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The silver lining: cloud computing and small and medium enterprises

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This paper summarises the issues raised at a roundtable workshop on 'SMEs, innovation, and the Cloud' held in Canberra in November 2013. Angela Henderson coordinated the workshop; Jessica Avalon and Shan Verne took notes. Grattan Institute thanks participants for their generosity on the day and for helpful comments on a draft of this paper.

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Overview

Innovation – the successful application of new ideas – drives Australia's productivity. Australia's biggest innovation opportunity lies in creatively exploiting global innovations. One of the biggest of these is information and communications technology.

Small and medium enterprises (SMEs) are an engine of the Australian economy. They employ two-thirds of Australian private sector workers and contribute half of Australia's private sector GDP. Yet many SMEs have low productivity. Innovations may spread slowly to many smaller firms because they lack the capital or market intelligence that large firms can access.

Online innovations – including mobile devices, e-commerce, and cloud computing – offer opportunities for firms of all sizes to become far more productive.

This paper explores issues raised at a workshop run by Grattan Institute and Google on how policymakers and business can accelerate the spread of cloud computing among SMEs. It uses cloud computing – the delivery of on-demand information technology services over the Internet – as a case study for how online technologies can benefit smaller firms.

Cloud computing can help level the playing field for smaller firms. It allows them to access sophisticated IT services that were previously out of reach. For example, it can allow them to manage and monitor their sales, operations and finances in real time.

The cloud also offers capabilities that were previously unavailable to firms of any scale. For example, it allows multiple users to access applications or update documents at the same time from mobile devices. Cloud computing makes it easier for small firms to take new ideas to market. Firms that use cloud computing report more growth in revenue and profit than others do.

But many Australian SMEs say they do not use cloud services. Many are not aware of the benefits or believe they do not have skills to capture them. Some are concerned about transition costs, data security and privacy. Networks are too slow or unreliable for cloud services in some areas of the country.

Workshop participants agreed that government and industry can remove obstacles to the use of cloud computing and help SMEs capture its benefits. The industry itself should lead the education of SMEs on the case for cloud computing. Yet government can:

- Choose policy settings that promote broader productivity growth and innovation;
- Ensure interaction with government over the internet is the default for all businesses;
- Provide an appropriate policy environment for investment in broadband networks that meet the needs of small business.

Information technology's contribution to productivity is just getting started. Small and medium enterprises should get on board.

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Participants in the workshop

The workshop was held on November 13 2013 and brought together participants the private sector, the research community and from and from the Commonwealth Government. The discussion took place under the Chatham House Rule.

Participants from the private sector included people with expertise in SMEs and in online technologies from:

- ACCI
- Australia Post
- HUB Australia
- EY
- Google
- NAB
- PwC
- Seek
- Telstra

Participants from the research community included people with expertise in innovation and telecommunications from:

- The Coombs Policy Forum, Australian National University
- CSIRO
- Grattan Institute
- NICTA
- The Productivity Commission

Participants from the Commonwealth Government including people with responsibilities for industry, innovation and communications policy from:

- The Department of Industry (AusIndustry, Commercialisation Australia)
- The Department of Communications
- The Department of Finance (AGIMO)
- The Department of Prime Minister and Cabinet
- DesignGov
- The Treasury

1. Productivity growth, SMEs and the adoption of innovations

1.1 Why is productivity growth critical for Australia?

Productivity growth lifts incomes and living standards. While Australian productivity growth has been relatively low since the early 2000s, Australia's national income has continued to grow because the terms of trade (the ratio of export to import prices) rose strongly.[1] But because the terms of trade are unlikely to provide another such boost to income in the coming years, productivity growth will be essential to maintain and improve living standards.[2]

Workshop observations: productivity growth

"Productivity growth is not a perfect measure of what drives wellbeing: measures of output may not fully capture improvements in product diversity and quality. For example, the internet appears to have generated 'consumer surplus' that is not picked up in output values."

"Simply adding more capital will not necessarily drive productivity. You will not get productivity growth if you over-invest."

