

## Research on Status and Comparative Competitiveness of China's and Australia's Service Trade

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**Keywords:** China; Australia; Service trade; Competitiveness index

**Abstract:** The purpose of this paper aims to explore the states of the service trade of both China and Australia. Meanwhile, it examines the dependency of Sino- Australia service trade and tests the factors that affect the Sino- Australia service value. The paper had adopted the simple linear regression method to analyse the independent variables proposed. Moreover, the regression result indicate that the Total population of both China and Australia, Australia's government expenditure on education, employment in services (% of total employment) of both China and Australia, China's GDP per capita (current US\$) and China's Merchandise trade (% of GDP) have an impact on the Sino-Australia trade value.

### 1. Introduction

With the increasing development of the international trade in service, General Agreement on Trade in Services (GATS) was concluded in an eight-year Uruguay Round of GATS negotiations since 1986. Since then, the GATS legal framework played a role in explaining the rules of service trade at the most general level.

It was revealed that trade in service comprised more than two-thirds of the world economy, and it became more and more critical to the nation's economic growth. A large number of developing countries had opened its service sector and tapped into the potential of international service trade [1].

In the year of 2015, Australia signed the Free trade Agreement (ChAFTA) with China. It vastly improved market access and reduce barriers for the bilateral service trade.

In the handbook of international trade in services, Cattaneo [1] also mentioned that comparative advantage and gains from specialisation are the two causes of service trade. Comparative advantage referred to the different ability between countries to implement specific economic activities. It may come from many sources, such as the availability of arable land, skilled labour, capital, technology, cost and so on. These differences posed a comparative advantage for the home countries and provided intensive for countries to trade. Deardorff [2] held a very similar view with Cattaneo. He described comparative advantages as the foundations of the service trade development. Also, gains from specialisation arising from increasing returns to scale or agglomeration effects are the other cause make service trade happen. It was explained by the two competing interests arising from the service trade between countries: (1) The producer interest: to enter a broader market and price higher; (2) The consumer interest: get access to a wider variety of choices and lower price.

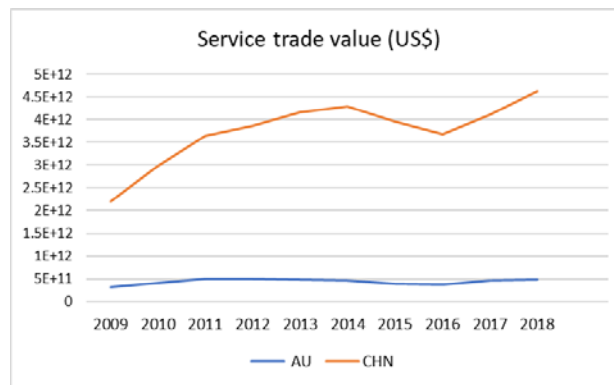


Figure 1 Service trade value of Australia and China with trade partner worldwide from 2009 to 2018.

Source: UN Comtrade Database

## 2. The overview of service trade in China and Australia

Since the international financial crisis in 2008, the Global economic took a long period to recover. The international service demand atrophy has been severe during the recession. However, China has achieved a rapidly expanding, and it turned up to be one of the fastest- grow region worldwide. According to the statistic from the world bank, China's average annual growth rate for value added in services (2009-2018) was 7.87%, which is 5.56% higher than that of the world level. It had been played a constructive role in spurring the demand in global service market over the decade.

On the other hand, Australia's service trade was reported to grow at the average annual rate for value added in services of 0.96% from 2009 to 2018. Though the growth rate looked low, service trade made a remarkable contribution to the Australian economy. According to [3], total service trade made up 22.3 % of Australia's total trade in goods and services in 2018. Unlike the large, advanced economies, such as the US, Australia's trade-in service was mostly driven by travel service and transport service over the past decades. However, as demonstrated in [4], Australia's service trade had developed in a more diversified way in the 21st Century.

