/news-events/news/press-releases/2022/08/federal-trade-commission-authorizes-three-new-compulsory-process-resolutions-investigations>; [European Commission publishes practical information for merging parties on how to seek guidance about Article 22 referral | White & Case LLP \(whitecase.com\)](https://www.whitecase.com/insight-our-thinking/japan-1-competition-amendment-act-2022-de-te/) ;

4.5. Interim measures

Interim measures are by no means a new tool for many competition authorities. However, the fast-changing nature of digital markets has increased calls for more frequent adoption of interim measures (OECD, 2022^[37]). Indeed, some countries have increasingly used interim measures in recent years, most notably in digital markets. An example is France, who issued interim measures in three cases since 2017, namely against Meta in May 2023 and against Google in 2019 and 2020.⁵⁴ Other examples are The Belgian Competition Authority in 2023 (against Proximus)⁵⁵, the EC in 2019 (against Broadcom)⁵⁶, CADE in 2021 (against food delivery and fitness aggregator apps iFood and GymPass), the Swedish authority (against fitness aggregator app Bruce) and the Competition Commission of India (against two online travel agencies).⁵⁷

On top of the increased use of interim measures in some jurisdictions, reforms have been implemented or proposed, notably to (i) confer competition authorities additional powers to impose interim measures, in particular when dealing with digital markets; or (2) revise (i.e. lower) legal standards or sharpening procedures to speed up the adoption of interim measures (OECD, 2022^[37]).

4.6. Guidelines

Some agencies have used guidelines increasingly to establish principles for the assessment of newer or specific competition policy themes (e.g. competition law and policy considerations related to covid-19, the digital era and sustainability) and to explain changes to the law itself.

For instance, several competition authorities have developed guidelines to ensure that the uncertainty as to the application of competition law is not an obstacle to pro-competitive sustainability initiatives and to the promotion of a circular economy or is not perceived as such by businesses. Such jurisdictions include the EC, the UK, Austria, the Netherlands, Greece, Germany, Spain and Japan (OECD, 2023, p. 34^[38]).

Similarly, competition authorities have issued guidelines to explain or elaborate on the anti-competitive practices in labour markets, including the US, Japan and Hong Kong (OECD, 2020^[9]), Peru⁵⁸, Portugal⁵⁹, as well as more recently Canada⁶⁰ and the UK⁶¹. Many of such guidelines are addressed to employers or

HR professionals, but other jurisdictions have also adapted their merger guidelines to incorporate labour market considerations in the assessment.⁶²

4.7. Investigative tools

Investigative tools such as inspections (in business and non-business premises), requests for information, interviews or phone or wiretaps are increasingly supplemented by digital investigative tools. In fact, competition authorities have indicated that digitalisation has (had) the largest impact on investigative tools, ahead of internal processes and interaction with stakeholders (ICN, 2021, p. 30^[39]).

Without attempting to be exhaustive, examples of some new tools that competition authorities have added to their investigative toolkit include:

- a) Digital forensics – a branch of forensic science, which encompasses the application of scientific techniques for identifying, preserving, recovering and analysing the digital information and presenting facts and opinions about it (OECD, 2018^[40]). Digital forensics is increasingly used by competition authorities for the copying and analysis of evidence found during inspections and to deal with very large amount of data in an efficient manner. (OECD, 2020^[41])
- b) Screening tools – screening tools are increasing in popularity. New technologies allow analysing large amounts of data in an increasingly automated manner and have enabled new screening methods, using machine learning in particular (OECD, 2022^[16]). Driven by the digital economy's impact and declining leniency applications, competition authorities are harnessing Artificial Intelligence and Machine Learning tools to enhance ex officio investigations. These tools find applications in numerous instances such as bid rigging detection, identifying collusion risks based on market structures or processing and analysing documents to extract information, among many others.⁶³
- c) Virtual inspections – virtual inspections refer to surprise investigations conducted by authorities remotely, involving methods such as quick data requests, virtual meetings with inspectors demanding access to devices and data reviews done online, departing from traditional in-person oversight.⁶⁴
- d) Algorithmic Auditing – this can refer to a variety of methods to review algorithms. It can be used for regulatory inspection to determine whether an algorithm is compliant with a law, regulation or norm, where regulators or auditing professionals can use a variety of tools or methods (OECD, 2023, p. 26^[42]).

4.8. Section summary

The skills and resources of competition authorities are intricately tied to their tools and powers. Contemporary challenges may require an authority to reflect on whether its tools and powers are still adequate, or whether new or reinforced tools are needed.

