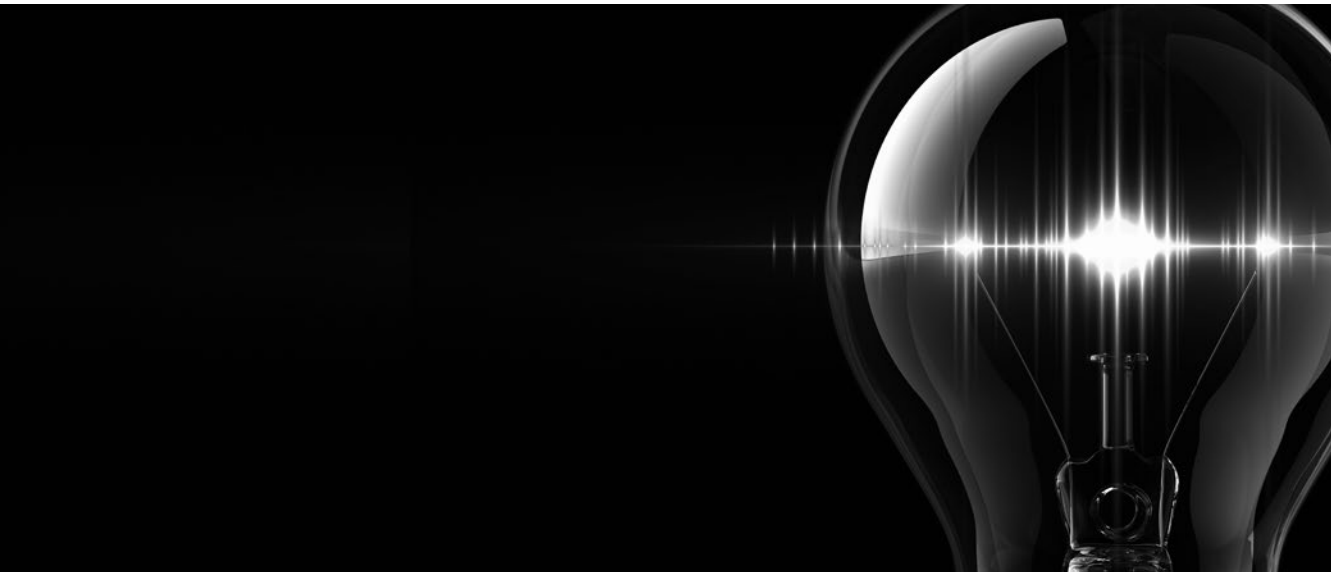
Australian Government

IP Australia

Australian Intellectual Property Report 2016



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Welcome to the Australian Intellectual Property Report 2016

As Assistant Minister for Innovation, I am pleased to introduce this report that explores intellectual property (IP) trends in Australia.

With the nation's economy transitioning, we are in an unprecedented position to seize exciting opportunities; and to become a regional – even a world – innovation leader.

The figures in this report indicate innovation and entrepreneurship in Australia are increasing; we are seeing across the board growth in protecting ideas through IP rights.

In 2015, patent applications grew by 10 per cent, trade marks by 14 per cent (the best growth in a decade), design applications were the highest for any single year on record and applications for plant breeder's rights hit a five-year peak.

As we strengthen our focus on innovation, we have the opportunity to successfully commercialise our great ideas in science and technology, and to build a stronger foundation for our future.

We have already begun this journey with initiatives such as the Intellectual Property Government Open Data (IPGOD), the IP Toolkit for collaboration, Source IP and the Patent Analytics Hub – all of which help research and business collaborate.

I am heartened by the positive growth that supports the government's commitment to innovation and IP Australia's vision of delivering a world leading IP system.

The Hon. Wyatt Roy MP
Assistant Minister for Innovation

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INTRODUCTION

This has been a year of growth for Intellectual Property (IP) rights in Australia. Trade mark applications rose sharply in 2015, recording a 14 per cent growth year-on-year, while patents are up 10 per cent, designs six per cent, and plant breeder's rights (PBRs) five per cent. Australian demand for patents returned to trend after the drop in 2014 driven by the *IP Laws Amendment (Raising the Bar) Act 2012* amendments, while trade marks and designs recorded their highest number of applications on record.[1]

The Australian policy debate also focussed on the role of IP in supporting innovation and promoting economic growth. The Australian Government emphasised this in asking the Productivity Commission to review all parts of the Australian IP system,[2]

> "to ensure that the intellectual property system provides appropriate incentives for innovation, investment and the production of creative works while ensuring it does not unreasonably impede further innovation, competition, investment and access to goods and services."

IP Australia supports the goals of the inquiry and acknowledges the potential value of broad principles to help guide the future strategic direction of IP arrangements in Australia. This is particularly important in a time of expanding global demand for IP rights, with both the World Intellectual Property Organization (WIPO) and IP Australia recording high growth in demand for IP rights in 2015.

IP Australia is responsible for identifying key trends and changes in the international and domestic innovation landscape, and providing advice to the Australian Government on the development of IP policy. IP Australia administers the legislation in relation to patents, trade marks, designs and plant breeder's rights, contributes to international negotiations and cooperation to support the global IP system, and promotes awareness of IP. Copyright is administered separately by the Department of Communications and the Arts, and is therefore not discussed in this report.

This is the fourth annual Australian IP Report and our aim is to promote awareness of IP rights and discuss the latest IP statistics. As part of the work to better enable evidence-based policy, we also released, concurrently with this report, the latest version of the IP Government Open Data (IPGOD).[3] Excitingly, a new live version of IPGOD (called IPGOLD) is now available through www.data.gov.au and provides weekly updates of our data.[4]

The data, graphs and statistics used in this report can be found online at: www.ipaustralia.gov.au/economics.

We welcome all comments, queries and suggestions. Please contact us by:

- Email: ipreport@ipaustralia.gov.au
- Twitter: @IPAustralia_OCE

Phone 1300 65 1010 (within Australia) or +61 2 6283 2999 (outside Australia).

PATENTS

A patent is an exclusive right granted for an invention, which can be broadly described as a new way of doing something, or which offers a new technical solution to a problem. For a patent to be successfully granted in Australia, the invention must be examined by IP Australia and found to:

- be novel - the idea or technology must not already exist elsewhere
- be patentable subject matter, as some things cannot be patented
- demonstrate an ‘inventive step’ so that the invention is not obvious or minor
- have a specific, substantial and credible use.

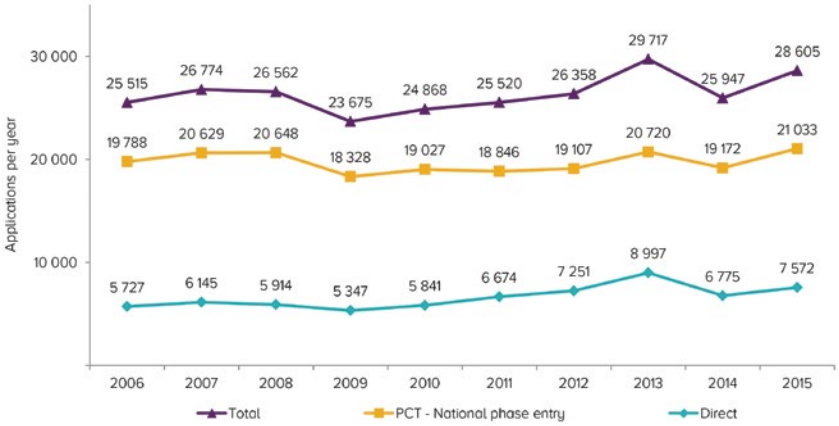
An Australian patent holder can exclude anyone else from using their patented invention in Australia. Patent protection means the invention cannot be commercially produced, used, distributed, imported or sold by others without the patent owner’s consent. There are three types of patents available in Australia: a standard patent, innovation patent and provisional patent.

Patent applications: IP Australia received 28 605 standard patent applications in 2015, an increase of 10 per cent from 2014. Usage of the Australian patent system over the past decade has trended upwards, reflecting the growing importance of IP rights in an advanced open economy. Breaks in this upward movement can be attributed to exogenous factors such as legislative changes and the Global Financial Crisis. Applications for patents returned to their normal growth trend after the sharp increase in 2013 caused by *Raising the Bar* which was followed by a subsequent dip in 2014.

Patent filings grow 10 per cent

Australia's steady rise in patent applications runs parallel with global trends. Australian patent applications have experienced an average annual growth rate of about three per cent over the past five years, similar to growth in patent applications worldwide as reported by WIPO.[5]

Figure 1: Standard patent applications, 2006-15



Applicant origin: The increase in patent applications is largely due to non-resident applications,[6] the majority of which are filed using the international patent system known as the Patent Cooperation Treaty (PCT). Nearly all patent applications filed at IP Australia using the PCT system (96 per cent) are filed by non-residents.

Standard patent filings by Australian residents increased by 16 per cent to 2 291 applications in 2015, and accounted for eight per cent of all patent filings.

The US, Japan, Germany and the UK filed 63 per cent of patents in Australia

Filings by non-residents increased by 10 per cent in 2015 and made up the majority of patent applications. Non-residents were responsible for 92 per cent of applications in 2015 with the United States (US) the biggest contributor, filing 13 781 applications. This represented an increase of 19 per cent, rebounding from a sharp drop in 2014.[7] Other top filers in 2015 were Japan (1 733), Germany (1 339) and the United Kingdom (UK) (1 155). Applications filed from Japan increased by three per cent, applications from the UK remained stable and applications from Germany decreased by eight per cent. Together, these

top four origins made up 63 per cent of all direct and PCT patent applications in Australia.

