

Securing Australia's Cloud potential

Economic value and regulatory principles
December 2024



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DT Economics is a specialist economic consulting firm based in London focusing on regulation, competition and expert witness services with a particular focus on telecoms and the broader digital ecosystem.

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01 Executive Summary



This report provides a comprehensive analysis of the cloud industry's economic impact and examines key regulatory considerations to ensure its continued success.

The cloud industry delivers substantial economic benefits to Australia. We estimate its contribution to the Australia's economy is both significant and growing:

- Over the period 2007-2023, it contributed impressive economic value to the Australian economy – with its contribution to GDP rising from AU\$ 2 billion in 2007-2008 to AU\$ 9-10 billion in 2022-2023 – an increase of over 300 per cent at a compound average growth rate of around 10 per cent. The sector currently supports 47-56 thousand jobs.¹
- By 2022-23, the industry had grown to represent 0.4 per cent of GDP and 0.5 per cent of employment.
- Looking ahead, projections indicate the cloud industry will contribute AU\$ 68-81 billion to GDP annually and support 71-84 thousand jobs by 2028-2029.
- Beyond these direct impacts, the industry generates significant indirect and induced economic effects through its extensive supply chain and employee spending.
- Studies estimate the cloud industry's productivity benefits range between 0.2 per cent and 1.0 per cent of GDP annually, underscoring its role as a catalyst for innovation and efficiency across sectors.

This report finds that the Australian Government should exercise caution regarding proposals for an ex-ante competition regime aimed at regulating the cloud sector. In sectors like the cloud industry, where competition issues are currently managed by general ex-post competition law, transitioning to an ex-ante regime would represent a major shift in economic policy that could jeopardise the economic growth the sector brings to Australia. The justification for such a change is yet to be established.

This report presents 10 guiding principles for the Australian Government to consider when evaluating recommendations for this proposed ex-ante competition framework. The principles are designed to help shape regulations that support the full economic potential of the cloud sector, ensuring it continues to drive growth and innovation in Australia's digital economy and ensuring Australia remains competitive in the region for investment and global talent. The principles are:

1. Clear strategic direction

The Government should provide a clear long-term vision and roadmap for their regulatory approach, allowing industry stakeholders to plan and invest with confidence. The example of net neutrality regulation in different jurisdictions shows the importance of regulatory certainty and strategic direction, coupled with enough regulatory discretion to allow regulation to adapt to a changing commercial environment.

2. Targeting and proportionality

Regulations should be narrowly targeted to address specific identified market failures or issues, and should be proportional in scope to avoid unintended negative consequences.

3. Learnings from other countries

The Government and regulators should understand how their equivalents in other countries are approaching similar issues as well as understand the impact of these approaches. This helps policy makers avoid mistakes that may hamper investment and innovation or cause other unintended consequences identified in other countries. The Government should learn from a broad range of international experience.

4. Account for local conditions

There can be no presumption that regulation introduced in international jurisdictions would be appropriate in the local context, especially in dynamic and rapidly evolving sectors. Regulations applied elsewhere should not be adopted in a different jurisdiction without first assessing its suitability given the local context, existing legislation and competitive dynamics.

5. Positive outcomes

The Government should focus on achieving measurable positive outcomes rather than implementing rules. Regulators should conduct impact assessments to test whether regulations can be expected to have the desired effect without distorting positive competitive dynamics or placing an undue burden on the sector. >>

¹ Full-time equivalent.

6. Focus on competition

Regulations should aim to promote effective competition, which can lead to lower prices, better quality, and more innovation for consumers. The example of the UK retail energy market shows the risks of getting pro-competitive regulation wrong, and how consumers may ultimately suffer if new competition is not sustainable when commercial conditions become challenging.

7. Consumer focus

All regulatory interventions should ultimately aim to protect and benefit consumers, ensuring they have access to high-quality, affordable services and are protected from potential harms. This assessment should also factor in the expected effect of regulatory compliance costs being passed on to consumers.

8. Investment and innovation

Regulations should foster an environment that encourages companies to efficiently invest in infrastructure and develop innovative new products and services, as this drives economic growth and benefits consumers. The example of fibre roll-out and de-regulation in New Zealand shows that explicitly choosing not to regulate can promote and support substantial investment, supported by clear strategic direction and political will.

9. Regulatory flexibility balanced with legal certainty

Regulators need flexibility to adapt their approach as markets evolve, but this discretion must be balanced against the need for legal certainty. The scope and terms of the regulatory flexibility should therefore be clearly defined.

10. Appeal rights

There should be a fair appeal process in place to allow regulatory decisions to be challenged and reviewed when necessary. The example of the 'fair share' or 'network fees' debate in South Korea highlights the value of strong appeal rights to test novel regulatory arguments and bolster companies' confidence in investing and innovating.

In this report, we consider how these principles apply to the cloud industry specifically. This is important because the cloud industry does not have clear natural monopoly characteristics, like most industries historically subject to ex ante regulation. It is also a dynamic and growing sector, with high levels of innovation. If the principles are not fully applied to the consideration of regulation of the cloud sector, it could mean lower quality products or services for users, less customer choice, less investment and economic damage across a range of industries.

We use international case studies to illustrate real world application of the 10 key principles, including problems that have arisen and damage that has been done when the principles were not followed well.

The cloud industry operates on a global scale, with service providers capable of serving clients in one jurisdiction from their infrastructure located in other regions. Cloud is a capital-intensive sector with long investment horizons. Many multinational companies in this sector centralise their decisions on new investment. Jurisdictions with less restrictive regulatory regimes tend to be more attractive for investment and talent. Like any rational economic entity, multinational companies avoid jurisdictions with unduly intrusive and high cost regulatory regimes. It is therefore critically important that the Government takes a cautious approach in order to attract investment, promote domestic job and industry growth across Australia, and achieve high quality of service for consumers.

The cloud industry is a key element in Australia's digital future, fuelling innovation, productivity, and economic growth. By carefully implementing the 10 key principles, the Government can establish a regulatory framework that supports the cloud industry's capacity to stimulate economic expansion. The Government should explore and adopt alternative solutions to address any identified issues, steering clear of proposals that would result in a fundamental change in economic policy regulation. A balanced strategy will help guarantee that cloud services remain a significant contributor to Australia's economy.



02 Cloud in Australia



The cloud gives users flexibility in managing their computer systems, but many IT solutions remain on-premises

- 2.1** Organisations of every type, size, and industry, both in Australia and across the globe, are using cloud services (**cloud**) for a wide variety of use cases (eg data backup, disaster recovery, email, virtual desktops, software development and testing, big data analytics, and customer-facing web applications). For example, healthcare companies are using the cloud to develop more personalised treatments for patients; financial services companies to power real-time fraud detection and prevention; and video game makers to deliver online games to millions of players around the world.²
- 2.2** Whereas traditional on-premises IT solutions remain the most used technologies worldwide to store data and host applications, adoption of the cloud is growing in Australia and globally, as businesses realise the benefits of using these services. This trend is likely to continue as the cloud, together with enhanced processing power and other advanced IT solutions, supports the adoption of emerging technologies such as artificial intelligence (**AI**).
- 2.3** As outlined in the analysis provided in this report, the cloud industry in Australia, which includes domestic and international cloud service providers (**CSPs**) providing cloud services in the country, has generated substantial benefits within the Australian economy since its inception. These economic benefits are expected to increase in the coming years, in line with the forecast growth of the industry in the country. In addition, as more cloud storage facilities are built in regional areas (in addition to the facilities in urban areas), a more even spread of these benefits across urban and regional territories in Australia is expected.
- 2.4** IT solutions are often viewed by businesses as a holistic system, where multiple components work together to solve a specific problem. These components can be deployed in various ways, including on-premises, over the internet, or through a hybrid approach using multiple providers. For example, a company launching a web-based fitness application would need to consider various components, such as a development platform to build the application, processing, data storage, a database for fitness data, payment, and security. Each of these components could be sourced from different technology providers through several IT solutions.³
- 2.5** Traditional on-premises IT solutions refer to the practice of hosting and managing software, data, and IT systems within the organisation's own premises. This means that the organisation is responsible for maintaining, updating, and securing the systems. On-premises solutions are often preferred for their control and customisation capabilities.
- 2.6** Cloud technology provides customers with an additional option to their IT problems, by offering on-demand availability of computer system resources without direct management by the user. This allows customers to access technology services, such as computing power, storage, and software on an as-needed basis from a CSP without the need of buying, owning, and maintaining physical data centres and servers.⁴
- 2.7** According to Gartner, as of 2021, less than 10 per cent⁵ of IT spending globally was on cloud computing technologies with many customers continuing to use on-premises IT solutions offered by more traditional IT providers. However, as discussed further below, take-up of cloud services as an additional solution to "minimize risk and optimize costs"⁶, is increasing both in Australia and globally.

2 AWS, What is cloud computing? <https://aws.amazon.com/what-is-cloud-computing>

3 AWS, Ofcom Cloud Services Market Study: AWS's response to Ofcom's consultation on its Interim Report, published on April 5, 2023, May 2023.

4 AWS, What is cloud computing? <https://aws.amazon.com/what-is-cloud-computing>

5 According to Gartner an estimated USD 4,400 billion was spent worldwide on IT in 2021, and of that amount cloud spending constituted USD 413 billion. Sources: Gartner, Gartner Forecasts Worldwide IT Spending to grow 5.1 per cent in 2023; [Gartner Forecasts Worldwide IT Spending to Grow 5.1% in 2023](#)

6 Gartner, Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \$600 Billion in 2023; [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \\$600 Billion in 2023](#)

Cloud computing solutions

2.8

There are multiple ways of classifying cloud services to provide solutions to the needs of a customer. As the cloud industry provides a wide and evolving range of solutions tailored to different customer needs, there are multiple ways that these services can be delivered. One way that stakeholders use to categorise the services that CSPs offer are by the different degrees of management by the cloud provider. These different solutions are discussed below:

- Infrastructure as a Service (IaaS).**
 IaaS is a computing infrastructure that is provisioned and managed over the internet (“in the cloud”) by a CSP. With IaaS, users (predominantly enterprises) can rent IT infrastructure, such as servers, storage, and networking components, from a CSP on a pay-per-use basis. IaaS allows organisations to avoid the upfront costs and complexity of purchasing and managing their own physical servers and data centres, making it a cost-effective solution for businesses of all sizes. IaaS also gives consumers flexibility, because it can expand and contract with business needs. If business activity increases, for example, during busy retail periods, resources can be scaled up and back down again once activity returns to normal. A CSP can also provide security as part of IaaS so that apps and data are always protected.⁷

- Platform as a Service (PaaS).**
 PaaS is a cloud computing service model that provides a platform allowing customers to develop, run, and manage applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching an app. It offers a complete development and deployment environment in the cloud, including tools for coding, testing, and hosting applications.⁸ PaaS contains the same infrastructure as IaaS but also includes development tools, database management and business intelligence. The business manages the applications and services it develops, and the CSP manages the rest.⁹
- Software as a Service (SaaS).**
 SaaS is a cloud computing service model that provides software applications over the internet as a service. It is more consumer-focussed and ready-to-use, by allowing users to access and use software applications directly from the internet without the need to install them on their local computers or servers. >>

SaaS providers manage the application code and make it available to customers via the internet based on a subscription model, offering benefits such as reduced costs, faster deployment, scalability, and ease of access from any connected device.

2.9

Figure 2-1 below summarises the different degrees of management by the user and the IT provider for each of these solutions, including both traditional on-premises IT services and cloud services offered by CSPs. Although this is a common way of partitioning cloud services, it is important to note that customers may consider between these options when assessing the best solution for their specific needs. Customers often buy combinations of these services in bundles to meet their specific needs. As a result, a drawback of this classification structure is that it suggests an artificial level of separation between what can be interlinked services.

Figure 2-1: Level of management of components by IT solution^{10,11}

Traditional on-premises	IaaS	PaaS	SaaS
Application Code	Application Code	Application Code	Application Code
Runtime	Runtime	Runtime	Runtime
Operating system	Operating system	Operating system	Operating system
Hardware	Hardware	Hardware	Hardware

■ Managed by user ■ Managed by IT provider

7 Core, Three categories of cloud computing explained: IaaS, PaaS and SaaS; <https://www.core.co.uk/blog/three-categories-of-cloud-computing-explained>

8 International Journal of Advances in Applied Sciences, Platform-as-a-Service (PaaS): Model and Security Issues, March 2015.

9 Core, Three categories of cloud computing explained: IaaS, PaaS and SaaS; <https://www.core.co.uk/blog/three-categories-of-cloud-computing-explained>

10 Google Cloud, PaaS vs IaaS vs SaaS vs CaaS: How are they different? <https://cloud.google.com/learn/paas-vs-iaas-vs-saas#section-1>

11 Application code in IT refers to the source code written to build a specific software application. It includes all the lines of code that dictate how the application functions and behaves. Runtime refers to the stage of the programming lifecycle where a program is executing, along with all the external instructions necessary for proper execution.

The cloud industry in Australia has grown dramatically in the past decade and is expected to grow further

2.10

Outsourcing of cloud solutions has become common practice for many businesses in Australia and worldwide. The growing number of enterprises undergoing a digital transformation journey, when paired with the continuing integration and normalisation of web use in everyday life, increasingly creates the need for public and commercial enterprises to access large amounts of computing power on demand.¹²

2.11

The Covid-19 pandemic accelerated the demand for cloud services within Australia and globally, as more businesses shifted online or to remote working conditions to remain viable. Some of these arrangements continue to support demand for online services, such as telehealth appointments, and remote learning, teaching and working environments. These all contribute to the increase in demand for cloud services. Further, industry appetite to harness the benefits of cloud-enabled technologies, such as AI and machine learning (ML), has also encouraged significant growth of demand for cloud services, to help users grow and scale their applications.

2.12

Increased revenues across the Australian cloud industry, as shown in Figure 2-2 to the right, are testament to this substantial growth, as businesses adapt to the changing technological landscape. Australian revenues in the sector have more than quadrupled in fifteen years (2007-08 to 2022-23), with a compound annual growth rate (CAGR) of 10 per cent. They are expected to increase further, by more than 50 per cent, by 2030.

2.13

Cloud services also help to enable the widespread adoption of emerging technologies such as AI and ML across the public and private sectors. As AI adoption becomes more normalised and widespread across different sectors within Australia, cloud services will help ensure the benefits of AI are shared across all industries in an economy. AI and advanced data analytics, supported by faster connectivity speeds from 5G networks, will allow companies to collect data more efficiently and in higher volumes, boosting the demand for cloud services in turn.

2.14

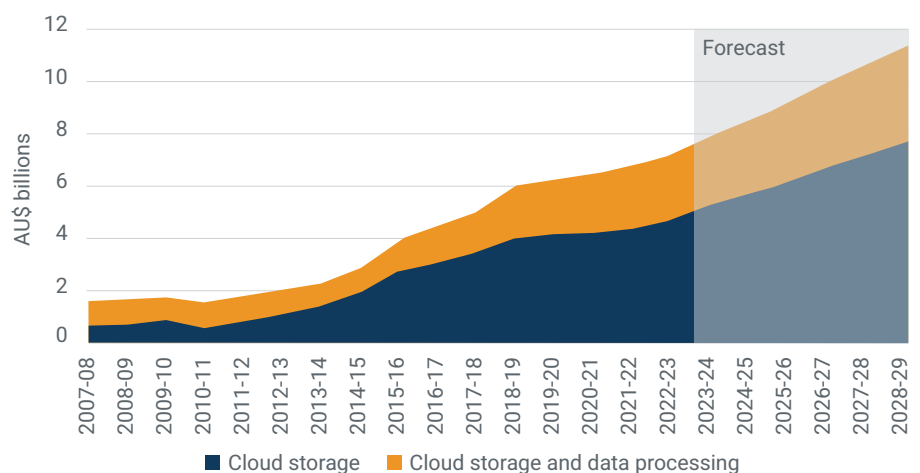
Finally, research and development within CSPs has also improved storage capacity, allowing many CSPs to shift towards more energy-efficient cloud storage infrastructure and cooling systems. These improvements, coupled with the concerns from companies and government departments over their own energy costs, contribute to the increase in demand for CSPs.¹⁵

Cloud computing technologies have a wide range of uses across both the private and public sectors in Australia

2.15

Cloud solutions cater to a wide variety of industries and customers across Australia, with 59 per cent of Australian businesses having reported using cloud technology in the Australian Bureau of Statistics (ABS)'s 2021-22 Business Characteristics Survey.¹⁶

Figure 2-2: Cloud industry revenues in Australia¹⁴



12 IBISWorld, Industry report: Cloud Hosting and Data Processing Services in Australia, August 2023.

13 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

14 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024 and Industry report: Cloud Hosting and Data Processing Services in Australia, August 2023. Data is provided up to 2022-23 and forecasted for the period 2023-24 to 2028-29. Please see Appendix for a definition of the Cloud storage and Cloud hosting and data processing services industries.

15 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

16 ABS, Characteristics of Australian Business for the 2021-2022 financial year.

2.16

As reported by the Australian Productivity Commission, some of the heaviest users of cloud solutions include:¹⁷

- **Finance and insurance companies** that generate and process large volumes of sensitive consumer and corporate financial and personal data. Many of these are also focusing on online and mobile offerings, which require more cloud storage capacity.¹⁸
- **Information media and telecommunications companies** that need more data storage as AI usage becomes increasingly vital. These companies heavily rely on data centres to process immense swathes of data, which in turn enable them to grow efficiently and provide better services to their own clients.¹⁹

2.17

In addition, according to a recent report by Accenture sponsored by AWS,²⁰ the use of cloud technology by micro small and medium enterprises (**MSMEs**)²¹ is also expected to become increasingly ubiquitous, advanced, and mature in Australia. With continuous advancements in technology and the decreasing costs of cloud services, MSMEs are expected have access to an even wider range of scalable and cost effective technology solutions across functions, occupations, and industries. MSMEs in **healthcare, education and agriculture** in particular are expected to deliver greater societal value through cloud enabled technologies, supporting 17 million virtual health consultations, two million school students to access online education, and one in three farms to access more efficient and sustainable farming practices in Australia by 2030.

2.18

Finally, **Australian government agencies**, including federal, state and local bodies, have also adopted cloud storage services as way to increase the agility, flexibility, scalability and robustness required to operate in a digital environment.²² As an example, in 2019 the Australian Government signed an agreement with Microsoft Australia, aimed at streamlining cloud access for 98 federal agencies, and encouraging one of the world's top three digital transformation processes of the public sector by 2025.²³

In the same year, AWS and the Digital Transformation Agency (DTA) signed an agreement to enable Australian federal, state, and territory agencies and departments, as well as public universities and government-controlled corporations, to access AWS cloud services through a simple contracting model.²⁴ Further, in 2021, the DTA also launched a government-wide Cloud Marketplace with 300+ cloud service providers, including many domestic and global small businesses and start-ups, to accommodate changing public sector demands and new cloud licensing models.²⁵ This rising integration of online platforms with government services is likely to contribute to the expected boost in industry activity in Australia, as illustrated in Figure 2-2 above.

Cloud computing facilities are on the rise, and increasingly spread out across urban and regional territories in Australia

2.19

Cloud storage facilities are located across a number of locations in Australia. These facilities have different IT load capacities and technical space and are operated by a mix of domestic and international providers. This distributed pattern facilitates several important economic benefits for the Australian economy, including:

- a) job creation that can reduce regional unemployment; and
- b) the promotion of infrastructure development such as high-speed internet connectivity.

2.20

Various CSPs have invested tens of billions of dollars in Australia over two decades to grow capacity, develop capabilities that meet evolving customers' needs, and otherwise support the growth of Australia's digital economy.²⁶ This has made the data centre industry in Australia very dynamic, with over 200 existing facilities.²⁷ In addition, the supply of data centre facilities is expected to continue to grow significantly in Australia over the coming years and the total data centre capacity in Australia is projected to increase from 1,350 megawatts (**MW**) in 2024 to 3,100MW by 2030.²⁸ According to Statista²⁹, over 60 per cent of corporate data is stored in the cloud, with the proportion growing over time.

17 Australian Government, Productivity Commission, 5-year Productivity Inquiry: Australia's data and digital dividend, Interim report, August 2022.

18 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

19 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

20 Accenture, Realising a cloud-enabled economy in Australia: How cloud drives economic and societal impact through micro, small and medium-sized businesses, 2023.

21 Defined as businesses and startups with between 1 and 250 employees.

22 Australian Government, Digital Transformation Agency, Secure Cloud Strategy, updated in 2021.

23 Microsoft, Deal accelerated transformation opportunity, invests in public sector skills, drives inclusion and leverages local investment, 2019; <https://news.microsoft.com/en-au/features/federal-government-inks-major-cloud-deal-with-microsoft>

24 Amazon News, Creating a new era of partnering for public sector innovation, April 2022; <https://www.aboutamazon.com.au/news/aws/creating-a-new-era-of-partnering-for-public-sector-innovation>

25 Digital Transformation Agency; <https://www.dta.gov.au/news/dta-launches-new-cloud-marketplace>

26 Mandala, Hyperscale cloud and its benefits to the Australian economy, December 2023.

27 These are facilities "offering colocation, cloud and connectivity" and do not include on-premises storage. Data from the Data Center Map, Australia Data Centers; [Australia Data Centers \(datacentermap.com\)](https://www.austriadatacenters.com)

28 For example, 300MW capacity data centre planned by NexTDC; <https://www.nextdc.com/data-centres/sydney-data-centres/s4-sydney>

29 Statista, Worldwide cloud storage of corporate data 2015-2022.

2.21

Most Australian data centres are located in either New South Wales or Victoria, with the bulk of these facilities located near higher density populations on the eastern coast between Brisbane, Sydney and Melbourne, as shown in Figure 2-3 and Figure 2-4 below. This proximity to large population centres is driven by customer demand, low latency, access to inputs including skilled operators, and network resilience.³⁰ In addition, with 19 data centres (most of which are maintained by domestic CSPs), Canberra, home to the Federal Parliament and its government agencies, also has a greater proportion of data centres relative to its population due to the vital need for government data storage outsourcing, as explained above.³¹

2.22

Low latency³⁵ is important for businesses with a business model that require them to store and retrieve large amounts of information in short periods of time. Financial services organisations, for example, often rely on rapid transaction rates and would be more likely to outsource their cloud storage to a location, often within the same city, that can shave microseconds off processing times. Smart technology, including IoT devices and self-driving cars, also need heavy datasets processed in real-time to function properly.³⁶

2.23

Whereas cities tend to have more sophisticated infrastructure, supporting connectivity and energy efficiency, data centre space constraints in major cities are pushing data centres to expand in regions further from population hubs.³⁷ This, in turn, will generate positive economic impact through investment in infrastructure and employment in these areas.