Recently, different tools and powers have been introduced or altered or have resurfaced. Pro-competitive intervention powers have been introduced in some jurisdictions to allow for the competition authority to intervene faster or easier, even absent a competition infringement. Moreover, regulatory sandboxes have gained traction in various jurisdictions, particularly in the financial and digital markets, allowing authorities to follow more closely new products, services or business models, without hindering businesses to innovate.

Thirdly, conventional, case-based (and mostly ex-post), competition enforcement is supplemented with ex-ante regulation and increased rulemaking in certain jurisdictions. Furthermore, to address the increased

concentration in many markets, many jurisdictions have aimed to increase its scrutiny of mergers, for instance by reviewing mergers below the notification thresholds. Fifthly, while interim measures and guidelines are by no means new tools or powers in most jurisdictions, interest has increased in them to address some of the contemporary challenges. Finally, to adapt to – and make use of – technological developments, competition authorities have augmented their investigative toolkit with certain new tools, including digital forensic techniques, screening tools, artificial intelligence and machine learning applications, virtual inspections and algorithmic auditing. These technological advancements have enhanced the efficiency and effectiveness of investigations, enabling authorities to handle larger volumes of data more effectively and address complex market dynamics.

5. Conclusions

Modern day competition authorities are faced with a multitude of challenges. While competition authorities are certainly not the end-all solution for (m)any of these challenges, they can have a crucial role to play. There is broad consensus and empirical evidence that competition is at the heart of innovation, productivity and economic growth. In some ways, one can see competition law and policy as the “general purpose technology” of economic policy.

To ensure they fulfil their important role, competition authorities will need to carefully reflect on their internal design, including both the skills and resources and tools and powers.

Most authorities will need different skillsets and in many cases, additional resources. Especially the technological revolution requires technologists to make sure competition authorities are ready for playing a key role in guiding or containing this revolution.

In absence of, or in addition to, additional resources, competition authorities ought to find smart ways of collaboration, either among them, internationally or with academic hubs. Such collaboration is crucial to face the challenges together, rather than each for their own. This allows competition authorities to share knowledge, expertise and experiences, pool resources, etc.

Finally, competition authorities will regularly need to take stock of whether tools and powers are (still) adequate to tackle today’s and tomorrow’s challenges. Moreover, the skills and resources need to match their mandate and powers, both in amount and type.

References

- Bajgar, M. et al. (2019), “Industry Concentration in Europe and North America”, *OECD Productivity Working Papers*, No. 18, OECD Publishing, Paris, <https://doi.org/10.1787/2ff98246-en>. [6]
- Breed, L. and C. Loughlin (2022), “The US FTC passes omnibus resolutions expanding its powers to investigate proposed mergers and potentially unlawful collusive conduct”, *Concurrences e-Competitions News Issue August 2022 Art. N° 108541*. [36]
- Chopra, R. and L. Khan (2020), “The Case for “Unfair Methods of Competition” Rulemaking”, *University of Chicago Law Review: Vol. 87: Iss. 2, Article 4*, <https://chicagounbound.uchicago.edu/uclev/vol87/iss2/4>. [55]
- Civil Service College Singapore (2019), “Ethos” Issue 21; July 2019, <https://file.go.gov.sg/ethos-issue-21.pdf>. [23]
- CMA (2023), *Annual Report on Concurrency*, <https://www.gov.uk/government/publications/annual-report-on-concurrency-2023/promoting-competition-in-services-we-rely-on-the-annual-concurrency-report-2023>. [24]
- Congress of the United States (2023), *Letter to FTC and DOJ regarding their draft merger guidelines*. [8]
- Da Silva Pereira Neto, C. (2023), “Interim Measures in Unilateral Conduct Cases: Dealing with Uncertainty and Risks of Errors”, *CPI Columns OECD*, https://www.pymnts.com/cpi_posts/interim-measures-in-unilateral-conduct-cases-dealing-with-uncertainty-and-risks-of-errors/. [54]
- Davenport, T. (2012), “Data Scientist: The Sexiest Job of the 21st Century”, *Harvard Business Review*, <https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century>. [48]
- De Backer, M. et al. (2023), “Sustainability and Competition Policy”, Vol. *Concurrences* N° 1-2023, Art. N° 111069, <http://www.concurrences.com>. [12]
- Donoho, D. (2017), “50 Years of Data Science”, *Journal of Computational and Graphical Statistics*, Vol. 26:4, pp. 745-766, <https://doi.org/10.1080/10618600.2017.1384734>. [47]
- Froeb, L., P. Pautler and L. Röller (2008), “The Economics of Organizing Economists”, *Vanderbilt Law and Economics Research Paper No. 08-18*, <http://dx.doi.org/10.2139/ssrn.1155237>. [44]
- G7 Germany (2022), *Compendium of approaches to improving competition in digital markets*, https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Others/G7_Compendium.pdf?blob=publicationFile&v=4. [22]
- Grullon, G., Y. Larkin and R. Michaely (2018), “Are U.S. Industries Becoming More Concentrated?”, *Swiss Finance Institute Research Paper No. 19-41*, <http://dx.doi.org/10.2139/ssrn.2612047>. [43]