Source: Workshop discussion.

1.2 How does innovation contribute to productivity growth?

An innovation is "a new idea, successfully applied": a new or significantly improved product, operational process or marketing method.[3] Innovation contributes significantly to Australian productivity growth.

Innovation largely contributes to Australian productivity growth through the local adoption and adaptation of ideas and technologies developed outside Australia, not through the commercialisation of locally invented 'new to world' technologies. Australia, as a small economy, generates a small fraction of global innovations.[4]

Economies become more productive when they adopt ideas and technologies developed elsewhere.[5] Countries that put barriers in the way of technology adoption can be much less productive than others. As two leading analysts explain: "Cross-country differences in the timing of adoption of new technologies seem to account for at least a quarter of per capita income disparities".[6]

[1] D'Arcy (2012).
[2] Harris (2013).
[3] Dodgson and Gann (2010).
[4] See Daley (2013); Cutler & Company (2008), p.20; Guellec and Van Pottelsberghe de la Potterie (2001).
[5] Parente and Prescott (1999a); Parente and Prescott (1999b).
[6] Comin and Hobijn (2010).

1.3 What are the main channels for the spread of innovation?

Good ideas and technologies spread faster in open economies than in closed ones. The free flow of ideas and trade, the migration of skilled people and the local operations of firms with international footprints all help local firms succeed, by providing new opportunities and new competitive pressures.

Industries innovate more and become more productive when faced with competitive pressure. Less productive firms either exit markets or catch up to more productive firms.[7] Firms also innovate more when they can learn from others, including multinationals,[8] suppliers and customers,[9] expert investors,[10] and broader networks and agglomerations of economic activity.[11]

Workshop observations: sources of growth

"Trade openness is a major driver of productivity growth. Trade permits firms to specialise and achieve scale economies, and trade competition knocks out low performers, increasing average productivity."

"Competitive intelligence is a vital part of innovation strategy – not just for individual firms"

Source: Workshop discussion.

[7] Lileeva and Trefler (2010); Breunig and Wong (2007).
[8] Bloom, *et al.* (2012).
[9] Tomlinson and Fai (2013), Mariotti, *et al.* (2013).
[10] Hummel, *et al.* (2013).
[11] van Hemert, *et al.* (2013); Rogers (2004).

1.4 What is the role of ICT in productivity growth?

The development and spread of information and communication technologies (ICT) has increased productivity across industries. ICT investment grew from the 1970s, but at first the benefits were slow to appear, as businesses had to make many changes to fully exploit the new technologies.[12] Eventually, large productivity growth benefits were realised. In Australia, 20 to 35 per cent of labour productivity growth in the 1990s has been attributed to firms that are not producers of ICT adopting ICT. [13]

There is vigorous debate about whether ICT still contributes to productivity growth. Some authors argue that the large productivity contribution of ICT in the late 1990s and early 2000s has been largely exhausted.[14] But reviews of the literature support the conclusion that the "ICT revolution is not over", and that ICT adoption has continued to drive productivity growth.[15]

Studies that focus on the Internet give a sense of the size of the ICT sector, though not estimates of its contribution to productivity growth. One estimated that the Internet contributes about 3.4 per cent of GDP in advanced economies.[16] An Australian study found

[12] Bessen (2002); Productivity Commission (2004), Box 6.1.
[13] Parham, *et al.* (2001) section 3.1; Gretton, *et al.* (2003).
[14] Gordon (2012); Cowen (2010).
[15] See Cardona, *et al.* (2013) and OECD (2013a) for overviews of studies on the impacts of ICT on productivity. Byrne, *et al.* (2013); Oliner, *et al.* (2007); Jorgenson and Vu (2007) also find a significant contribution of ICT investment to measures of productivity or output.
[16] Manyika and Roxburgh (2011).

that firms providing internet-related services contribute about 3.2 per cent of GDP and directly employ 190,000 people.[17]

Workshop observations: ICT and measured productivity growth

"Some value creation via ICT generates consumer surplus, but not market sector output and is not captured in productivity statistics."