Figure 2-3: Number of data centres by region³²

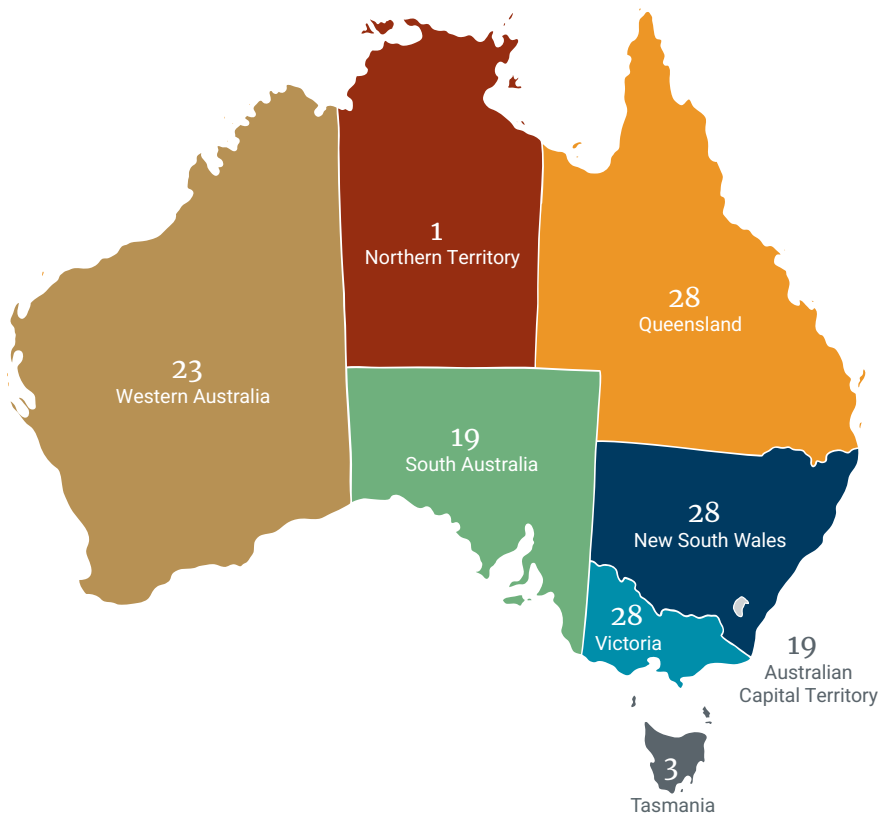
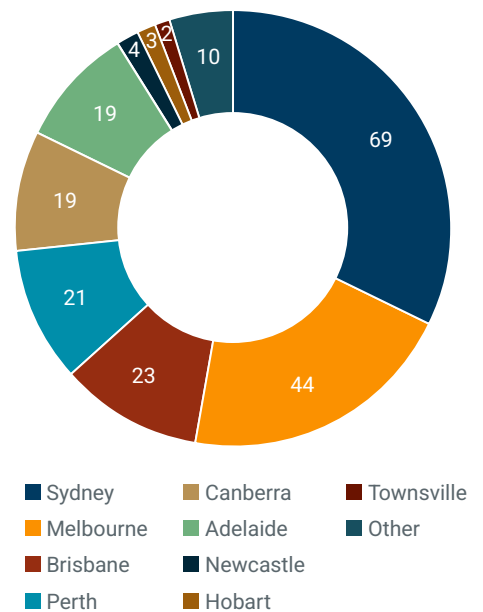


Figure 2-4: Number of data centres by city^{33,34}



30 Mandala, Empowering Australia's Digital Future Data Centres: Essential digital infrastructure underpinning everyday life, 2024; <https://mandalapartners.com/reports/empowering-australia-s-digital-future>, p17; IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

32 Data Center Map, Australia Data Centers; [Australia Data Centers \(datacentermap.com\)](https://datacentermap.com) (accessed 06/2024)

33 Data Center Map, Australia Data Centers; [Australia Data Centers \(datacentermap.com\)](https://datacentermap.com) (accessed 06/2024)

34 The cities included in the "Other" category are: Gold Coast, Toowoomba, Geraldton, Albury, Ballarat, Darwin, Grafton, Port Hedland, Sunshine Coast and Wollongong.

35 Latency is the amount of time it takes for a data packet to go from one place to another.

36 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

37 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

31 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

2.24

Regional locations offer the benefits of lower real estate costs and more readily available space for data centre expansion. Data transfer in regional locations has also been made faster and easier by the roll-out of high-speed telecoms networks. Finally, outsourcing data storage often serves to provide a data backup to protect from natural disasters. Storage centres outside of major cities can provide an alternate location for risk averse city firms.³⁸

2.25

CSPs need to stay updated with the latest technology and offer high-quality cloud storage services to customers by creating and improving data centres in the best locations. This is and will remain a key goal in the industry.³⁹ The growing diversity of data centres across urban and regional areas will also ensure that the economic benefits produced by the cloud, which are discussed further below, will also be widespread.

The cloud industry is helping the Australian economy become more innovative and dynamic

2.26

The cloud sector⁴⁰ is growing rapidly in Australia with companies investing heavily and adoption rising significantly since the COVID-19 pandemic and the increased digitisation of economy, including the recent embrace of emerging technologies such as generative AI.⁴¹ The cloud industry needs to continually invest and innovate to accommodate for the growth in traffic volumes and the growing demands for faster speeds.⁴² Our analysis presented in this report support these trends.

2.27

The economic dynamism of the cloud industry is self-evident and is quantified in the next section of this report. Less self-evident, and much harder to quantify, is the effect the cloud has on the dynamism of many other sectors who use cloud products and services.

2.28

Economic growth is closely linked to the vitality of small businesses. A common challenge these companies face is the high overhead costs of Information Technology, which is essential in many industries to meet both regulatory and basic commercial requirements.

2.29

Information Technology represents a substantial overhead expense for small businesses. Prior to the advent of the cloud, both small and large enterprises were required to possess their own computer systems and data storage, along with maintaining IT departments to manage them. This operational and capital cost constituted a significantly larger portion of total expenses for small firms compared to their larger counterparts, thus providing large companies with a considerable competitive edge over smaller market entrants. This disparity stems from the economies of scale that large firms benefit from in managing their IT infrastructure.

2.30

Cloud services help equalise opportunities by allowing small businesses to benefit from the economies of scale offered by the cloud, making data storage and management a variable cost with the same unit price for companies of any size. This advantage enhances the competitiveness of agile smaller firms against larger corporations. Given that smaller businesses contribute more to economic growth, this will ultimately enhance the economy's overall growth rate.

38 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

39 IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

40 We at no point in this analysis attempt to consider whether there might be a 'market' for cloud service in regulatory terms, with specific product and geographic boundaries.

41 Statista, Public Cloud – Australia; <https://www.statista.com/outlook/tmo/public-cloud/australia>

42 IBISWorld, Cloud Hosting and Data Processing Services in Australia report, Products and Markets, 2024.

03

Economic impacts of the cloud on the Australian economy



3.1

Cloud infrastructure in Australia gives customers the choice and ability to securely store their data remotely, accelerate innovation, increase agility, reduce costs, and power their individual digital transformation journeys.⁴³

3.2

Beyond the immediate value to its customers and partner networks, the cloud industry contributes significant additional value to the Australian economy. This analysis assesses the positive impact associated with the Gross Domestic Product (GDP) and employment generated by the cloud industry in Australia. This includes:

- **The direct impact**, measured as the change in GDP and employment generated by CSPs.
- **The indirect impact**, measured as the change in GDP and employment generated by the suppliers of CSPs, such as telecoms providers.
- **The induced effect**, measured as the change in GDP and employment generated by the spending of employees receiving compensation from CSPs and any business within the cloud industry supply chain.

3.3

This analysis covers both a **16-year historical period** (2007-2023)⁴⁴ and a **six-year forecast period** (2023-2029).⁴⁵ The start of the historical period, ie 2007-2008, is the first year when data on the cloud industry was collected by IBISWorld, which is used in this analysis. Since 2010, there has been significant growth in the cloud industry, which implies the historical analysis in this report can be considered a conservative proxy for the value generated by the cloud industry since its inception in Australia. More detail on the methodology and data sources used in this analysis is provided in the Appendix.

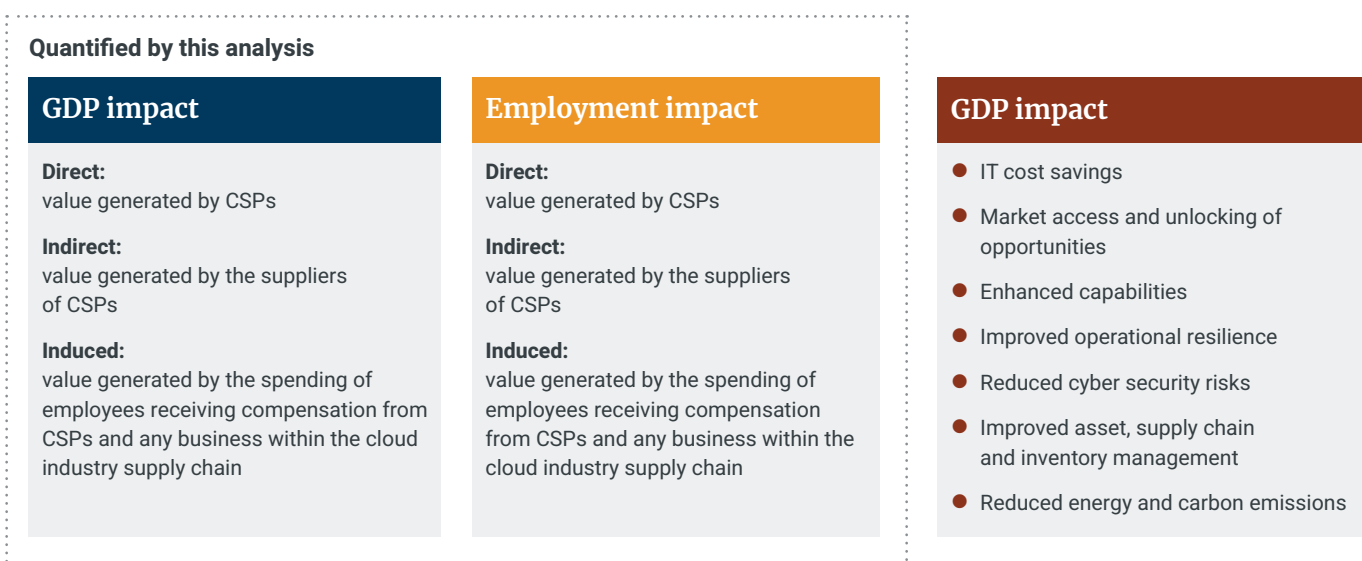
3.4

The cloud industry also generates a range of additional benefits to the Australian economy, such as immediate cost savings, productivity benefits, flexibility, energy savings, enhanced security, and more. The analysis in this report does not extend to quantifying these benefits but observes that there are several existing empirical studies that have sought to measure these impacts. The range of impacts suggested by the studies, as well as a more detailed description, of these impacts is provided below.

3.5

Figure 3-1 below summarises the areas of benefits identified above and highlights those measured by this analysis.

Figure 3-1: Overview of the cloud industry impacts



43 AWS, AWS Investment in Australia, AWS Economic Impact Study, 2023.

44 Please note the analysis is based on financial years and covers the period 2007-08 to 2022-23.

45 Please note the analysis is based on financial years and covers the period 2023-24 to 2028-29.

The cloud industry’s contribution to GDP is significant and forecast to grow

3.6

This analysis estimates that the cloud industry in Australia has grown from contributing AU\$ 2 billion in 2007-2008 to contributing **AU\$ 9-10 billion in 2022-2023**, an overall contribution of **AU\$ 73-89 billion to GDP** over the **sixteen-year period 2007-2023**. Additionally, it supported **47-56 thousand full time equivalent (FTE) jobs** in the year **2022-2023**, which increased from 20-23 thousand in 2007-2008. This contribution was equivalent to 0.2 per cent of Australian GDP and employment in 2007-08. By 2022-23, these impacts grew to 0.4 per cent⁴⁶ of GDP and 0.5 per cent of employment respectively.

3.7

To put this in context, comparable studies that quantified the direct and indirect impacts of other industries in Australia estimated that:

- the telecommunications industry contributed 2.8 per cent (AU\$ 51.5 billion) to Australian GDP and employed over 87,300 FTE roles directly, while supporting a total of over 267,000 roles across the economy, in 2017-18;⁴⁷ and
- the technology sector as a whole contributed 8.5 per cent (AU\$ 167 billion) to Australian GDP, and there were 861,000 people employed in the tech sector in 2020-21.⁴⁸

3.8

Looking ahead over **the next six years**, the cloud industry in Australia is expected to contribute **AU\$ 68-81 billion to GDP** (increasing from 0.4 per cent of total GDP in 2022-23 to over 0.5 per cent⁴⁹ in 2028-29). In the year 2028-2029, the contribution of cloud to GDP is predicted to reach **AU\$ 14-16 billion** and will support **71-84 thousand jobs**.⁵⁰ To put this in context:

- generative AI is predicted to contribute up to 5 per cent (AU\$ 115 billion) of GDP annually to the Australian economy by 2030,⁵¹ and
- it is estimated that the Australian tech sector could contribute AU\$ 244 billion annually to GDP by 2031.⁵²

3.9

Figure 3-2 and Figure 3-3 below illustrate the growing impacts of the cloud industry on Australian GDP and employment respectively over the full period considered. The growth of these impacts is testament to the central role the cloud industry and its partners will play in the future of Australia’s economic prosperity, and these benefits will scale dramatically as technologies such as AI become embedded in Australian businesses. More detail on these impacts is provided below.

Figure 3-2: Estimated impact of the cloud industry on Australian GDP⁵³

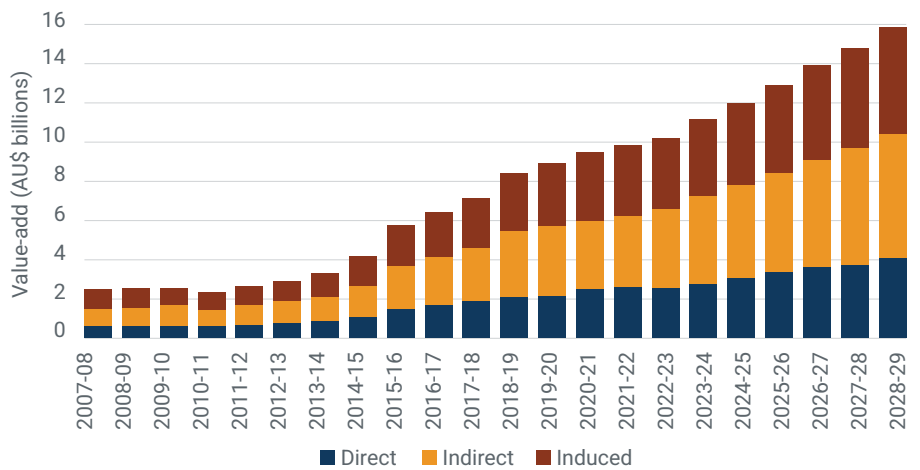
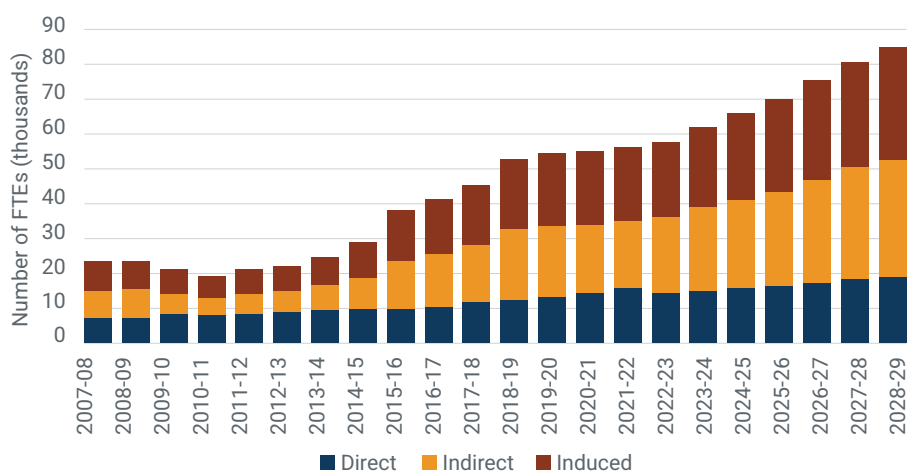


Figure 3-3: Impact of the cloud industry on Australian employment⁵⁴



46 Please note this is calculated using GDP data from 2021-22, the latest available data point published by the ABS.

47 Deloitte, Connected Nation, Communications Alliance, 2019.

48 Tech Council, The economic contributions of Australia’s tech sector, 2021.

49 Please note this is an approximation using 2030 GDP forecast data from the Lowy Institute; <https://power.lowyinstitute.org/data/future-resources/economic-size-2030/gdp-2030/> (accessed August 2024, link no longer live)

50 The top of the range given here is different to the sum of the values in Figure 3-5 as different methodologies give rise to the maximum indirect and maximum induced values. More detail is given in Appendix 1.

51 Tech Council of Australia, Australia’s Generative AI opportunity, July 2023.

52 Tech Council, The economic contributions of Australia’s tech sector, 2021.

53 These figures represent the most granular estimates from the impact assessment analysis, as detailed in Appendix 1. Estimates up to 2022-2023 are historical and after that date the impacts are forecasted.

54 These figures represent the most granular estimates from the impact assessment analysis, as detailed in Appendix 1. Estimates up to 2022-2023 are historical and after that date the impacts are forecasted.

These economic benefits reflect a direct, indirect and induced component from the cloud industry

3.10

The cloud industry in Australia:

- has contributed AU\$ 73-89 billion to GDP and supported 30-35 thousand jobs annually on average over the sixteen-year period 2007-2023, reaching AU\$ 9-10 billion in the year 2022-2023; and
- is expected to contribute AU\$ 68-81 billion to GDP and support 61-72 thousand jobs annually on average over the six-year period 2023-2029 reaching AU\$ 14-16 billion in the year 2028-2029.

3.11

Figure 3-4 and Figure 3-5 above summarise the benefits generated by the cloud industry in the Australian economy. These are split as follows:

- The **direct contribution** of the cloud industry to **GDP in Australia** is approximately AU\$ \$22 billion over the sixteen-year historic period. Annually, the direct contribution has risen from **AU\$ 0.6 billion in 2007-2008** to **AU\$ 2.5 billion in 2022-2023**. The industry is expected to directly generate a further AU\$ 20 billion by 2030 (in the next six years), with the annual impact reaching **AU\$ 4.1 billion in 2028-2029**. This estimate captures the value-add generated by the Australian cloud industry, calculated as the difference between the revenues of the sector and the costs of direct intermediary inputs, ie the direct costs associated with delivering cloud services to customers. These may include, as an example, the costs of raw materials and components, such as electronic parts, machinery and automotive parts used in the production of these services.

Figure 3-4: Estimated economic impacts of the cloud industry in Australia, 2007-2023

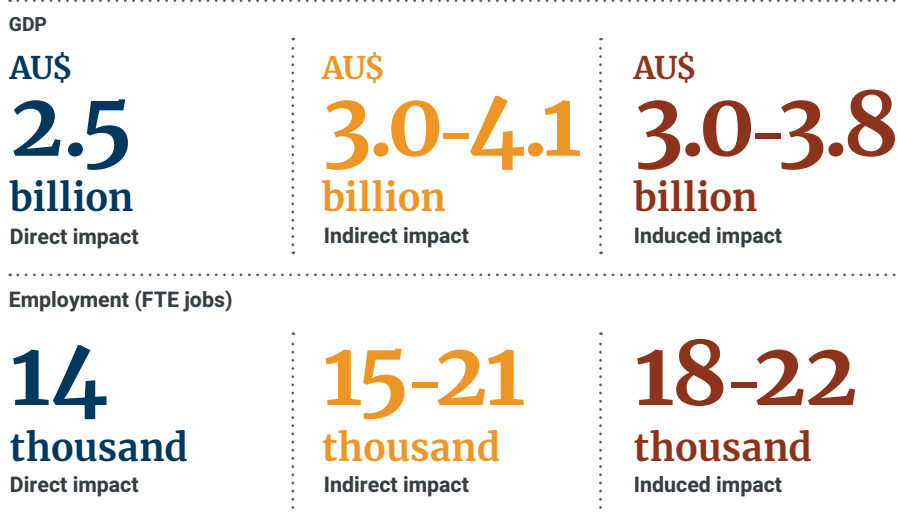
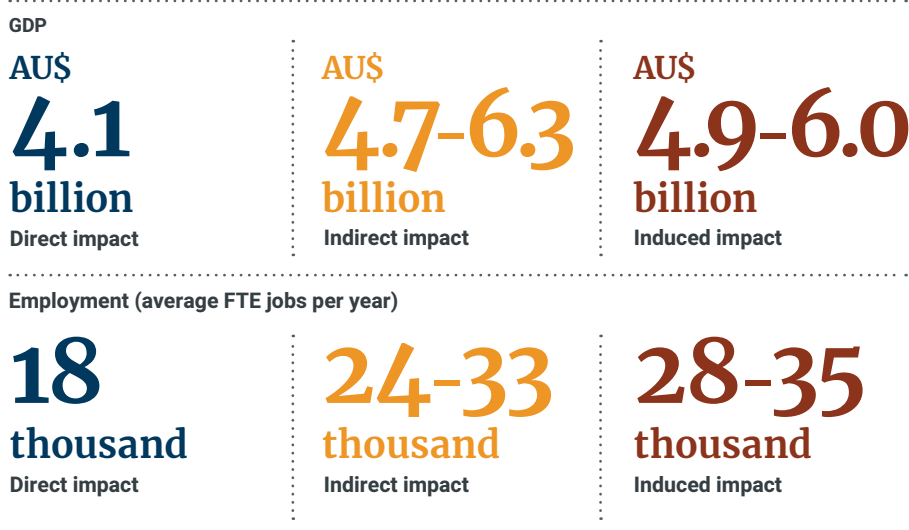


Figure 3-5: Forecasted economic impacts of the cloud industry in Australia, 2028-2029



- The **indirect contribution** of the cloud industry to **GDP in Australia** ranges between AU\$ 25 billion and AU\$ 34 billion over the sixteen-year historic period. Annually, the indirect contribution has risen from **AU\$ 0.7-0.8 billion in 2007-2008** to **AU\$ 3.0-4.1 billion in 2022-2023**. The industry is expected to indirectly generate another AU\$ 24-32 billion by 2030 (in the next six years), with the annual impact reaching **AU\$ 4.7-6.3 billion in 2028-2029**. These estimates account for the value-add in the cloud industry supply chain, indirectly supported by the services offered by CSPs. A CSP, for example, needs to access connectivity services in the telecoms industry, and is hence indirectly generating economic activity elsewhere in the economy.>>

Figure 3-6 overleaf illustrates the indirect value-add generated in the top five key sectors in the cloud industry supply chain over the historical period considered. Figure 3-7 below gives a more detailed breakdown of the indirect contribution of cloud through the supply chain for the year 2021-2022. These contributions have substantially grown over time, in line with the growth in the overall indirect value-add shown in Figure 3-2 above.>>

- The **induced contribution** of the cloud industry to **GDP in Australia** ranges between AU\$ 26 billion and AU\$ 32 billion over the sixteen-year historic period. Annually, the induced contribution has risen from **AU\$ 0.8-1.0 billion in 2007-2008** to **AU\$ 3.1-3.8 billion in 2022-2023**. The industry is expected to generate another AU\$ 24-30 billion by 2030 (in the next six years), with the annual impact reaching **AU\$ 4.9-6.0 billion in 2028-2029**. These estimates account for the value-add generated by the spending of employees receiving compensation from CSPs and any business within the cloud industry supply chain in the country.
- The **direct contribution** of the cloud industry to **employment in Australia**, ie the number of jobs supported directly by the cloud industry annually, has increased from 7 thousand FTE jobs in 2007-2008 to **14 thousand FTE jobs in 2022-2023**. This measure is expected to grow to **18 thousand by 2030**. This estimate captures the number of jobs provided by CSPs, calculated as the number of employees that work directly for one of the CSPs in Australia.