- Gürkaynak, G. (2022), “The Turkish Competition Authority Sees A New Merger Control Regime Enter Into Force, Amending Notification Thresholds And The Scope Of Applicable Sectors”, *Concurrences, e-Competitions News Issue May 2022*. [59]
- Gwartney, J. et al. (2003), *Economics: Private and Public Choice*, Thomson South Western. [51]
- HCC (2021), *Annual Report on Competition Policy Developments in Greece*, [56]
[https://one.oecd.org/document/DAF/COMP/AR\(2022\)14/en/pdf](https://one.oecd.org/document/DAF/COMP/AR(2022)14/en/pdf).
- Hunt, S. (2022), “The technology-led transformation of competition and consumer agencies: The Competition and Markets Authority’s experience”, *Discussion paper*. [17]
- Hunt, S. (2017), “From Maps to Apps: the Power of Machine Learning and Artificial Intelligence for Regulators”, *Beesley lecture series*, <https://www.fca.org.uk/publication/documents/from-maps-to-apps.pdf>. [18]
- ICN (2021), “Report on Digitalisation, Innovation and Agency Effectiveness”, *A Report by the ICN Agency Effectiveness Working Group*. [39]
- ICN (2019), “Report on agency effectiveness through organisational design”, *Agency Effectiveness Working Group*, <http://internationalcompetitionnetwork.org/wp-content/uploads/2019/05/AEWG-Organisational-design-2019-report.pdf>. [25]
- Koltay, G., S. Lorincz and T. Valletti (2023), “Concentration and Competition: Evidence from Europe and Implications for Policy”, *Journal of Competition Law & Economics*, *nhad012*, <https://doi.org/10.1093/joclec/nhad012>. [5]
- Lefever, V. (2023), “The Belgian Competition Authority imposes interim measures on the incumbent telecoms operator following its acquisition of a failing rival following the jurisprudence of the EU Court of Justice in its Towercast ruling (Proximus / EDPnet)”, *Concurrences, e-Competitions June 2023, Art. N° 113147*. [61]
- Leimüller, G. and S. Wasserbacher-Schwarzer (2020), “Regulatory Sandboxes”, *Analytical paper for BusinessEurope*, [33]
https://www.buinessurope.eu/sites/buseur/files/media/other_docs/regulatory_sandboxes_-_winnovation_analytical_paper_may_2020.pdf.
- Lorenzoni, I. (2022), “Why do Competition Authorities need Artificial Intelligence?”, *Yearbook of Antitrust and Regulatory Studies*, <https://doi.org/10.7172/1689-9024.YARS.2022.15.26.2>. [57]
- Lowe, P. (2008), “The design of competition policy institutions for the 21st century — the experience of the European Commission and DG Competition”, *Competition Policy Newsletter*, Vol. Number 3. [28]
- Madiega, T. and A. Van de Pol (2022), “Artificial intelligence and regulatory sandboxes”, [32]
European Parliamentary Research Service Briefing,
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733544/EPRS_BRI\(2022\)73354_4_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733544/EPRS_BRI(2022)73354_4_EN.pdf).
- McEwin, I. (ed.) (2010), *The Role of Economic Analysis in Competition Law*, Hart Publishing, [14]
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1610189.