Patent grants: 23 098 patents were granted by IP Australia in 2015, an increase of 20 per cent from 2014. The split between patent grants to non-residents (93 per cent) and residents (seven per cent) in 2015 is consistent with previous years.

Patent grants increased 20 per cent in 2015

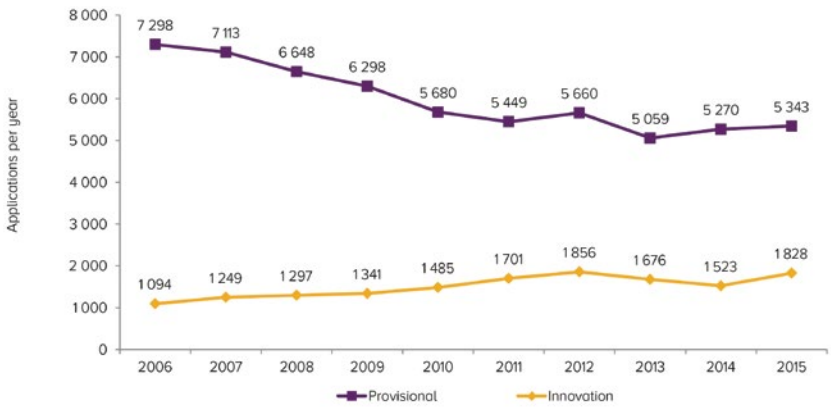
Table 1: Patents granted to residents and non-residents, 2011-15

	2011	2012	2013	2014	2015
Resident	1 262	1 311	1 110	1 199	1 614
Non-resident	16 611	16 413	16 002	18 105	21 484
Total	17 873	17 724	17 112	19 304	23 098

The provisional patent: A provisional application allows applicants to claim an early priority date before filing a standard or innovation patent. There has been a persistent decline in provisional applications over the past decade by an average of three per cent annually. In 2015, however, the number of filings for provisional applications increased one per cent to 5 343.

Provisional applications are primarily used by Australian residents, who filed 95 per cent of them in 2015. Over the past decade the split between resident and non-resident provisional applications has remained relatively constant.[8]

Figure 2: Other patent applications, 2006-15



The innovation patent: An innovation patent (also known as a utility model) has a lower application fee, lasts up to eight years and does not require examination unless the patent needs to be enforced.

For the first time in three years, there was an increase in the demand for innovation patents in 2015: 1 828 innovation patent applications were filed,

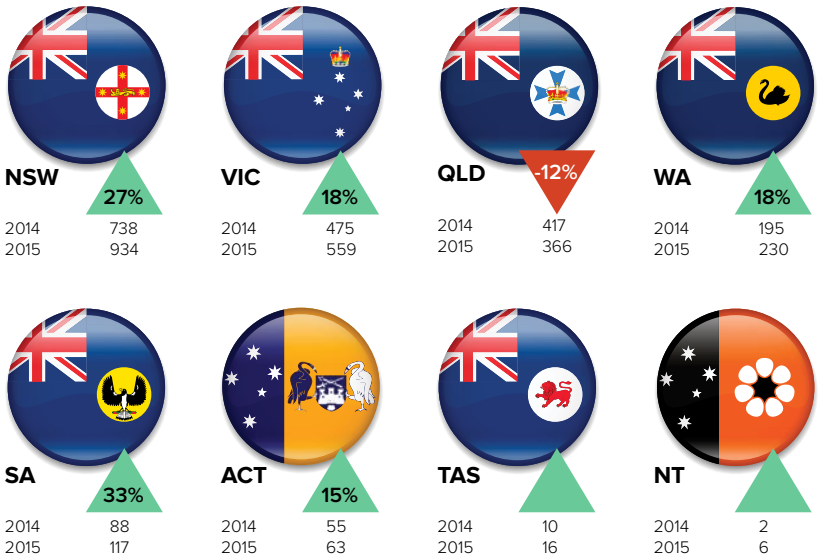
Innovation patent applications from China grow 73 per cent

a 20 per cent increase from the previous year. This growth was primarily driven by a 34 per cent increase in non-resident applications, while resident applications increased 8 per cent. Applications from China and the US increased 73 per cent and 58 per cent, respectively.

The majority of innovation patent applications are made by Australian residents who, in 2015, accounted for 61 per cent of filings. China remained the single largest source of non-resident applications (352), followed by the US (144) and Taiwan (57). These three countries accounted for 77 per cent of non-resident applications and 30 per cent of all innovation patent applications.

State level: Between 2014 and 2015 annual growth in patents filed by Australians increased 16 per cent. Double-digit growth was recorded in all states and territories, except for Queensland, which experienced a 12 per cent decline in patent applications.[9]

Figure 3: State level applications

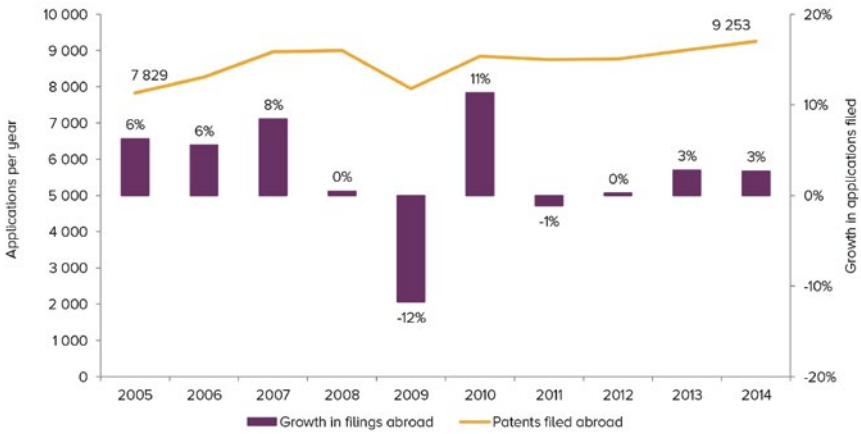


Australians filing overseas: IP rights are only enforceable within the jurisdiction in which they are granted, so applications are filed in multiple countries for a single invention. Combined with Australia's relatively small market, this means Australian residents file more patents overseas than they do domestically.

Australians file four times as many patents abroad

According to the latest WIPO data,[10] in 2014 Australians filed over four times as many applications abroad as they filed domestically, a total of 9 253 applications filed abroad.[11] This represents an increase in Australians filing abroad by three per cent from 2013.

Figure 4: International patent filings by Australians, 2005-14



Source: World Intellectual Property Organization, IP Statistics data center

Australian applications to New Zealand grow by 31 per cent

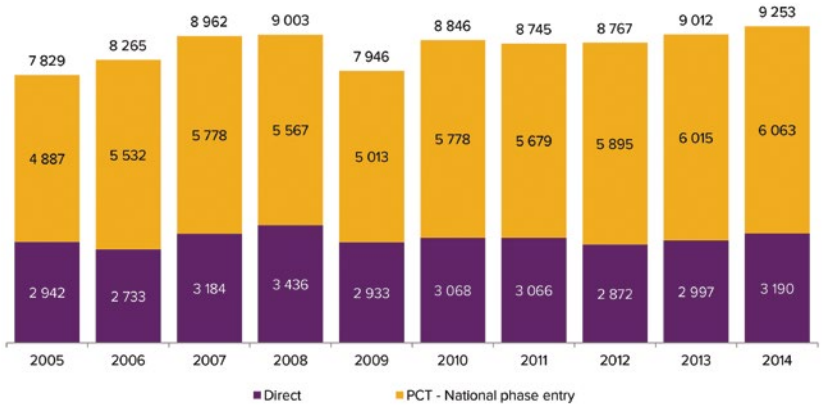
The major destinations for Australian applications were the US with 38 per cent, the European Patent Office (EPO) and New Zealand (NZ), each with nine per cent of applications. In 2014 these destinations received 55 per cent of Australian applications filed abroad and 68 per cent of all filings globally.[12] Historically there has been a close tie for the third-largest destination between China and New Zealand.[13] Of the top three destinations only New Zealand received more Australian applications in 2014 than in 2013, increasing 31 per cent.

Legislation change in New Zealand: The Intellectual Property Office of New Zealand (IPONZ) experienced a surge in patent applications (both from NZ residents and foreign filers) leading up to September 2014 when they implemented the *New Zealand Patents Act 2013*.[14] This Act commenced on 13 September, replacing the *Patents Act 1953* and marked the largest reform to New Zealand patent law in 60 years.[15] The Act made NZ patent law largely consistent with the Australian patent law under *Raising the Bar* and will facilitate the planned introduction of Trans-Tasman single application

and single examination processes between the two countries.[16] WIPO stated that the Act "strengthens the criteria for granting a patent to ensure that patents are only granted for genuine innovations".[17] This change in New Zealand's IP legislation, and the resulting spike in applications, mirrors closely the experience of Australia before the *Raising the Bar* implementation and explains the surge in patent applications made by Australians to the IPONZ in 2014.

