AUSTRALIA'S TRADE IN ENGINEERING SERVICES

Submission to the Productivity Commission Inquiry

15 May 2015

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Executive Summary

There has been strong growth in Australia's exports of engineering services, averaging 15.8% per year since 1998. However, imports of these services increased almost twice as fast with the result that in 2014 Australia experienced a substantial deficit in its trade in engineering services.

In part, the growth in imports reflects the exceptional demand for engineers during the construction phase of the resources boom. The high Australian dollar resulting from high commodities prices at the time also played a role. Only one jurisdiction appears to have a strong export record.

However, Engineers Australia believes that the myriad of arrangements relating to the practice of engineering throughout the world have also played a part. There has been important progress towards establishing international benchmarks for entry level engineering courses. But, there has only been limited progress in establishing similar benchmarks for competent practicing engineers. Engineers Australia has successfully negotiated a range of mutual recognition agreements towards this end, but there are limits to the organisation's capacity in the absence of official recognition of appropriate Australian benchmarks.

Engineers Australia believes that Action by the Commonwealth Government is necessary to more rapidly improve Australian trade in engineering services. Engineers Australia believes an important step would be formal recognition, endorsement and announcement by the Commonwealth Government that engineering should only be practiced by competent practicing engineers that belong to a formal professional standards scheme under existing legislation enacted by Commonwealth, State and Territory Governments. Engineers Australia has professional standards schemes which are legal instruments under this legislation that binds Engineers Australia to monitor, enforce and improve the professional standards of its members and to protect consumers of engineering services. The criteria for competent practicing engineers described earlier in this submission are consistent with the definitions and criteria of the schemes. While these arrangements stop short of mandatory registration of engineers, they reinforce what Engineers Australia is doing to uphold professional engineering standards in Australia in a self-regulatory environment.

Engineers Australia also believes that the Commonwealth Government should consider assisting the international processes underway to establish global benchmarks for engineering education and strengthening the arrangements relating to the inclusion of mutual recognition arrangements in new free trade agreements and in existing agreements when they are revised.

Opening Remarks

Engineers Australia is the peak body responsible for accreditation of engineering education in Australia, responsible for standards of engineering practice in Australia and is the link between the engineering profession in Australia and globally. Engineers Australia is not involved in industrial matters or the business interests of engineering enterprises whether large or small. Engineers Australia's interests encompass the engineering team comprising Professional Engineers (at least a four year, full time degree in engineering), Engineering Technologists (at least a three year, full time degree in engineering) and Associate Engineers (at least a two year, full time associate degree or advanced diploma in engineering).

The way in which Engineers Australia discharges these responsibilities goes to the heart of trade in engineering services. Like other professions, engineering has distinct entry requirements and distinct standards for competent practicing engineers and how this status is maintained throughout an engineering career.

Engineers Australia accredites the degrees in engineering offered by Australia universities in line with competencies agreed and internationally audited by the International Engineering Alliance (IEA). Three mutual recognition agreements operate under the IEA:

- The Washington Accord recognises the accredited engineering courses for Professional Engineers of member countries; there are at present 17 signatories and four provisional signatories, including China. The full list is at www.ieaagreements.org/Washington-Accord/signatories.cfn
- The Sydney Accord recognises the accredited engineering courses for Engineering Technologists; at present there are 10 signatories and these are listed at www.ieaagreements.org/Sydney/signatories.cfn
- The Dublin Accord recognises the accredited engineering courses for Associate Engineers; at present there are eight signatories and these are listed at www.ieaagreements.org/dublin/signatories.cfn

Most European countries belong to a recognition protocol parallel to the International Engineering Alliance. Seventeen European countries are part of the EUR ACE agreement (*EUR*opean *AC*credited *E*ngineers) covering a set of standards and procedures for accrediting engineering degree courses in individual European countries. At present a comparison of IEA graduate attributes with EUR ACE framework standards is in progress with a view towards future integration of these arrangements.