- OECD (2023), "Communication by Competition Authorities: Objectives and Tools", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/communication-by-competition-authorities-objectives-and-tools-2023.pdf>. [21]
- OECD (2023), "Algorithmic Competition", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/algorithmic-competition-2023.pdf>. [42]
- OECD (2023), "Competition and Poverty", *Best Practice Roundtables on Competition Policy*, [https://one.oecd.org/document/DAF/COMP/LACCF\(2023\)4/en/pdf](https://one.oecd.org/document/DAF/COMP/LACCF(2023)4/en/pdf). [53]
- OECD (2023), "Competition in the Circular Economy", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/competition-in-the-circular-economy-2023.pdf>. [38]
- OECD (2023), "Serial Acquisitions and Industry Roll-ups", *Best Practice Roundtables on Competition Policy*, [https://one.oecd.org/document/DAF/COMP\(2023\)13/en/pdf](https://one.oecd.org/document/DAF/COMP(2023)13/en/pdf). [11]
- OECD (2022), "Competition and Inflation", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/competition-and-inflation-2022.pdf>. [50]
- OECD (2022), "Data Screening Tools for Competition Investigations", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/data-screening-tools-in-competition-investigations-2022.pdf>. [16]
- OECD (2022), *G7 inventory of new rules for digital markets - OECD submission to the G7 Joint Competition Policy Makers and Enforcers Summit*, <https://www.oecd.org/competition/g7-inventory-of-new-rules-for-digital-markets-2022.pdf>. [46]
- OECD (2022), "Integrating Consumer Behaviour Insights in Competition Enforcement", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/integrating-consumer-behaviour-insights-in-competition-enforcement-2022.pdf>. [19]
- OECD (2022), "Interactions between Competition Authorities and Sector Regulators", *OECD Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/interactions-between-competition-authorities-and-sector-regulators-2022.pdf>. [60]
- OECD (2022), "Interim Measures in Antitrust Investigations", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/interim-measures-in-antitrust-investigations-2022.pdf>. [37]
- OECD (2022), "Subsidies, Competition and Trade", *Best Practice Roundtables on Competition Policy*, <http://www.oecd.org/daf/competition/subsidies-competition-and-trade-2022.pdf>. [3]
- OECD (2021), "Environmental Considerations in Competition Enforcement", *Best Practice Roundtables on Competition Policy*, <https://one.oecd.org/document/DAF/COMP%282021%294/en/pdf>. [13]
- OECD (2021), "Ex ante regulation of digital markets", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/ex-ante-regulation-and-competition-in-digital-markets.htm>. [26]
- OECD (2021), *OECD Regulatory Policy Outlook 2021*, OECD Publishing, Paris, <https://doi.org/10.1787/38b0fdb1-en>. [62]

- OECD (2020), "Competition in Labour Markets", *Best Practice Roundtables on Competition Policy*, <http://www.oecd.org/daf/competition/competition-concerns-in-labour-markets.htm>. [9]
- OECD (2020), "Digital Evidence Gathering in Cartel Investigations", *Latin America and Caribbean Competition Forum - Session I*, [https://one.oecd.org/document/DAF/COMP/LACF\(2020\)2/en/pdf](https://one.oecd.org/document/DAF/COMP/LACF(2020)2/en/pdf). [41]
- OECD (2020), "Start-ups, Killer Acquisitions and Merger Control", *Best Practice Roundtables on Competition Policy*, <https://www.oecd.org/daf/competition/start-ups-killer-acquisitions-and-merger-control-2020.pdf>. [10]
- OECD (2020), "Using market studies to tackle emerging competition issues", <http://www.oecd.org/daf/competition/using-market-studies-to-tackle-emerging-competition-issues-2020.pdf>. [29]
- OECD (2020), *Using Market Studies To Tackle Emerging Competition Issues - Contribution from Mexico*, [https://one.oecd.org/document/DAF/COMP/GF/WD\(2020\)67/en/pdf](https://one.oecd.org/document/DAF/COMP/GF/WD(2020)67/en/pdf). [31]
- OECD (2018), "Economics in Competition: How Can Younger Agencies in Asia-Pacific Learn from More Advanced Ones When Integrating Economists in Their Agencies?", *Asia-Pacific Competition Update*. [45]
- OECD (2018), *Investigative Powers in Practice: Unannounced Inspections in the Digital Age*, [https://one.oecd.org/document/DAF/COMP/GF\(2018\)7/en/pdf](https://one.oecd.org/document/DAF/COMP/GF(2018)7/en/pdf). [40]
- OECD (2018), "Market Concentration", *Best Practice Roundtables on Competition Policy*, [https://one.oecd.org/document/DAF/COMP/WD\(2018\)46/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2018)46/en/pdf). [4]
- OECD (2017), "Safe Harbours and Legal Presumptions in Competition Law", *Best Practice Roundtables on Competition Policy*, [https://one.oecd.org/document/DAF/COMP\(2017\)9/en/pdf](https://one.oecd.org/document/DAF/COMP(2017)9/en/pdf). [35]
- OECD (2014), *Factsheet on how competition policy affects macro-economic outcomes*, <https://www.oecd.org/daf/competition/2014-competition-factsheet-iv-en.pdf>. [20]
- OECD (Forthcoming), *OECD Competition Trends 2024*, <https://www.oecd.org/competition/oecd-competition-trends.htm>. [52]
- OECD/ICN (2021), *OECD/ICN Report on International Co-operation in Competition Enforcement*, <http://www.oecd.org/competition/oecd-icn-report-on-international-cooperation-in-competition-enforcement-2021.htm>. [2]
- Parcu, P., G. Monti and M. Boota (eds.) (2021), *Chapter 1: Introduction: From the legalistic to the effect-based approach in EU competition policy*, Edward Elgar Publishing, <https://doi.org/10.4337/9781800370197>. [15]
- Porter, M. (1996), "What Is Strategy?", *Harvard Business Review*, <https://hbr.org/1996/11/what-is-strategy>. [49]
- Schrepel, T. and T. Groza (2023), "The Adoption of Computational Antitrust by Agencies: 2nd Annual Report", Vol. Stanford Computational Antitrust 55, <http://Available at SSRN: https://ssrn.com/abstract=4476321>. [27]