- The **indirect contribution** of the cloud industry to **employment in Australia**, ie the number of jobs supported indirectly by the cloud industry annually has increased from **6-8 thousand FTE jobs in 2007-2008** to **15-21 thousand FTE jobs in 2022-2023**. This measure is expected to grow to **24-33 thousand by 2030**. These are jobs in the cloud industry supply chain that are indirectly supported by the services provided by CSPs and include jobs in the sectors that supply the skilled labour and services needed to offer cloud services.

- The **induced contribution** of the cloud industry to **employment in Australia**, ie the number of jobs supported annually by the household consumption of workers within the cloud industry and the cloud industry supply chain, has increased from 7-8 thousand FTE jobs in 2007-2008 to **18-22 thousand FTE jobs in 2022-2023**. This measure is expected to grow to **28-35 thousand by 2030**. As explained further in Appendix 1, these estimates are obtained using industry data, and an input-output (I-O) model built based on statistical data provided by the ABS. The ranges of estimates provided reflect different granularities and assumptions in the data used.

Figure 3-6: Breakdown of value-add in the cloud industry supply chain by top-5 sectors⁵⁵

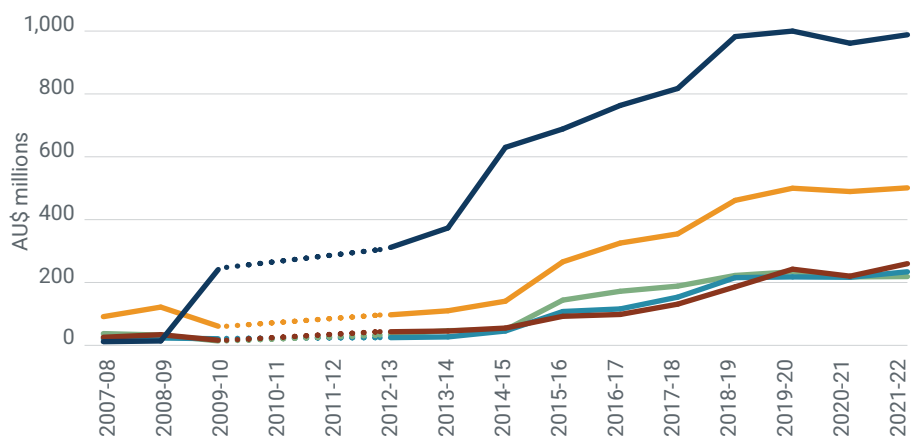
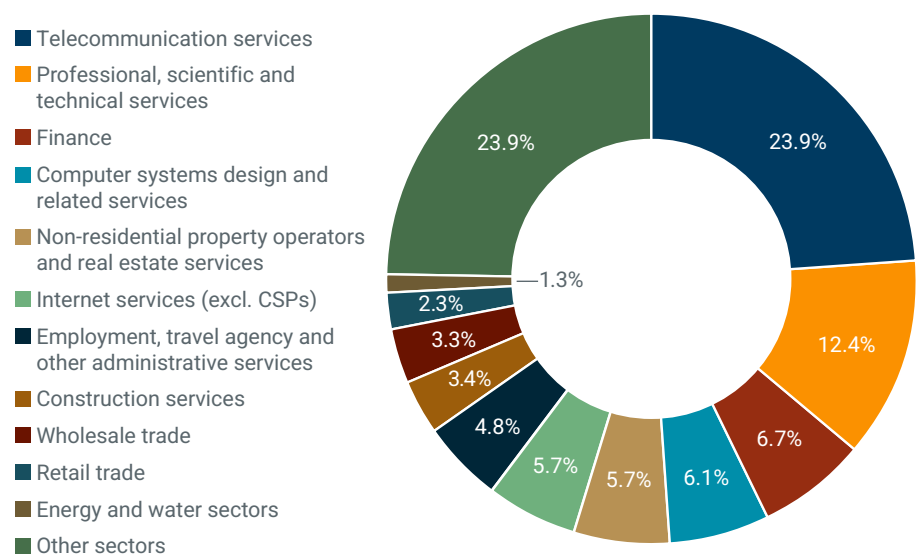


Figure 3-7: 2021-22 breakdown of value-add in the cloud industry supply chain⁵⁶



55 The industries shown in this chart are the sectors that contributed the most to the cloud industry supply chain in 2021-22. Please note the dotted lines in the chart reflect interpolations in the data from the ABS I-O tables, as described in more detail in Appendix 1.

56 Energy and water sectors' in the chart comprise the following sectors from the ABS I-O tables: 'Electricity transmission, distribution, on selling and electricity market operation', 'Gas supply', and 'Water supply, sewerage and drainage services'. The 'Internet services (excl. CSPs)' industry in the chart includes the 'Internet

service providers, internet publishing and broadcasting, websearch portals and data processing' provided in the ABS I-O tables but excludes the cloud industry. More detail on how this is estimated is provided in the Appendix.

In addition, the cloud industry generates productivity benefits ranging between 0.2 and 1 per cent of GDP annually

3.12

Beyond the direct, indirect and induced GDP and employment impacts assessed as part of this analysis, there are a number of additional productivity gains that the cloud industry generates in the economy. These refer to the benefits of more efficient use of labour and capital resources in producing goods and services.⁵⁷

3.13

According to the Australian Government Productivity Commission,⁵⁸ the fruits of these productivity gains can be experienced as quality improvements, including innovation and invention, which add new value to the Australian economy. Based on a review of existing empirical studies that have sought to quantify these impacts, the **productivity gains** generated by the cloud industry in Australia are estimated to **range between 0.2 and 1 per cent of GDP annually**, as illustrated in Figure 3-8 below.

3.14

More detail on these specific impacts is provided below:

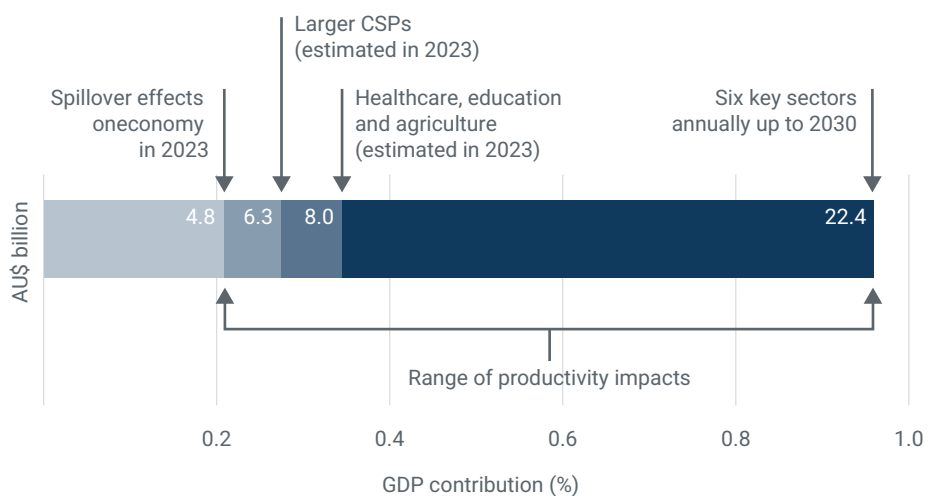
- Consulting firm Telecom Advisory Services LLC⁶⁰ estimated that the **spillover effects of cloud services on the total economy in Australia were AU\$ 4.9 billion⁶¹ in 2023**, where spillover effects refer to the benefits generated by cloud services in terms of IT cost efficiencies, new product development, support for incubation of startups and the like. For example, when cloud services enable the adoption of IT services in the SME sector, which benefits from the scalability of IT state-of-the-art, that is considered to be a spillover effect.

- A report published by research firm Mandala⁶² and commissioned by Microsoft estimated that **cloud technology provided by AWS, Google Cloud Platform, Microsoft Azure, IBM, Oracle, Huawei Cloud, Tencent, Alibaba (the larger CSPs) delivers approximately AU\$ 6.3 billion in benefits per annum**. These benefits are estimated to be generated by enhanced market access opportunities, improved operational resilience, cost savings, reduced cyber security risk and enhanced capabilities. These are described in more detail below.
- With respect to the impacts on **healthcare, education and agriculture**, a recent report by Accenture sponsored by AWS,⁶³ estimated that within these key societal sectors the **annual contribution of a 'cloud-enabled Australian economy' is expected to reach AU\$9.3 billion by 2030** (increasing 16 per cent from **AU\$ 8.0 billion today**), where a 'cloud enabled Australian economy' refers to a future state characterised by high levels of overall cloud adoption across Australian businesses.>>

Under this scenario, it is anticipated that 90 per cent of all businesses in Australia, including MSME, would adopt at least a basic level of cloud technology, thanks to the continuous advancements in technology and the decreasing costs of cloud services.

- Australian enterprise software company TechnologyOne⁶⁴ has projected that a **transition to cloud-based SaaS across six key sectors⁶⁵ could realise AU\$ 224 billion⁶⁶ in benefits over the next ten years**. Of these gains, on average, 54 per cent would come from productivity enhancing business process improvements associated with the automation and simplification of business processes, whereas 32 per cent would come from reduced technology ownership and maintenance costs.

Figure 3-8: Range of annual estimated productivity impacts of the cloud industry in Australia⁵⁹



57 AWS, AWS Investment in Australia, AWS Economic Impact Study, 2023.

58 Australian Government, Productivity Commission, 5-year Productivity Inquiry: Australia's data and digital dividend, Interim report, August 2022.

59 All the impacts as a proportion of GDP are estimated using 2021-22 GDP data (as of the latest published data by the ABS).

60 Telecom Advisory Services LLC, Economic impact of cloud adoption in Asia-Pacific, December 2023.

61 The report estimates a spillover effect of US\$ 3.24 billion. This has been converted to AU\$ using the average 2023 exchange rate.

62 Mandala, Hyperscale cloud and its benefits to the Australian economy, December 2023.

63 Accenture, Realising a cloud-enabled economy in Australia: How cloud drives economic and societal impact through micro, small and medium-sized businesses, 2023.

64 Technology One, The economic impact of Software as a Service in Australia, 2021.

65 These are: local government, state and federal government, higher education, health and aged care, asset and project intensive (including construction, ports and developers that own and manage large property assets), and corporate and financial services.

66 In Net Present Value (NPV) terms. This equates to AU\$ 22.4 billion annually on average over the next ten years.

3.15

The ranges of magnitude for these impacts are broad and depend on the different methodologies and specific benefits measured across these studies, as well as the different range of industries these analyses focus on. The multifaceted and often indirect nature of cloud-driven productivity improvements, as well as the variability across different business contexts and datasets, make it inherently difficult to quantify the productivity benefits of the cloud in a standardised way. However, the estimates provided by these studies are an indicative reference of the productivity benefits generated by the cloud industry in Australia. The specific nature of these benefits is as follows:

- **Enhanced market access opportunities.** Cloud technologies allow Australian businesses to establish an online presence and cater to both domestic and international audiences with ease through scalable web development mobile applications and cloud-based solutions, as well as to scale their operations to support global expansion and growth.
- **Enhanced capabilities.** Cloud technologies enable faster deployment of new applications and services, eg those related to AI, machine learning, augmented reality, virtual reality and data querying, allowing businesses to quickly respond to market demands and capitalise on new opportunities.
- **Cost savings.** Cloud services also allow businesses to scale their storage and computing resources up or down as needed, only paying for what they use.
- **Improved operational resilience.** CSPs generally distribute workloads across multiple servers and resources, preventing overload on any single component and ensuring consistent performance. This load balancing enhances overall system reliability.
- **Reduced cyber security risks.** CSPs offer highly secure, encrypted data storage options with substantial spare capacity that are often more robust than what organisations could achieve on-premises. This helps protect against data breaches and loss. This distributed architecture and features also enable faster recovery and business continuity in the event of a security incident or other disruption.
- **Reduced energy and carbon emissions.** CSPs can leverage more energy-efficient hardware and data centre infrastructure compared to what individual organisations can deploy on-premises. In addition, cloud data centres are often located closer to power sources, which reduce energy transmission losses. Many large CSPs are also investing heavily in renewable energy sources to power their data centres, further improving the environmental sustainability of cloud services. As shown in Figure 3-7 above, water, electricity and gas supply constitute a very minor proportion of the indirect value-add in the cloud industry supply chain. This shows the cloud industry's reliance on these sectors is relatively limited when compared to other industries in the supply chain and is testament to the increasingly energy efficient solutions adopted by CSPs in the country.

04 Regulation of the cloud in Australia



The cloud industry is extensively regulated by intersecting competition, consumer protection, privacy regulations and sectoral regulation

4.1

The Australian cloud sector is governed by extensive intersecting legislation and regulatory frameworks, covering all facets of cloud and overseen by multiple regulators.

4.2

At federal level, key legislative and regulatory frameworks include:

- The Competition and Consumer Act 2010;⁶⁷
- The Privacy Act 1988;⁶⁸
- Australian Consumer Law (ACL);⁶⁹
- The Security of Critical Infrastructure Act (2018);⁷⁰
- The 2023-2030 Australian Cyber Security Strategy;⁷¹
- Australia's foreign investment review framework;⁷² ; and
- The Australian Government's Hosting Certification Framework.⁷³

4.3

Further wide-ranging and relevant legislation is on the horizon. Published merger control law reforms⁷⁴ will mean any transactions in the digital space (along with other parts of the economy) are subject to possible review. Introduced Privacy Act reforms will change the obligations companies face around the protection of personal information.⁷⁵ Upcoming reforms in areas such as AI guardrails⁷⁶, online safety⁷⁷, cybersecurity⁷⁸ and climate-related disclosure⁷⁹ will have a range of impacts on the cloud sector, including (1) increased transparency requirements, (2) stronger security obligations (3) enhanced enforcement powers for the Information Commissioner and (4) imposing additional requirements on cloud providers when transferring data overseas.

4.4

The cloud industry is also subject to an overarching ex-post competition regime, primarily through the Competition and Consumer Act, the competition framework in Australia. This is enforced by the Australian Competition and Consumer Commission (ACCC). The Competition and Consumer Act contains key broad provisions, such as section 46, which prohibits a firm with a substantial degree of market power from engaging in conduct that has the purpose, effect or likely effect of substantially lessening competition in a market.⁸⁰ Another broad provision is found in section 45, which prohibits a firm entering into an agreement with another firm (eg, bundling or tying agreement) that has the purpose, effect or likely effect of substantially lessening competition in a market.

4.5

Furthermore, the cloud industry must adhere to extensive regulations within various sectors where cloud services are offered, including financial services, healthcare, and education. Overall, this sector is under significant regulatory oversight by a diverse array of regulatory bodies.

67 See Competition and Consumer Act (2010); www.legislation.gov.au/C2004A00109/2011-01-01/text

68 See Privacy Act 1988 - <https://www.legislation.gov.au/C2004A03712/2019-08-13/text>

69 The full text of the Australian Consumer Law (ACL) is set out in Schedule 2 of the [Competition and Consumer Act 2010](#).

70 See Security of Critical Infrastructure Act 2018 (SOCI) - <https://www.cisc.gov.au/legislation-regulation-and-compliance/soci-act-2018>

71 See www.homeaffairs.gov.au/cyber-security-subsite/files/2023-cyber-security-strategy.pdf

72 Australian Treasury, Australia's Foreign Investment Policy, May, 2024; foreigninvestment.gov.au

73 See www.hostingcertification.gov.au

74 See <https://treasury.gov.au/consultation/c2024-554547>

75 Australia Government (2023) Government response: Privacy Act Review Report; <https://www.ag.gov.au/sites/default/files/2023-09/government-response-privacy-act-review-report.PDF>

76 Australian Department of Industry, Science and Resources, Introducing mandatory guardrails for AI in high-risk settings: proposals paper, September, 2024; <https://consult.industry.gov.au/ai-mandatory-guardrails>

77 See Australia Department of Infrastructure, Transport, Regional Development, Communications and the Arts (2024) Terms of Reference – Statutory Review of the Online Safety Act 2021; <https://www.infrastructure.gov.au/sites/default/files/documents/tor-statutory-review-online-safety-act-2021-8Feb.pdf>

78 See Australia Government, 2023-2030 Australian Cyber Security Strategy : Legislative Reforms – Consultation Paper, 2023; <https://www.homeaffairs.gov.au/reports-and-publications/submissions-and-discussion-papers/cyber-legislative-reforms>

79 See Australian Treasury, Mandatory climate-related financial disclosures – Policy position statement, 2024; <https://treasury.gov.au/sites/default/files/2024-01/c2024-466491-policy-state.pdf>

80 Whilst the specific conduct areas that may contravene this section are not specified, examples given by the ACCC include, refusal to deal, restricting access to an essential input, predatory pricing, anti-competitive loyalty rebates, margin/price squeezing, and anti-competitive tying and bundling.

Policy makers are considering new ex-ante competition rules for digital services

4.6

In February 2020, the Australian Government directed the ACCC to conduct an inquiry into markets for the supply of digital platform services (the Digital Platforms Services Inquiry), or (DPSI), looking specifically at:

- “(a) the intensity of competition in markets for the supply of digital platform services;
- (b) practices of suppliers in digital platform services markets which may result in consumer harm;
- (c) market trends, including innovation and technology change, that may affect the degree of market power, and its durability, held by suppliers of digital platform services;
- (d) changes over time in the nature of, characteristics and quality of digital platforms services arising from innovation and technological change;
- (e) developments in markets for the supply of digital platform services outside Australia.”⁸¹

4.7

The scope of this inquiry is clearly broad, with the ACCC’s recent interim reports expanding to consider cloud services. In its seventh interim report from September 2023,⁸² the ACCC sought the views from the industry on “digital platform service providers’ expansion into consumer cloud storage services.”⁸³ More recently, in the issues paper for the final report,⁸⁴ the ACCC sought industry views on “potential or emerging competition and small business issues in relation to cloud computing in Australia”.

4.8

In its fifth interim Report, the ACCC recommended putting in place legally binding, service-specific codes of conduct requiring certain designated digital platforms to address issues including anti-competitive self-preferencing, tying and exclusive pre-installation agreements. The ACCC said that new obligations in these codes could also improve consumer switching, information transparency and interoperability between different services, and could better protect business users of digital platform services. These recommendations have been supported in principle by the Australian Government. An Australian Government consultation paper setting out the details of proposed sector-specific rules is expected later in 2024.

4.9

The ACCC supported its recommendation for ex-ante reforms by noting that similar measures have been implemented by regulators in other countries to deal with similar competition concerns. We observe that there are in fact a wider range of approaches adopted globally than those in the examples relied upon by the ACCC. International precedent ranges from detailed ex-ante regimes, (eg Europe and the UK) to light-handed ones focused on transparency obligations (eg Japan), to a decision that there is no need for new competition rules (eg Taiwan⁸⁵ and the US). Many countries rely on general competition regimes rather than specific ex-ante regimes for digital platforms or services.

81 Australian Government, Competition and Consumer (Price Inquiry – Digital Platforms) Direction 2020, p. 3-4, 2020; <https://www.accc.gov.au/inquiries-and-consultations/digital-platform-services-inquiry-2020-25>

82 Australian Competition and Consumer Commission, Digital platform services inquiry Interim report No. 7 – Regulatory reform, September 2023.

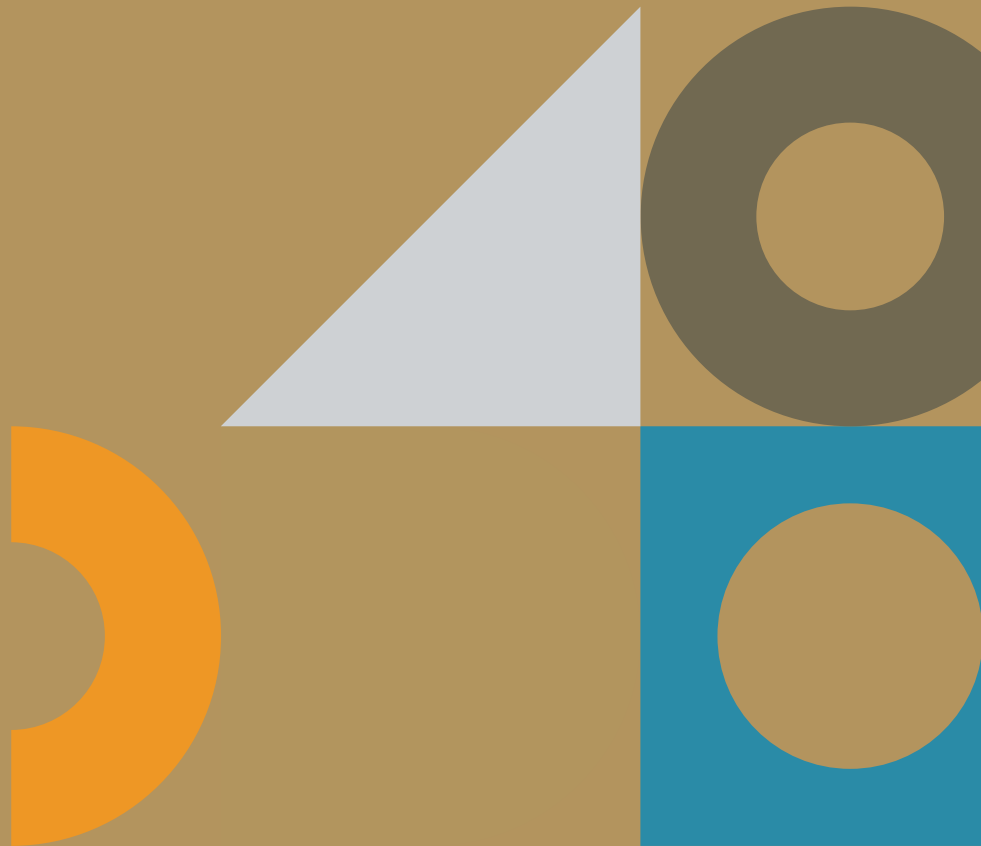
83 Australian Competition and Consumer Commission, Digital platform services inquiry – March 2025 – Final Report, Issues paper, July, 2024; <https://www.accc.gov.au/system/files/dpsi-10-final-report-issues-paper.pdf>

84 Australian Competition and Consumer Commission, Digital platform services inquiry – March 2025 – Final Report, Issues paper, July 2024.