Completing an accredited course in engineering is followed by a period of professional formation during which new graduates acquire the practical skills and expertise necessary to become a competent practicing engineer. Competent practising engineers are capable of independent practice of engineering skills and expertise. To become a competent practicing engineer, graduates need to satisfy Engineers Australia that they meet the following criteria:

- They hold accredited qualifications in engineering consistent with the engineering team.
- They have undertaken a period of up to five years professional formation under the supervision of a competent practising engineers.
- They adhere to an approved code of ethics for the practice of engineering.
- They undertake regular and continuous professional development in their field of practice to ensure the currency of their engineering knowledge.

- Professional formation has been undertaken in a risk management environment that satisfies relevant Australian risk management standards and that they are conversent with these standards and how they apply to their practice.
- They fully appeciate the need for and importance of consumer protection and that their practice is covered by one of six options for consumer protection.

Engineers Australia recognises highly experienced engineers by the conferring of Chartered Status. To become a Chartered Engineer, competent practicing engineers must additionally demonstrate that they satisfy sixteen competencies recognised and audited internally in their field of expertise.

Mutual Recognition Agreements

Engineers Australia has a range of mutual recognition agreements with like organisations in other countries to recognise the equivalence of each others' professional titles or qualifications. Some of these agreements are not with the engineering organisations of other countries but instead they are with engineering organisations, principally those from the UK and the USA, that have an international ambit. A summary of these agreements is at Attachment A.

Engineers Australia's efforts to negotiate mutual recognition agreements pre-dates the Commonwealth government's interest in free trade agreements. It is worth noting, however, that even though Australia has signed a free trade agreement with the government of the USA, Engineers Australia has found it is necessary to consider mutual recognition agreements with individual States in the USA who have responsibility for professional matters.

The long list at Attachment A testifies to the difficulties involved for an organisation like Engineers Australia to deal with this matter. Arrangements relating to engineering vary considerably throughout the world: registration is mandatory in some countries and not in others; in some cases registration is the responsibility of State rather than national governments; alternatives to mandatory registration exist in some countries while in other cases there are no arrangements. Engineers Australia believes that the mobility of engineers and engineering services will be limited while this situation persists. There has been promising, but slow progress towards global benchmarks for entry level engineering education, but similar progress towards global benchmarks for engineering practice are more illusive.

Australia's Trade in Engineering Services

Earlier this year Engineers Australia examined Australia's trade in engineering services. This work is attached for the Commission's information at Attachment B.

Long term growth rates for exports and imports of engineering services were comparatively high. Export of engineering services grew from a modest $363 million in 1998 by an average annual 15.8% per year to be $1,474 million in 2014. The long term growth rate for imports of engineering services was much higher. In 1998, imports were $262 million so that there was a balance in trade of engineering services. Growth averaged 28.1% per year, increasing imports to $3,090 in 2014, opening up a deficit of $1,616 in engineering services.

In 2013-14, six jurisdictions were net importers of engineering services and one, the NT, was in balance. Only Victoria remained as a net exporter of engineering services. About 70% of the trade deficit was attributable to WA and another 5% to Queensland. However, the Queensland deficit was far less than the $286 million deficit in NSW. These results suggest:

- A large part of the national deficit is the result of resource related demands for engineering services in WA.

- Only one jurisdiction has a surplus, Victoria and historically this State has had higher exports than other jurisdictions.

The first point supports the contention that a large part of the deficit in trade of engineering services is related to the resources boom and likely to be transitory. The second point suggests that Australia's performance in trade in engineering services has been fairly lacklustre with the only State with consistent surplus showing trends that if they continue will send it into deficit in about two years.

Success Australian Engineering Enterprises

In 2006, Engineers Australia produced a collection of Australian owned engineering enterprises that have been successful in international export markets[1]. During its consultation meeting with Engineers Australia, the Commission sought to establish contact with engineering businesses that have had experience in international markets. Engineers Australia commends this publication.

Policy Options

Unlike some other countries, Australia does not have mandatory arrangements covering the practice of engineering. This stands in stark contrast to arrangements for the practice of law, the practice of medicine, the practice of accounting and even the practice of plumbing.

Engineers Australia has advocated change in this area. Mandatory registration of engineers has not been acceptable to a succession of Australian governments. However, Engineers Australia believes that something less than mandatory registration of engineers would facilitate growth in Australian trade in engineering services.