Of the 9 253 applications filed abroad by Australians in 2014, 66 per cent were filed using the PCT system. The remaining 34 per cent were direct applications to destination offices. The split between PCT applications and direct applications is representative of previous years.[18]

Figure 5: Route of Australian patent applications filed abroad, 2005-14



Source: World Intellectual Property Organization, IP Statistics data center

Growth in direct applications outstripped growth in PCT applications, with increases of six per cent and one per cent respectively. This is despite recent changes by WIPO to the PCT administrative instructions and PCT Receiving Guidelines, implemented in 2013, aiming to simplify procedures for all applicants.[19]

TRADE MARKS

A trade mark identifies a unique product or service and is used to distinguish goods and services from those of competitors. It can be a symbol, letter, number, word, phrase, sound, smell, shape, logo, picture and/or an aspect of packaging. A registered trade mark gives the owner the exclusive right to use, authorise other people to use and to sell the trade mark; with a requirement to renew this right every 10 years. Registered trade marks are the only marks legally allowed to use the ® symbol, and it is an offence to use ® if the trade mark is not registered.

14 per cent increase in trade mark filings

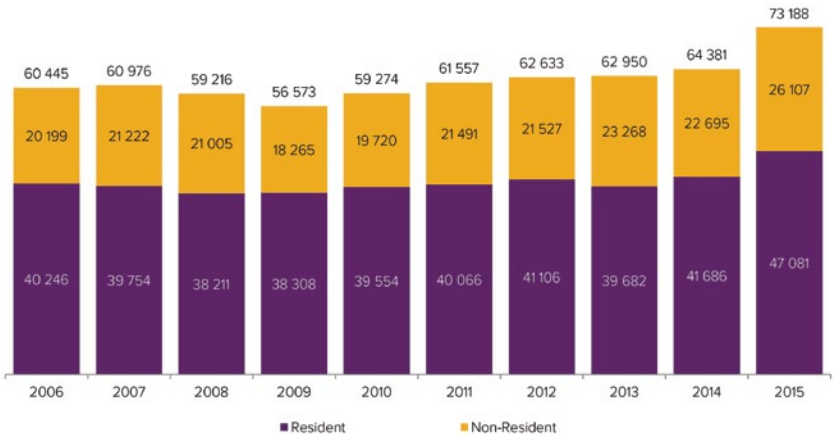
Trade mark applications: In 2015, IP Australia received a record number of trade mark applications (73 188). Filings increased by approximately 14 per cent in 2015, significantly higher than the 2010 to 2014 average annual growth rate of two per cent. This growth in applications was largely due to growth in direct applications, which made up 80 per cent of trade mark applications in Australia in 2015, as opposed to applications through WIPO's Madrid route. Of the 14 per cent growth, direct applications accounted for approximately nine percentage points of the total growth.[20]

Table 2: Growth in direct and Madrid trade mark applications, 2010-15

Type	2010	2011	2012	2013	2014	2015	Growth since 2010
Direct applications	5%	2%	3%	-3%	4%	11%	3%
Madrid applications	3%	16%	-3%	19%	-6%	26%	10%

Applicants can choose to lodge trade marks through WIPO's Madrid system, which allows trade marks to be sought in multiple jurisdictions through the one application. Madrid applications did increase by 26 per cent in 2015, and while they represent 20 per cent of the total volume, they have been growing at an average annual rate of 10 per cent since 2010, much faster than direct applications.[21] Nearly all Madrid applications received at IP Australia are filed by non-residents, with Australian residents only lodging three of the 14 451 Madrid applications received in 2015.

Figure 6: Trade mark applications, by origin, 2006-15



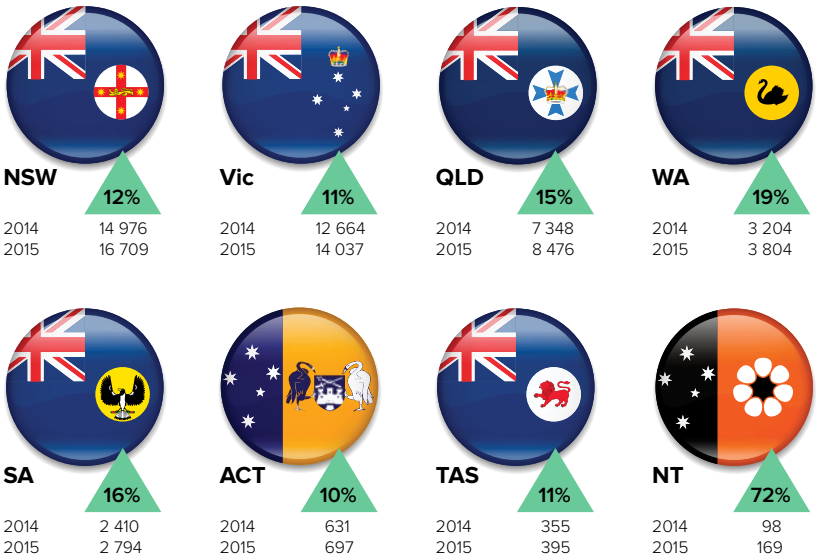
Growth in US filings drives growth in non-resident filings

Non-residents held a lower share of trade mark applications (36 per cent) in 2015 when compared to residents (64 per cent). Applications from non-residents recovered from a decrease of two per cent in 2014 and increased by 15 per cent to 26 107 applications. The increase in non-resident filings is largely driven by growth in applications from the US (17 per cent), which made up 33 per cent of all non-resident filings in 2015. The top 10 origins accounted for 78 per cent of non-resident filings in 2015. Of the top 10 filers, only Japan filed fewer applications than in 2014.

Resident applications increased by 13 per cent, the highest growth rate in 10 years. This growth was driven by an increase in filings from the top three states: New South Wales (35 per cent share of resident filings), Victoria (30 per cent share) and Queensland (18 per cent share). These three states all experienced double-digit growth in applications for the first time in over a decade. The number of applications in WA increased by 600 applications to 3 804, a growth of 19 per cent in 2015.[22]

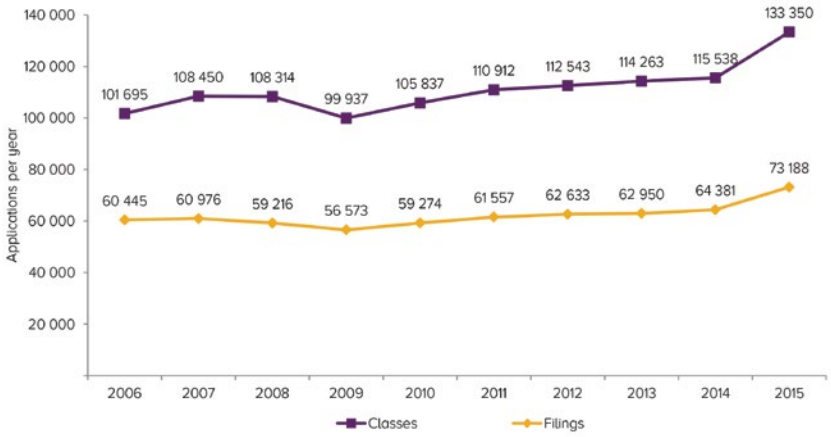
Double-digit growth in trade marks from all states

Figure 7: State level applications



Trade mark classes: The Nice Classification system[23] is an international classification of goods and services and categorises trade marks into 45 classes; different firms can protect the same trade mark in different classes. As a trade mark can be requested for more than one Nice class, there will always be more filings in trade mark classes than the number of trade marks filed.[24] In 2015, there were 133 350 classes filed compared to 73 188 trade mark applications, an average of 1.8 classes per application, consistent with the post-2007 average.

Figure 8: Trade mark applications, 2006-15



Record year for trade mark filings

Classes filed for trade marks increased by 15 per cent in 2015, compared to an average annual growth of five per cent over that last 5 years. The 45 Nice Classes are divided into services and goods classifications,[25] with service classes representing 43 per cent and goods classes representing 57 per cent of applications in 2015. Total applications in service classes grew by 18 per cent in 2015 with an average growth of six per cent since 2010. For goods classes, total applications increased by 15 per cent in 2015 at an average growth of four per cent since 2010.

The three classes that received the most applications in 2015 were: advertising and business functions (Class 35)[26] with 13 119 applications, apparatus and instruments (Class 9)[27] with 12 563 applications, and education and other services (Class 41)[28] with 10 848 applications. Advertising and business functions, and apparatus and instruments both increased by 18 per cent, while services in hospitality increased by 16 per cent in 2015.