Source: Workshop discussion.

1.5 What contribution do SMEs make to output, productivity growth, and innovation?

Small and medium enterprises play a vital role in the Australian economy. They employ the majority of workers and produce about half of private sector GDP. Firms with fewer than 200 employees employ 70 per cent of Australian private sector workers and produce 57 per cent of Australian private sector output. Of these, small firms with fewer than 20 employees contribute 47 per cent of private sector employment and 35 per cent of private sector output.[18]

Of about 2.1 million firms in Australia, only about 6,000 had more than 200 employees in 2011. Of the rest, just 80,000 firms had more than 20 employees. More than 700,000 firms employed between 1 and 19 employees; and around 1.3 million had no employees at all.

The productivity of SMEs is important to the level of productivity in the economy. SMEs have lower labour productivity than larger firms on average, due in part to their lower capital per worker.[19] Productivity varies widely across SMEs.[20]

Small firms innovate less than large firms. Just a third of micro firms with four employees or fewer report being 'innovation active', while 51 per cent of small firms of five to 9 employees, 64 per cent of medium-sized firms of 20 to 199 employees and 69 per cent of large firms of more than 200 employees are classed as innovation-active.[21]

Workshop observations: contributions of SMEs

"Many small firms are lifestyle firms. We should not confuse them with the few small firms that have growth ambitions."

"Small firms may not be productivity leaders, but they do matter to overall productivity."

Source: Workshop discussion.

[17] Deloitte (2011).
[18] Connolly, *et al.* (2012) provides an overview of Australian small business. Shares stated are for private sector, non-financial employment and GDP.
[19] Rogers (1998); OECD (2012) Chapter 4.
[20] Rogers (1998).
[21] ABS (2013).

2. Cloud computing and SMEs: opportunities and impact

2.1 What is 'the cloud'?

The terms cloud computing and the cloud are used to describe ICT services that can be accessed over a network from a remote location on demand. A consumer or business may access services such as email, file backups, or accounting software through a PC or tablet. Most Internet users are users of the cloud.

Cloud computing is a natural outcome of three related developments in ICT: robust connections, powerful devices, and large-scale cloud infrastructure.

- *Robust connections:* bandwidth that is reliably available, can carry large amounts of data in a given time and has low latency – in other words, it permits rapid response to a request. In recent years both fixed and mobile networks in inner cities and some other locations have become fast and reliable enough to permit many business-critical applications to run via the cloud rather than on-site.
- *Powerful devices:* PCs, tablets, and phones that are so powerful – in their display, central processing unit, memory and networking -- that they allow users to access and interact with sophisticated services provided over the Internet.
- *Cloud infrastructure:* data centres with hardware and software that are powerful and flexible enough to support large-scale delivery of sophisticated services.

Together, these developments allow powerful ICT services to be made available across the network as the customer needs them. As one cloud seller puts it, "Cloud computing … offers users economies of scale and efficiency that exceed those of a mainframe, coupled with modularity and agility beyond what client/server technology offered".[22]

Large-scale cloud services providers have a range of cost advantages, such as being able to balance loads across many users and maintain systems centrally.

Customers can access and pay for resources such as storage, processing, memory and software as they need to through 'client' software and hardware, such as a web browser running on a PC, or an 'app' running on a mobile phone.[23]

There are many popular cloud services, including office productivity (such as Office 365 and Google Drive); customer relationship management (Salesforce); file sharing (Dropbox); and data storage (Amazon Glacier). Other services that are now offered in the cloud include enterprise resource planning (ERP), analytics, business continuity, and security. Even widely used web services such as web search, social media and email can be seen as forms of cloud computing.

While most customers use only the final software services sold by cloud computing providers, the underlying "platforms" and

[22] Microsoft (2010).
[23] Mell and Grance (2011).