Engineers Australia believes an important step would be formal recognition, endorsement and announcement by the Commonwealth Government that engineering should only be practiced by competent practicing engineers that belong to a formal professional standards scheme under existing legislation enacted by Commonwealth, State and Territory Governments. Engineers Australia has professional standards schemes which are legal instruments under this legislation that binds Engineers Australia to monitor, enforce and improve the professional standards of its members and to protect consumers of engineering services. The criteria for competent practicing engineers described earlier in this submission are consistent with the definitions and criteria of the schemes. While these arrangements stop short of mandatory registration of engineers, they reinforce what Engineers Australia is doing to uphold professional engineering standards in Australia in a self-regulatory environment.

Engineers Australia believes that the Commonwealth Government should consider assisting the international processes underway to establish global benchmarks for engineering education. Progress achieved so far suggests that agreement will eventually be reached between the members of the International Engineering Alliance and EUR ACE countries, but Government assistance could dramatically reduce the time required and so contribute substantially to international mobility of engineering education standards.

Engineers Australia is in regular contact with the Department of Foreign Affairs and Trade regarding the content of prospective free trade agreements that Government is addressing. These arrangements are comparatively recent ones and Engineers Australia has had an opportunity to provide its input. Australia's trade in engineering services would benefit considerably by increasing the importance of mutual recognition arrangements for professional services, and elevating the level at which they are

[1] Engineers Australia, Proudly Australian, A Collection of Australian Owned Success Stories, 2006 www.engineers**australia**.org.au/sites/default/files/resources/Representation/Policy%20Publications/Skills/A%20Collection%20of%20**Australian**%20Owned%20Success%20Stories,%20October%202006.pdf

dealt with, in all free trade agreements when they are revised as well as including them in new agreements.

ATTACHMENT A

ENGINEERS AUSTRALIA

MUTUAL RECOGNITION AGREEMENTS APRIL 2015

COUNTRIES

1. **New Zealand**: Institution of Professional Engineers, NZ, February 2013
    - Establishes pathways for engineers to gain membership or registration in the other's country
    - Covers the engineering team

2. **Japan**: Institution of Professional Engineers, Japan, 1 October 2003
    - Applies to registered or licensed engineers who are on the APEC Engineer Register
    - Covers temporary and permanent registration in each country

3. **Ireland**: Institution of Engineers Ireland, December 1992
    - Permits mutual recognition of members holding professional titles from home jurisdiction in host jurisdiction
    - Covers engineering team

4. **Hong Kong China**: Hong Kong Institution of Engineers, June 1994
    - Permits mutual recognition of registered and/or qualified engineers from home jurisdiction in host
    - Covers professional engineers in defined areas of practise

5. **Canada**: Canadian Council of Professional Engineers: October 2007, national peak organisation of provincial and territory engineering organisations
    - Covers mutual recognition of professional engineers only

6. **Texas, USA**: Texas Board of Professional Engineers, August 2014, licensing authority in Texas
    - Permits mutual recognition of Chartered Professional Engineers
    - Includes provisions for recognition of Technologists and Associates
    - Agreed under Australian-USA FTA.

7. **Malaysia**: Institution of Engineers Malaysia, March 2009, peak body for engineers in Malaysia

8.

- Intended to promote, facilitate and extend professional links.
- Recognition of status, coverage and membership structures
- Reciprocal recognition for membership on a learned society basis
- Facilitates registration of competent practitioners.

ORGANISATIONS

1. **Institution of Mechanical Engineers, UK**; November 1997, peak organisation for mechanical engineers in the UK operating to Royal Charter
   - Permits mutual recognition of registered members holding professional titles from a home jurisdiction in host jurisdiction
   - Covers engineering team

2. **Institution of Chemical Engineers, UK**: September 1998, peak organisation for chemical engineers in UK with branch office in Melbourne
   - Permits mutual recognition of Chartered Members
   - Covers the engineering team

3. **Institution of Civil Engineers, UK**: September 1994, peak organisation for civil engineers in UK
   - Permits mutual recognition of Chartered Civil Engineers and Chartered Professional Engineers

4. **Chartered Institution of Building Services Engineers, UK**: October 1995, peak organisation for building services Engineers
   - Permits mutual recognition of registered members holding professional titles
   - Covers engineering team

5. **Royal Aeronautical Society, UK**: May 2005, peak organisation for aeronautical engineers with an Australian Division
   - Covers reciprocal recognition of membership
   - Facilitates registration as a competent practitioner (Chartered status)

6. **Royal Institution of Naval Architects, UK**: November 1998, international professional institution for naval architects
   - Intended to enhance close cooperation between two organisations
   - Facilitates recognition of competent practitioners.