### 2.1 The value of service trade

From Fig. 1, we can see how the value of China's service trade value climbed since 2009. From 2009 to 2018, the trade value increased from US\$2.2072E+12 to US\$4.62921E+12. Although the curve dropped in the year 2015 and 2016, China's service trade continues to develop rapidly since then, and it reached the peak of the decade in 2018. Thanks to the preferential policies being launched since 2001, when China joined the WTO, China was able to engage in the global service trade on the broader scope. Meanwhile, China's service trade scale has been expanded at a rapid speed, and it showed the potential to keep growing in the future [5].

Regarding Australia's performance, the service trade value grew from US\$3.2E+11 to US\$5.07E+11 from 2009 to 2012. And then it continuously decreased to the bottom amount of US\$3.79E+11 in the year 2016. The curve had a smooth growth since 2017, and it reached US\$4.88E+11 in 2018. Overall, Australia's service trade showed ups and downs development trend over the decade, and it presented to be steady.

### 2.2 Trade in service (% of GDP)

Fig. 2, shows that the proportion of China's trade in service in GDP had an unsteady development over the ten years. The curve presented in a V shape in the earlier period, which hit its bottom at 4.25% in 2010. The peak was 6.22% appeared in the year 2014. Furthermore, the average percentage of service trade that contributed to the GDP was 5.57%. The trend of the graph has revealed the country's inherent economic logic. China is a well-known manufacturing country; the proportion of

global service trade value logically remain low in the nation. Meanwhile, it delivered a message that there is a vast potential space for service trade development in the future.

As for the Australia situation, the curve declined from 2009 to 2013. Since then, the percentage of service trade value out of the GDP achieved fast growth and the growth rate slowdown in the year 2017. Australia's average service trade (% of GDP) for the indicated ten years was 8.84%. This might be due to Australia had undergone a transition industrial structure from the manufacturing industry to the service industry. The value of trade in service contributed a substantial share to the GDP.

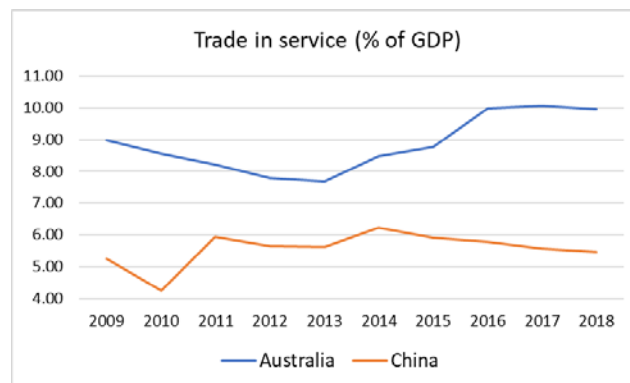


Figure 2 Trade in services (% of GDP) in current U.S. dollars.

Source: World bank

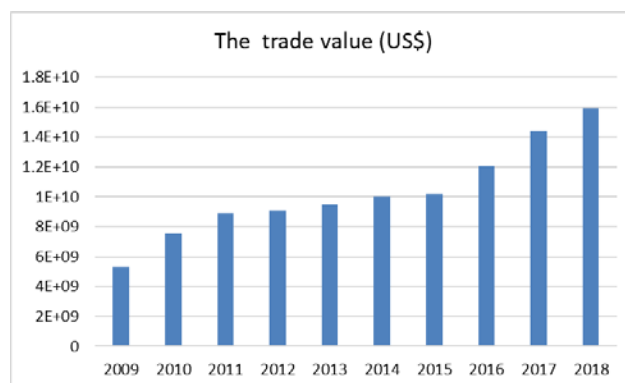


Figure 3 The service trade value (US\$) between China and Australia from 2009 to 2018