85 <https://www.ftc.gov.tw/upload/c1697761-9974-412f-b6cb-28befbc9e8d3.pdf>

05

The value of developing regulatory criteria before introducing ex-ante economic regulation



Competition is the primary driver of good outcomes in most circumstances

5.1

In most circumstances, markets function well without the need for specific ex-ante competition rules. Competition is effective and delivers positive outcomes for users and the economy. As ACCC guidelines states, “competition encourages individual businesses to innovate and find ways to work more efficiently. This results in: lower prices, better quality products and services, more choice for consumers, increased prosperity and welfare of all Australians.”⁸⁶

5.2

On the rare occasions when market forces in a sector are not sufficient to achieve good or efficient outcomes, additional economic regulation may be considered (over and above general ex-post competition rules).

Before introducing ex-ante economic regulation, policy makers should consider alternatives

5.3

Australia’s Office of Impact Analysis (OIA) has set out a guide to public service policy making. This guide establishes as core principles that:

- “Policy makers should clearly demonstrate a public policy problem necessitating Australian Government intervention, and should examine a range of genuine and viable options, including non-regulatory options, to address the problem
- Regulation should not be the default option: the policy option offering the greatest net benefit for Australia – regulatory or non-regulatory – should always be the recommended option.”⁸⁷

5.4

In the case of the Australian cloud sector, a public policy problem has not yet been demonstrated.

5.5

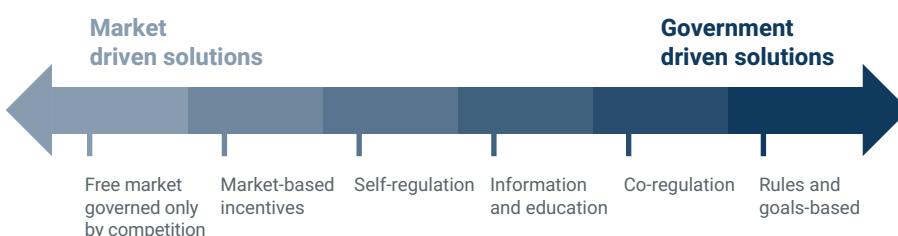
Even if policy makers have demonstrated a concern that supports regulation there are a wide range of potential options that can be used by Government. The OIA’s guide to policy-making tells policy makers to consider these options:

- The non-regulatory option;
- Better enforcement of existing legislation;
- Prescriptive regulation;
- Principles-based regulation;
- Quasi-regulation;
- Co-regulation;
- Self-regulation; and
- Other, non-regulatory approaches such as marketing campaigns and setting of standards.⁸⁸

Having set out the options available, the guide then requires policy makers to identify a range of genuine and viable alternative policy options, demonstrate each of the live options can achieve the stated policy objectives and demonstrate confidence that all available options have been identified.⁸⁹

Similarly, in the UK, National Audit Office (NAO) guidance encourages the consideration of regulatory options along a spectrum, as shown in Figure 5-1 to the left.⁹⁰

Figure 5-1: Spectrum of regulatory interventions⁹¹



86 ACCC guidelines on Competition and anti-competitive behaviour; <https://www.accc.gov.au/business/competition-and-exemptions/competition-and-anti-competitive-behaviour>

87 Department of the Prime Minister and Cabinet, Australian Government Guide to Policy Impact Analysis, March 2023, p.6; <https://oia.pmc.gov.au/sites/default/files/2023-02/oia-impact-analysis-guide-nov-22.pdf>

88 Department of the Prime Minister and Cabinet, Australian Government Guide to Policy Impact Analysis, March, p. 21-22, 2023 <https://oia.pmc.gov.au/sites/default/files/2023-02/oia-impact-analysis-guide-nov-22.pdf>

89 Department of the Prime Minister and Cabinet, Australian Government Guide to Policy Impact Analysis, March, p. 20, 2023; <https://oia.pmc.gov.au/sites/default/files/2023-02/oia-impact-analysis-guide-nov-22.pdf>

90 National Audit Office, Using alternatives to regulation to achieve policy objectives, June, 2014, p.12.

91 *ibid.*

5.6

Market driven solutions tend to impose lower costs and are less interventionist. These include:

- **Self-regulation:** An industry can self-regulate using codes of conduct or standards. With self-regulation, the industry is solely responsible for monitoring and enforcing members' compliance. This enforcement can be achieved either first hand or through other bodies set up by the industry. Self-regulation works better when the objectives of the industry are closely aligned with those of regulators and governments. It may be an attractive alternative to regulation when there is high asymmetry of information between industry and regulator, leading to higher risks of poorly implemented regulation.
- **Co-regulation:** Co-regulation is a partial step between regulation and self-regulation. It involves some degree of explicit government or regulator involvement. For example, an industry may work with its regulator to develop a code of practice, but then enforcement would then be by carried out through the industry.
- **Goals-based regulation:** Involves Government setting an objective rather than specifying rules and remedies. Under this approach, participants will be free to deliver the outcome in whichever legally compliant way they deem most efficient. Goals-based regulation can be more effective when there is a clear outcome, but regulators do not have full access to information about the industry processes, particularly if there is rapid technological change within the industry

5.7

What the OIA and UK NAO guidance make clear is that the appropriate regulatory model will depend on the circumstances. As regulation moves up the spectrum and involves additional cost and intervention, policy makers need to look carefully at all the available options to identify the one that best achieves the desired outcome while imposing the lowest regulatory cost and burden. A good regulatory system engenders high public trust, is proportionate to the harms identified and supports economic growth and consumer welfare.

There are well-established principles that should be applied when considering ex ante economic regulation in digital sectors

5.8

Introducing ex-ante economic regulations is a major regulatory intervention. It is materially different from ex-post regulation because ex-ante rules are set 'up-front' and don't require evidence of anti-competitive behaviour. Because of the interventionist nature of this type of regulatory approach, only a small number of industry sectors have historically been subject to it. These are traditionally the utility sectors, because of their natural monopoly characteristics⁹² (such as ports, water, energy or telecommunications). In these sectors, ex-ante rules were introduced to address high-prices and low quality of service - typical characteristics of unregulated natural monopolies - and included both price and non-price regulation.

5.9

If the Government is considering ex-ante economic regulation for new sectors such as cloud, it is crucial that the Government has confidence that any regulation will be effective and proportionate.⁹³ Policy makers and regulators should use the framework set out by the OIA.⁹⁴

5.10

In this framework, policy makers must first answer the question of what problem it is that they are trying to solve. The problem – and the data and evidence needed to describe and solve it – must be simply and clearly explained. Next, policy makers must define the objectives, why government intervention is needed to achieve them, and how will success be measured.

5.11

Once this is done, policy makers can develop and analyse the policy or regulatory options. The question of what are the relevant options is fundamentally informed by the features of the sector. The following features are important to consider:

- **The cloud sector does not have clear natural monopoly characteristics.** Natural monopolies are characterised by very high barriers to entry and fixed costs, both of which are features of the traditional utility sectors, eg ports or electricity networks. The major physical infrastructure bottlenecks that we see with traditional utility providers are not present in the cloud space. Costs of entry, for example, do not represent a barrier to entry if potential entrants have access to capital markets and financing opportunities. In the case of the cloud industry, empirical evidence shows that small and large cloud providers alike have access to capital markets and financing opportunities.⁹⁵ Absent clear natural monopoly characteristics, an ex ante regulatory approach is therefore less likely to be relevant for cloud.
- **The cloud sector is dynamic and growing.** The traditional utility sectors are more mature, with demand for their services more predictable and the investment needed to cater for that demand more certain. As described earlier in the report, the cloud sector is predicted to grow substantially. Rapid change and growth make it harder to predict the results of ex ante regulation, and increase the risk of getting it wrong. Compared to mature sectors, there would be more at risk from the introduction of ex-ante economic regulation in the cloud sector.>>

92 Many utility networks have natural monopoly features, with high fixed costs and economies of scale that make competition impractical. Firms in these sectors often have significant and lasting market power due to their control of essential infrastructure.

93 OECD, Introductory handbook for undertaking Regulatory Impact Analysis, (RIA), February 2015.

94 Department of the Prime Minister and Cabinet, Australian Government Guide to Policy Impact Analysis, March 2023, p.10-11; <https://oia.pmc.gov.au/sites/default/files/2023-02/oia-impact-analysis-guide-nov-22.pdf>

95 Competition in cloud and IT services in Australia, 2024, Charles River Associates for Amazon Web Services, p17; <https://www.accc.gov.au/system/files/amazon-supplementary-submission.pdf>.

● **The cloud sector has and supports high levels of innovation.** It is likely that the cloud sector will be a key factor in fostering new technologies such as AI and quantum computing by providing the necessary infrastructure, accessibility, and collaborative environment for rapid advancement in these fields.⁹⁶ Some experts have predicted the cloud will be key to dramatic progress. For example:

“The intersection of quantum computing and artificial intelligence (AI) within the cloud environment represents a paradigm shift in the capabilities of computational technologies”⁹⁷

The risk of restricting innovation is therefore relatively high in the cloud sector.

● As set out above in our economic analysis the **cloud sector is an important component of the efficiency and productivity improvements throughout the economy**, such as health and education. Cloud is also a key element of the Government’s own digital strategies and objectives.⁹⁸ Therefore, the risk of negative impact from poorly designed and implemented regulation extends beyond the cloud sector to other key sectors of the economy who are major users of cloud services, including Government itself. This includes the risk of compliance costs in the cloud sector having flow-on effects to these other key sectors.

5.12

Once the right options have been identified, policy makers must then evaluate them, assessing their expected net benefits, consulting openly, designing evaluation criteria and presenting a clear case for recommended options. Regulation proposals that have not been through this full process carry the risk of unintended consequences and economic damage. This could mean lower quality products or services for users, less customer choice and less investment.










5.13

If, when following the policy-making process described above, policy makers decide that ex ante regulation is a credible option, then it is critical to design the regulation well. Below we set out 10 key regulatory principles to apply when considering the introduction of ex ante economic regulation. They align with the existing principles and strategic objectives that the ACCC has already set out.⁹⁹ We have constructed this list based on our experience of international best practice and our observation of a high degree of consistency in principles set out and applied internationally. The principles shown in Figure 5-2 and described in more detail afterwards are in our view a representative summary of this mainstream international best practice.¹⁰⁰

5.14

These regulatory principles provide a framework to ensure dynamic sectors avoid the risk of negative consequences for users and the wider economy, including impacts on growth, productivity, employment and investment. Below we expand on the regulatory principles shown in Figure 5-2 below.

Figure 5-2: Summary of the 10 common regulatory principles

Regulatory principle	Aim
 1. Clear strategic direction	Regulatory objectives are clearly set out
 2. Target and proportionality	Regulation is targeted and proportional
 3. Learnings from other countries	Regulations are not unnecessarily more interventionist than those being applied or considered in other jurisdictions
 4. Accounting for local conditions	Regulation accounts for the local context, existing legislation and competitive dynamics
 5. Positive outcomes	Regulation is focused on positive outcomes
 6. Focus on competition	Regulation addresses and prevents harms quickly and sustainably, primarily through competition
 7. Consumer focus	Regulation is consumer centric and aligned to what consumers want
 8. Investment and innovation	Regulation does not materially harm investment incentives and innovation
 9. Regulatory flexibility balanced with legal certainty	Regulations can be applied when necessary and can be suitable to address issues in a suitable manner.
 10. Appeal rights	Regulated companies have clarity on the timeline for the next review of the regime and the right to appeal decisions

Source: DT Economics analysis

96 See for example, Arikatla, Ainala, Seru, Dasu, Basaba, Quantum Computing’s Paradigm Shift: Implications and Opportunities for Cloud Computing, International Journal of Intelligent Systems and Applications in Engineering, 2024.

97 Padmanaban, Quantum Computing and AI in the Cloud, Journal of Computational Intelligence and Robotics, Vol 4(1), 2024.

98 See, for example, the Australian Government’s “Secure Cloud Strategy” (2021), which says that the “case for cloud is no secret to industry or government”; https://www.dta.gov.au/sites/default/files/2023-11/DTA%20Secure%20Cloud%20Strategy_1.pdf

99 These are discussed in the ACCC’s Interim Report No. 5 – Regulatory reform (2022); <https://www.accc.gov.au/system/files/Digital%20platform%20services%20inquiry%20-%20September%202022%20interim%20report.pdf> See Chapter 5 in particular.

100 The principles are consistent with those discussed in, for example:

- The NSW Government Guide to Better Regulation (2019) where they are listed on page 5; https://www.productivity.nsw.gov.au/sites/default/files/2022-05/TPP19-01_Guide-to-Better-Regulation.pdf
- An OECD note, The Ten Principles of Ex Ante Competition Regulation (2022). [OECD-Column-October-2022-2-Full.pdf](https://www.oecd.org/competition/policy-international-com/2022-2-Full.pdf) ([competitionpolicyinternational.com](https://www.oecd.org/competition/policy-international-com/)).
- The European Commission’s ‘Better regulation toolbox’ (2023); https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox/better-regulation-toolbox_en

Regulatory principle 1 Clear strategic direction

5.15

Regulatory risk is a major challenge for businesses facing changes to laws or regulations. These changes can raise operating costs and deter investors. Having a strategic vision allows industry stakeholders to understand long-term regulatory outlooks and plan accordingly. Direction can be set through mission statements, roadmaps and engagement, providing clarity over future priorities and boosting investor confidence.

5.16

Independence from political influence is important in high-profile sectors like cloud, where rapidly changing regulations can hinder investment and innovation. The Government can mitigate this risk by maintaining a clear strategic direction, fostering confident investment in the growing cloud industry. Clear strategies (both from a regulatory perspective and in terms of digital markets) from the Government and bodies like the ACCC will reduce risks and foster greater regulatory certainty for firms considering future investments. This is crucial for productivity improvements and securing overall economic value.

Regulatory principle 2 Targeting and proportionality

5.17

Regulation often imposes costs and burdens on firms and may have unintended negative consequences that outweigh the hoped-for benefits. To mitigate this, regulations should be designed to address a specific risk or problem and they should achieve this at the lowest possible cost for parties involved. Regulations that are targeted and proportional can enhance the effectiveness of the market, while minimising any negative unintended consequences that could affect innovation, investment or growth.

5.18

With the growing adoption of cloud services by firms across the economy, it is important that any economic regulations considered are targeted to address specific market failures rather than a specific set of firms or a broad set of commercial activities. Disproportionate or untargeted regulations may have adverse impacts both directly on the cloud sector but also indirectly on the firms across the economy that deploy cloud-based solutions. A proportional approach for the cloud industry may mean that alternatives to rules-based regulations are more suitable to address issues identified, as discussed earlier in section 5.

5.19

Regular impact assessments and mechanisms like sunset clauses can help to manage costs arising from new regulatory regimes to a minimum, allowing policy makers to routinely adapt and scale back regulation to keep it targeted.

Regulatory principle 3 Learnings from other countries

5.20

Regulators should understand how other regulators are approaching similar issues and the effect their approaches are having. This helps policy makers avoid mistakes that reduce innovation or cause other unintended consequences. It can help policy makers choose policy options that do not have a relatively high regulatory burden which could adversely impact on compliance costs. Regulations that are more interventionist than in other jurisdictions could disincentivise firms from investing in Australia if it may be more profitable for firms to expand in another country with a lower regulatory burden. In the cloud sector, many firms either already operate across jurisdictions (or are seeking to do so) and therefore make investment decisions partly by comparing the burden of the respective regulatory regimes. There are benefits in not being too quick to follow other jurisdictions adopting novel approaches, before the effects on across factors such as the economy, innovation, jobs, consumer confidence and service quality are seen.

Regulatory principle 4 Account for local conditions

5.21

Learnings from other countries can point to elements of good and bad practice. In some cases, particularly in relatively mature industries, harmonisation of regulation can be beneficial because it can reduce international compliance costs. However, there can be no presumption that regulation introduced in international jurisdictions would be appropriate in the local context, especially in a dynamic sector such as cloud. No international regulation should be adopted in Australia without first considering the local context, existing legislation and competitive dynamics.

Regulatory principle 5 Positive outcomes

5.22

There are two main ways that regulations can be focused on positive outcomes. First, regulation can include specific goals or targets. For example in the telecoms sector there have been many examples of policy objectives to roll out a connectivity service such as high-speed broadband to a certain percentage of the population by a certain time. This creates flexibility for firms as to how achieve the goal. Second, regulation can be focused on by ensuring the effect of regulations will have measurable benefits. This is often done by conducting a thorough impact assessment before introducing regulations to include defined and measurable benefits, shown to materially exceed expected costs.>>

Regulatory principle 6 Focus on competition

5.23

Competition regulation is designed to foster a level playing field to enhance consumer benefits and promote the growth of the industry. Competition regulations prevent dominant firms from abusing their power and prevent mergers that would result in overall negative consequences. It is important to ensure that effective competition is the priority as regulations that solely focus on introducing new entrants, establishing new untested requirements (eg interoperability) or regulations that prevent all mergers can have detrimental effects. When considering competition regulation, and particularly any potential impact on innovative technologies such as cloud, it is important to focus the regulations on addressing any identified consumer harm.

5.24

Regulators focus on introducing measures to promote greater competition as effective competition can lead to lower prices, better quality products and services, and more innovation for consumers. In promoting competition, regulators encourage innovation as firms can gain a competitive advantage by developing new technologies and offering new services. Additionally, competitive markets can be more dynamic and adaptable to change. This is particularly relevant to digital markets where the industry is evolving at a fast pace.

5.25

The ACCC also makes clear in its guidance that conduct which enhances efficiency, innovation, and product quality or price competitiveness is unlikely to substantially lessen competition. As discussed above, cloud is an innovative technology that drives innovation and efficiency in firms who use it. Cloud services represent an additional choice to firms who previously only had on-premises solutions for their data storage and related needs. In this way, cloud has led to a broader set of choices to users. It cannot be assumed (without clear evidence) that conduct in the cloud sector inherently lessens competition to the extent that justifies additional ex-ante regulation.

Regulatory principle 7 Consumer focus

5.26

All regulation should be targeted and limited to addressing identified potential for harm for users. This goes beyond specific regulation designed to protect sets of consumers (eg affordability related regulation). Markets that are functioning well should maximise value for consumers. However sometimes markets fail, which prevents this from happening. Regulation designed to address market failures such as abuse of dominance or information asymmetry should be directly aimed at protecting consumers from identified harms these issues cause. Additionally, regulations that are consumer focused can foster trust in the regulator and the industry, which can stimulate demand and growth.

5.27

Focusing on the impacts on consumers is crucial for any regulatory interventions. Indeed, regulators have moved on from introducing specific consumer focused interventions (eg related to affordability) to instead ensuring that all interventions need to bring the consumer angle as a focal point.

Regulatory principle 8 Investment and innovation

5.28

Investment and innovation are two key drivers of growth in an industry.

5.29

Investment is essential for the development and growth of any industry, especially those that rely on technology and data. Both domestic and international cloud providers continue to plan significant investment in Australia to expand infrastructure, accommodate the expected growth in cloud adoption by businesses and consumers, and otherwise invest in the digital economy in Australia. This is illustrated earlier in this report in our quantitative estimates of the economic impact of the cloud sector.

5.30

Innovation is the key mechanism by which industries evolve and shape competitive conditions. Innovation can create new opportunities for value creation, differentiation and competitive advantage. Cloud services provide users with innovative services, giving them access to new technologies, scalability and potentially low-cost IT solutions. This allows users to innovate faster, bringing new products and services to market more rapidly. As more users take cloud services over time there is more opportunity for innovation, bringing the potential for material productivity benefits for the broader economy.

5.31

The cloud industry is both a fast-moving industry and a driver of innovation across other sectors. In the UK, Ofcom noted that “competitive market forces are delivering benefits to customers – especially where providers are competing to attract new customers – in the form of innovative products and discounts.”¹⁰¹ According to research by McKinsey¹⁰², cloud services accelerate innovation within businesses who deploy cloud services across several distinct areas including:

- experimentation with new technologies – provides the foundation for rapid experimentation and deployment of new technologies and services;
- enabling new business models - enables companies to create new digital products and services, develop platform-based business models, and form closer links with other firms (as well as end-users);
- enhancing agility and speed – allows organisations to rapidly scale resources up or down based on demand, deploy updates and new features continuously, respond quickly to market changes and customer needs; and
- fostering collaboration and knowledge sharing – cloud-based tools facilitate real-time collaboration across geographies, easier sharing of data and insights across the organization, integration of diverse data sources for richer analytics.

¹⁰¹ Ofcom's press release that accompanied the publication of Ofcom's Final Report on the UK cloud market, 2023; <https://www.ofcom.org.uk/internet-based-services/cloud-services/ofcom-refers-uk-cloud-market-to-cma-for-investigation>

¹⁰² McKinsey, Projecting the global value of cloud: \$3 trillion is up for grabs for companies that go beyond adoption, 2022.

5.32

Ex-ante competition rules could jeopardise the degree to which cloud services “enable” innovation. For instance, new ex-ante economic regulations might place limitations on how cloud providers operate and necessitate further investments to adhere to regulatory standards. These could have both direct and indirect consequences. The direct effects would include the added expenses for creating compliance systems and the effort required to demonstrate adherence to regulations, as well as the opportunity costs related to allocating resources to develop compliance systems and generate evidence of compliance. The indirect costs might be less obvious but could be significant, potentially affecting the overall inclination to develop new products and services, which might entail additional compliance requirements.¹⁰³ The OECD states:

“Innovation-related challenges will often require more flexible and adaptive regulatory frameworks. Increased flexibility may however lead to more discretion in decision-making whereby trade-offs (including in terms of predictability, legal protection and stability) are assessed on a case-by-case basis. ...Ensuring broad-based and continuous stakeholder engagement as well as close monitoring of outcomes (possibly in real time) and sufficient investigative power for relevant bodies will be instrumental to do so.”¹⁰⁴

5.33

A regulatory strategy that fails to carefully differentiate between various business models and theories of harm, and does not closely examine specific evidence, can lead to a blunt approach with ambiguous or onerous requirements that hinder innovation and investment.

Regulatory principle 9**Regulatory flexibility balanced with legal certainty****5.34**

Regulatory flexibility is a vital tool for regulators, enabling them to evaluate the impact of regulations on a case-by-case basis and ensuring they have a positive effect on consumers. This flexibility allows firms to find and tailor the most effective ways to meet regulatory objectives.

5.35

At the same time, excessive discretion can create uncertainty for both regulated entities and the public, potentially negatively affecting investment and innovation. It can also increase the risk of regulatory capture and potential abuse by the regulators. Checks and balances are typically established to prevent such abuses.

5.36

A balance between regulatory flexibility and legal certainty is essential. If regulations provide regulators with a high degree of discretion, this can create an inherent uncertainty for industry. Conversely, if regulations are clearly defined but rigid, they may struggle to adapt to new technologies. Given the rapidly evolving cloud industry, regulations should be adaptable to keep pace with commercial and technological developments.