"infrastructure" that are used to develop and provide cloud software for end users are also commercially available as cloud services.[24]

The term *platform* describes the tools used to develop and provide cloud services. Examples of platforms include databases, code libraries, development and test environments, and server configuration tools. Providers include IBM, Windows Azure, Amazon Elastic Compute, and Google Cloud Platform and others.

The term *infrastructure* describes the underlying technologies on which software and platforms run. Examples of infrastructure include virtual machines (meaning computing power rather than a specific item of hardware), web servers, and support for functionality such as load balancing, bandwidth management, backup and redundancy, data security, encryption, identity management and the provision of IP numbers. Providers include IBM, Windows Azure, Google Cloud Platform, Amazon Elastic Compute and others.

Workshop observations: defining the Cloud

"Cloud is delivery of IT services via the internet, on demand."

"Scalability is the key characteristic."

"The Cloud' is a jargon term – if you use Webmail, twitter, ecommerce, you are a Cloud user."

Source: Workshop discussion.

[24] Some analysts see these terms as becoming less descriptive as services increasingly overlap (eg, KPMG (2013a); Armbrust, *et al.* (2009)).

2.2 Why is the cloud attractive?

Cloud computing is a general-purpose technology that can be used for many different purposes by firms across all sectors.[25] Cloud computing provides a range of advantages over running software and hardware on site. In other words:[26]

- The cloud is more flexible than traditional IT. Firms can buy what they need, when they need it.
- The cloud can be cheaper than traditional IT. The ability of providers to make services available with relatively low set-up costs brings many services within reach of small and medium firms for the first time. For SMEs, in particular, the cloud can alleviate capital constraints and the lack of technical expertise.[27]
- The cloud adds capabilities beyond what is possible with traditional IT. These include access from mobile devices, and multi-user creation and editing. The cloud also makes it easier for a firm to standardise and update processes across multiple locations and business units.
- The cloud offers a different and often lower risk profile than traditional IT. For example, large cloud providers operate robust and redundant systems with multiple levels of data protection and backup. However, access to cloud systems may be more exposed to network outages than traditional IT.

As with any IT service, each specific cloud service needs to be evaluated, and its adoption planned in the context of what is important to each firm.[28]

Across the Australian economy, cost savings from widespread cloud adoption could add between $2 and $3 billion to GDP, or between 0.15 and 0.2 of a percentage point of GDP.[29]

Other advantages of the cloud, such as flexibility, multi-site access and the end of redundant systems, are more difficult to quantify in dollars, but are likely to be larger than the cost savings alone. The few studies that quantify the value of increased flexibility and new business creation deriving from the cloud estimate benefits of more than 1 per cent of GDP in the European Union.[30]

[25] Etro (2011); see OECD (2013a) for a discussion of studies on ICT as a general purpose technology.
[26] Australian Computer Society (2013b) offers a related set of advantages.
[27] Michael (2013).
[28] KPMG (2013b); Dean and Saleh (2009).
[29] Based on 75% cloud adoption for relevant IT services, with operating expense reduction of 25 per cent and capital expenditure reduction of 50 per cent (KPMG (2012)).
[30] Centre for Economics and Business Research Ltd (2010); Etro (2009), Etro (2011).

2.3 How will the cloud change industries?

As with earlier waves of ICT, the benefits ultimately accrue to end consumers as firms compete by cutting prices or providing new and better services. It will take time for firms to adjust their business practices to fully exploit cloud technologies.[31] There will be widespread impacts across sectors, including the ICT sector itself, sectors that are already intensive ICT users, and those that are not.

The ICT sector is rapidly changing as the cloud becomes a core part of the industry. Industry analysts estimate that the Australian cloud services market is growing by about 25 per cent a year, while the broader IT services market is growing only at about 3 per cent. By 2017, the cloud services market is expected to have grown to around $3 billion, or 15 per cent of the IT services market in Australia.[32]

Sectors that already use ICT intensively include retail banking, capital markets, energy and utilities, manufacturing, transport and logistics, and business, professional and property services.[33] For firms in those sectors, much of the cloud's initial value may be through reductions in IT complexity and cost. Over time, the flexibility and innovation made possible by the cloud may become more important.