- Schrepel, T. and T. Groza (2022), “The Adoption of Computational Antitrust by Agencies: 2021 Report”, 2 *Stanford Computational Antitrust*, 78 (2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4142225. [58]
- Suleyman, M. (2023), *The Coming Wave: Technology, Power, and the Twenty-first Century’s Greatest Dilemma*, Crown. [1]
- The White House (2021), *Executive Order on Promoting Competition in the American Economy*. [7]
- Wish, R. (2020), “New Competition Tool: Legal comparative study of existing competition tools aimed at addressing structural competition problems with a particular focus on the UK’s market investigation tool”, *Expert Study. European Commission*, https://ec.europa.eu/competition/consultations/2020_new_comp_tool/kd0420573enn.pdf. [30]
- World Bank Group (2020), “Global Experiences from Regulatory Sandboxes”, *Finance, Competitiveness & Innovation Global Practice*, <https://documents1.worldbank.org/curated/en/912001605241080935/pdf/Global-Experiences-from-Regulatory-Sandboxes.pdf>. [34]

Endnotes

¹ For instance, the OECD Recommendation on Transparency and Procedural Fairness in Competition Law Enforcement recommends to “Periodically review their legal framework, public policies and competition authority rules, procedures, and guidelines[...]”. (point II(8)).

² See for instance the two OECD Policy Roundtables on “Changes in Institutional Design of Competition Authorities”, <https://www.oecd.org/competition/changes-in-competition-institutional-design.htm>.

³ See <https://explodingtopics.com/blog/data-generated-per-day>.

⁴ For instance, it is argued that 75% of American industries have become more concentrated in the last quarter century (Grullon, Larkin and Michaely, 2018^[43]). While in 1950, at the time of the enactment of the Celler-Kefauver Antimerger Act aimed at limiting concentration, 0.1 percent of American corporations owned 49 percent of the assets of all American corporations, today this number is over 88 percent (Congress of the United States, 2023^[8]).

⁵ Several authorities have focused on the interplay between competition principles and sustainability, including the Dutch Authority for Consumers & Markets (ACM) through its Guidelines regarding Sustainability claims (Guidelines Sustainability claims (summary) <https://www.acm.nl/system/files/documents/guidelines-sustainability-claims-summary.pdf>) and the Hellenic Competition Commission in its Staff Discussion Paper (<https://www.epant.gr/en/enimerosi/competition-law-sustainability.html>).

⁶ See for instance OECD Best Practise Roundtable on Competition and Inflation (OECD, 2022^[50]) for a discussion on inflation and competition and OECD Best Practise Roundtable on Competition and Poverty (OECD, 2023^[53]) for a discussion on poverty and competition.

⁷ For instance, while some agencies have chosen for a “functional” organisation – a separate group of economists, typically headed by a Chief Economist –, others prefer a “divisional” one – economists inserted in the teams that deal with particular enforcement practices (Froeb, Pautler and Röller, 2008^[44]). Moreover, several authorities have changed their internal organisation over time, revisiting the tradeoffs that come with the choice, or chosen hybrid forms (see also Economics in Competition: How Can Younger Agencies in Asia-Pacific Learn from More Advanced Ones When Integrating Economists in Their Agencies? (OECD, 2018^[45]) that distinguishes between a “centralised model”, a “devolved model” and a “hybrid model”.

⁸ Based on OECD research.

⁹ See *Compendium of approaches to improving competition in digital markets* (G7 Germany, 2022, pp. 60, 73, 47 respectively^[22]).