Regulatory principle 10**Appeal rights****5.37**

Strong clear appeal rights allow new regulations to be challenged and reviewed fairly, ensuring transparency, consistency, and accountability. For instance, regulations should allow for affected parties to understand the basis for any enforcement action, enable them to assess the relevant factual information, and defend themselves as necessary. In addition to ensuring consistency with a country's existing principles and regulations, the preservation of due process provides critical transparency to both potential regulatory targets and the public.>>

This confidence in fair treatment is essential in any regulatory framework. Ineffective implementation of an appeals process can slow regulators and create uncertainty for companies and investors.

5.38

In fast-moving dynamic industries like the cloud sector, clear and strong appeal rights will help strike the right balance between addressing concerns and enabling the sector to develop with confidence.

Applying the principles to cloud**5.39**

From a purely principled point of view, what these principles show is the importance of carefully considering a range of evidence, and considering the outcomes from all perspectives when developing regulatory options. The increasing economic value of the cloud underscores the importance of safeguarding investment and innovation, while also establishing a clear strategic direction to facilitate future investments. A focus on consumers should ensure that the ultimate end users of cloud services benefit from the regulatory environment. It will also be crucial for impact assessments to evaluate how regulations might affect the productivity benefits provided by the cloud. In a dynamic and growing industry like cloud, which is pivotal to the Australian Government's future digital goals¹⁰⁵, the principles indicate that ex-ante regulation is unlikely to be the most effective core regulatory approach.

103 See by Europe Economics and CCIA Research Center, DMCC: Economic Impact, September, 2023 (https://ccianet.org/wp-content/uploads/2024/01/CCIA_DMCC-Economic-Impact.pdf) where these arguments are developed in more detail.

104 OECD, Practical Guidance on Agile Regulatory Governance to Harness Innovation, 2021 (<https://legalinstruments.oecd.org/public/doc/669/9110a3d9-3bab-48ca-9f1f-4ab6f2201ad9.pdf>)

105 As set out in Australian Government, Digital Transformation Agency, Secure Cloud Strategy, updated in 2021. This is part of Australia's broader Digital Government Strategy, Australian Government, 2021.

06

Examples of the regulatory principles in action



6.1

Given the cloud industry is new, we cannot draw on played-out examples of ex-ante regulatory regimes in cloud. However, by taking the economic regulatory principles shown in Figure 5-2, we have prepared six case studies to show their practical application – and potential issues when misapplied – and to highlight relevant lessons for the cloud sector.

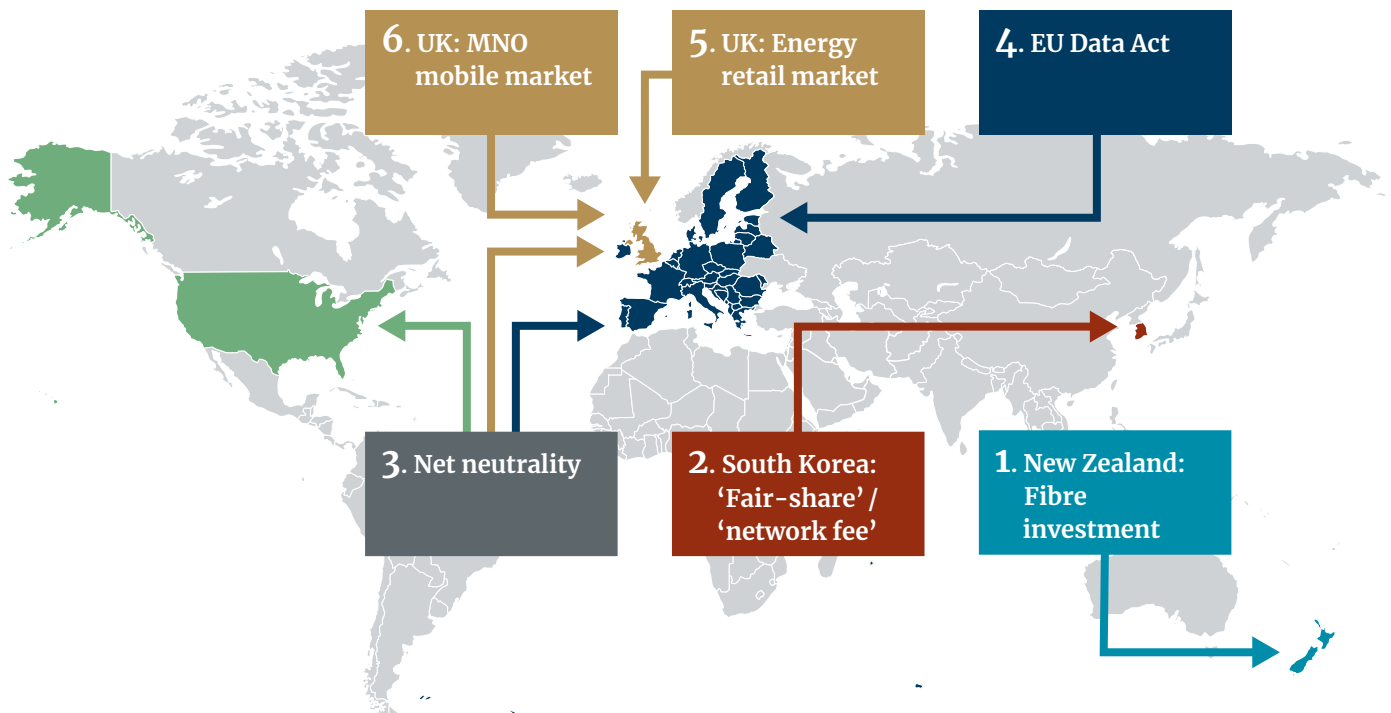
6.2

The case studies explore various methods for addressing regulated industries, including those within the digital platform and services sector. Policy makers and regulators in Australia should examine these examples, as the key lessons are particularly relevant for introducing regulation in a fast-evolving industry like cloud services.

6.3

Figure 6-1 below summarises the case studies included in this report.

Figure 6-1: Regulatory case studies



6.4

Table 6-1 below shows how the case studies have been chosen to offer insights across the common economic regulatory principles identified in the previous chapter.

Table 6-1: Main principles discussed in each case study

Regulatory principle	New Zealand Fibre investment	South Korea 'fair share' network fees	Net neutrality	EU Data Act	UK energy retail market	UK mobile network retail market
 1. Clear strategic direction	✓		✓	✓	✓	✓
 2. Target and proportionality	✓		✓	✓	✓	
 3. Learnings from other countries		✓				
 4. Accounting for local conditions		✓		✓		
 5. Positive outcomes			✓			✓
 6. Focus on competition				✓	✓	✓
 7. Consumer focus		✓	✓	✓		✓
 8. Investment and innovation	✓	✓	✓	✓	✓	✓
 9. Regulatory flexibility balanced with legal certainty	✓		✓			✓
 10. Appeal rights		✓				

Competition is the primary driver of good outcomes in most circumstances

6.5

The case study analysis illustrates the regulatory principles in action, helping policy makers think through how they will apply to the Australian cloud sector. The case studies are presented and analysed in full in Appendix 2. Some of the most important observations are:

a) New Zealand fibre investment

(i) The example of fibre roll-out in New Zealand shows that sustaining substantial investments in an industry that evolves rapidly can be difficult. Explicitly minimising regulation can promote and support substantial investment. The case study also illustrates the best practice of building in an automatic review of regulation, assessing the scope for deregulation after a specified period.

(ii) In a cloud context, this example shows the importance of creating a policy and regulatory environment that clearly promotes investment. The mechanism for automatic review of any regulation that is introduced should also be applied to cloud.

b) South Korea fair share network fees

(i) The example of the 'fair share' or 'network fees' debate in South Korea highlights how introducing regulation can have the unintended consequence of materially discouraging investment in local services and a resultant impact on domestic service quality. The example also shows the value of having strong appeal rights on important decisions in regulatory contexts.

(ii) The lesson for the cloud sector is that regulatory systems, especially those first developed elsewhere, should not be applied to the cloud sector in Australia without thorough testing to demonstrate that there will not be unintended consequences or damage to consumer choice and experience. A strong appeals process will also be needed if new regulation is introduced, to provide further protection against errors in decision-making.

c) Net neutrality

(i) The example of net neutrality regulation in different jurisdictions shows how, while appropriate regulatory flexibility is required to adapt to changing commercial environments, strategic direction and regulatory certainty are damaged by frequent changes to regulation. This can have a significant impact on investment decisions. The trade-offs between regulation and incentives to invest and innovate need to be carefully considered. Economic regulatory interventions must be carefully targeted at well-defined problems identified through thorough evidence-based analysis.

(ii) These lessons apply in the cloud context, with a need for a clear strategic direction alongside regulatory flexibility in what is a fast-developing industry. Government will need to have careful, evidenced-based definitions of any problems identified requiring regulatory intervention.

d) The EU Data Act

(i) The EU Data Act example suggests that promoting investment and innovation through regulation may not be straightforward. The costs of measures intended to protect consumers need to be carefully weighed. A clearly defined strategic direction is needed so that the assessment of a proposed intervention can accurately capture the intervention's likely costs and benefits. That strategy should be developed before any regulatory reforms are considered. Absent that, the hoped-for benefits for consumers and competition might be outweighed by costs because regulation has created uncertainty and harmed incentives to invest or innovate.

(ii) In the cloud context, introducing regulation also carries the risk of disincentivising investment and innovation. This example highlights the importance for Government of developing a clear strategic direction within which to assess likely costs and benefits of any regulatory proposals.

e) The UK retail energy market

(i) The example of the UK retail energy market shows the risks of regulation designed to promote competition, and how this can go wrong if the implications are not fully understood. In this case, actions to increase competition ultimately caused a market failure with significant harm to consumers. The potential effects of any intervention must be thoroughly evaluated under all plausible scenarios.

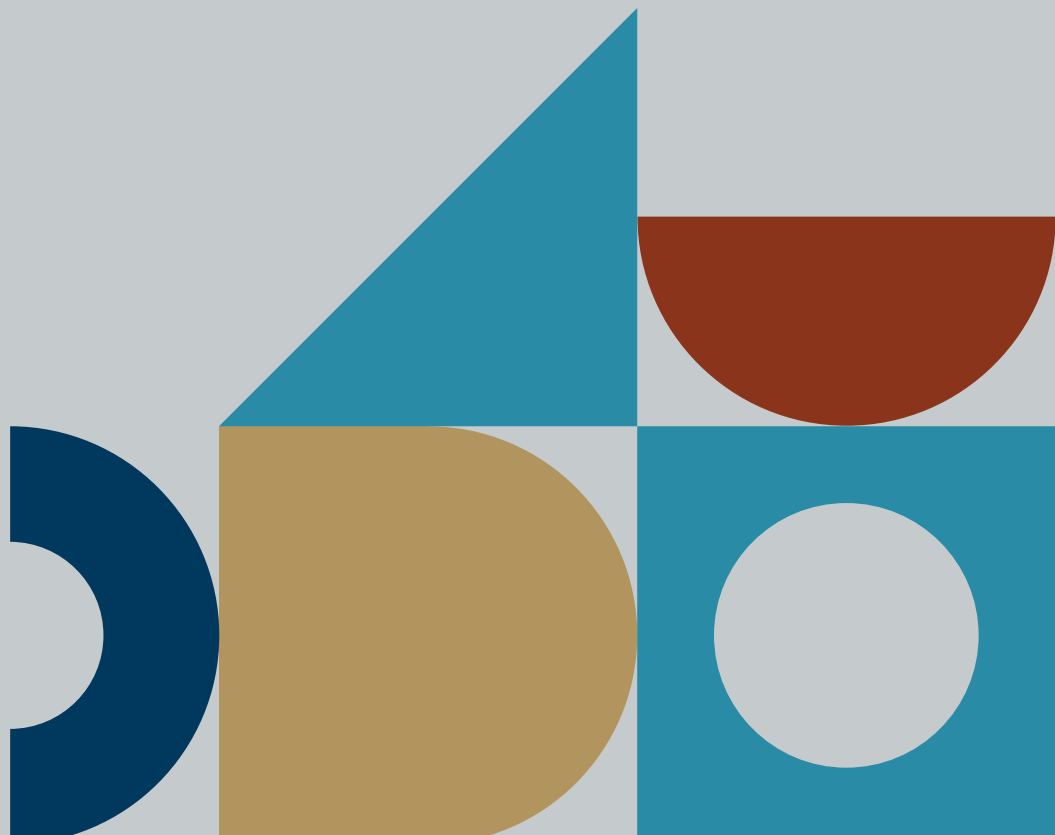
(ii) In the cloud context, this example should caution Government against adopting regulations which might damage competition, even if that risk appears small. Thorough scenario analysis will be key.

f) The UK mobile market

(i) The UK mobile market example shows how a regulator applying flexibility can adapt regulations over time to match changing market conditions and the changing balance of strategic objectives such as competition or investment. Ofcom has adapted its competition strategy, moving from increasing the number of competitors to ensuring robust competition among established competitors.

(ii) In the cloud context, this case study shows the benefit of applying regulatory flexibility and re-assessing interventions frequently as circumstances change in what is a dynamic sector.

07 Concluding comments



7.1

This report presents an economic analysis of the value of the cloud in Australia, showing significant and increasing benefits. The cloud sector boosts Australia's productivity and drives economic growth, with substantial direct and indirect impacts across the nation. As set out above, Australia's cloud industry is expected to contribute AU\$ 68-81 billion to GDP over the next six years, and support 71-84 thousand jobs in the year 2028/2029.

7.2

The cloud sector is currently subject to a wide range of regulatory requirements and obligations, including general competition law and merger control regulations. It is a competitive environment with growing take-up and rapid innovation. Layering ex-ante economic rules over existing ex-post ones, or importing an untested regime for regulating cloud, would present a risk of creating an unjustified regulatory burden, dampening investment and harming Australia's reputation as a digital-friendly economy.

7.3

It is critical that any proposed economic regulations imposed on the industry undergo thorough and rigorous analysis. In this report, we have set out 10 regulatory principles to guide policy makers and regulators. Using these principles, any proposal for additional ex-ante economic regulation in the cloud sector can be carefully tested to ensure that the costs of implementation do not outweigh the anticipated benefits. Relevantly:

1. Clear strategic direction. The case studies show that clear strategic direction can provide a strong framework for assessing any proposals for further regulatory intervention in the cloud sector.

2. Targeting and proportionality.

The case studies highlight the risks of regulation that isn't properly targeted or proportionate, which in the cloud sector could mean stifled investment or unintended consequences such as degraded quality.

3. Learnings from other countries.

The case studies show how learning from the experience of other countries could help the Australian Government avoid regulatory approaches that could cause net damage to the cloud sector and its users, and to the broader economy.

4. Account for local conditions.

The case studies suggest that international regulatory systems should not be imported for the cloud sector in Australia, because of the need to carefully assess the specific circumstances and competitive dynamics in Australia.

5. Positive outcomes. The case studies show the value of having a focus on defined positive outcomes rather than a focus on rules. In the dynamic and growing cloud sector, this principle will be especially important.

6. Focus on competition. The case studies point to the importance in the cloud sector of a focus on competition, as the key mechanism to drive continued investment and innovation and positive outcomes for consumers.

7. Consumer focus. The case studies show how regulation can reduce consumer benefits. In cloud, consumers benefit extensively from the services and choice available, and it will be important to protect this.

8. Investment and innovation. The case studies point to the clear risk of reduced investment and innovation if regulation is misapplied, especially in dynamic and growing sectors. Given cloud's importance to the Australian economy, this risk suggests ex-ante regulation should be a last resort.

9. Regulatory flexibility balanced with legal certainty. The case studies show regulatory flexibility balanced with legal certainty can be applied to handle dynamic sectors carefully. This will be important for cloud as the sector evolves and increasingly supports economic growth and consumer benefits across multiple other sectors.

10. Strong appeals process. The case studies illustrate the value of appeals processes in allowing important decisions to be tested and challenged if it is not delivering the benefits expected.

7.4

These principles will help ensure that the Australian Government can harness the significant economic benefits that the cloud sector offers for Australia's digital future. Our international case studies illustrate both the benefits of applying these regulatory principles, and the risks of getting them wrong. It is vital for regulators and policy makers to fully consider the overall context, have clear and robust analysis and employ regulatory judgement to balance differing perspectives.

Appendix 1

Overview of methodology, data sources and limitations



Overview of methodology

A1.1

The analysis set out in this report estimates the economic contribution of the cloud industry in terms of direct, indirect and induced impacts. In particular:

- The **direct effect** is measured as the change in GDP and employment generated by CSPs;
- The **indirect effect** is measured as the change in GDP and employment generated by the suppliers of CSPs, such as telecoms providers; and
- The **induced effect** is measured as the change in GDP and employment generated by the spending of employees receiving compensation from CSPs and any business within the cloud industry supply chain.

Direct impact

A1.2

The direct contribution of the cloud industry to the economy is calculated according to the value-added approach to GDP accounting. This method calculates value added as the difference between the sales made by the sector and the direct cost of making those sales.

A1.3

With respect to employment, the direct impact is calculated as the total number of employees in the cloud industry. This estimate captures the number of jobs provided by CSPs, calculated as the number of employees that work directly for one of the CSPs in Australia.¹⁰⁶

Indirect and induced impacts

A1.4

To calculate the broader economic impacts of the cloud industry, ie the indirect and induced impacts, this analysis relies on I-O multipliers. The multiplier is a well-understood economic concept, first accurately and systematically measured by the Nobel Prize winning input-output models developed by Harvard economist Wassily Leontief.

A1.5

More specifically, in the context of an impact assessment, an I-O multiplier refers to a factor that measures the proportional increase in economic output or employment from an initial change in output, in this case an increase in output from the cloud industry. When an increase in economic output is measured, the multiplier is referred to as output multiplier. When the increase relates to employment, the multiplier is referred to as employment multiplier.

A1.6

The key multipliers used in this analysis are set out in Table A-1 below. These multipliers, which are output multipliers, are then adjusted to capture only the value-add proportion of output, since it is value-added that measures the contribution to GDP of any industry (GDP itself is a value-added measure). Relevant employment multipliers are also calculated to estimate the additional employment generated by producing the extra output induced by the output multipliers below.

Table A-1: Key I-O output multipliers used in the analysis

Type of multiplier	
Production multiplier	The amount of output required from all industries of the economy to produce the initial one dollar of extra output from the cloud industry and all the subsequent induced output.
Purpose	To produce the initial and the production induced output, wage and salary earners will earn extra income that they will spend on commodities produced by all industries in the economy. This spending will induce further production by all industries. The output resulting from this further induced production is the consumption induced output.

¹⁰⁶ This analysis relies on the cloud industry data for Australia from IBISWorld. This data covers cloud hosting and processing services and cloud storage.

A1.7

Figure A-1 below illustrates an example of how these multipliers, once suitably adjusted to capture the value-add proportions of the different effects, are applied to calculate the GDP impact of the cloud industry across the three dimensions identified. A similar approach is used to calculate the employment impact.

A1.8

More granular applications of this methodology, including to the costs of direct inputs and employees' wages data, are also used in this analysis. The different granularities of these methodologies contribute to identifying the ranges of impacts provided in this report.

Data sources

Cloud industry output and employment data

A1.9

This analysis relies on the cloud industry data from IBISWorld, covering the following metrics over the full period of this analysis, ie 2007-08 to 2028-29, in Australia:

- revenues;
- costs of direct inputs;
- number of employees; and
- employees' wages.

A1.10

While we solely rely on IBISWorld for this data, we understand IBISWorld compiles these industry statistics using data sourced from the ABS. We have also not adjusted this data for inflation as we understand IBISWorld uses an in-house GDP deflator to adjust for that.

A1.11

The cloud industry data used in this analysis captures the following industries within the cloud ecosystem:

- **Cloud hosting and data processing services**, including industry companies primarily providing electronic data processing or hosting services. Specialised hosting activities include web hosting, streaming services or application hosting, application service provisioning, and providing general time-sharing mainframe facilities to customers.¹⁰⁷ The industry excludes processing payroll services and financial transactions, such as credit card transactions.¹⁰⁸
- **Cloud storage**, which includes those centre operators providing electronic information storage and retrieval services. Electronic information storage allows third parties to upload, download, back up and access files and systems over the internet.¹⁰⁹

Multiplier data

A1.12

In order to calculate relevant multipliers this analysis uses the I-O tables maintained by the ABS.¹¹⁰ This data is provided over the period 2007-08 to 2021-22¹¹¹ and shows the impact of each Australian dollar spent in one industry on all other industries.

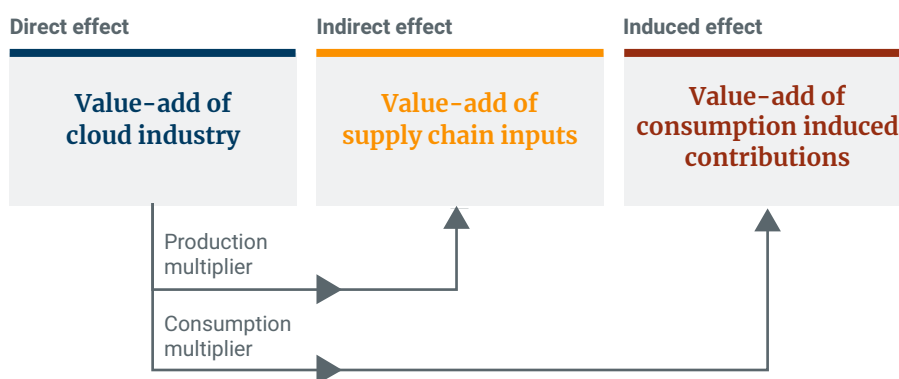
A1.13

Given the lack of more recent I-O data, the analysis relies on 2021-22 data for the period 2022-23 to 2028-29. The analysis also accounts for a scenario where the consumption value-add multipliers are kept constant at 2019-20 levels for the period 2020-21 to 2028-29. This allows to remove from the forecast analysis the effect of fluctuations in consumption related to the Covid-19 pandemic. These different scenarios contribute to identifying the ranges of impacts provided in this report.

A1.14

The multipliers are calculated according to the methodology published by the ABS,¹¹² which is aligned to the standard procedures used by other institutions worldwide in the context of impact assessments.

Figure A-1: Stylised modelling approach



¹⁰⁷ Computer time-sharing involves sharing computing resources among users through multi-tasking.

¹⁰⁸ IBISWorld, Industry report: Cloud Hosting and Data Processing Services in Australia, August 2023.

¹⁰⁹ IBISWorld, Industry report: Cloud Storage Services in Australia, January 2024.

¹¹⁰ Australian National Accounts: Input-Output Tables, <https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables/latest-release>

¹¹¹ The ABS has not provided I-O tables for financial years 2010-11 and 2011-12. For these years, interpolations of multipliers calculated in 2009-10 and 2012-13 have been applied. The ABS I-O tables also provide data on FTE employees, which is used to calculate employment multipliers. However, this data is not available for the years 2013-14 to 2017-18 and is therefore interpolated at an industry level over this time period.