Sectors that have not traditionally been heavy ICT users may also find the cloud attractive. These include retail and hospitality, construction and trades, and agriculture, forestry and fishing. For some firms, cost reductions will bring ICT within reach. For other firms, such as those with highly mobile workforces, that have not found much value in traditional IT, the new functionality made possible by the cloud is likely to be its main attraction.

2.4 How is the cloud likely to affect SMEs?

Small and medium enterprises can benefit from the cloud. As one recent study puts it, "The cloud gives companies of any size access to capabilities and services that previously were available to only the largest enterprises—at a fraction of their historical cost".[34] Some SMEs will be able to serve new markets, offer more sophisticated services, and collaborate with suppliers and customers in new ways.

Cloud reduces the costs of experimentation. Tech start-ups --firms that build new IT products and services -- are taking advantage of the cloud. By hosting their services in the cloud, their IT costs can remain low, scaling up only as demand grows.

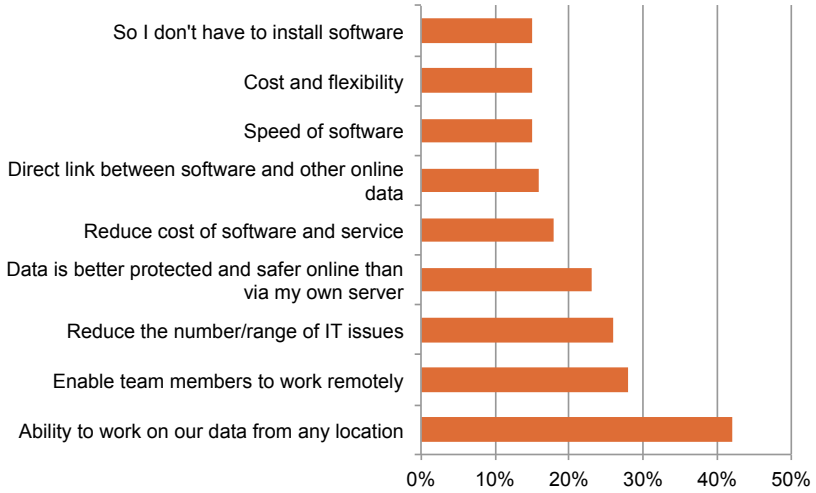
Using the cloud may make it easier for SMEs to grow and innovate. SMEs that use the cloud (or ICT more broadly) grow faster, innovate more and export more, on average. The cloud also makes it possible for innovators to mix and match technologies to generate new services. As a recent special report in *The Economist* puts it, "new firms combine and recombine open source software, cloud computing and social networks to come up with new services." The report describes cloud computing as

[31] Bessen (2002).
[32] IDC (2013b), IDC (2013a).
[33] KPMG (2012); IDC (2011); ABS (2006).
[34] Michael (2013).

perhaps the biggest change underlying the current explosion of experimentation and innovation by tech startups.[35]

Figure 1 summarises the main reasons given by Australian SMEs for using the cloud.

Figure 1: Reasons cited by SMEs for using the Cloud
Per cent citing reason



Note: Wording simplified from original.
Source: MYOB (2012)

Large firms are not standing still: many of them are sophisticated users of traditional IT and are early movers in exploiting the cloud. For some applications, the cloud may extend the advantages enjoyed by large firms in traditional IT. But over time, the cloud will erode some of those advantages, and may lead to a shift of economic activity away from larger firms and towards SMEs.

Workshop observations: SME benefits of the cloud

"Cloud permits SMEs to focus on their core business. It's not a 'solution' to a specific problem".

"Cloud permits SMEs to 'get smaller in order to get bigger'".

"Cloud changes the proposition for innovation, reducing the costs of experimentation."

'Cloud reduces the costs and risks of starting up a business."