¹⁰ Mentioned as well in the FTC Strategic Plan for Fiscal Years 2022 to 2026 (https://www.ftc.gov/system/files/ftc_gov/pdf/fy-2022-2026-ftc-strategic-plan.pdf). Expand staff skillsets: In addition to attorneys and economists, the FTC seeks to hire technologists, data analysts, financial analysts,

business analysts, psychologists, youth development experts, bilingual and multilingual staff, and experts from other outside disciplines.

¹¹ DOJ will hire more data experts to scrutinize digital monopolies, antitrust chief says | CNN Business. <https://edition.cnn.com/2023/03/06/tech/doj-data-experts/index.html>

¹² See for instance 50 Years of Data Science (Donoho, 2017_[47]).

¹³ See for instance Data Scientist: The Sexiest Job of the 21st Century (Davenport, 2012_[48]).

¹⁴ What Is Data Engineering? (<https://www.dremio.com/resources/guides/intro-data-engineering/>).

¹⁵ A data pipeline is a set of data processing steps from a data source to a destination data set, with the output of one step being the input of the next. It is valuable whenever data sources are used repeatedly. (Hunt, 2022, p. 6_[17])

¹⁶ What is Data Engineering? | A Quick Glance of Data Engineering <https://www.educba.com/what-is-data-engineering/>

¹⁷ See for instance comments made by the Chief Economist of the Antitrust Division of the United States Department of Justice (US DOJ), at the ‘Tech Antitrust Conference’ in Palo Alto on 20 January 2023 (The Tech Antitrust Conference <https://www.concurrences.com/en/events/the-tech-antitrust-conference-109197>) and at the 2023 Stigler Center and Chicago Booth Conference on ‘Beyond The Consumer Welfare Standard?’ (<https://www.youtube.com/watch?v=mu6FyMIQegc>).

¹⁸ Porter defines strategy as a competitive position, “deliberately choosing a different set of activities to deliver a unique mix of value” (Porter, 1996_[49]). Using five well-known competitive forces that culminate around an industry’s competitive rivalry – threats of new entry, threat of substitution, bargaining power of suppliers, bargaining power of buyers and competitive rivalries –, a company can better understand its competitors and its market(s) to better understand how it should react.

¹⁹ See for instance comments made by the Chief Economist of the Antitrust Division of the US DOJ, at the 2023 Stigler Center and Chicago Booth Conference on ‘Beyond The Consumer Welfare Standard?’ (<https://www.youtube.com/watch?v=mu6FyMIQegc>).

²⁰ An area of finance that deals with a business’ sources of funding, its optimal capital structure and how to best allocate its financial resources, all with the primary objective to increase or maximise shareholder value.

²¹ Private equity refers to capital investments made into non-publicly traded companies. Private equity investments made into a target company often take place through a private equity firm (a specialised investment management firm), a venture capital fund (a fund that invests capital in exchange for equity in the target) or angel investors (high-net-worth individuals).

²² Microeconomics focuses on the decision making of consumers, producers and resource suppliers operating in a narrowly defined market, such as that for a specific good or resource. Macroeconomics focuses on how the aggregation of individual micro-units affects the entire economy, studying topics such as consumer spending, inflation and employment (Gwartney et al., 2003, p. 17_[51]).

²³ See for instance guidelines on how to avoid anti-competitive practices by employers in the United Kingdom (Avoid breaking competition law: Advice for employers <https://www.gov.uk/government/publications/avoid-breaking-competition-law-advice-for-employers>) and Canada (Competition Bureau publishes wage-fixing and no-poaching enforcement guidelines <https://www.canada.ca/en/competition-bureau/news/2023/05/competition-bureau-publishes-wage-fixing-and-no-poaching-enforcement-guidelines.html>).

²⁴ See Ioana Marinescu to Join Department of Justice as Principal Economist <https://sp2.upenn.edu/ioana-marinescu-to-join-department-of-justice-as-principal-economist/>

²⁵ ACCC Corporate Plan 2023-2024, p. 11, <https://www.accc.gov.au/system/files/ACCC%20and%20AER%20Corporate%20Plan%202023-24.pdf>

²⁶ FTC Strategic Plan for Fiscal Years 2022 to 2026, p. 9, https://www.ftc.gov/system/files/ftc_gov/pdf/fy-2022-2026-ftc-strategic-plan.pdf

²⁷ OECD Competition Trends 2024 (OECD, Forthcoming^[52]), based on data from 78 participating jurisdictions.