Source: UN Comtrade Database

Table 1 The DEGREE DEPENDENCE of the bilateral trade

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Australia	0.570	0.656	0.635	0.586	0.601	0.685	0.753	0.997	1.082	1.109
China	0.104	0.124	0.118	0.106	0.099	0.096	0.092	0.107	0.117	0.114

Source: UN Comtrade Database, World bank

### 3. The performance of Sino- Australia service trade.

Since China entered the WTO in 2001, it became more open to trade partners all over the world. The service trade scale was expanding with time, so did that with Australia. Additionally, since the official launched of China–Australia Free Trade Agreement (ChAFTA) in June 2015, the economic relations between China and Australia was enhanced in a much more longstanding and profound manner. The ChAFTA reduced the barriers for bilateral trade, allowed a greater variety of products and enabled more investment opportunities, which vastly tackle the thresholds involved and boost the development of the service trade [6,7].

According to the Australia DFAT statistic 2018, China was ranked at the second place in Australia's top services two-way trading partners in 2018, and account for 14% of the total share. Also, China sat in the first place in Australia's top services export markets in the same year, which made up 19.3% of the total share.

### 3.1 The dependence on Sino- Australia service trade.

The overall trade performance of Sino-Australian service trade revealed an increasing tendency (See Fig. 3.). From the year 2005, the trade size started booming, and it reached US\$1.59E+10 in 2018. Also, from TABLE 1, it can be observed that the degree of dependence between each other increase in a rapid speed since 2015. Australia's index grew faster than that from 2009 to 2015; while China's index stopped decreased in 2016 and started climbing. This indicated that ChAFTA, as a mutual agreement and understanding between the two countries, has made a significant contribution in governing and promoting the service trade development. A closer link and connection of Sino-Australian service trade were established since then.

Table 2 Trade Competitive Index of China and Australia.

	China	Australia
2009	-0.102	-0.028
2010	-0.116	-0.052
2011	-0.173	-0.087
2012	-0.231	-0.115
2013	-0.285	-0.129
2014	-0.373	-0.089
2015	-0.384	-0.072
2016	-0.408	-0.033
2017	-0.426	-0.021
2018	-0.429	-0.023

Source: UN Comtrade Database: Import and export Service Trade Value (US\$)

## 4. Competitiveness index

### 4.1 The trade competitive index (TC)

The TC index is one of the most commonly used indicators for the global competitiveness analysis, expressed by the formula:

$$TC = (Xit - Mit) / (Xit + Mit) \quad (1)$$

The TC index takes into consideration of a specific industry import and export values in a country, reflecting the international competitiveness of the country's industry. TC index sits between the values of  $\pm 1$ . The closer the index value is to 1, the stronger the competitiveness is; While the closer the index value is to -1, the weaker the competitiveness is.

From Table 2. Australia's TC index remained negative from 2009 to 2018 and generally floated between the value -0.129 and -0.021. The index continuously dropped till 2013 and started increasing since then. This reflects that of Australia service industry had more substantial import than export, and the competitiveness of service trade was below the global level. As illustrated by Fanqi [8], Australia as a developed economy, has high domestic demand toward foreign service, which offset its service trade competitiveness to a certain degree. Also, the undiversified service trade export activity was potentially one of the reasons behind the competitive disadvantage. According to DFAT statistic, the export of travel services accounted for 65% of total service export in 2018, which was extremely high.

The China's TC index had always been negative, which floated in between -0.102 and 0.429 and was in a declining tendency. The figure indicated that the international competitiveness of China's

service trade is weak, and at a disadvantageous global position. This might be due to the worldwide service trade activities are undergoing a transformation to capital and technology- intensive model. The WTO statistic showed financial services and telecommunication, computer services are the second and third largest traded services sectors, accounting for 18.6% and 13.2% of total service trade in 2017. Also, according to [9], Computer services, research and development (R&D) services, grew at more than 10 % per cent on average annually, since 2005. China's service trade account for a relatively low share in these sectors, and still lag behind the world level.