"Cloud will force some changes in how SMEs think about their businesses – creating big opportunities to open up"

"Do less and connect better"

"The web, co-working and new forms of outsourcing are creating opportunities for people who would like to work but are on the fringes of the formal labour market."

"Ultimately, we have to design organisations from the data up to take full advantage of the new IT"

Source: Workshop discussion.

[35] The Economist (2014).

2.5 Is Australia's cloud opportunity different? Is Australia leading or lagging?

Australia's cloud opportunity is likely to be shared by other developed economies. While Australia's industry mix is different, with a lower manufacturing and higher resources share of GDP than most), our services share is similar to our peers. Australia appears to be well positioned for cloud adoption on some dimensions but not on others.

Australia's stable and open economy, reliable utility services, a skilled workforce with provision for skilled immigration, and independent courts and robust regulatory institutions tend to make Australia attractive for hosting cloud infrastructure.[36] They will also tend to make cloud services more attractive to customers.

However, the quality and price of Australia's international and domestic network connections has been judged as lagging in some international comparisons:

- Australia has been rated behind all Asian developed countries on cloud readiness in Asia, with low scores on international internet connectivity;[37]
- Australia lags behind its OECD peers on domestic broadband speed and prices.[38]
- Australia has dropped to 18th, from 9th in 2004, in the 2013 WEF-Insead technology readiness rankings.[39]

Workshop observations: Australia's opportunity

"The organic evolution towards the cloud is going to happen. The question is really: which 'propositions' will accelerate the evolution?"

Source: Workshop discussion.

[36] McKinnar and Kathage (2014).
[37] Asia Cloud Computing Association (2012).
[38] OECD (2013b), pp165-66.
[39] Bilbao-Osorio, *et al.* (2013).

3. Barriers to adoption by SMEs

3.1 What are the barriers to adoption by SMEs?

Fifty-nine per cent of SMEs have low or very low digital engagement.[40] While Australian ITC adoption is higher than among many OECD peers,[41] adoption is lower amongst SMEs than among large firms.[42]

SMEs cite five main constraints to adoption of low-cost, flexible computing solutions: knowledge and awareness; setup and transition costs; concern about lock-in and data extraction; privacy and security; and network quality.[43]

Knowledge and awareness: many managers do not know what the term cloud computing means, and are not aware that it may offer business advantages.[44] One 2011 survey found that 59 per cent of SMEs were unaware of or unsure of cloud computing.[45]

Setup and transition costs: Many managers report a lack of relevant ICT skills.[46] Others are not sure how to manage the transition to the cloud.

Concerns about lock-in and data extraction: firms may be unsure how they will protect sensitive data, including customer and financial data, and critical business processes from being dependent on a single provider.

Privacy and data security: Cloud computing is sometimes perceived as being more subject to privacy and security breaches than other types of computing.[47]

Network quality: slow or unreliable network connections can offset any advantages of cloud services.[48]

Knowledge, awareness and skills appear to be the major barriers. As awareness increases, comfort with cloud computing appears to increase. For example, 23 per cent of SMEs who say they use cloud services report that they do so in part because they "data is better protected and safer online via one or more servers rather than via my own server".[49]

[40] Deloitte Access Economics (2013).
[41] OECD (2013b).
[42] ABS (2013).
[43] IDC (2011) Chapter 4; MYOB (2012).
[44] MYOB (2012); Optus (2011).
[45] Optus (2011).
[46] Kimber and Mason (2013) summarises findings from a range of studies.
[47] OAIC (2013). Australian Computer Society (2013b) cites ACMA survey results showing 52 per cent of respondents lack confidence in privacy settings for online services.
[48] Government of Australia (2012); Steen, *et al.* (2014) shows that network quality is an important factor considered by firms in one specific location decision. IDC (2011) found SMEs in Europe are more likely than large firms to cite network connectivity as constraint on the use of cloud services.
[49] MYOB (2012).

Workshop observations: barriers to adoption

"A lot of SMEs don't know what the opportunity is."