²⁸ See the secondment opportunities for economists (<https://competitionandmarkets.blog.gov.uk/2023/06/30/secondment-opportunities-for-competition-economists-at-the-cma-2/>) and lawyers (<https://competitionandmarkets.blog.gov.uk/2023/06/09/september-secondment-opportunities-for-competition-and-consumer-lawyers/>). For the competition lawyers, since its launch in June 2018, over 50 secondees from over 20 law firms have taken part in the programme. For competition economists, since its launch in March 2021, ten secondees from a number of firms have already taken part in the programme.

²⁹ See [DDAT – Digital Secondment Programme | Civil Service Careers \(civil-service-careers.gov.uk\)](#) and [‘Part of the team’ – secondment scheme to bring workers from tech giants into government – PublicTechnology.](#)

³⁰ See [AEWG Webinar “Shaping agency digital transformation: the role of of digital experts”](#), 15 March 2022.

³¹ Since 2007, the FTC has hosted 81 international colleagues in the International Fellows Program. See <https://www.ftc.gov/policy/international/international-fellows-program>.

³² <https://www.canada.ca/en/treasury-board-secretariat/services/professional-development/interchange-canada.html>.

³³ For instance, the KFTC signed a Memorandum of Understanding (MOU) with research institutes and academia in 2021 to improve technological expertise in the ICT sector (G7 Germany, 2022, p. 117^[22]). Moreover, the HCC has signed a MOU with the Athens University of Economics and Business (AUEB), which includes the exchange of know-how; upskilling, training, accreditation of knowledge, skills and professional qualifications of the HCC’s officials, on the basis of recognised standards (HCC, 2021, p. 20^[56]). Finally, the Competition Commission South Africa (CCSA) has partnered with academic institutions to bring in their artificial intelligence expertise rather than seeking to hire and build internal capacity (G7 Germany, 2022, p. 113^[22]).

³⁴ One example is the launch of the digital markets enforcement initiative (<https://www.compcom.co.za/wp-content/uploads/2022/02/Joint-Statement-of-the-Heads-of-Competition-Authorities-Dialogue-on-Regulation-of-Digital-Markets.pdf>) that the competition authorities of South Africa, Egypt, Kenya, Nigeria and Mauritius launched. One of the areas of co-operation is the sharing of knowledge and capacity building to deal with digital markets.

³⁵ Examples are units based on (i) area of law being enforced (e.g. cartels, abuse, mergers), (ii) sector, (iii) professional services (legal, economic) and (iv) function (enforcement, advocacy, consumer protection, sector regulation, international affairs, etc.). The most frequent form is a hybrid form that combines some of these categories.

³⁶ See for instance the considerations at Microsoft on the designing of its data science organisation (<https://medium.com/data-science-at-microsoft/designing-a-data-science-organization-ab53a80b1d15>).

³⁷ For example (Stigler Committee, 2019), p. 13; (Furman et al., 2019), p.5; (ACCC Digital Platform Inquiry, 2019), p. 13, p.31.

³⁸ OECD analysis based on publicly available information.

³⁹ A data pipeline is a set of data processing steps from a data source to a destination data set, with the output of one step being the input of the next. It is valuable whenever data sources are used repeatedly. (Hunt, 2022, p. 6_[17])

⁴⁰ Horizon scanning is a systematic process for spotting threats, risks, dynamic change and opportunities (Hunt, 2022, p. 31_[17]).

⁴¹ Case pipeline refers to potential future cases that could be launched. (Hunt, 2022, p. 6_[17])

⁴² Around the world, more and more regulatory sandboxes are established in a variety of topics and sectors. The first regulatory sandboxes were set up in the US 2012 in FinTech as an answer to increasingly stringent financial regulations after the 2008 economic crisis, which provided a barrier for new digital business models in the finance sector. The term regulatory sandbox was finally established in the UK in 2015. (Leimüller and Wasserbacher-Schwarzer, 2020, p. 4_[33])

⁴³ Regulation (EU) 2022/1925.

⁴⁴ Regulation (EU) 2022/2065.

⁴⁵ See for instance an inventory of proposed or enacted legislative reforms that have been developed to address digital competition issues in G7 jurisdictions in G7 inventory of new rules for digital markets - OECD submission to the G7 Joint Competition Policy Makers and Enforcers Summit (OECD, 2022_[46]).

⁴⁶ Ex ante regulation of digital markets (OECD, 2021, pp. 29-30_[26]) identifies three possible models with regards to the body in charge of enforcing the new rules: (i) the competition authority as currently structured is tasked with enforcing the new rules, (ii) several bodies are made responsible, partly dependent on the legal system in place, and (iii) a newly established specialised unit or body is made responsible (within or outside the competition authority).