7. **American Society of Civil Engineers, USA**: October 2007, peak organisation for civil engineers in USA.
    - Agreement to cooperate, promote and facilitate exchange of technical and professional knowledge.

8. **American Society of Mechanical Engineers, USA**: October 2005, peak organisation for mechanical engineers in USA and operates internationally.
    - Agreement to cooperate, promote and facilitate exchange of technical and professional knowledge
    - Promote international mobility
    - Recognition of status, coverage and membership structures

9. **Institute of Marine Engineering, Science and Technology, UK**: November 2007, professional body covering engineers, scientists and technologists operating in the international marine environment.
    - Reciprocal recognition of members
    - Covers engineering team

10. **Institution of Engineering and Technology, UK**: March 2006, Professional society for engineering and technology licensed by UK Engineering Council to grant chartered status
    - Mutual recognition of registered members holding professional titles

11. **Institution of Electrical Engineers, UK**: October 1995, peak organisation for electrical engineers in UK
    - Cooperative agreement
    - Mutual recognition of Chartered Members

12. **Institution of Structural Engineers, UK**: August 2008, Peak body for structural engineers in the UK
    - Cooperation
    - Mutual recognition of Chartered Status

ENGINEERS AUSTRALIA POLICY NOTE

ATTACHMENT B

ENGINEERS AUSTRALIA

Outsourcing Australian Engineering Services

19 March 2015

Key Points

Governments have assured Australians that the transition towards a service based economy, underway for some time, is consistent with the continuation of improved Australian living standards. An essential part of the transition is that services play a strong role in all facets of the economy, including international trade. Engineers Australia's formal position is to support growth in trade in engineering services.

Australia's exports of services have steadily increased but since 2007 so has the deficit on services trade because imports have increased faster. The picture for trade in professional services is much the same. In both cases, exports have continued to grow but not fast enough.

There is a wide deficit in Australia's trade in engineering services. Here growth in exports has not just stalled but fallen in recent years. On the other hand, imports of engineering services have exploded. Australia is a substantial net importer of engineering services at a time when the engineering labour market has experienced serious deterioration.

Over 70% of the deficit in trade in engineering services can be attributed to Western Australia which experienced a phenomenal resources boom. If imported engineering services were a substitute for local shortages of engineers, much of this component of the deficit will unwind in the near future. However, all except one jurisdiction in Australia are net importers of engineering services and in the one exception, Victoria, the situation is rapidly deteriorating. The resources boom cannot explain the widespread nature of this situation.

Competitive factors are the most likely cause, particularly the high value of the Australian dollar during the last ten years. The dollar has fallen, perhaps not as much as the authorities would want but further falls are likely to be limited. There is likely to be a lag between these events and export responses but some sort of response should be evident in the next two or so years. If this does not eventuate, other factors will need to be considered.

Background

In 2003, Engineers Australia recognized the globalization of trade in services, including engineering services[2]. At the time the prospects for trade in engineering services looked bright as did trade in services generally. The context in which the Report was researched was the realization that Australia was rapidly transitioning towards a services based economy at a time when trade liberalization policies were receiving increasing support. An important point made was that Australia will be unable to compete in the international economy without an efficient and technologically advanced services sector. The product of the Report was a formal Engineers Australia policy position that supported increased trade in engineering services and urged governments at all levels to be more pro-active to support services export opportunities[3].

At the time the Report was written the most recent statistics available were for 1999-00. Fifteen years have now passes and it is pertinent to ask what has been Australia's experience in trade in services generally, trade in professional services and trade in engineering services. This Policy Note draws on Australian Bureau of Statistics (ABS) trade statistics[4] to examine these issues since 1998. The purpose is to draw attention to a situation that has larger passed unnoticed by the professions and by governments and to establish benchmarks for a revised Engineers Australia policy in this area.