"Don't underestimate awareness as a barrier. It was only when we personally showed builders our mobile-banking capabilities that they said 'Where can we get it'? The bank has offered it – and marketed it – for years"

"Business owners' eyes glaze over when we discuss the cloud. But innovation resonates – people innovate, not technologies."

"SMEs will say 'I spend time running my business – I don't have time to also become an IT expert'."

"Many SMEs need to see 'someone like themselves' adopt a service before they will try it."

"It can take 3-5 years from getting on the web to really innovating your business to take advantage of what the cloud can offer".

"Bandwidth is a constraint even in the cities. Businesses need different services than consumers do: higher reliability, more symmetric bandwidth. For example, bandwidth in suburban business areas is 'maxing out' during peak times when SMEs are wanting point of sale, HR, inventory management and other services over the cloud".

"We have to be careful in selling SMEs a proposition that won't work until the network can support it".

Source: Workshop discussion.

3.2 Is there a case for trying to speed up adoption?

The discussion above shows that accelerated adoption of cloud computing may be valuable. The cloud offers a number of advantages over traditional IT, but Australian SMEs see a range of constraints and barriers to adopting cloud computing and have been slower to adopt technologies than have larger firms. Yet as noted earlier, economies that are quick to adopt technologies have higher incomes.[50]

Regardless of what policymakers do, the private sector will play a major role. Cloud IT service providers and brokers are already working to understand and overcome the barriers customers face in adopting the cloud. They are particularly active in raising awareness of the benefits of the cloud. For example, they have learnt that many SMEs need to see firms like them adopting a technology before they feel comfortable, and are adjusting their marketing in response.[51]

Should policymakers also seek to address barriers to adoption? Where current government policy settings influence adoption and where they could be adjusted at low cost, there is a case for policy change.[52] Government can influence cloud adoption through a number of routes:

- Government's choice of its own interaction channels, such as the web or phones, may influence the channels Australians adopt to interact with each other;
- Government regulation of privacy, consumers rights, dispute resolution and other areas shapes the use of technology.
- Government plays a major role in infrastructure, both through regulation and by contracting for construction of network assets such as the NBN.

Workshop observations: speeding up adoption

"SMEs perceive a lot of risks – they will need intermediaries to help the assess the risks. The trusted intermediary role will become a business, navigating users to quality cloud 'solutions'".

"The question for private sector intermediaries is: why can't you provide what is needed? Only then can we define a role for government."

"Don't expect trust in the cloud to emerge completely without government involvement. What makes banks trustworthy? Government set-up and masses of regulation."

Source: Workshop discussion.

[50] Comin and Hobijn (2010); Parente and Prescott (1999a).
[51] Government of Australia (2012) p. 20-21 cites examples of cloud providers who are educating their customers.
[52] A case might also be made based on market failure. If a user finds cloud computing more valuable when many others also adopt it, then under-adoption may result. But a reliable guide to policy for such 'network effects' has proven elusive. Technologies (such as mobile phones) with network effects can still be adopted rapidly without much government support. See Shy (2001).

4. The path forward

What should government and industry do to speed the adoption of cloud computing by small and medium firms? The ideas canvassed in the workshop include the following.

- Work to improve awareness and skills;
- Choose policy settings that promote broader productivity growth and innovation;
- Ensure interaction with government over the internet is the default for all businesses;
- Review regulation for opportunities to support the use of cloud services;
- Provide an appropriate policy environment for investment in broadband networks that meet the needs of small business.

4.1 The broader policy context

Government's broad policy settings should seek to increase openness and competition to drive productivity growth and innovation. Government should not attempt to create national champions, favour local providers, or protect industries from competition.

Government should take this focus into the wide set of reviews it has established. Many of these reviews extend well beyond technology and small business, but a common theme is a reconsideration of the role of government in light of how the economy and technology have changed. Relevant reviews include the recently completed Strategic Review of the National Broadband Network; the National Commission of Audit; the Financial System Inquiry (the terms of reference of which explicitly include the impact of new technologies); the Review of Competition Policy; the broader deregulation agenda; and, in due course, the taxation and energy white papers.