¹¹² Australian Bureau of Statistics, Information Paper, Australian National Accounts, Introduction to Input-Output Multipliers, 1995.

A1.15

This analysis relies on the 'Internet service providers, internet publishing and broadcasting, websearch portals and data processing' sector of the I-O tables as the starting point since it is the closest proxy for the cloud industry in those tables. It is not a perfect proxy however, as it includes additional sectors beyond the cloud.

A1.16

As an alternative to this approach, the analysis also adjusts the 'Internet service providers, internet publishing and broadcasting, websearch portals and data processing' sector within the I-O tables to reflect some characteristics of the cloud industry data visible in the data obtained from IBISWorld. This allows to estimate multipliers which should more accurately reflect the production and consumption induced effects of the cloud industry in isolation.

A1.17

These different approaches, ie using the 'Internet service providers, internet publishing and broadcasting, websearch portals and data processing' as a proxy or adjusting it using the IBISWorld data, generate a different set of multipliers which contribute to identifying the ranges of impacts provided in this report.

Caveats and limitations**A1.18**

I-O multipliers, like the ones used in this analysis, are most commonly used to quantify both direct and indirect economic impacts. As provided by the ABS, while their ease of use makes I-O multipliers a popular tool for economic impact analysis, they are based on limiting assumptions, including:¹¹³

- **Lack of supply-side constraints** – economic impact analysis using multipliers implicitly assumes that the economy has no supply-side constraints, ie that extra output can be produced in one area without taking away resources from other activities. In reality the actual impact depends on the extent to which the economy is operating at or near capacity. If the economy is close to full capacity, extra stimulus via the multiplier will generate higher inflation rather than higher output. However, that is not a problem in this case, as the current analysis quantifies the direct, indirect and induced output that the cloud industry has already produced (without inflationary effects). For example the current analysis quantifies the benefit which has already indirectly materialised in the telecoms industry (and many others), in the form of higher value-add and employment, from the existence (and growth) of the cloud industry, rather than the hypothetical marginal effect of an additional unit of output from the cloud industry itself.

The use of multipliers to predict the effect of any increase in the cloud industry is potentially subject to the inflation critique, but any reduction in the output of the cloud industry will be subject to multiplier effects which are not subject to that critique. Therefore, the multipliers estimated in this analysis can be safely used to calculate the loss to the Australian economy resulting from any measures which would restrict the output of the cloud industry.

- **Fixed prices** – constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. This is also the case in this analysis.
- **Fixed ratios for intermediate inputs and production** – economic impact analysis using multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. As such, impact analysis using multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount. These effects have not been modelled in this analysis.
- **No allowance for purchasers' marginal responses to increases in income** – economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. However, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production. These effects have not been modelled in this analysis.

A1.19

Whereas mindful of these limitations, we consider I-O multipliers useful summary statistics to assist in understanding the degree to which an industry is integrated into the economy and the indicative economic impacts it produces. In line with this, we consider using these multipliers appropriate in the context of this exercise which provides reference estimates for the economic impact of the cloud industry in Australia.

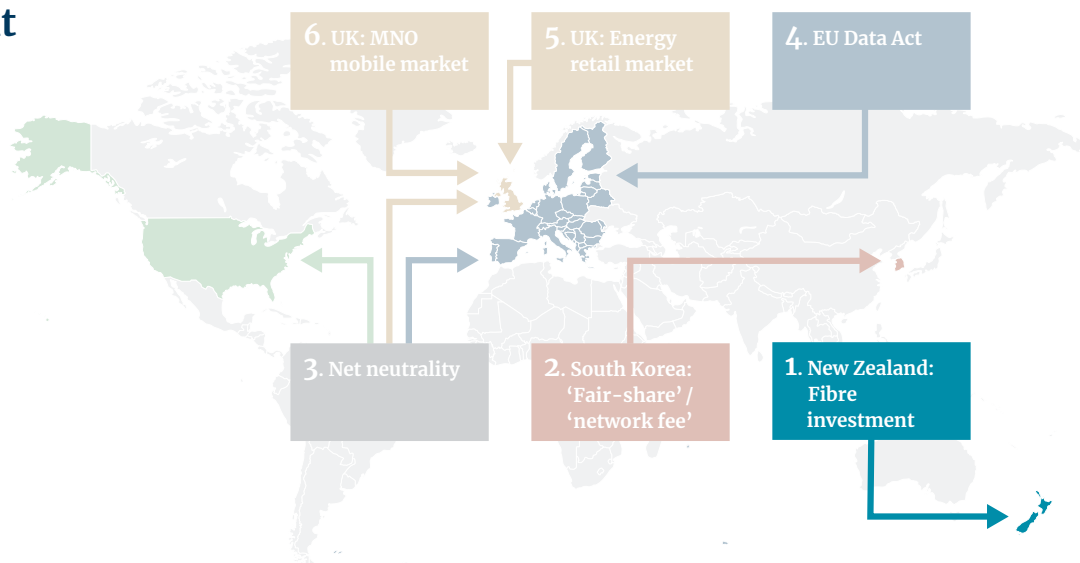
¹¹³ Australian Bureau of Statistics, Using I-O tables for analysis, Australian System of National Accounts: Concepts, Sources and Methods, 2021; <https://www.abs.gov.au/statistics/detailed-methodology-information/concepts-sources-methods/australian-system-national-accounts-concepts-sources-and-methods/2020-21/chapter-22-input-output-tables/using-i-o-tables-analysis>

Appendix 2

Detailed case study information



Case study 1: Fibre investment in New Zealand



Why is this case study relevant?

A2.1

The case study provides an example of a regulatory approach to promote investment in infrastructure. It highlights the challenges that regulators may face when regulating an emerging industry where significant investment is required to deliver positive outcomes for consumers. There are challenges for a regulator to maintain investment incentives, given other competing regulatory objectives, which will be a challenge for the cloud sector as well. The case study also demonstrates the need to balance regulatory flexibility and ensuring regulatory certainty.

Case study description

A2.2

Promoting significant investment in fibre has been a key concern in New Zealand for many years, especially given the country's low population density. Many homes across the New Zealand historically had copper lines running to them and previous regulation disincentivised companies from installing new infrastructure. The New Zealand government therefore began a major regulatory intervention into the fibre sector in 2010, launching the Ultra-Fast Broadband (**UFB**) initiative, a public-private partnership to promote the roll-out of fibre across the country. The UFB project involved four wholesale-only network operators, including Chorus, the former wholesale arm of the incumbent telecom operator, Telecom New Zealand.¹¹⁴ The operators bid to build in each of 33 geographic areas, with one winner per area to set coverage requirements and network quality standards. Two thirds of these areas were won by Chorus.

A2.3

A promise of limited regulation was made to operators to give them confidence in committing to the large capital investments required. In particular, the Government promised operators that wholesale price they received from retail operators would not be regulated once agreed at the outset in their contract with Government: "there will be limited scope for regulatory intervention to alter those prices while the industry is still immature".¹¹⁵ Industry had stressed the importance of price flexibility to the New Zealand government. Subsequently, public concern about possible high prices led to a change in this policy. Regulatory forbearance on wholesale prices for the ultra-fast broadband network was replaced in 2011 by a contractual compensation mechanism, whereby the Government would compensate the UFB network operators if regulation was introduced that reduced their prices below the contractual cap.^{116,117}

¹¹⁴ Telecom New Zealand split into a wholesale arm, Chorus, and a retail arm, Spark, to allow it to participate in the UFB project.

¹¹⁵ New Zealand Government, UFB Model Amendments Announced, 2010; <https://www.beehive.govt.nz/release/ufb-model-amendments-announced>. See also Murray Miller, Ultra-fast Broadband The New Zealand Experience, Journal of Telecommunications and the Digital Economy, June 2020; https://telsoc.org/sites/default/files/journal_article/248-article_text-2746-1-11-20200527.pdf

¹¹⁶ The tech users' association (**TUANZ**), along with some network operators were key voices in arguing against the regulatory holiday. The rationale behind this was that end users of the network would ultimately pay the costs. Source: UFB 'holiday' worth millions to telcos, article from Stuff New Zealand; <https://www.stuff.co.nz/technology/4981100/UFB-holiday-worth-millions-to-telcos>

¹¹⁷ NERA Consulting, Telecommunications Infrastructure International Comparison, 2018; https://assets.publishing.service.gov.uk/media/5b549697ed915d0b81e003e3/FTIR_Annex_B_-_NERA_Telecommunications_Infrastructure_International_Comparison.pdf; <https://www.nzherald.co.nz/business/joyce-scrap-regulatory-holiday-from-broadband-bill/IS6NET3RHL2CQTWUJADOCG2PKE/>

A2.4

As the 10 year public private partnership underpinning the UFB project drew to a close in 2020, an updated regulatory framework was brought into effect. This had to accommodate the fact that UFB had essentially created a series of local monopolies, with only one wholesale fibre network per geographic area. To ensure that the companies could not “make excess profits at the expense of consumers”¹¹⁸, new legislation was implemented in November 2018 with the aim to “establish a stable and predictable regulatory framework for fibre fixed line access services in New Zealand”.¹¹⁹

A2.5

Shortly after the 2018 implementation of the new legislation, the Commerce Commission (**NZCC**) conducted a review of fibre services ahead of future regulations. Amongst other things, the NZCC found that there were differences between companies’ financial reporting as Chorus did not provide a separate view of its fibre services and network in its annual report.¹²⁰ This lack of transparency led to specific regulations for fibre fixed line access services (**FFLAS**) that were introduced in 2021 to set a revenue cap and minimum quality standards for Chorus and an information disclosure regime for all fibre providers.¹²¹

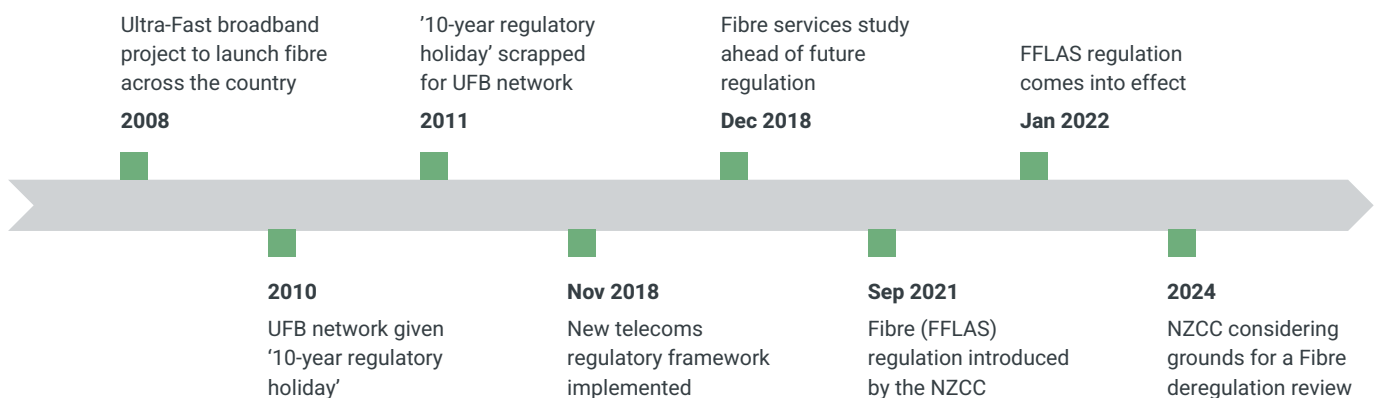
A2.6

The new regulations for Chorus were implemented in 2022 for a three-year period, before a grounds for a deregulation review should be considered by the NZCC.¹²² The NZCC’s draft decision is that there are not currently reasonable grounds to consider deregulation.¹²³

A2.7

Figure A-2 below sets out the timeline for this case study.

Figure A-2: Fibre investment timeline



Regulatory principles in case study

A2.8

In New Zealand, the UFB project is an example of regulation being designed to promote investment through the incentive of a low regulatory burden. The initial promise to withhold price regulation was reversed, but operators were instead offered compensation to leave them no worse off. The UFB roll-out was completed in December 2022, bringing high-speed fibre broadband to 412 towns and cities. Uptake is currently at 75 per cent of UFB premises passed and it continues to increase.^{124>>}

A recent monitoring report from the NZCC reports that, “New Zealand’s average broadband download speed is 97Mbps – the 13th fastest in the OECD – ahead of Australia, the United Kingdom, Ireland, and Germany.”¹²⁵

A2.9

One point where this scheme fell short of the regulatory principles is that the strategic direction was unclear. The incentives for companies investing in the fibre roll-out changed over time and this could have affected levels of investment.

A2.10

We see the NZCC now looking to deregulate within the sector if possible, through its upcoming 2024 fibre deregulation review, as set out above, and this move to keep regulation to a minimum is an example of the regulatory principle of **targeting and proportionality** and **regulatory discretion**.

118 New Zealand Parliament: Telecommunications (New Regulatory Framework) Amendment Bill – Second Reading, Sep 2018; https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb_20180918_20180918_24

119 New Zealand Parliament: Telecommunications (New Regulatory Framework) Amendment Bill 2017; <https://www.parliament.nz/en/pb/bills-and-laws/bills-digests/document/51PLLaw25241/telecommunications-new-regulatory-framework-amendment>

120 NZCC, Study into fibre services Summary report issued under s 9A of the Telecommunications Act 2001, December 2018.

121 New Zealand Telecommunications Forum, Commission completes input methodologies to valuing fibre providers’ financial loss, November 2020.

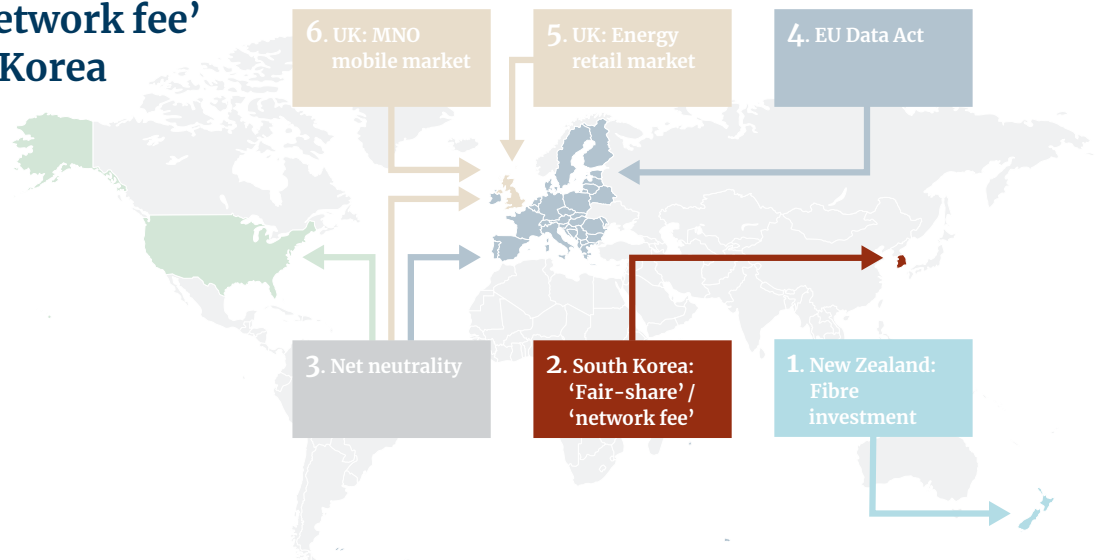
122 NZCC’s Fibre deregulation review, 2024.

123 https://comcom.govt.nz/_data/assets/pdf_file/0025/362149/Fibre-fixed-line-access-service-deregulation-draft-decision-27-August-2024-5242543_1.pdf

124 <https://crowninfrastructure.govt.nz/fibre/when-and-where/>

125 https://comcom.govt.nz/_data/assets/pdf_file/0033/361959/2023-Telecommunications-Monitoring-Report-15-August-2024

Case study 2: 'Fair-share' / 'network fee' debate in South Korea



Why is this case study relevant?

A2.12

This case study shows the importance of regulators ensuring that their approaches are not seen as overly onerous compared to other jurisdictions, given the over-the-top providers operating globally. Given the regional and global nature of the scope and scale of CSPs and the cloud supply chain, this case study may be helpful to understand the importance of considering the interplay between local goals and global players.

Case study description

A2.13

Aln the telecoms industry, there is an ongoing debate regarding the treatment of usage fees charged by network operators to large platform content providers, such as Google and Netflix. Proponents of these fees refer to this as the 'fair-share' debate, while those against refer to it as a 'network fee' debate. Telecom operators argue that this fee is fair, as a contribution to the costs of network maintenance and expansion, and to ensure a fair distribution of revenues among different actors in the internet ecosystem. South Korea is the only country that has introduced regulations that enforce a 'sending party pays' regulatory structure for Internet Service Providers (ISPs) as part of its interconnection regulatory policy in the Telecommunications Business Act (TBA),¹²⁶ requiring ISPs to charge for the traffic they receive from each other. The interconnection between an ISP a content provider is not directly regulated, but ISPs are enabled in law to impose paid peering arrangements with content providers to recover the costs of delivering the content provider's content over its network.¹²⁷

A2.14

Although this regulation has been called "pioneering" and "a good example to follow" by telecom operators,¹²⁸ many see this regulation as providing a disincentive for global content providers to provide services in the country, as they may have to pay to send that data over other networks.

A2.15

Some large platforms, including Facebook, have chosen to re-route content through other countries, using caches in nearby countries and directing South Korean traffic there.^{129,130} This was a way to circumvent some of the interconnection charges, but it resulted in degraded quality for South Korean customers.¹³¹

¹²⁶ Korea Communications Commission, Telecommunications Business Act; https://eng.kcc.go.kr/download.do?fileNm=TELECOMMUNICATIONS_BUSINESS_ACT.pdf

¹²⁷ <https://www.internetsociety.org/resources/doc/2022/internet-impact-brief-south-koreas-interconnection-rules/>

¹²⁸ Telefonica: South Korea's approach to the fair share contribution pioneering model; <https://www.telefonica.com/en/communication-room/blog/south-koreas-approach-to-the-fair-share-contribution-pioneering-model/>

¹²⁹ Korea Communications Commission, Telecommunications Business Act; https://eng.kcc.go.kr/download.do?fileNm=TELECOMMUNICATIONS_BUSINESS_ACT.pdf

¹³⁰ <https://www.internetsociety.org/resources/doc/2022/internet-impact-brief-south-koreas-interconnection-rules/>

¹³¹ The Korea Times: Speed hump: Facebook agrees to talk on cache server fees; https://beta.koreatimes.co.kr/www/tech/2024/06/133_242273.html

A2.16

The requirement to pay fees has led to multiple disputes. For example, in 2019 SK Broadband sought mediation from the Korea Communications Commission regarding network fee negotiations with Netflix.¹³² Between 2019 and 2020, there were multiple lawsuits between SK Telecom¹³³ and Netflix over access fee disputes. In 2020, Korea's National Assembly approved, known as the 'Netflix Law', which required large service providers to "secure means for stability of service".¹³⁴ The Seoul Central District Court ruled in 2021 that Netflix has an obligation to pay SK Broadband for network usage. The court recognised broadband as a two-sided market where parties can negotiate terms of data exchange.¹³⁵ Netflix appealed the initial ruling, and SK Broadband filed a countersuit. The appeal process involved multiple hearings at the Seoul High Court. Ultimately, the case was resolved through a settlement rather than a final court decision.

A2.17

Another example of a dispute began in 2017, when the KCC investigated whether Facebook had violated the TBA by moving data outside of Korea, leading to a lower quality of service for Korean end users. The KCC fined Facebook 396 million won (US\$370,000)¹³⁶. Facebook filed a lawsuit against KCC, with the Korean Court ruling in favour of Facebook and cancelling the fine in 2019.¹³⁷

Regulatory principles in case study**A2.18**

This case study highlights the risks of introducing regulations that are new or applied differently to existing regulations in other countries. This links to the regulatory principle of **learnings from other countries**. The observation that countries neighbouring South Korea offered a less burdensome regulatory framework should have cautioned the South Korean authorities away from applying network fees. The regulator failed to sufficiently **account for local conditions**.

A2.19

While the fees were intended to protect consumer interests, in line with the regulatory principle of consumer focus, they ultimately caused some harm to consumer interests because quality was lessened.¹³⁸

A2.20

The regulations were introduced to promote investment in the telecommunications infrastructure in South Korea, but some commentators have argued the regulations had the opposite effect in some cases.^{139,140}

A2.21

The case study provides evidence of the application of strong appeal rights. The litigation surrounding the SK Telecom – Netflix case went through ten court hearings, including appeals in the Seoul High Court.¹⁴¹ The cases revolved around Netflix's obligation to pay or negotiate for the use of SK Telecom's network. The court proceedings allowed the arguments surrounding this novel system of regulation and legislative responsibility to be tested in a forum separated from the regulator and government. The case was ultimately settled outside of court.

132 See <https://www.koreatechtoday.com/ending-the-battle-netflix-and-sk-broadband-reach-an-agreement/>

133 SK Broadband's holding company

134 Kim and Chang, New Requirement and Enhanced Obligations for Value-Added Telecommunications Service Providers to Secure Means for Stability of Service, September 2020.

135 <https://chambers.com/articles/korean-court-ruling-over-a-network-usage-fee-dispute-between-netflix-and-sk-broadband>

136 Korea Times; Facebook fined \$370,000 for limiting user access; March 2018; https://www.koreatimes.co.kr/www/tech/2024/09/133_246026.html

137 Korea JoongAng Daily, Seoul court cancels Facebook fine, August 2019

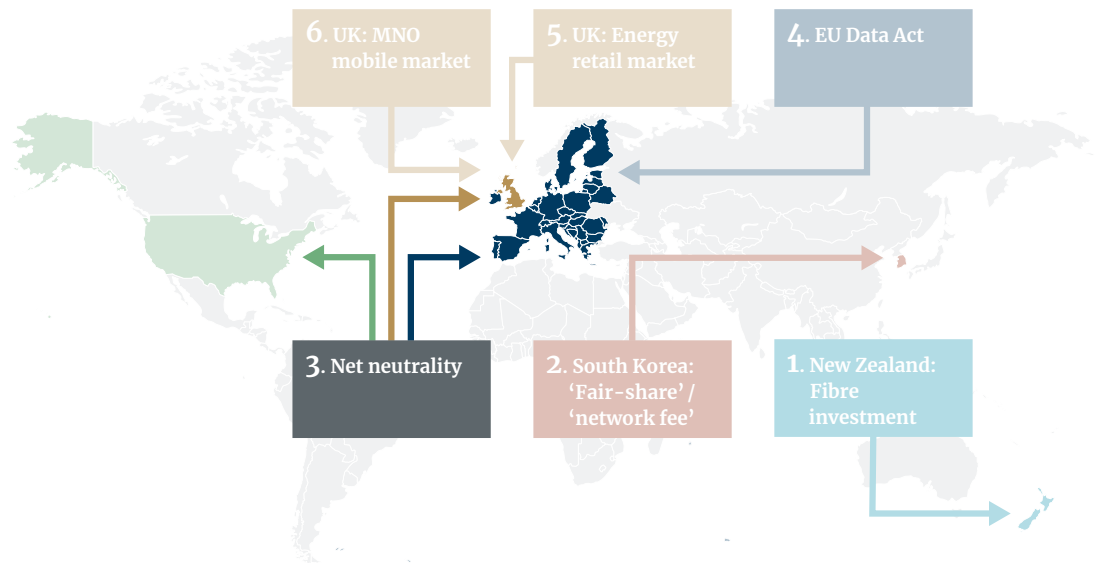
138 WIK-Consult, Competitive conditions on transit and peering markets, Implications for European digital sovereignty Final report, p36, 2022.