Trade in Services

In Australian statistics services included services provided by manufacturers, transport and travel, construction services, insurance and pension services, financial services, intellectual property services, telecommunications services, computer and information services, business services, technical and trade related services, personal, cultural and recreational services and government services. Figure 1 illustrates the trends in exports, imports and the balance of services trade since 1998.

Long term average annual growth in exports of services was 5.0% per year more than doubling them from $26,763 million in 1998 to $57,250 million in 2014. Imports of services grew faster by an average 6.2% per year over the seventeen years considered. As a result imports increased from $27,928 million to $71,219 million.

Until about 2007, trade in services was essentially balanced, but from then onwards average annual growth in services exports slowed to 3.1% while average annual growth in services imports increased to 6.4% per year. The effect has been a widening deficit in services trade. Last year, services exports increased by 7.0% and services imports grew more slowly, by 5.4%, but these changes were insufficient to correct the services trade deficit.

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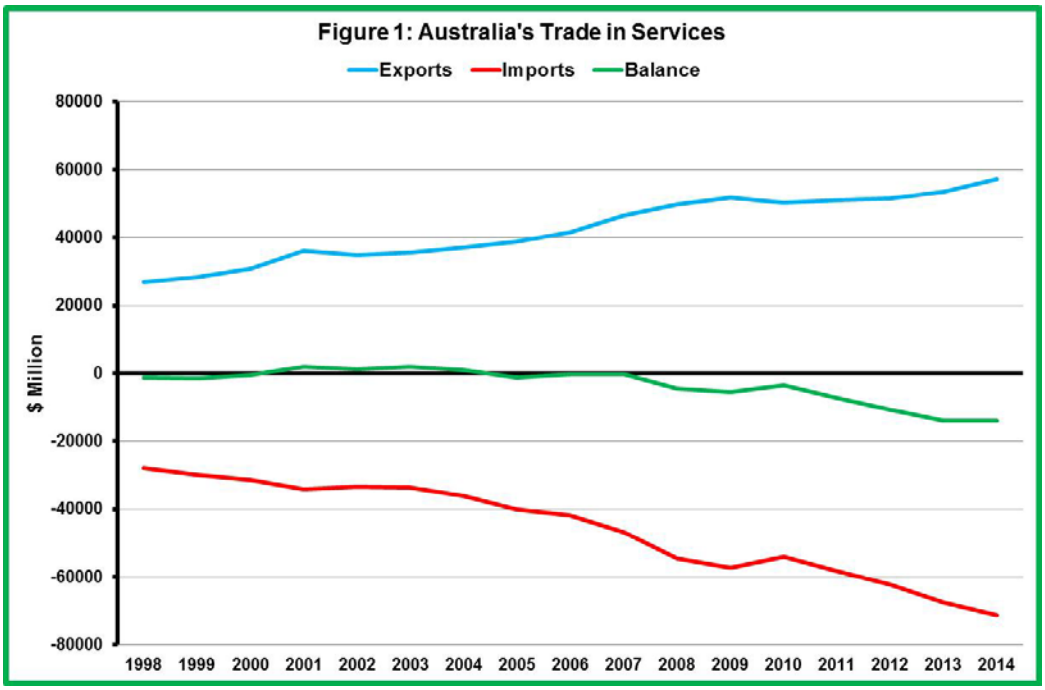
[2] Engineers Australia, Going Global; the case for enhancing global trade in professional services, Report by Kathryn Hurford, 2003, www.engineersaustralia.org.au

[3] See www.engineersaustralia.org.au/about-us/policy-statements

[4] ABS, Balance of payments and International Investment Position, Australia, December 2014, Cat No 5302.0, February 2015 and International Trade in Services by Country, by State and by Detailed Services Categories, 2013-14, December 2014, Cat No 5368.0.55.003, www.abs.gov.au