Table 3: Growth in top three trade mark classes, 2010-2015

Classes	2010	2011	2012	2013	2014	2015	Growth since 2010
Advertising and business functions	8%	7%	-1%	0%	4%	18%	5%
Apparatus and instruments	6%	9%	4%	0%	2%	18%	7%
Education and other services	3%	6%	3%	0%	5%	16%	6%

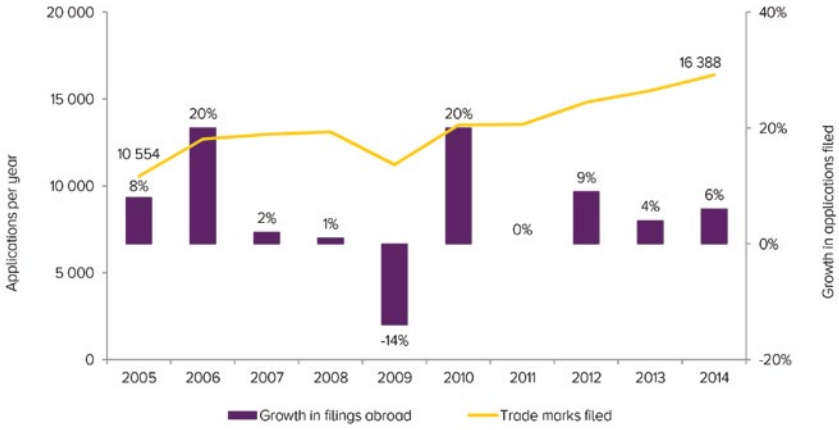
Class filings grow 15 per cent

Among the top 20 most frequently filed classes in Australia, the fastest growing was 'services for providing food and drink' (Class 43). In 2015 this was the 12th most filed class, and it experienced 15 per cent growth in 2015 compared to an average annual growth of 12 per cent since 2010. The second-fastest growth class was for 'meat, fish and poultry' (Class 29), currently the 14th most filed class with an average annual growth of 11 per cent since 2010. Tied for third place were the classes for 'medical services' (Class 44) and 'legal and security services' (Class 45), growing at an average of 10 per cent since 2010.

Six per cent growth in Australian filings abroad

Australians filing overseas: An estimated 5.19 million trade mark applications were filed worldwide in 2014, which is seven per cent more than in 2013.[29] According to the latest WIPO figures, Australians filed 16 388 trade mark applications abroad in 2014, a growth of six per cent. China remains the top destination for Australians filing trade mark applications abroad, after overtaking New Zealand in 2011.[30]

Figure 9: Australian trade mark applications filed abroad, 2005-2014



Source: World Intellectual Property Organization, IP Statistics data center

China top destination for trade marks, and India now sixth

WIPOs Madrid route for trade mark applications is popular with Australian applicants who in 2015 were responsible for 4.2 per cent of all Madrid applications, with Australian Madrid applications growing by 32.3 per cent from 2014.[31] Detailed country breakdowns are only available until 2014, and China received 17 per cent of Australian filings abroad in 2014, in line with the global trend of trade mark applicants seeking protection in China. WIPO reported that the trade mark office of China accounted for four-fifths of the annual increase in global trade mark filing activity in 2014.[32] The US and New Zealand received 15 per cent and 13 per cent of Australian applications filed abroad in 2014. Notable changes to the top 10 destinations for Australians are the UK dropping out of the top 10, and India entering as the 6th largest destination receiving 538 applications from Australian residents in 2014.

DESIGNS

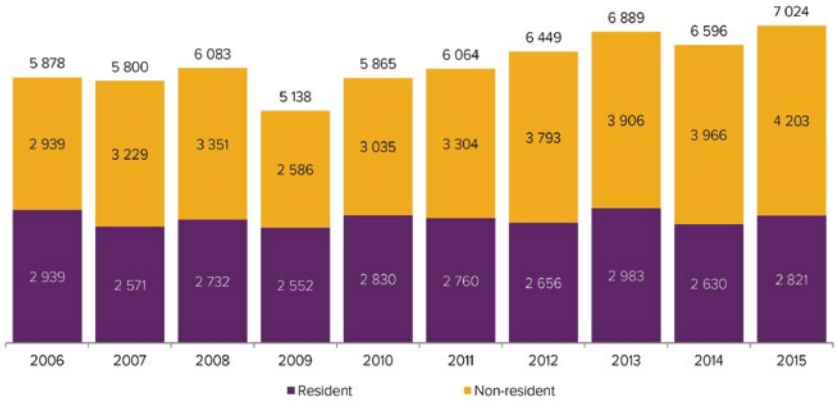
A design right protects the overall appearance of a product and allows the holder to exclude others from using the design in any commercial way in Australia for up to 10 years. The protection covers the shape, configuration or pattern that gives a product its unique visual appearance but excludes the feel of the product, what it's made from or how it works.

Only designs that are found to be both new and distinctive are protected in Australia. Examples of Australian registered designs include the Sand Wedge beach chair, Speedo's Fastskin suit, the shape of the Holden Monaro, and various fashion labels across Australia, such as Forever New Clothing, which had the highest number of design applications between 2011 and 2015.

Design right applications: IP Australia received the highest number of design filings on record in 2015, a total of 7 024 applications. Applications increased by six per cent, recovering from the five per cent decrease in 2014. Since 2010, applications for designs grew by an average of four per cent per year. Non-residents accounted for 60 per cent of design rights applications in 2015, which is similar to the 2014 ratio, and up from earlier years.

Record year for design applications

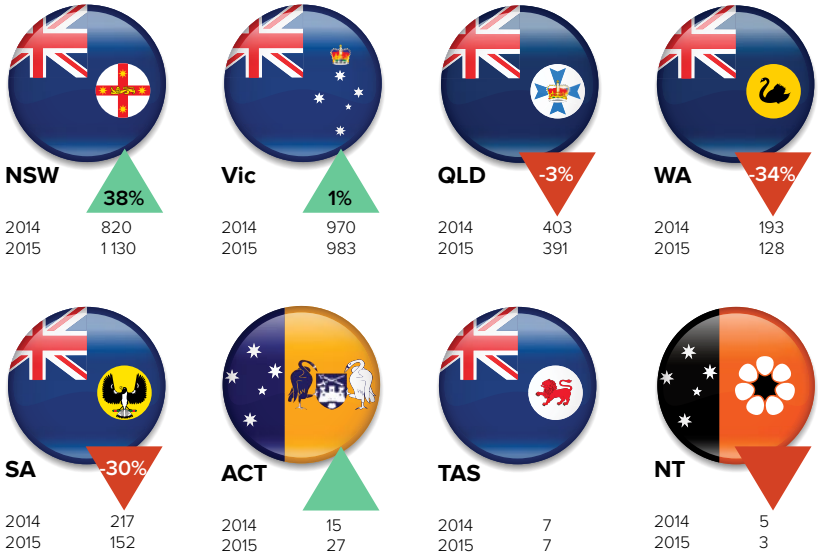
Figure 10: Design applications, by origin, 2006-15



Non-resident applications reached a new peak of 4 203 applications in 2015. Applications grew by six per cent in 2015, a slight drop from the average annual growth rate of seven per cent from 2010 to 2014. The growth of non-resident applications in 2015 was largely attributed to the filings from the top 10 countries. These filings make up 82 per cent of the non-resident design right applications and 49 per cent of all design right applications in Australia. The top filer, the US, filed 43 per cent of the non-resident applications and 26 per cent of all design right applications in Australia.

US responsible for 26 per cent of design filings in Australia

Figure 11: Design filings by State



Resident applications increased by seven per cent in 2015, higher than the average annual growth rate of four per cent since 2010. The increase in resident applications in 2015 was driven by 38 per cent growth in filings from NSW, the state with 40 per cent of resident filings. Victoria was responsible for 35 per cent of resident filings, growing one per cent. Queensland accounted for 14 per cent of resident filings, with negative growth in 2015. Western Australia, South Australia, Australian Capital Territory and Northern Territory have relatively low bases, especially in the case of the Northern Territory, meaning the large decline in percentage growth illustrated in Figure 11 does not have a significant effect on the overall growth of resident applications.

Design classes: Designs are classified according to the Locarno system, an international classification for industrial designs which has 32 main classes.[33] The top 10 Australian classes filed for in 2015 made up 65 per cent of all applications. The top class in 2015 was articles of clothing and haberdashery (class 2), receiving 721 applications and growing by eight per cent. The articles of clothing and haberdashery class has been the top class for design applications in Australia since 2013, when it grew by 46 per cent and overtook applications filed in the class for packages and containers for goods (class 9).

Medical and lab equipment is the fastest growing design class

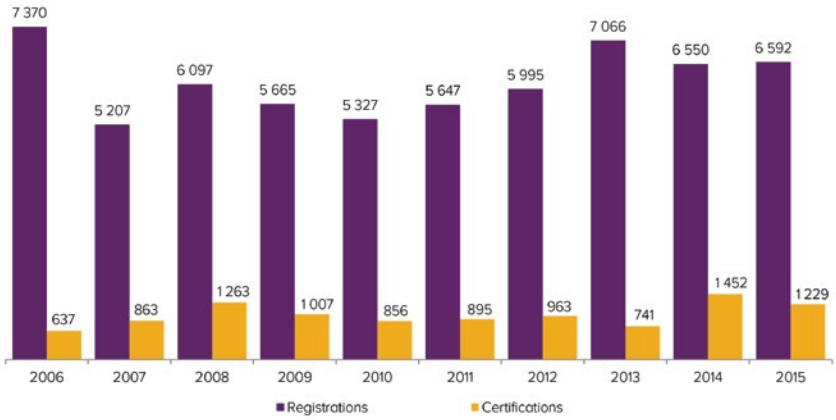
The fastest growing class of designs are medical and laboratory equipment (class 24), ranking eighth in the top 10 of classes filed. Applications for this class grew 12 per cent in 2015 with average annual growth of 17 per cent since 2010. The second-fastest growing class over the last five years is communication equipment (class 14), ranking sixth in the top 10 classes filed. This is despite an eight per cent annual decrease in applications in 2015.[34]

Table 4: Fastest growing design classes since 2010

Design Class	2014	2015	Change in 2015	Growth since 2010
Medical and laboratory equipment	317	356	12%	17%
Communication equipment	462	424	-8%	10%

Enforceable design rights: A design right is only enforceable if, after registration, the design is examined and certified by IP Australia. The owner of a certified design has exclusive rights to use, license and/or commercialise the design for 10 years. Applicants do not usually opt for voluntary examination of design rights; often being comfortable with the shielding effect of a registration until there is a need to enforce their design right. The data consistently shows a lower number of certifications relative to registrations of design rights. In 2015, IP Australia registered 6 592 applications and certified 1 229 designs.