Government should recognise that deregulation in itself may not provide significant support to the use of the cloud by SMEs. Workshop participants did not identify any major regulatory barriers to SMEs' use of cloud computing.

4.2 Awareness and skills

Improving SMEs' awareness of the cloud opportunity and improving their skills can help speed adoption. The 'cloud industry' is better positioned than government to make the business case to SMEs, improve awareness of the opportunity and to help SMEs acquire the relevant skills.

Government should allow the private sector, including providers, industry associations, consumer advocacy bodies and brokers, to lead in engaging with SMEs on the value of the cloud. The commitment of the previous government to work with intermediaries may be a low-cost way of monitoring the development of the cloud industry and promoting informed

decision-making by cloud users.[53] Other government initiatives, such as digitalbusiness.gov.au, that help SMEs to understand and exploit the cloud may also be valuable.

4.3 E-government and government use of cloud

The government, in the process of implementing its ICT policy,[54] should seek to preserve and extend the previous government's focus on the cloud -- through the National Cloud Computing Strategy and the Australian Government Cloud Computing Policy, for example.[55]

Government policy statements recognise the importance of ICT and the cloud to business productivity. They include a commitment to make the Internet "the default way to interact with users." In implementing this commitment, it should seek to attain the high quality interfaces, ease of use, and reliability achieved by the best cloud providers.

Government should ensure that its IT procurement does not disadvantage cloud provision. Current guidelines[56] recommend consideration of the cloud but some in the industry see them a restrictive. While cloud procurement in itself will not be a major driver of uptake by Australian SMEs, it may help to demonstrate to SMEs the types of functions that can be moved to the cloud.

4.4 Regulation

Government should not seek to develop cloud-specific regulations. Cloud computing is subject to broader commercial and other laws and regulations, including those relating to privacy and data security and provider liability. Sector-specific regulation does not appear warranted.[57] There appears to be only lukewarm support for a cloud-specific 'protocol' that would set out the terms of service.[58]

Government should take the lead in publicising how legal frameworks apply to cloud services, as already set out in the previous government's cloud computing strategy.[59] In many cases, while legal rights and obligations may be defined appropriately, potential cloud customers may not be aware of them.[60]

The government should consider the findings in its recent stocktake of regulation relevant to the cloud, and assess the case for related policy development, including deregulation where appropriate. Issues include privacy, data security, and contractual rights over data stored in the cloud in Australia and overseas.[61]

[53] Government of Australia (2013).
[54] Liberal-National Coalition (2013).
[55] Government of Australia (2013); Australian Government Information Management Office (2013).
[56] Australian Government Information Management Office (2013)
[57] Australian Computer Society (2013a).
[58] Ibid.. Australian Industry Group (2013) and others argued that the case for the adoption of an industry-wide 'Cloud Protocol' was not strong at present.
[59] Government of Australia (2013).
[60] Australian Communications and Media Authority (2013).
[61] Government of Australia (2014).

4.5 Network performance.

Government should ensure that policy for Australian fixed and mobile broadband network supports the use of cloud applications by SMEs. Businesses need highly reliable, high bandwidth, low-latency uploads and downloads, and sufficient international backbone bandwidth. Bottlenecks in the suburbs and regional and remote areas should be addressed. These issues are well-recognised,[62] but specific solutions must be developed and needs of business should be recognised.

Workshop observations: Policy Issues

"Regulation is not a major constraint on very small firms."

"Many SMEs are more burdened by *change* in regulations than regulations *per se*. They have to spend a lot of time to confirm whether or not they are compliant."

"We found the Government's IT procurement processes prohibitive, for a service that is close to our core offering in the private sector. And we are not an SME by any means."

"Not every good idea is actually taken up by business. For example, Standard Business Reporting was a huge project and has had very low take-up."

Source: Workshop discussion.

[62] Government of Australia (2012); Government of Australia (2013); Liberal-National Coalition (2013).

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