Trade in Professional Services

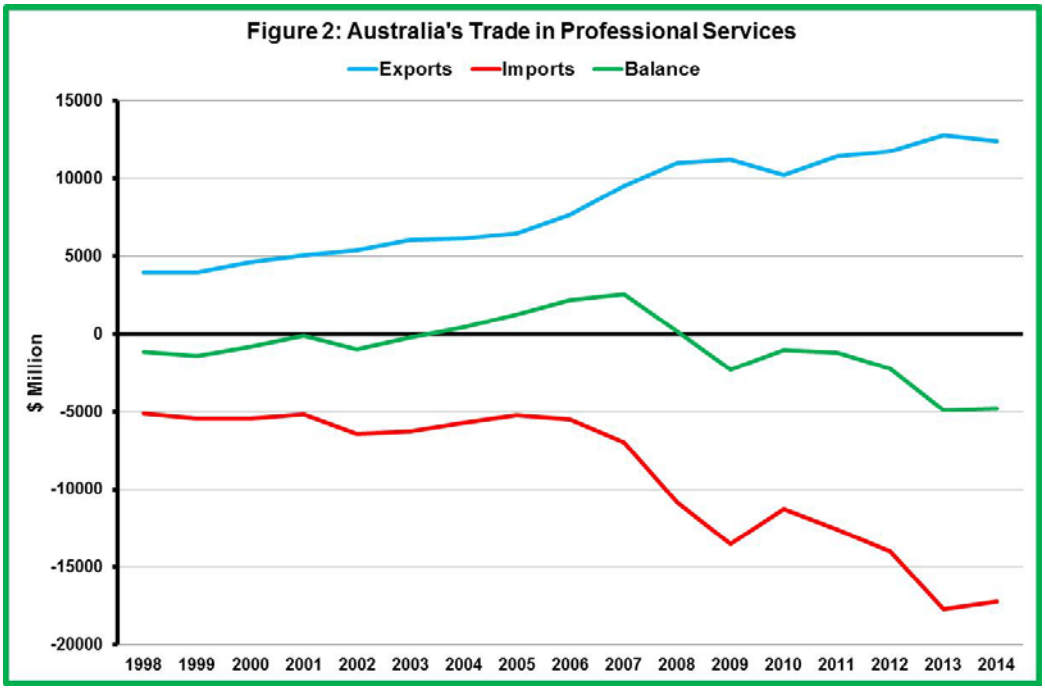
For the purposes of this Note professional services include research and development services, professional and management consulting, legal services, accounting and audit services, business and management services, advertising, market research and opinion polls, architectural services, engineering services, surveying services, waste treatment, extraction in agriculture, mining and oil and gas, operational leasing services, air and sea operations services and trade related services. Figure 2 shows the trends in exports, imports and the balance of trade in these services since 1998.

Both imports and exports of professional services have increased their shares of total services trade. In 1998, exports of professional services were 14.9% of all services exports and by 2014 this had increased to 21.7%. Similarly, in 1998, imports of professional services were 18.4% of services imports and by 2014 this share had grown to 24.2%.

In 1998, exports of professional services were $3,985 million and over the seventeen years to 2014 grew by an average 7.7% per year to $12,403 million, an increase over three-fold. Imports were $5,143 in 1998 and grew much faster, by an average 9.2% per year, to be $17,211 in 2014. Until about 2007, annual growth in professional services exports was just below the long term average and there was sluggish growth in imports. As a result, the 1998 deficit in professional services trade turned into a healthy surplus, more or less consistent with expectations back in 2003.

However, from 2007 onwards, growth in professional services exports slowed to 4.2% per year while imports accelerated at an average 15.7% per year. The result has been that the 2007 surplus has become a $5 billion deficit. Last year, professional services exports fell

by 3.0% and professional services imports fell by 2.6% leaving the previous year's deficit largely in tack.