Figure 12: Design registrations and certifications, 2006-15



PLANT BREEDER'S RIGHTS

Plant breeder's rights (PBRs) are used to protect new varieties of plants that are distinguishable, uniform and stable. Examples of PBRs in Australia include water-efficient wheat and bullseye lettuce.

As well as meeting a set of criteria to pass examination, PBRs must also:

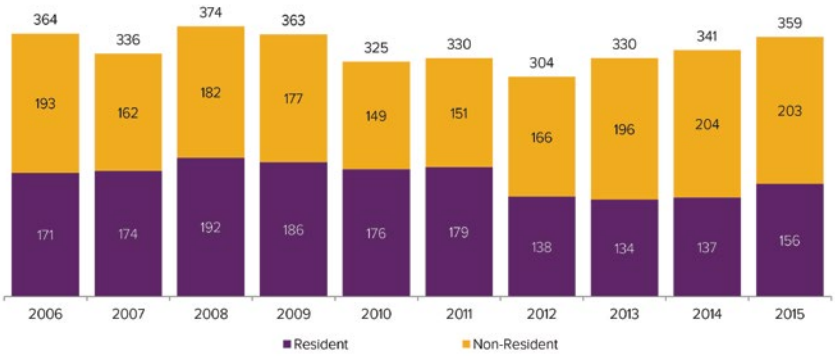
- be distinct from other varieties of the same plant
- be uniform and stable
- not have been exploited or sold outside certain time limits
- have an identified breeder and an acceptable name.

A PBR gives the owner exclusive rights to exclude others from commercially using or selling a variety. Consequently, it provides the opportunity for the right holder to collect royalties while directing the production, sale and distribution of varieties. Other plant breeders can freely use parts of a registered PBR to experiment with, use non-commercially or develop a new variety for commercial use.

PBR growth driven by Australian resident applicants

PBR applications: The number of PBR applications received in Australia increased by five per cent in 2015, from 341 to 359 applications. This growth was solely driven by a 14 per cent increase in applications by Australian residents, who represented the single largest country of origin in 2015. The number of applications from non-residents did not increase for the first time in five years, with one less application than in 2014. This meant the share of PBR applications by Australian residents increased to 43 per cent, a three percentage point increase from 2014.

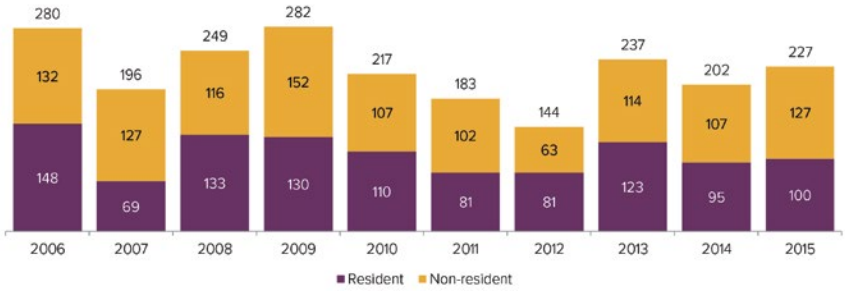
Figure 13: Plant breeder's rights applications, by origin, 2006-15



The US was the biggest non-resident origin and filed 20 per cent of applications made in 2015.[35] Most advanced economies filed fewer Australian PBR applications in 2015, including the US, the UK, the Netherlands, Germany and France. Countries originating more PBR applications to Australia in 2015 include Japan, New Zealand and South Africa.

PBR registrations: IP Australia registered 227 PBRs in 2015, an increase of 12 per cent. Resident and non-resident registrations increased five per cent and 19 per cent, respectively. Fewer registrations were granted to residents of the UK and Germany. The largest non-resident registrants were from the US, the Netherlands, New Zealand and Japan, receiving 76 per cent of total registrations.

Figure 14: Plant breeder's rights registrations, by origin, 2006-15



Horticulture makes up 83 per cent of PBR applications

Plant varieties: The development of plant varieties was largely in horticulture[36] – both in ornamental and edible breeds, which made up 43 per cent and 40 per cent of total applications in 2015. Broadacre food crops account for nine per cent of PBR applications, while broadacre forage crops contribute eight per cent.[37]

The three largest genera for PBR applications were Prunus (stone fruit), followed by Solanum (tomatoes and potatoes) and Fragaria (strawberries).

WHO USES IP RIGHTS IN AUSTRALIA?

Australian firms invest 1 of every 10 dollars in IP

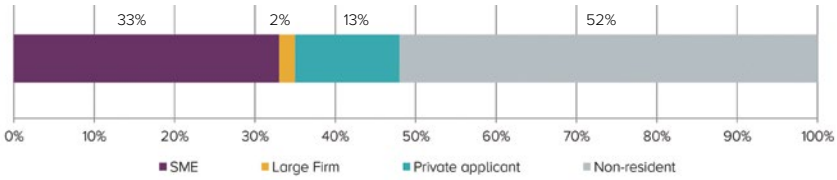
IP forms a major component of the investment strategy of Australian firms. According to the Australian Bureau of Statistics (ABS), investment in IP products was 10.4 per cent of all Australian private investments in fixed capital in 2014-15.[38]

The latest Business Characteristics Survey from the ABS found that 21 per cent of Australian businesses reported having protection for their IP. These rates increase with firm size, with 60 per cent of large firms (those with over 200 employees) using some method of protection for their IP while only 16 per cent of micro firms (0-4 employees) reporting the same.[39] Using the 2016 version of the publicly available IP Government Open Data (IPGOD),[40] which has been linked to Australian Business Numbers, this chapter will explore in more detail what types of firms are using the IP system in Australia.[41]

IP rights and firm size: In aggregate, IP Australia has seen 888 702 unique IP right applicants from across the globe since 1980, with roughly eight per cent of applicants filing for more than one type of IP. Among the IP rights administered by IP Australia, trade marks have attracted the widest customer base with nearly 600 000 unique applicants since 1980. By comparison, plant breeder's rights are very niche IP rights with only 1 905 applicants in the same time period.

IP rights attract a diverse group of applicants, from multinational enterprises such as Nestle to individual applicants such as Ken Done, an Australian artist and designer. Across all the applications received in 2015, Figure 15 summarises the type of applicant, finding that 33 per cent of applications were from Australian small -to-medium enterprises (SMEs).

Figure 15: IP Rights applications received in 2015, by applicant type



One third of IP rights filed by Australian SMEs in 2015

Overall the share of applications filed by Australian SMEs has gradually increased over the last 10 years, with patent figures showing the most notable rise. The SME share of all patent applications was 43 per cent in 2006 and increased 10 percentage points to 53 per cent by 2015. PBR applications were an exception, with SMEs having the same share of applications (46 per cent) in both 2006 and 2015, despite experiencing the most volatility over time. This volatility is due to a smaller base of PBR applications compared to other IP rights.

Figure 16: Share of resident IP applications, by firm type over the past 10 years

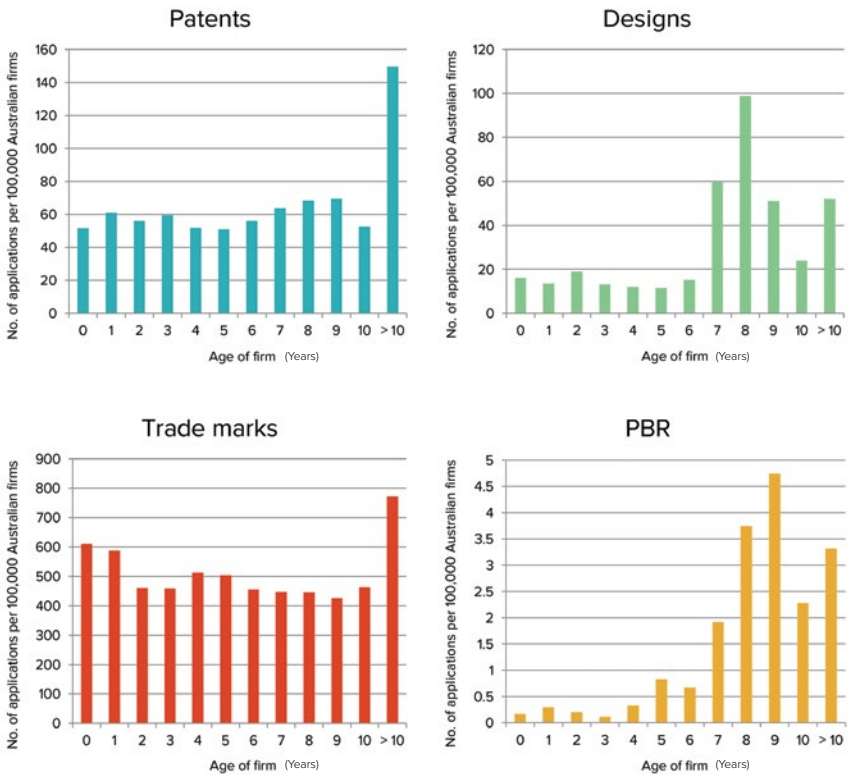
Large firms responsible for smaller share of applications since 2006

The share of applications from large resident firms has decreased for all IP rights over the last 10 years, with the exception of patent applications in which the large-firm share remained largely unchanged over time. The share of applications from private applicants increased for PBRs from 25 per cent in 2006 to 30 per cent in 2015. But for every other IP right, the share from private applicants either declined (for patents and designs) or remained relatively stable (trade marks).