⁴⁷ Economic regulators in network sectors (such as energy, telecommunications, transport and water) act as rule-setters as well as market referees, ensuring market efficiency and the quality, reliability and

affordability of services (OECD, 2021, p. 156^[62]). Examples are Australia, Estonia, the Netherlands, New Zealand and Spain (OECD, 2022, p. 8^[60]).

⁴⁸ Interpretive rules and general statements of policy with respect to unfair or deceptive acts or practices in or affecting commerce” (Federal Trade Commission Act, para. 57a.(1)(A). Section 6(g) of the FTC Act, 15 U.S.C. Sec. 46, authorises the FTC “to make rules and regulations for the purpose of carrying out the provisions of this subchapter”.

⁴⁹ See also press release from the FTC on 11 October 2023 <https://www.ftc.gov/news-events/news/press-releases/2022/10/federal-trade-commission-explores-rule-cracking-down-junk-fees>.

⁵⁰ See The Case for “Unfair Methods of Competition” Rulemaking (Chopra and Khan, 2020^[55]): “But in practice, the exclusive reliance on case-by-case adjudication has yielded a system of enforcement that generates ambiguity, drains resources, privileges incumbents and deprives individuals and firms of any real opportunity to participate in the process of creating substantive antitrust rules.”

⁵¹ See for a discussion on such acquisitions for instance Start-ups, Killer Acquisitions and Merger Control (OECD, 2020^[10]).

⁵² In December 2021, the KFTC amended its Monopoly Regulation and Fair Trade Act (MRFTA) as a result of which value-based notification thresholds were implemented.

⁵³ As of May 2022, acquisitions of “technology undertakings” that have operations or R&D activities in Turkey, or provide services to customers in Turkey, are not subject to the standard notification thresholds. This includes where the target is active in the field of digital platforms, software and game software, financial technologies, biotechnology, pharmacology, agriculture chemicals and health technologies (see (Gürkaynak, 2022^[59])).

⁵⁴ See [https://one.oecd.org/document/DAF/COMP/WP3/WD\(2022\)5/en/pdf](https://one.oecd.org/document/DAF/COMP/WP3/WD(2022)5/en/pdf) and Online ad verification: The Autorité de la concurrence issues interim measures against Meta <https://www.autoritedelaconcurrence.fr/en/article/online-ad-verification-autorite-de-la-concurrence-issues-interim-measures-against-meta>

⁵⁵ See (Lefever, 2023^[61]). This investigation into Proximus/Edpnet marks the first example of a competition authority using an abuse of dominance investigation to target a possibly anticompetitive merger that falls below both European and Belgian notification thresholds.

⁵⁶ Commissioner Vestager specifically noted that “So interim measures are one way to tackle the challenge of enforcing our competition rules in a fast and effective manner. [...] Whenever necessary, I am therefore committed to making the best possible use of this important tool”. Statement by Commissioner Vestager on Commission decision to impose interim measures on Broadcom in TV and modem chipset markets, 16 October 2016.

⁵⁷ Interim Measures in Unilateral Conduct Cases: Dealing with Uncertainty and Risks of Errors (Da Silva Pereira Neto, 2023^[54]).

⁵⁸ <https://www.indecopi.gob.pe/documents/1902049/2501877/Gu%C3%ADa+Informativa-Competencia+en+%C3%81mbito+Laboral.pdf/cc871a77-33ae-6a3f-b2fb-c1fe5a2224e3>.

⁵⁹ https://www.concorrenca.pt/sites/default/files/Issues%20Paper_Labour%20Market%20Agreements%20and%20Competition%20Policy.pdf

⁶⁰ <https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/enforcement-guidelines-wage-fixing-and-no-poaching-agreements>.

⁶¹ <https://www.gov.uk/government/publications/avoid-breaking-competition-law-advice-for-employers/employers-advice-on-how-to-avoid-anti-competitive-behavior>.

⁶² For instance, see the FTC-DOJ Draft Merger Guidelines (<https://www.ftc.gov/legal-library/browse/ftc-doj-merger-guidelines-draft-public-comment>) and OECD Best Practise Roundtables on Competition in Labour Markets (OECD, 2020, p. 49^[9]).

⁶³ Why do Competition Authorities need Artificial Intelligence? (Lorenzoni, 2022^[57]), The Adoption of Computational Antitrust by Agencies: 2021 Report (Schrepeel and Groza, 2022^[58]).

⁶⁴ Ibid.

www.oecd.org/competition