Trade in Engineering Services

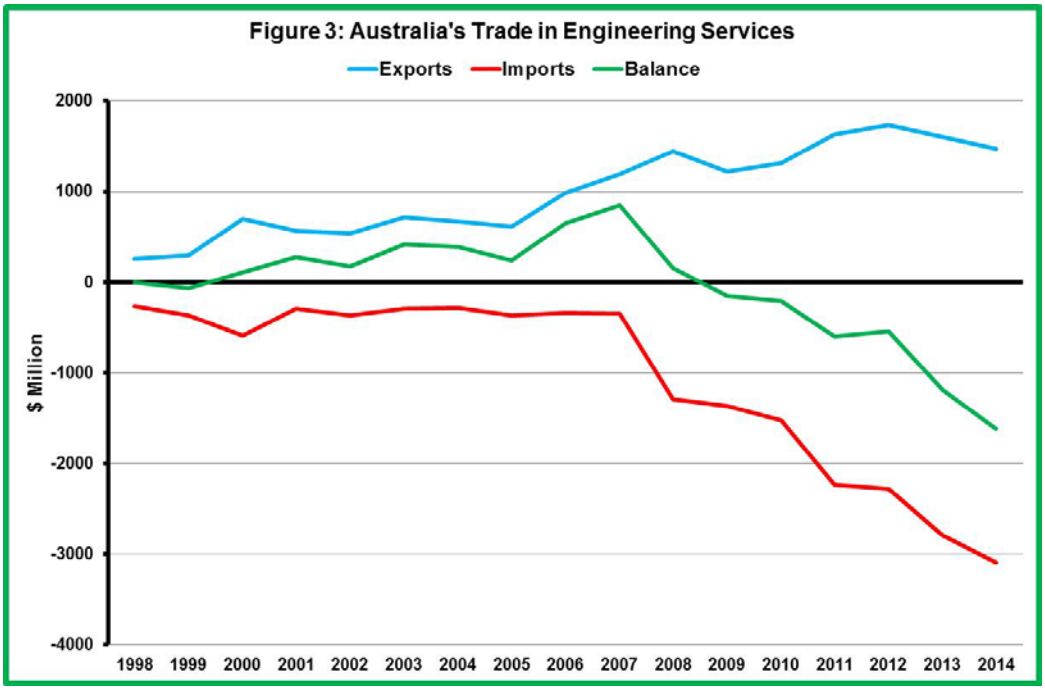
Engineering services in ABS definitions are much the same as commonly understood and includes engineering design, consulting, evaluation and technical services across the full range of engineering disciplines. Figure 3 shows the trends for trade in engineering services consistent with earlier illustrations.

Long term growth rates for exports and imports of engineering services were comparatively high. Export of engineering services grew from a modest $363 million in 1998 by an average annual 15.8% per year to be $1,474 million in 2014. The long term growth rate for imports of engineering services was much higher. In 1998, imports were $262 million so that there was a balance in trade of engineering services. Growth averaged 28.1% per year, increasing imports to $3,090 in 2014, opening up a deficit of $1,616 in engineering services.

There have been two distinct phases to trade in engineering services. From 1998 to about 2007, exports of engineering services grew strongly while imports grew much slower. The result was a growing surplus in the balance of trade in engineering services. The second phase is from 2007 onwards. Except for the GFC year 2008, exports of engineering services continued to increase through to 2012. Although exports have fallen in the past two years, their level has remained high relative to historical levels.

The most dramatic change was to imports of engineering services. The period between 2007 and the GFC were characterized by acute skill shortages. While the GFC brought some temporary relief, shortages were once again experienced as the economy

recovered, easing substantially from about 2012 onwards. The effect of acute engineering shortages was to redirect some of the excess demand for engineering services away from domestic supply, that is, Australian resident engineers including skilled migrants, to the importation of engineering services. As a result there was an extraordinary increase in the imports of engineering services, averaging 53.0% per year, 16.6% when 2008 is excluded through to 2014. The coincidence between relatively high levels of exports and high and increasing levels of imports suggests that there are different skills and specialist areas of engineering involved.



Growth in the export of engineering services and the trend in imports up to 2007 are consistent with expectations when Engineers Australia's policy was drafted. There is no doubt that faltering exports need to be stimulated. However, the change in imports points to a more fundamental problem whose character requires further investigation. One view is supported by the remarks in the previous paragraph, the rapid rises of imports is the result of distortions generated during the resources boom. If this is correct, then it will be reflected in trends for the resources States and will likely be transitory. The challenge will be to manage the change back to a more "normal" situation as the resources boom unwinds.