IP rights and firm age: The age of a firm is among a set of contributing factors that influence a firm's decision to apply for an IP right. On a pro rata basis, firms that are over 10 years old tend to file more IP rights than firms that are newer.

To determine this, applications in the IPGOD data set were categorised by the age of the firm at the time of filing. The number of applications received by firms of each age group was then divided by the entire stock of firms of that age in the Australian Business Register (ABR) to produce a pro-rata analysis. The result takes into account the large stock of firms aged over 10 years and shows how many of each IP right have been applied for over the years 2013-2014 for every 100 000 firms of that age.

Figure 17: Number of applications (per 100 000 Australian firms), by firm age and IP right (2013-2014)



The graph shows that on average firms that are more than 10 years old tend to file more IP rights. For patents, older firms tend to file around three times the amount of younger firms. Evidence from the Organisation for Economic Co-operation and Development (OECD) suggests that the younger firms that are filing for patents are likely to be global frontier firms. The OECD found that these young firms were typically more profitable, larger transnational corporations and prioritised investing in knowledge-based capital.[42] Similarly, new research on US firms suggests that getting patents granted help start-ups create jobs, grow their sales, innovate and reward their investors.[43]

Start-ups file more trade marks

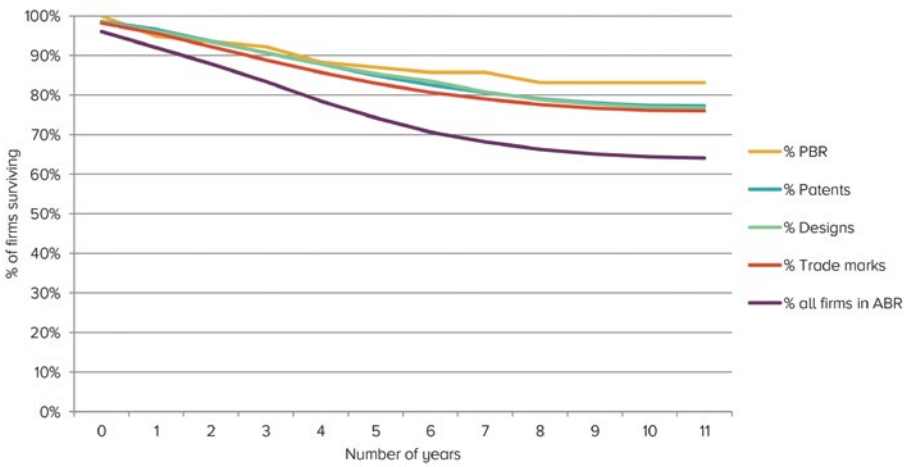
Firms that are more than 10 years old tend to file more trade marks on average than firms under 10 years. Trade marks are the only IP right with an early spike, where firms that are in the range the OECD considers as start-ups (0-2 years old) have noticeably more applications (over 600) than firms that are 2-10 years of age. Recent work by Hendrickson et al (2015) has shown that young firms (0-5 years old) and particularly start-ups (0-2 years old) are responsible for most of the employment growth in Australia.[44]

Designs and PBRs both have large amounts of applications from firms that are over 10 years of age, but both have a spike around the 8-9 years of age mark. For both designs and PBRs the number of applications observed in each category in any given year is very low. The spikes in these graphs should best be interpreted as a high number of filings from a handful of companies that were established 8-9 years before the data was captured. In the case of PBRs these companies include Bonza Botanicals from Australia,[45] and for designs this spike is caused by the top designs filer in Australia over the last five years, Forever New Clothing.

IP right holding firms live for longer

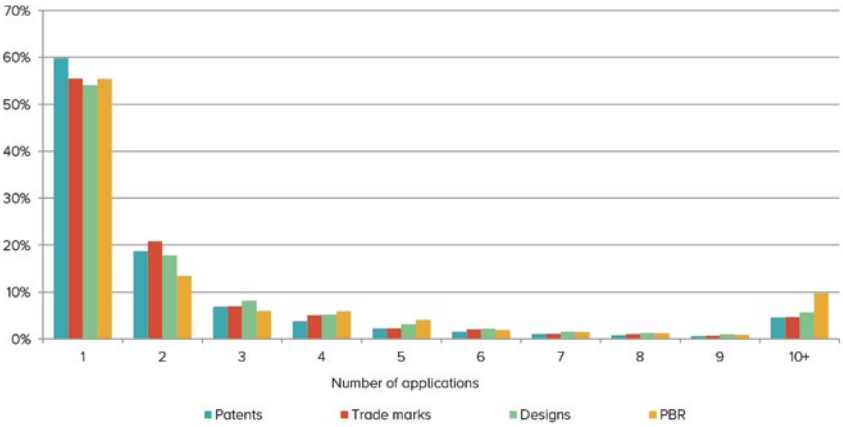
IP rights and firm survival: The ABR can be used to compare the survival rates of firms with IP rights to that of an average firm. Since the ABR began capturing ABN and GST registrations in 1999 and 2000, roughly 35 per cent of all registered firms have cancelled their ABN or GST. For IP right applicants, only 25 per cent have cancelled, which may indicate that firms with IP rights tend to live longer than firms without. This finding was empirically tested and verified for all IP rights administered by IP Australia in *The economic impact of innovation patents* report.[46]

Figure 18: Firm survival rate by IP right



How much do they file? The distribution of filing intensity among applicants is largely consistent across the rights, with over 50 per cent of applicants in each right only filing once and less than 10 per cent of applicants filing more than 10 applications. Proportionally, patents appear to attract more applicants that file once than any other IP right, by at least four percentage points. In contrast, PBRs have the greatest proportion of applicants that file 10 times or more, by at least four percentage points.

Figure 19: The distribution of filing intensity among applicants



While most applicants only file for one right across each of the IP rights, close to half of applications come from the top five per cent of applicants (as measured by their number of applications). There is some variance in this across the rights with the top five per cent of patent applicants filing 57 per cent, plant breeder's rights filing 53 per cent, trade marks filing 45 per cent and designs filing 44 per cent.

Top 5% of applicants responsible for nearly half of applications.

The top filers for IP rights change constantly over time and characterise the continual evolution of industry and consumer interests in Australia. Few firms retain their positions as the top filers of IP rights when looking at five-year periods as illustrated in Table 5.

Table 5: Top applicants at IP Australia, 2001-2015

		2001-2005	2006-2010	2011-2015
Patent	1	CSIRO	Novartis	Halliburton Energy
	2	Canon	Qualcomm	Samsung
	3	Qualcomm	Aristocrat	Covidien
Trade mark	1	Lidl	Nestle	Remarqueble
	2	Nestle	LG	Applied Marks
	3	Novartis	Johnson & Johnson	Monitor
Design	1	GM Global Tech Operations	GM Global Tech Operations	Forever New Clothing
	2	Nokia	Nokia	Samsung
	3	Holden	Wolverine World Wide	Microsoft
Plant breeder's rights	1	GRDC	QLD Dept Agriculture & Fish's	Nunhems
	2	Ball Horticultural	GRDC	Suntory Flowers
	3	QLD Dept Agriculture & Fish's	Zaiger's Inc. Genetics	Driscoll Strawberry Associates

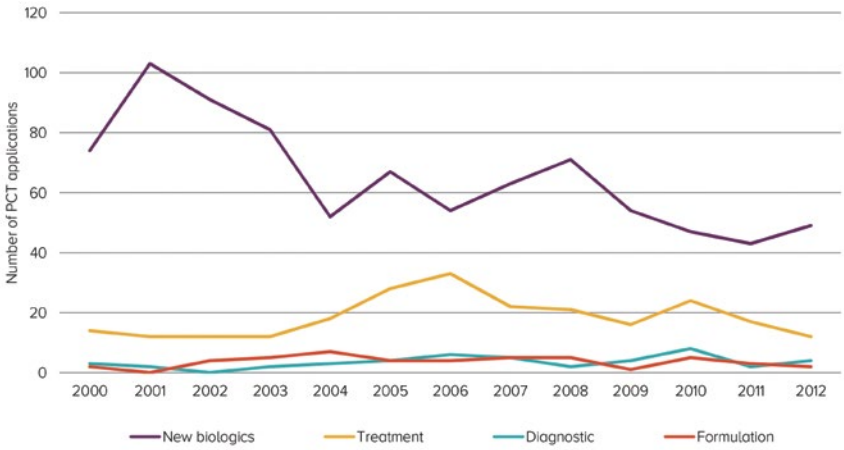
IP AND INNOVATION POLICY

As well as administering the Australian IP rights system, IP Australia also engages in a number of initiatives to promote innovation and address the needs of business and the public research sector in Australia. Three initiatives carried out over the year include the Patent Analytics Hub, Source IP and the open data project, IPGOD. In particular these initiatives have sought to facilitate collaboration between business and the research sector, in line with government priorities.