139 Oxera: An economic assessment prepared for the Dutch Ministry of Economic Affairs and Climate. Proposals for a levy on online content application providers to fund network operators; <https://www.government.nl/documents/reports/2023/02/27/proposals-for-a-levy-on-online-content-application-providers-to-fund-network-operators>

140 Park and Nelson, Korea's Challenge to the Standard Internet Interconnection Model, p. 74. This chapter was included in a larger report entitled The Korean Way with Data – How the World's Most Wired Country is Forging a Third Way, 2021; https://carnegie-production-assets.s3.amazonaws.com/static/files/202108-KoreanWayWithData_final5.pdf

141 <https://strandconsult.dk/netflix-ends-three-year-litigation-in-korea-over-network-usage-costs-fair-share-update-by-strand-consult/>

Case study 3: Net neutrality



Why is this case study relevant?

A2.23

This case study shows the challenges of providing a clear strategic direction when regulating contentious issues, which are potentially subject to political considerations.

Case study description

A2.24

Net neutrality is the principle that internet service providers (ISPs) treat most, if not all, internet traffic equally across all users and content providers. Net neutrality regulation might mean that prioritising some traffic over other traffic, for example throttling one streaming service while favouring traffic from another service, would not be allowed. Regulation in this area has had a lot of public attention and has been seen by many as being about protecting consumers from being treated unfairly and enabling free speech on the internet. However, there have been some concerns expressed by commentators about some versions of net neutrality regulations due to the potential for restricting network innovation opportunities that could prevent networks filtering illegal or harmful content.^{142, 143}

A2.25

Net neutrality regulations have a long history and have been applied in different ways across many jurisdictions. This allows for comparisons between the regions to compare both what is and what isn't consistently applied between them.

A2.26

In the US, there has been a lack of regulatory certainty, as the regulations have been implemented and then withdrawn multiple times, particularly when an opposition party gets into government.¹⁴⁴ Debate around the introduction of net neutrality regulation had been going on in the US since the 2000s. Widespread regulation was first introduced in 2015 when the US's Open Internet Order categorised ISPs as telecommunications services, effectively bringing in net neutrality regulation. Then, in 2017, the FCC released the Restoring Internet Freedom Order, which revoked the 2015 changes. During the period between the Open Internet Order being revoked in May 2017 and the restoration of Net Neutrality in April 2024, there were no federal net neutrality regulations. Additionally, conflicting rules were introduced at the US state level.>>

For example, in 2018, California introduced the "California Internet Consumer Protection and Net Neutrality Act of 2018," re-introducing net neutrality regulation in that state.¹⁴⁵ Most recently in the US, the net neutrality rules that were restored earlier in 2024 have been temporarily blocked by the Sixth Circuit U.S. Court of Appeals.¹⁴⁶

A2.27

In 2015, the EU adopted Regulation (EU) 2015/2120, known as the Telecommunications Single Market (TSM) Regulation, to provide net neutrality regulations and regulations for an 'open internet' within the EU. One of the key reasons for introducing net neutrality regulations in the EU was "to provide harmonising rules for net neutrality within the EU and enshrined the principle of net neutrality in EU law for the first time."^{147>>}

142 NordVPN, Net neutrality pros and cons: What you need to know; <https://nordvpn.com/blog/net-neutrality-pros-and-cons/>

143 Issues covered in Ofcom's net neutrality review; <https://www.ofcom.org.uk/internet-based-services/network-neutrality/net-neutrality-review/>

144 <https://crsreports.congress.gov/product/pdf/R/R40616>

145 ACA Connects v. Bonta: Ninth Circuit Upholds California's Net Neutrality Law in Preemption Challenge; <https://crsreports.congress.gov/product/pdf/LSB/LSB10693>

146 Reuters: US court blocks Biden administration net neutrality rules, August 2024; <https://www.reuters.com/legal/us-court-blocks-biden-administration-net-neutrality-rules-2024-08-01/>

147 From the European Commission's information page regarding net neutrality; https://competition-policy.ec.europa.eu/sectors/electronic-communications/related-topics_en

A2.28

To foster trust in the net neutrality rules, the working group of European regulators, BEREC, has put forward advice on net neutrality. and provides expert advice to them.¹⁴⁸ As each country has different market dynamics within Europe, BEREC has clarified that some practices are prohibited but others “will be need to be assessed by NRAs against a number of criteria set out in the Guidelines.”¹⁴⁹ While this affords some regulatory discretion, it has also led to some disputes about the application of the criteria. Some of these cases have had to be decided by courts, including the European Court of Justice¹⁵⁰, creating general regulatory uncertainty. Additionally, regulators have a requirement to apply competition principles to assess legality of services to ensure that they don’t reduce consumer choice. This is a significant implementation challenge as many regulators are not equipped to do this.

A2.29

In 2020, after leaving the EU, the UK adopted the EU rules on net neutrality within domestic legislation. The net neutrality rules applied by the UK government provide some room for regulatory discretion in some areas.¹⁵¹ These include:

- whether ‘specialised services’ to deliver specific content optimally are allowed;
- how ‘traffic management’ measures to address network congestion and maintain high quality of service are treated; and
- how zero-rating is treated.¹⁵²

A2.30

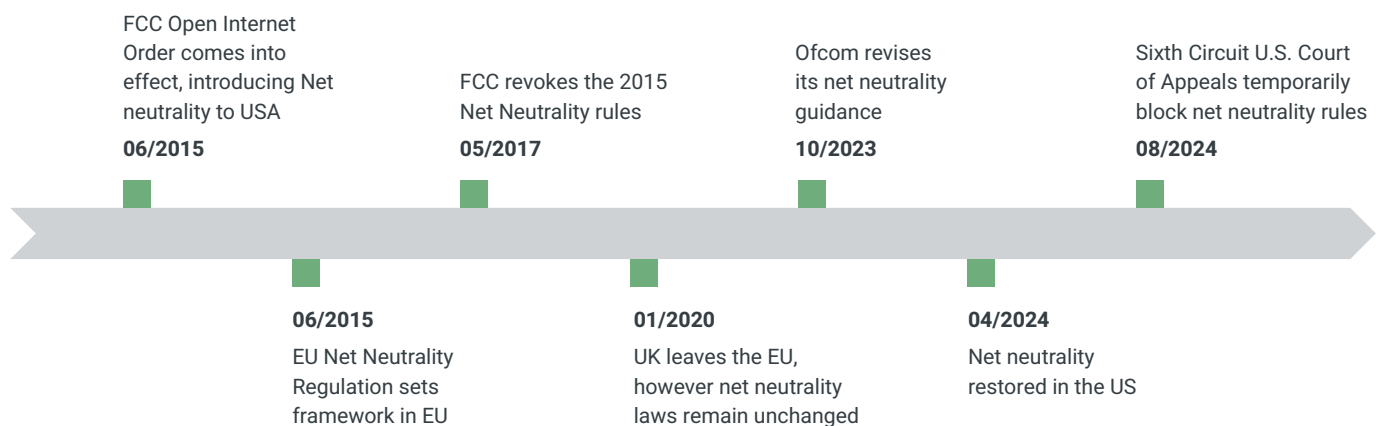
Zero-rating is a commercial practice where free internet access is allowed for certain websites or services. An example of this would be a phone contract not including data from a specific streaming service to count towards a monthly data allowance. In 2023, Ofcom revised its net neutrality guidance, meaning that in the UK “most zero-rating offers will be allowed”.^{153>>}

Before announcing its updated net neutrality guidance, Ofcom announced that it would follow a new programme of work across digital markets that aims to “ensure that digital communications markets are working well for people and businesses in the UK.”¹⁵⁴ In the strategy document, it states that it will only “intervene where necessary to support healthy and flourishing markets that work well across the outcomes we care about.” This shows a focus on the positive outcomes of the regulation rather than defaulting to continuity.

A2.31

Figure A-3 sets out key timeline points for this case study.

Figure A-3: Net neutrality timeline – 2015 onwards



148 BEREC, About BEREC’s Net Neutrality Guidelines (2016); https://www.berec.europa.eu/files/document_register_store/2016/8/NN%20Factsheet.pdf

149 From BEREC’s information on zero-rating; <https://www.berec.europa.eu/en/what-is-zero-rating>

150 BEREC, Introduction to the Open Internet, Judgements on the Open Internet Regulation by the European Court of Justice; <https://www.berec.europa.eu/en/all-topics/introduction-to-open-internet>

151 Competitive Enterprise Institute, How the UK Can Reform Net Neutrality Regulations and Promote Innovation; <https://cei.org/blog/how-the-uk-can-reform-can-improve-internet-connectivity-for-consumers/>

152 Ofcom revises net neutrality guidance; <https://www.ofcom.org.uk/internet-based-services/network-neutrality/ofcom-revises-net-neutrality-guidance/>

153 ibid

154 Ofcom; Digital markets in the communications sector, 2022.

Regulatory principles in case study

A2.32

In the US, regular changes in the nature of the regulation in the US has meant a lack of a **clear strategic direction**. The fact that the net neutrality laws were in effect for only a two-year period at a federal level (until their recent reintroduction) meant that companies would have had regulatory uncertainty. Additionally, net neutrality laws have been inconsistently applied and have an uncertain future in the US.

A2.33

In applying **learnings from other countries**, the UK has adopted the EU regulations into its domestic legislation, but including key **regulatory flexibility**, which may be applied to the practice of zero-rating. Ofcom's latest strategy document also makes clear its explicit focus on regulating for **positive outcomes**.

A2.34

Net neutrality regulation can be argued to be inherently **consumer focused**.¹⁵⁵ However, others have argued that net neutrality restricts consumer choice as the regulation prevents consumers from benefitting from specialised services that ISPs could offer with prioritisation of certain traffic.¹⁵⁶

A2.35

There are several positive impacts of net neutrality on **innovation and investment**. According to the FCC's Open Internet Order,¹⁵⁷ "the Internet's openness promotes innovation, investment, competition, free expression, and other national broadband goals" and has led to growth in "the digital app economy, video over broadband, and VoIP, as well as a rise in mobile e-commerce." Similarly for the UK, the consistency with the EU creates certainty for cross-border investors. Net neutrality also lowers the barriers to entry for some over-the-top services. This is because without net neutrality, ISPs would be able to charge for data prioritisation and smaller businesses may be unable to afford paying for this service.

A2.36

However, opponents of net neutrality have argued that there are negative impacts on investment and innovation stemming from the regulation. Some studies have suggested that net neutrality regulations in Europe have a "a significantly negative and substantial impact on fiber investments"¹⁵⁸ and, more broadly could "lead to substantial market uncertainties regarding 5G-based services and applications".¹⁵⁹ It has been argued that internet innovation has declined since 2015 in Europe and that "hard net neutrality regulation does not confer an innovation advantage."¹⁶⁰ In the US, the threat of net neutrality "reclassification (2011-2015) reduced telco investments by about 20-30%".¹⁶¹

155 Clause (1) of the Regulation (EU) 2015/2120 states "It aims to protect end-users"; <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A32015R2120>

156 Competitive Enterprise Institute, How Ofcom can develop more flexible net neutrality rules for specialised services; <https://cei.org/blog/how-ofcom-can-develop-more-flexible-net-neutrality-rules-for-specialised-services/>

157 FCC Releases Open Internet Order; <https://docs.fcc.gov/public/attachments/FCC-15-24A1.pdf>

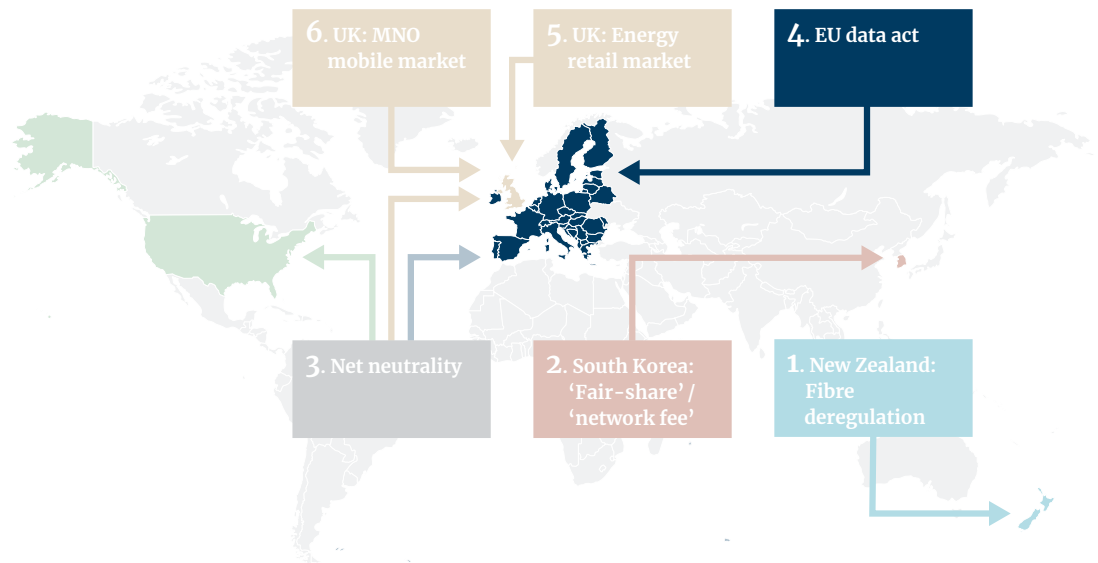
158 Briglauer, Cambini, Gugler and Stocker, Net neutrality and high-speed broadband networks: evidence from OECD countries, *European Journal of Law and Economics*, 55, p. 552, 2023.

159 Briglauer (2024) Efficiency and Effectiveness of Net Neutrality Rules in the Mobile Sector: Relevant Developments and State of the Empirical Literature.

160 Strand Consult, Net Neutrality regulation is failing UK consumers, innovators, and investors, 2023.

161 Ford, Net Neutrality, Reclassification and Investment: A Counterfactual Analysis, Perspectives, Phoenix Center for Advanced Legal & Economic Public Policy Studies, April, 2017.

Case study 4: EU Data Act



Why is this case study relevant?

A2.38

The regulations imposed via the EU Data Act will apply in Europe to firms that have counterparts or equivalents in Australia, including in the cloud sector. The EU Data Act has implications for those firms' operations and investment decisions globally as well as locally.

Case study description

A2.39

The EU Data Act is part of a broader European strategy that was initiated by a 2020 EU white paper, "Shaping Europe's digital future". The strategy aims to make the EU a global leader and role model for the digital economy.^{162>>}

The strategy covers various aspects of digital transformation, such as data governance, artificial intelligence, cybersecurity, digital skills, and digital sovereignty. The EU Data Act is a central legislative initiative which aims to create a common European 'data space' or single market for data, open to data from across the world.¹⁶³ The Act, alongside the Data Governance Act, foresees achieving this by creating the opportunity for a data intermediation industry to act as a data broker.¹⁶⁴ One of the main goals of the EU Data Act was to "maximise the value of data in the economy... [so] that more data is available for innovative use, while preserving incentives to invest in data generation".¹⁶⁵

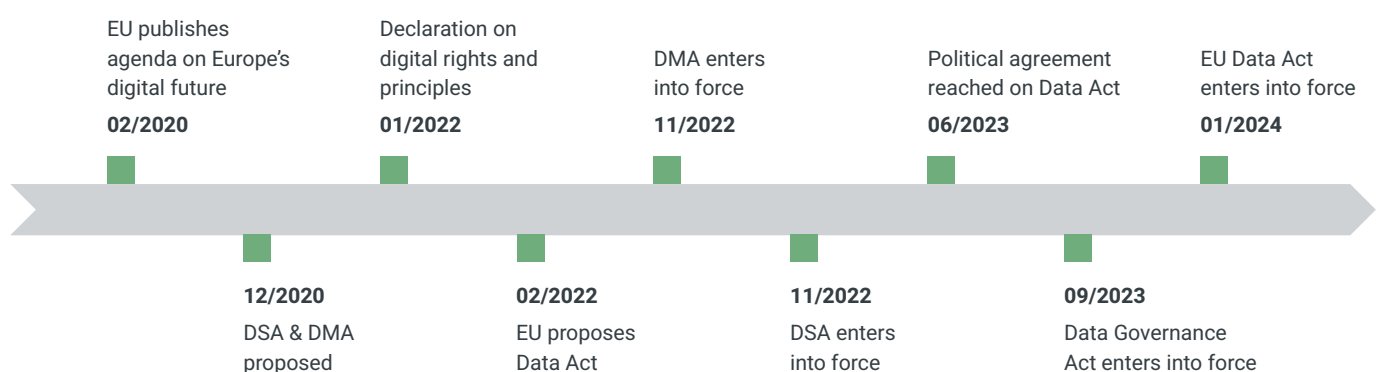
A2.40

The EU Data Act forms part of a wider digital strategy, incorporating other key pieces of legislation such as the Digital Markets Act, which regulates large 'gatekeeper' platforms,¹⁶⁶ and Digital Services Act, which regulates online intermediaries and platforms.¹⁶⁷

A2.41

Figure A-4 below sets out the timeline for this case study, whilst Figure A-4 below summarises the key points.

Figure A-4: EU Data Act Timeline



162 Shaping Europe's digital future; https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/shaping-europes-digital-future_en

163 European Commission, A European strategy for data.

164 European Commission. Data Act explained; <https://digital-strategy.ec.europa.eu/en/factpages/data-act-explained>

165 Source: Data Act: Proposal for a Regulation on harmonised rules on fair access to and use of data, from the EC in February 2022.

166 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en

167 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act_en

Regulatory principles in case study

A2.42

The EU Data Act provides an example of how applying the regulatory principle of **promoting investment and innovation** may not be straightforward. One of the main goals of the EU Data Act was to promote investment and innovation. The creation of rules codifying how this industry will be treated, and development of these rules alongside those in the Digital Markets Act (DMA)¹⁶⁸ and Digital Services Act (DSA)¹⁶⁹, aimed to provide **strategic direction**.

A2.43

However, there is debate about the likely effects. According to the US Chamber of Commerce, “data sharing mandates such as what is envisaged in the Data Act will dissuade companies from investing in R&D or other critical activities in Europe ... [the] provisions of the draft Data Act may unintentionally weaken Europe’s ability to compete in the digital marketplace globally.”¹⁷⁰

A2.44

The EU Data Act may also be burdensome in terms of compliance for data holders and so threaten investment.^{171,172} It could impose substantial costs on businesses, especially those based outside the EU.¹⁷³ The requirements for the companies to comply with the EU Data Act in the EU could impede cross-border trade.¹⁷⁴ The related DMA legislation has been criticised for helping delay the launch of new services in EU countries, such as Apple Intelligence and Meta’s Threads.¹⁷⁵ There is a risk here within the principles of **proportionality** and a **focus on competition**.

A2.45

This example has relevance to the cloud industry as the European Commission wants to ensure a “free flow of data in Europe”, while establishing “safeguards for access requests by a foreign public sector body”.¹⁷⁶ If applied poorly, this model could benefit local cloud services while indirectly hindering development of global infrastructure.

168 Focused on competition by pursuing a level playing field for businesses. The DMA primarily targets major tech companies, such as Google, Amazon, and Meta, and requires user consent before processing personal data for targeted advertising.

169 Focused on protecting users by enforcing stricter content moderation, banning targeted advertising to children, and requiring more transparency from platforms.

170 U.S. Chamber Statement on the European Commission’s Proposal for a New Data Act; <https://www.uschamber.com/international/u-s-chamber-statement-on-the-european-commissions-proposal-for-a-new-data-act>

171 Morrison Foerster: The EU Data Act – Stimulant or Roadblock for the Data Economy? <https://www.mofo.com/resources/insights/220223-eu-data-act>

172 US Chamber of Commerce, The EU Data Act: A Misguided Policy; <https://www.uschamber.com/international/the-eu-data-act-a-misguided-policy>

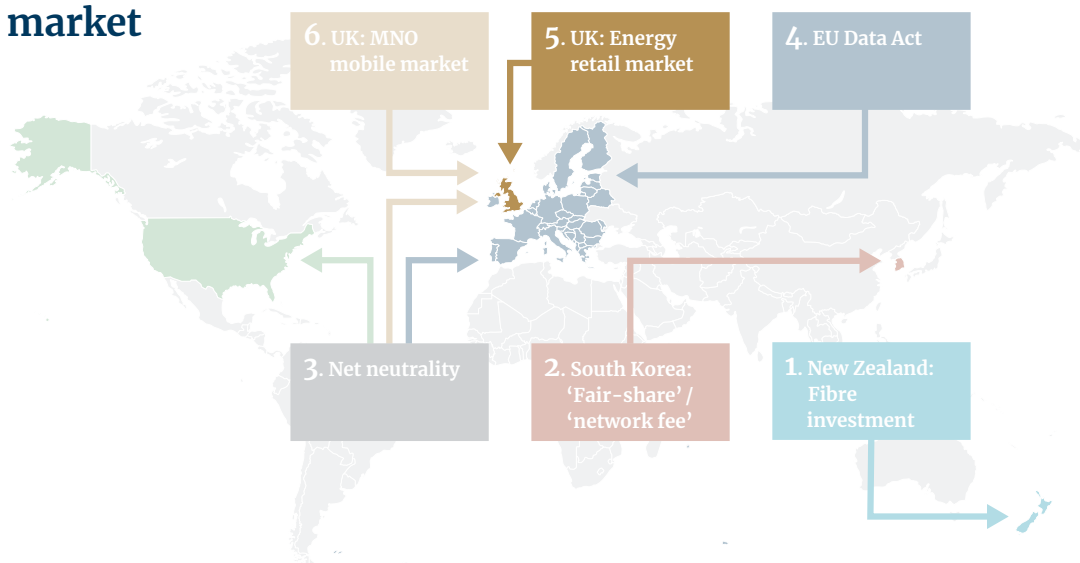
173 The US-based policy research organisation Center for Strategic & International Studies estimated the compliance costs and fines for US businesses of the DMA and DSA to be between US\$22 billion and US\$50 billion. CSIS Implications of the European Union’s Digital Regulations on U.S. and EU Economic and Strategic Interests; https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/221122_EU_DigitalRegulations.pdf?VersionId=iwE19KteALSKhjPCEWN8LvqqORV02X

174 The EU Data Act and International Data Flows – Why Policymakers Should Clarify Art. 27 of the Data Act; <https://www.itic.org/news-events/techwonk-blog/the-eu-data-act-and-international-data-flows-why-policymakers-should-clarify-art-27-of-the-data-act>

175 <https://www.theguardian.com/technology/article/2024/jun/21/apple-ai-europe-regulation>; <https://techcrunch.com/2023/07/05/threads-no-eu-launch/>

176 EC, Data Act explained; <https://digital-strategy.ec.europa.eu/en/factpages/data-act-explained>

Case study 5: UK retail energy market



Why is this case study relevant?