An alternative view is that the observed change is more permanent because engineering services have become globalized. Under this view the persistent rise in imports is due to falling global engineering competitiveness for a variety of reasons, a key one being the persistent high value of the Australian dollar over the period involved. The situation describes now co-exists with a substantially depressed local engineering labour market.

How have States and Territories been affected?

This section reviews trends in trade in engineering services in States and Territories to see if these shed any further light on the extraordinary changes underway. The main complication is that we need to review trends in architectural, engineering and technical

services because unlike national statistics, those for States and Territories cannot be disaggregated further. The key issue, of course, is how much activity is accounted for by non-engineering services. At the national level, most of the changes observed in Figure 3 are explained by changes in engineering exports and imports. In 2014, engineering accounted for 89% of both exports and imports suggesting that the trends that follow are good insights to jurisdictional changes. The trends for the five largest jurisdictions and for Tasmania and the two Territories combined are shown in Figure 4.

New South Wales

In NSW exports have increased over time and were $440 million in 2013-14. Imports largely offset exports so that there was a balance of trade until about 2008. Although imports were increasing, there was a strong surplus which petered out in 2013. From 2012 onwards, imports accelerated strongly and were $776 million in 2013-14. The result was that NSW is now a net importer of engineering services.

Victoria

Victoria has been a consistent net exporter of engineering services. The trade surplus continued to increase through to 2008. About this time, exports plateaued and imports started to grow strongly, steadily eroding the surplus. In 2013-14, both exports and imports fell. Victoria remains a net exporter but if present trends continue for another year or two this could easily change.

Queensland

Queensland exports of engineering services have steadily increased; 2007 was an anomaly with no statistic available. By 2013-14 exports had increased to $278 million. Queensland imports of engineering services have gradually increased, accelerating strongly from 2009-10 onwards and were $458 million in 2013-14. The trade balance remained in surplus until 2012-13 when it fell into deficit which increased sharply the following year. After many years as a net exporter of engineering services, Queensland is now a net importer.

South Australia

South Australian exports were quite low until about 2007 when they began to increase steadily. In 2013-14, exports were $47 million. Imports were generally stronger than exports but tended to fall in an irregular way reducing the trade deficit and turning it into a surplus for a short period between 2011 and 2013. From 2013 there was a sharp increase in imports which in 2013-14 were $116 million. For most of the time examined South Australia was a net importer of engineering services and remains so now.

Western Australia

Until about 2007, Western Australian trade in engineering services was more-or-less in balance. Exports increased strongly between about 2004 and 2008 and have plateaued since. In 2013-14, exports were $432 million, on par with NSW but somewhat lower than Victoria. Imports increased from 2003 and accelerated dramatically from 2007 to peak at

$1,871 million in 2012-13. Imports fell to $1,617 million in 2013-14. From about 2007 onwards Western Australia has been a strong net importer of engineering services.

Tasmania and the Territories

Trade in engineering services in these jurisdictions is comparatively low and lumpy over short intervals. In 2013-14, they combined to be net importers of engineering services.

Overview

In 2013-14, six jurisdictions were net importers of engineering services and one, the NT, was in balance. Only Victoria remained as a net exporter of engineering services. About 70% of the trade deficit was attributable to WA and another 5% to Queensland. However, the Queensland deficit was far less than the $286 million deficit in NSW. These results suggest:

- A large part of the national deficit is the result of resource related demands for engineering services in WA.
- Only one jurisdiction has a surplus, Victoria and historically this State has had higher exports than other jurisdictions.

The first point supports the contention that a large part of the deficit in trade of engineering services is related to the resources boom and likely to be transitory. The second point suggests that Australia's performance in trade in engineering services has been fairly lacklustre with the only State with consistent surplus showing trends that if they continue will send it into deficit in about two years.

There is no doubt that the competitiveness of Australian engineering enterprises will increase as the dollar devalues as it is expected to do. However, much of the devaluation has already occurred and if this has been an important reason for the deficit in engineering services a turn-around should be evident in the coming two or so years. If the dollar devalues and the deficit persists, other factors will need to be seriously considered.

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