Patent Analytics Hub: The Patent Analytics Hub was initially established as a pilot program in 2012. In 2015 we were able to extend the service to government agencies, Australian universities and public-sector research agencies. The mission of the Hub is to help Australian innovators make the most of their intellectual property, by aiding understanding of their technology areas, finding collaborators and boosting the commercial returns from research. Patent data is a comprehensive and worldwide source of information about technological developments, but extracting value from patent databases is challenging. Patent analytics can extract useful insights from vast global patent databases, through the mining, visualisation and interpretation of data.

One example of a recent Patent Analytics Hub study is the report on the Australian Pharmaceutical Industry. The Hub conducted a study based on PCT applications filed by Australian applicants or inventors. One of the outcomes was an understanding of the technological strength of the sector: in Australia 43 per cent of applications related to biologics (e.g. peptides or antibodies) in contrast to the rest of the world with an average of 29 per cent of applications on biologics.[47] Of those PCTs filed, 72 per cent relate to the development of new biologics, emphasising Australia's strong focus on primary research. Other uses include treatments (20 per cent), which cover using known pharmaceuticals for a new purpose and methods of using pharmaceuticals. The remainders are made up from new formulations and diagnostic uses. Patent analytics studies such as this are of increasing importance to Australian Government agencies and publicly funded research organisations.

Figure 20: Filing trend—biologics (2000-2012)



Source: PATSTAT database, Autumn 2014; OECD, REGPAT database, February 2015; IP Australia calculations

Source IP: Source IP is a digital marketplace that supports the advertisement and trade of licensable patents generated by the public research sector in Australia. Source IP is specifically aimed at making it easier for Australian businesses, including SMEs, to access public-sector innovation and technology. It focuses on boosting collaboration between business and researchers by providing a single site to showcase the expertise of individual Australian research organisations and facilitating easy, one-click contact.

In addition to promoting collaboration within Australia, Source IP aims to drive the global promotion of Australian research by providing easy access to Source IP data. This is done through the use of Application Programming Interfaces which will allow the integration of Source IP data into global marketplaces. By showcasing Australian research on global platforms, Source IP maximises the visibility of Australian research organisations and enhances

the process of knowledge transfer and the opportunity for technology commercialisation internationally.

The Source IP website intends to achieve the following objectives for the public research sector:

- drive innovation and commercialisation by enabling IP rights holders to signal their patent licensing intent
- provide a repository for the IP generated in Australian research organisations to improve accessibility for the Australian business community and global businesses.

Figure 21: Source IP – where business meets ideas

Source IP – access and licence publicly funded patents

IPGOD: IP Australia has over 100 years of Australian IP rights data, encompassing everything from the genus and species of new varieties of crops to legal information relating to hearings and oppositions associated with the granting of a right.

Analysis of IP rights requires good data. To facilitate this, IP Australia released the Intellectual Property Government Open Data (IPGOD) in September 2014, the first complete database to be launched by a government agency linking all IP rights to firm identifiers including Australian Business Numbers (ABNs) and

Australian Company Numbers (ACNs). This was underpinned by the Australian Government Declaration of Open Government[48] and is currently supported by the recent Public Data Policy Statement announced under the Australian Government's broader National Innovation and Science Agenda measures.[49]

IPGOD 2016 adds attorney information and abstracts

The latest release of IPGOD was launched in February 2016 with many exciting updates, including:

- expansions to the data, including attorney information on agents representing IP right applicants
- abstracts for patent applications
- a range of process information across patents, trade marks and designs.

IPGOD 2016 has been released alongside its counterpart: Intellectual Property Government Open Live Data (IPGOLD). IPGOLD will include the same data as IPGOD but in a fully automated weekly update to reflect IP Australia's most current data. IPGOD will continue serving as an annual snapshot which is expected to be more useful for some types of research and analysis.

Both IPGOD and IPGOLD datasets have been progressively updated this year, with the full set of data now available on data.gov.au.

RESEARCH PROGRAM

One of the ways IP Australia contributes to our goal of providing a world leading IP system is through our research program. This program seeks to advance the knowledge and evidence-base upon which IP policy is built. It is with this in mind that the IPGOD project was established, and using this resource the Office of the Chief Economist has published a series of targeted research projects.

In 2015 we released two reports on the role that patents play in the mining and pharmaceutical industries. The Mining Report identified 6 539 Australian mining inventions filed between 1994 and 2011, and analysed the origin and technology of these inventions from public entities, Australian miners and mining equipment technology services firms.[50] In the pharmaceutical sector, the patent analytics hub found that Australia ranks 13th in pharmaceutical patents globally, comparable to Switzerland and Israel.[51]

The Office of the Chief Economist also released its report into the economic impact of innovation patents. The paper found that the low level of repeated use by SMEs suggests that the innovation patent system may not be fulfilling its policy goal of providing an incentive for Australian SMEs to innovate.[52] This work has fed into the current Productivity Commission consideration of Australia's IP system.

Another project sought to develop a greater understanding of the role of Geographical Indicators (GI) in Australia, and is a project which is continuing in 2016. This project seeks to produce data on potential Australian GIs, a data-matching exercise completed in 2015, and now expanded to investigate the economic impacts of GIs in Australia.

For 2016 the Office of the Chief Economist is currently undertaking a series of evidence-based economics and policy analyses. These analyses cover a wide range of intellectual property and innovation fields, and findings will be made available on www.ipaustralia.gov.au/economics throughout 2016.

A continuing policy interest in the IP and innovation space is the determination of the societal value of an IP right: how much innovation does the award of a patent induce? We are investigating this 'innovation premium' using data from the Department of Industry, Innovation and Science and the Australian Inventor Survey. From a similar perspective, an important historical motivation for the existence of patent protection is the suggestion that such protection increases the rate at which a new technology moves into the marketplace. We are trying to empirically evaluate such 'technological diffusion' by looking at the rate at which pharmaceuticals listed on the Pharmaceutical Benefits Scheme (PBS) increase their market penetration during and after their period of patent protection.

Focus on university grants, collaboration and patent outcomes

A key focus of the Australian Government's National Innovation and Science Agenda (NISA) is the effectiveness of the relationship between universities and industry in Australia. IP Australia is seeking to contribute to the underlying policy evidence base by examining how research grants that encourage university-industry collaboration impact the registration of patented technologies in Australia. Early results indicate an important role for granting bodies in promoting the commercialisation of research, but further investigation is required before the data can support new policy initiatives.

Are trade marks a leading indicator of economic activity?

Moving into the analysis of trade marks, the Office of the Chief Economist was motivated by the significant spike in trade mark applications at the end of 2015 and a trade mark application forecasting tool it developed, and is examining what trade marks themselves may forecast. Are trade mark applications a leading economic indicator, like investment, or are there underlying economic trends that can usefully inform how many trade mark applications IP Australia will receive? Finding answers to these questions could not only increase trade mark examination efficiency at IP Australia, but also provide policymakers in Australia with new insight into how IP is used, and what these uses imply for growth and the innovation agenda.

The aim of this research program is to evaluate the economic impact of various components of the IP system, in order to assist evidence-based policy decisions within IP Australia and other Commonwealth agencies.

IP Australia's research procurement plan is published annually, with any new projects announced through our reporting structures. Academics and service providers who would like to be updated on research tenders can email ipreport@ipaustralia.gov.au or follow us on twitter (@IPAustralia_OCE) and online at www.ipaustralia.gov.au/economics.

END NOTES

[1] In April 2013 The *IP Laws Amendment (Raising the Bar) Act 2012* was implemented. The new law raised the standard required for an invention to be granted a patent. This led to a rush of applications and examination requests in the weeks leading up to the implementation dates, and a resulting drop in applications for the remainder of 2013 which carried over into 2014. The 2015 data shows that applications have returned to the trend observed since 2010.

[2] The Treasury, 2015, "Inquiry into Intellectual Property Arrangements: Terms of Reference" available at http://www.pc.gov.au/inquiries/current/intellectual-property/terms-of-reference [viewed 28/2/16].

[3] The second release of IP Government Open Data can be found at http://data.gov.au/dataset/intellectual-property-government-open-data

[4] IPGOLD stands for IP Government Open Live Data, and is currently released as a single .zip file every week.

[5] In 2009, there were 1.85 million patent applications filed worldwide. In 2014, this number was 2.68 million. Average annualised increase of 2.55 per cent over five years. Source: WIPO IP Statistics Data Center (Dec. 2015 update): indicator 1: "Total patent applications (direct and PCT national phase entry)"; count by filing office; 2009-2014.

[6] The growth in domestic applications over the past five years (2010-2015) has been irregular, but the average annualised growth rate is a slight decline of -0.27 per cent (which is a similar rate when calculated from 2006 as well).

[7] In 2014, standard patent applications filed by US residents decreased by 12 per cent, as a result of the rush to file prior to the implementation of *Raising the Bar*.

[8] Resident share of applications over the past decade ranged between 94 and 97 per cent.

[9] The Northern Territory experienced a 200 per cent increase in patent applications; from two applications filed in 2014 to six applications filed in 2015.

[10] The available and published data from WIPO are typically lagged by two years.

[11] In 2013, Australians filed approximately three times as many patent applications abroad than they filed domestically.

[12] WIPO IP Statistics Data Center (Dec. 2015 update): indicator 1 "Total patent applications (direct and PCT national phase entry)", Total count by filing office; 2004-2014.