A2.46

This case study shows how regulatory interventions, which had seemingly delivered an effectively competitive market and addressed the market failure identified, may contribute to unexpected market failures. This case study provides a cautionary tale of the risks of only considering immediate short-term impacts and how there can be unintended longer-term consequences to consider when implementing regulation. This demonstrates the importance of continual monitoring and adapting of regulations as necessary.

Case study description

A2.47

Before the 1990s, the UK's energy market was essentially made up of 14 state-owned suppliers, each operating as a regional monopoly. The sector was privatised towards the end of the 1980s, with competition introduced in the late 1990s. At that time, the 14 regional monopolies and British Gas consolidated to what became known as the "Big 6" – British Gas, EDF Energy, EON, Npower, Scottish Power and SSE. These six companies collectively held around 99 per cent of the market.

A2.48

Starting in the early 2000s, Ofgem, the energy regulator in the UK, was increasingly focused on upping competition in the UK energy market. Ofgem took a 'low bar' approach to encourage more suppliers into the market that would compete on price and bring innovation. It mainly assessed its success in regulating the supplier market by measuring the number of new entrants, how many customers were switching to them and the savings they were making. It did not measure the financial resilience of the market. Ofgem's approach manifested itself in how it licensed new suppliers and its monitoring of suppliers in the market.>>

The licensing process because much easier, with limited information requested on the new suppliers' financial viability or business model. Ofgem's limited monitoring approach meant it was unsighted on the risky strategies many suppliers were employing.¹⁷⁷

A2.49

Ofgem's activities to attract new entrants to the energy market were supported by UK government policy measures, which exempted new suppliers from some industry levies and policy costs. The government's Renewables Obligation scheme enabled suppliers to operate in the market without committing large amounts of their own capital or charging tariffs that covered their costs. This is because suppliers collected consumer money to cover the cost of the Renewables Obligation throughout the year but only paid this over once a year, in August, enabling them to use the money as a form of temporary working capital.

¹⁷⁷ Department for Business, Energy & Industry Strategy and Ofgem, The energy supplier market, report by the Comptroller and Auditor General, 2022; <https://www.nao.org.uk/wp-content/uploads/2022/03/The-energy-supplier-market.pdf>

A2.50

The regulations did increase competition with the introduction of many new entrants. By September 2021 the new entrants held around a 40 per cent market share.¹⁷⁸ Additionally, the number of consumers switching energy suppliers rose from 9.1 million in 2007 to 9.5 million in 2008 increasing to 10.7 million in 2019.¹⁷⁹

A2.51

Figure A-5 right shows the market shares of the main companies in the UK gas supplier market. This chart shows that from 2010 to 2018, the collective market share of the smallest suppliers grew significantly. Figure A-6 right shows that the number of suppliers in the domestic energy market reached a peak in 2018, with over 70 companies, before falling gradually until 2021.

A2.52

Since 2019, the UK government has capped the price per unit of gas and electricity for customers on standard default tariffs.¹⁸⁰ The government determined that bills should be capped following findings from the Competition and Markets Authority that 70 per cent of customers of the six largest energy firms were on expensive default tariffs and customers were paying £1.4 billion more per year than they would in a fully competitive market.¹⁸¹

A2.53

From December 2020 to December 2021, the wholesale price of gas increased by almost five times.¹⁸² In the fourth quarter of 2021, this supply shock caused a sudden series of exits, visible in Figure A-7 overleaf. Since mid-2021, 26 energy companies servicing around four million consumers had gone out of business.¹⁸³

Figure A-5: UK gas supplier market shares by company¹⁸⁴

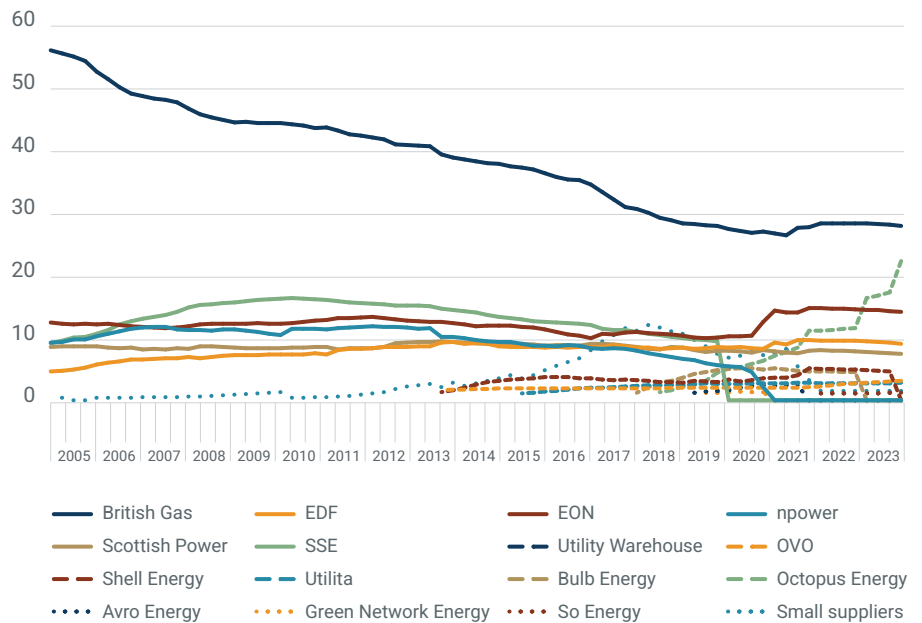
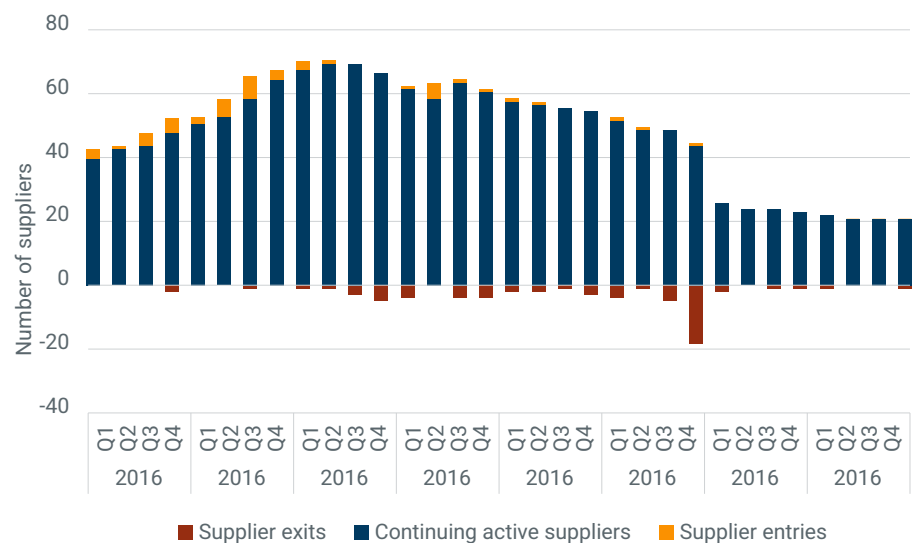


Figure A-6: Supplier entries and exits in the domestic energy retail market (GB)¹⁸⁵



178 <https://www.nao.org.uk/wp-content/uploads/2022/03/The-energy-supplier-market.pdf> p18

179 Statista: Number of electricity and gas customers switching energy suppliers in Great Britain from 2007 to 2022.

180 AT the time the cap was introduced, more than half of all households in Great Britain were on default tariffs because they had never switched or had not done so recently. Consumers are often automatically put on default deals, usually standard variable tariffs, when they come to end of fixed terms contract deals, with default deals typically more expensive; <https://www.ofgem.gov.uk/press-release/energy-price-cap-will-give-11-million-fairer-deal-1-january>

181 <https://www.nao.org.uk/wp-content/uploads/2022/03/The-energy-supplier-market.pdf> p16

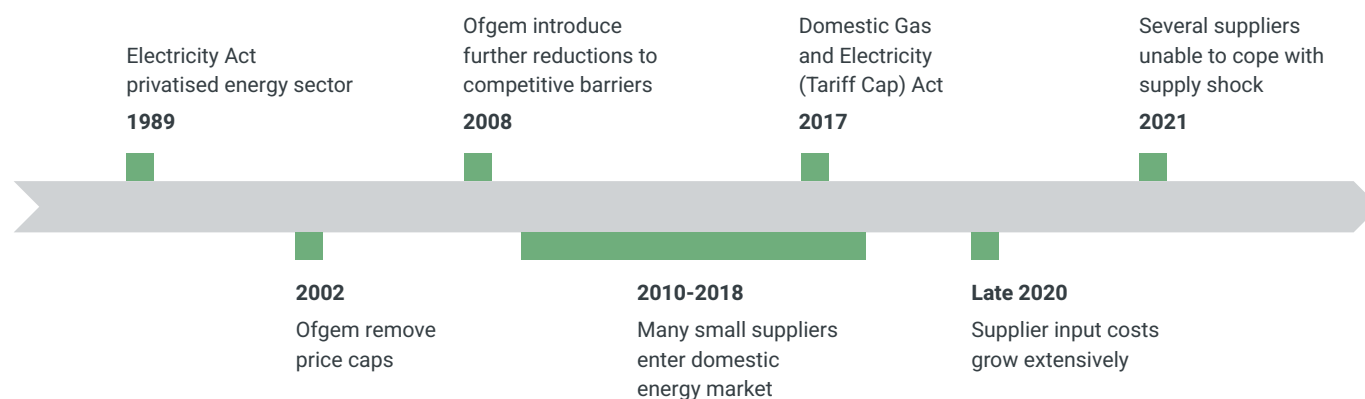
182 Gas prices rose from £45.69 to £270.96, data from <https://www.ofgem.gov.uk/wholesale-market-indicators>

183 UK government website: Delivering a better energy retail market: a vision for the future and package of targeted reforms.

184 DT Economics elaboration of Ofgem analysis of Xoserve reports. Note: 'Small suppliers' includes suppliers with market share below 1 per cent.

185 DT Economics elaboration of Ofgem analysis of DNO and Xoserve reports.

Figure A-7: UK retail energy market timeline



Regulatory principles in case study

A2.55

In an inquiry by the UK's Public Accounts Committee into the UK's regulation of energy suppliers,¹⁸⁶ Ofgem was found to have failed "to effectively regulate the energy supplier market". Ofgem "did not strike the right balance between promoting competition in the energy suppliers market and ensuring energy suppliers were financially resilient".¹⁸⁷

A2.56

The regulations were explicitly intended to provide more **competition** in the market. In its review of Ofgem's regulation, however, Oxera found that it failed to monitor the market dynamically and consider that "the benefits of competition may accrue more than proportionately with early entrants in a highly concentrated market and then taper off as competition increases to unsustainable levels (eg with a high number of loss-making firms)."¹⁸⁸

A2.57

According to Oxera's review,¹⁸⁹ Ofgem's approach encouraged new suppliers to take risks and enter the market without committing their own equity capital. Companies were able to enter with less 'skin in the game' and were not incentivised to make long-term investment in the market. The companies that failed were not financially resilient enough to withstand the shocks to supply. Entering the market with less investment contravenes the well-established 'ladder of investment' regulatory model and the regulatory principle around **promoting investment**.¹⁹⁰

A2.58

One of the key principles illustrated in this study is **consumer focus**. The price caps were introduced as a consumer protection measure. However, Ofgem did not consider what impact the price cap might have if there was significant volatility or sustained periods of price increases in the wholesale energy markets.¹⁹¹ Citizen's Advice estimated the costs to consumers of the widespread collapse of smaller energy firms after 2021 to be £2.6 billion.¹⁹²

¹⁸⁶ UK Parliament Committees, Regulation of energy suppliers; <https://committees.parliament.uk/work/6762/regulation-of-energy-suppliers/>

¹⁸⁷ UK Parliament Committee news articles, PAC: Ofgem failures "come at considerable cost to energy billpayers"; <https://committees.parliament.uk/committee/127/public-accounts-committee/news/174285/pac-ofgem-failures-come-at-considerable-cost-to-energy-billpayers/>

¹⁸⁸ *ibid.*

¹⁸⁹ Oxera: Review of Ofgem's regulation of the energy supply market, 2022; https://www.ofgem.gov.uk/sites/default/files/2022-05/Review%20of%20Ofgems%20regulation%20of%20the%20energy%20supply%20market_May%202022.pdf

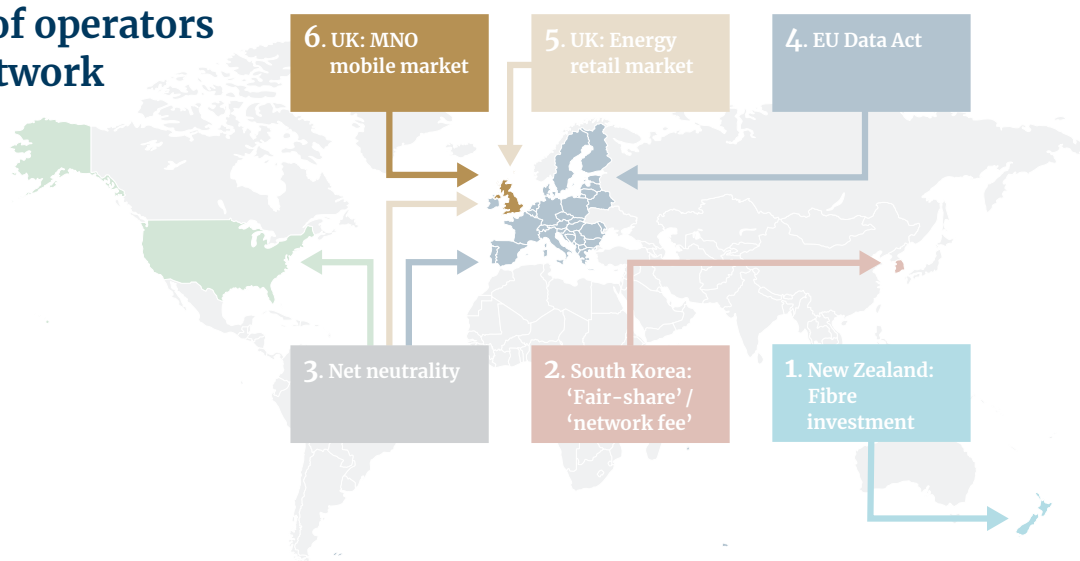
¹⁹⁰ Proposed initially by Martin Cave in 2006 to describe how new entrants can have successive rungs of access, each with more investment required. This has been widely embraced by national regulatory authorities in the European telecommunications sector.

¹⁹¹ The exact impact of the price cap on the supplier failures is uncertain but it is likely that many suppliers would have failed even without its existence given their lack of financial resilience. However, the cap has affected the market in other ways, such as increasing the costs passed on to customers when suppliers have failed; <https://www.nao.org.uk/wp-content/uploads/2022/03/The-energy-supplier-market.pdf> p6

¹⁹² Citizen's advice report: Market Meltdown, How regulatory failures landed us with a multi-billion pound bill, Dec 2021.

Case study 6: Target number of operators in UK mobile network retail market

(consolidation and
spectrum allocations)



Why is this case study relevant?

A2.60

This case study shows how a regulator can change its position over time on a specific issue – here related to the number of competitors needed in the mobile market. Ofcom has changed its view over time to make sure that its strategy meets changing objectives and priorities.

Case study description

A2.61

The UK mobile market has seen regulations introduced for different reasons over time, with an auction of spectrum licences to promote competition and generate revenues, and with more recent regulations to facilitate investment. The shifting focus over time shows how Ofcom has moved to a more targeted approach to its regulations, including a softening approach towards consolidation. Since 2010, there have been three successful mergers and one unsuccessful, with a further merger proposed this year.

A2.62

In telecoms, spectrum constraints act as a barrier to entry and to exit, as there is only a finite amount of spectrum available, which must be allocated by a regulator.>>

In the UK, spectrum is allocated using an auction system, where companies bid for a licence to use certain spectrum 'bands'.¹⁹³ Spectrum auctions are the main mechanism for a regulator to increase the number of players in the market as they can choose what licences to sell. In 2000, there was an auction of 3G spectrum in which a fifth entrant was introduced to the UK mobile network market. In the more recent 4G spectrum of early 2013, Ofcom shifted its focus to include "coverage obligations in auctioned licences to require certain minimum levels of coverage to be achieved by certain dates"¹⁹⁴

A2.63

The other way that the regulator can control the number of operators in the market is through allowing or disallowing mergers. In 2012, in determining the effective spectrum outcome, Ofcom stated that customers were likely to benefit if there were "at least four credible national wholesalers of 4G mobile services."¹⁹⁵ Therefore it was not looking to bring in a new entrant. However, this approach impacted on its views to proposed market consolidation in subsequent years. However, in a 2022 discussion paper, Ofcom set out a new approach to how it would treat mergers.¹⁹⁶ "The question of whether a particular merger is likely to result in a substantial lessening of competition depends on the effectiveness of competition [...]>>

Our stance [...] would therefore be informed by the specific circumstances [...], taking into account how markets are evolving." This shows a shift in focus from the number of operators in the market to the effectiveness of the competition between the operators that exist in the market.

A2.64

The UK's regulatory model is one that is followed by other countries globally. Alongside the intended effect of allocating spectrum to those companies who will use the spectrum efficiently, the 3G spectrum auction in 2000 had the positive side effect of generating over £22 billion for the UK Treasury. Unfortunately, many governments have subsequently learned the wrong lessons from this.¹⁹⁷ By trying to raise as much revenue from the sale of spectrum as possible, they can fail to secure the primary objectives from the auction, such as new competitors, increased coverage, or a more pro-competitive split of spectrum holdings. Although raising money for the government is a positive impact of spectrum auctions, the auction needs to focus primarily on the core positive outcomes. This provides an example of failure to **account to account for local conditions** properly.

A2.65

Figure A-8 overleaf sets out the timeline for this case study.

193 Radio spectrum comprises ranges of wavelengths to transmit data.

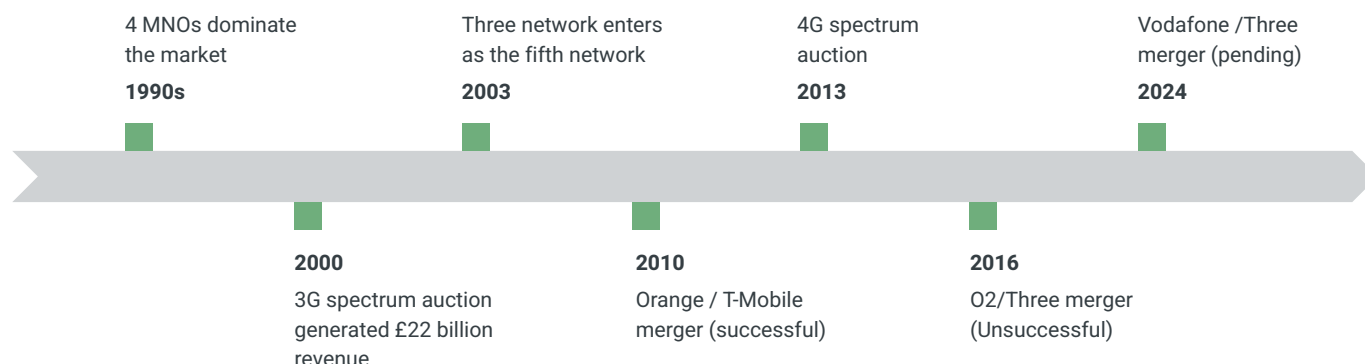
194 Ofcom, "Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues", March 2011.

195 Lexology, "Ofcom unveils plans for 4G auction of the airwaves".

196 Ofcom, "Ofcom's future approach to mobile markets – A discussion paper", 9 February 2022.

197 <https://www.gsma.com/connectivity-for-good/spectrum/lessons-from-spectrum-auctions-the-good-the-bad-and-the-ugly>

Figure A-8: UK Mobile market timeline



Relevant regulatory principles

A2.66

Ofcom's 2000 auction of 3G spectrum was specifically designed to increase **competition** by introducing a fifth mobile network operator. Over time, the more fragmented market and the costs of the spectrum reduced the scope for investment in new technologies by the five operators. With a more fragmented market there is less scope for investment, challenging the regulatory principle to **promote investment**.¹⁹⁸

A2.67

UK mobile operators have since attempted to merge. The EC blocked the merger of Three and O2 in 2015 as it would have a "negative impact on network innovation and investment."¹⁹⁹ More recently, Vodafone UK and Three have argued that they lack the "necessary scale on their own to earn their cost of capital"²⁰⁰. Regarding the proposed merger of Vodafone UK and Three, the merging parties argue that the merger "will create a third mobile operator with scale, competing across all technologies and driving network investment by all players."²⁰¹

A2.68

Ofcom's approach to mergers appears to be softening, reflecting a growing understanding that consumer interests will be best met through significant ongoing investment in infrastructure and that some consolidation of the market may enable this. In 2022 document setting out its approach to mobile markets and spectrum, Ofcom says that:

- it "will set out more explicitly how [mergers] are likely to impact on how the market functions, including on investment to meet future customer needs";
- its "stance on any future merger would be informed by our view on the effectiveness of competition that can be expected after the merger, rather than just the number of competitors;" and
- it "will consider international developments and engage with relevant stakeholders as needed".²⁰²

A2.69

This shows an approach that is following many of the regulatory principles, including a balance between **clear strategic direction** and retaining **regulatory flexibility** as to how specifically future competition will be assessed.

A2.70

International experience of spectrum auction focused too heavily on raising revenue show the importance of focussing on achieving the core **positive outcomes**, typically a healthy level of competition and investment in roll-out of mobile networks.

198 Spectrum auctions in Europe: The good, the bad, and the ugly, Geoffrey Myers.

199 This is discussed in the CMA's final report on the Proposed merger between Three UK and Vodafone; https://assets.publishing.service.gov.uk/media/60a55ec58fa8f520c5e44021/Virgin_O2_-_Final_Report_20.5.21.pdf

200 Statement on Merger of Vodafone UK and Three UK to create one of Europe's leading 5G networks, 2023.

201 Vodafone investor report, Merger of Vodafone UK & Three UK to create one of Europe's leading 5g networks, 2023; <https://www.vodafone.co.uk/newscentre/press-release/merger-of-vf-uk-three-uk-to-create-one-of-europes-leading-5g-networks/>

202 Ofcom sets out initial views on the future of mobile markets and spectrum, 2022; <https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/ofcom-sets-out-initial-views-on-the-future-of-mobile-markets-and-spectrum/#:~:text=We%20anticipate%20that%20existing%20mobile,of%20strategies%20to%20do%20so>