[13] From 2011 to 2013, China was the third largest destination for Australian patent applications.

[14] In 2014 IPONZ received on average 634 patent applications a month, in September 2014 IPONZ received 1363 patent applications. Source: New Zealand Intellectual Property Office, Facts and figures, IPONZ application volumes, Patents, Wellington, 2016, http://www.iponz.govt.nz/cms/iponz/facts-and-figures

[15] New Zealand Intellectual Property Office, *Patents Act 2013*, Wellington, 2014, http://www.iponz.govt.nz/cms/patents/patents-act-2013

[16] Intellectual Property Australia, International activity, Single economic market, Canberra, 2015, http://www.ipaustralia.gov.au/about-us/international-activity/single-economic-market/

[17] World Intellectual Property Organization, New Zealand, *Patents Act 2013*, Geneva, 2015, http://www.wipo.int/wipolex/en/details.jsp?id=14497

[18] On average for the past 10 years the share of PCT applications was 65 per cent and the average share of direct applications was 35 per cent.

[19] World Intellectual Property Organization, World Intellectual Property Indicators – 2014 Edition, Geneva, 2014 (page 68).

[20] Direct applications grew by 5 782 and Madrid applications grew by 3 025 from 2014 to 2015. Total growth was 8 807, meaning 13.7 per cent growth rounded to the nearest whole number (14 per cent). Direct applications were responsible for 66 per cent of the growth (5 782 / 8 807 = 0.66), while Madrid accounted for 34 per cent of growth (3 025 / 8 807 = 0.34). Direct applications therefore represented 9.2 percentage points of the growth (0.66 x 0.137 = 0.09) and Madrid applications represent 4.7 per cent of the growth (0.34 x 0.137 = 0.047) which we round to the nearest whole number for ease of exposition.

[21] An Australian trade mark provides protection only within Australia. To be protected overseas, applicants can choose to file a single international application nominating the Madrid Protocol countries in which protection is required. The Madrid Protocol is a treaty that provides International registration of a trade mark. It is administered by the International Bureau of WIPO.

[22] Applications in the Northern Territory increased by 72 per cent starting from a low base of 98 applications in 2014.

[23] IP Australia, *A guide to applying for a trade mark*, <http://www.ipaustralia.gov.au/uploaded-files/publications/trade-mark-application-guide.pdf>, April 2013, pp. 20-23. For a more detailed explanation see; WIPO, "*Nice Classification, official publication*", List of Classes with Explanatory Notes, Nicepub version: 2.13, updated 05.02.2016, viewed 17/02/2016, http://web2.wipo.int/classifications/nice/nicepub/en/fr/edition-20160101/classheadings/

[24] S Mendonça, T S Pereira & M M Godinho, 'Trademarks as an indicator of innovation and industrial change', Research Policy, vol. 33, 2004, pp. 1385-1404.

[25] Firms apply for trade marks class 1 to class 34 when they are seeking marks for goods, and class 31 to class 45 when they are seeking marks for services.

[26] Class 35: It includes mainly services rendered by persons or organisations principally with the object of: 1. help in the working or management of a commercial undertaking, or 2. help in the management of the business affairs or commercial functions of an industrial or commercial enterprise, as well as services rendered by advertising establishments primarily undertaking communications to the public, declarations or announcements by all means of diffusion and concerning all kinds of goods or services (WIPO, 2016).

[27] Class 9: includes apparatus and instruments for scientific research in laboratories; apparatus and instruments for controlling ships, such as apparatus and instruments for measuring and for transmitting orders; protractors; punched card office machines; all computer programs and software regardless of recording media or means of dissemination, that is, software recorded on magnetic media or downloaded from a remote computer network (WIPO, 2016).

[28] Class 41: titled Education; providing of training; entertainment; sporting and cultural activities. It covers mainly services rendered by persons or institutions in the development of the mental faculties of persons or animals, as well as services intended to entertain or to engage the attention (WIPO, 2016).

[29] World Intellectual Property Organization, *World Intellectual Property Indicators – 2015 Edition*, Geneva, 2014 (page 73).

[30] An administrative change in the way that the US reports their numbers to WIPO affected the 2013 numbers for how the origin of applications filed in the US are counted. Australian applications to the US for 2013 reduced by 835 filings to 2 313. This means that the 10 per cent growth in Australian trade mark applications abroad reported in the Australian Intellectual Property Report 2015 is revised downward to four per cent growth in 2014. The administrative change has not yet been applied to historical data up to 2012. The necessary adjustments to IP Australia's data will be made when these historical changes are made.

[31] WIPO statistical release 16 March 2016, PR/2016/788 , available at http://www.wipo.int/pressroom/en/articles/2016/article_0002.html

[32] World Intellectual Property Organization, *World Intellectual Property Indicators – 2015 Edition*, Geneva, 2014 (page 73).

[33] See http://www.wipo.int/classifications/nivilo/locarno/index.htm# for more details of the classifications.

[34] This class includes data processing equipment and communications equipment, wireless remote controls and radio amplifiers. See WIPO, "International Classification for Industrial Designs", List of Classes and Subclasses with Explanatory Notes, http://www.wipo.int/classifications/nivilo/locarno10/index.htm?lang=EN#, [viewed 24/02/2016].

[35] In 2014, the US resident filers made 22 per cent of total PBR applications.

[36] Some edible horticulture breeds can also be considered ornamental.

[37] Ornamental breeds are plants grown for decorative purposes, such as flowers, trees and shrubs. Edible breeds include fruit, nuts and some vegetables. Broadacre food crops can include oilseeds, wheat, pulses, rice and sugar cane. Broadacre forage crops are typically used as feedstock.

[38] ABS. 2015. 5206.0 - Australian National Accounts: National Income, Expenditure and Product, http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5206.0Mar%202014?OpenDocument, Download the PDF file; data on investment in intellectual property products can be found on page 67. Investment in R&D made up 4.9 per cent, followed by investment in computer software making up 3.2 per cent.

[39] ABS. 2015. 81670.0 - Selected Characteristics of Australian Business, 2013-14, http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8167.0Main+Features12013-14?OpenDocument, Download the Business Structure and Arrangements data tables, data can be found in Table 8.

[40] See http://www.data.gov.au/organization/ip-australia for data

[41] For information on the matching between IP applications and Australian Business Numbers see Julius, T. D. & Rassenfosse, G., 2014, "Harmonising and Matching IPR Holders at IP Australia.", Melbourne Institute Working Paper Series Working Paper No. 15/14. http://www.melbourneinstitute.com/downloads/working_paper_series/wp2014n15.pdf

[42] OECD. 2015. "OECD Innovation Strategy 2015: An Agenda for Policy Action." Meeting of the OECD Council at Ministerial Level, Paris, (3-4 June 2015). http://www.oecd.org/sti/OECD-Innovation-Strategy-2015-CMIN2015-7.pdf p. 5

[43] Farre-Mensa J, Hegde D and Ljungqvist A. 2016. "The Bright Side of Patents." USPTO Economic Working Paper No. 2015-5. Available at SSRN: http://ssrn.com/abstract=2704028 or http://dx.doi.org/10.2139/ssrn.2704028

[44] Hendrickson, Luke, Stan Bucifal, Antonio Balaguer and David Hansell. 2015. "The employment dynamics of Australian entrepreneurship." Department of Industry and Science Economics Research Paper 4/2015, http://www.industry.gov.au/Office-of-the-Chief-Economist/Research-Papers/Documents/2015-Research-Paper-4-The-employment-dynamics-of-Australian-entrepreneurship.pdf

[45] As well as Rijk Zwaan Zaadteelt en Zaadhandel B.V.

[46] See http://www.ipaustralia.gov.au/about-us/what-we-do/reports/The-economic-impact-of-innovation-patents

[47] Note in this context biologics include all peptides, enzymes, antibodies, antigens and nucleic acid based therapeutics, including vaccines, recombinantly produced peptides, synthetic peptides and blood products.

[48] Commonwealth of Australia, Declaration of Open Government, Canberra, 2013, www.finance.gov.au/e-government/strategy-and-governance/gov2/declaration-of-open-government.html

[49] Australian Government, Department of Prime Minister and Cabinet, Australian Government Public Data Policy Statement, Canberra, 2015, http://www.dpmc.gov.au/sites/default/files/publications/aust_govt_public_data_policy_statement_1.pdf

[50] Francis, Emma. 2015. "The Australian Mining Industry: More Than Just Shovels and Being the Lucky Country." http://www.ipaustralia.gov.au/pdfs/The_Australian_Mining_Industry_Report.pdf

[51] IP Australia. 2015. *A patent analytics study on the Australian Pharmaceutical Industry*. Canberra: Department of Industry, Innovation and Science & IP Australia, http://www.industry.gov.au/industry/IndustrySectors/PharmaceuticalsandHealthTechnologies/Pharmaceuticals/Documents/PatentAnalyticsStudyOnTheAustralianPharmaceuticalIndustry.pdf

[52] Johnson, Matthew, Benjamin Mitra-Kahn, Adam Bialowas, Bradley Man, Peta Nicholson and Sasan Bakhtiari. 2015. "The economic impact of innovation patents." IP Australia Economic Research Paper 05, http://www.ipaustralia.gov.au/uploaded-files/reports/Economic_impact_of_innovation_patents_-_Report.pdf

www.ipaustralia.gov.au/economics