## 4.2 Revealed comparative advantages (RCA)

Revealed Comparative Advantages Index is another indicator that illustrates the international trade comparative advantage. It measures the proportion of the country's exports to the world's total exports, indicating a country's service trade in the global market. RCA index expressed by the formula:

$$RCA = (X_{ij} / Y_i) / (X_{wj} / Y_w) \quad (2)$$

If  $RCA > 2.5$ , the country's service trade is with an extremely competitiveness; if  $1.25 \leq RCA \leq 2.5$ , it indicated strong international competitiveness; if  $0.8 \leq RCA \leq 1.25$ , it indicated moderate international competitiveness; If the  $RCA < 0.8$ , it indicates weak service competitiveness.

The China's RCA index was always below 0.8 from 2009 to 2018, and it shows a declining trend, indicating that the international competitiveness of China's service trade is weak. While Australia's RCA index was general in between 0.8 and 1.25, showing moderate international competitiveness on service trade (See TABLE 3). The statistic indicates that RCA index gap in between China and Australia maintained at an average level of 0.49 over the ten years. The overall development of Australia service trade is better than that of China.

Table 3 RCA INDEX OF CHINA AND AUSTRALIA.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	0.423	0.344	0.501	0.459	0.420	0.406	0.391	0.390	0.368	0.373
Australia	0.824	0.989	0.872	0.798	0.806	0.835	0.863	1.027	0.968	0.940

Source: World bank: Exports of service (current US\$), Exports of goods and services

## 5. Quantitative analysis of Sino-Australia service trade driven factors.

### 5.1 Method

Simple linear regression method is adopted in this paper. To prepare the regression analysis, I collected the data on the variables from the year 2009 to the year 2018. The linear regression aims to find a non- vertical liner function that explained the relationship between the independent and dependent variable, which provides a more accurate and in-depth inspect on how the dependent variable is affected by independent variable. In this context, the simple linear regression investigates the dependent variable, value of Sino - Australia service trade, as a function of the following independent variable:

- (1). Total population.
- (2). GDP per capita (current US\$)
- (3). Employment in services (% of total employment)
- (4). Government expenditure on education, total (% of government expenditure)
- (5). Merchandise trade (% of GDP) (AU)
- (6). Foreign direct investment, net inflows (BoP, current US\$)

### 5.2 Result and discussion

Total population. From TABLE 4, both the China's and Australia's total population scored a positive parameter and a P-value lower than 0.05. Meanwhile, the two countries have very closed R square, which is 92.2% and 91.9% accordingly. This indicated that the value of Sino - Australia service trade is affected by China's population to the extent of 92.2% and by Australia's population

to the extent of 91.9%. A nation's population reflect the nation's market size to a certain degree. So, the impact of the total population of the two countries can be discussed as a whole, as it influences demand toward the bilateral service trade. The larger the population, the higher the Sino -Australia trade value will be.

GDP per capita (current US\$). The result shows the P-value of Australia's GDP per capita is greater than 0.05, while that of China is below 0.05. This suggests there is no significant relationship between Australia's GDP per capita and the value of Sino - Australia service trade. While the value of Sino - Australia service trade is with a positive relationship with China's GDP per capita, the former can be affected to the extent of 88.1%. It was explained that GDP per capita is a useful measurement in comparing the average living standards across different countries [10]. From 2009 to 2018, Australia's average GDP per capita was US\$57417.461, while that of China was US\$6966.182. Compared with the world average, US\$10372.64564, Australian has reached an extremely high living standard and quality. There is a very minimum possible for the country to expand the GDP further. So, change in Australia's GDP per capita does not have a significant impact on the service trade between Chinas. However, China, as a developing country, with GDP per capita lower than that of the world level, have great potential to boost the index. As the living standard improves, the higher demand for the import of service trade will be.

Table 4 Simple linear regression result.

	Independent Variable	parameter	t_values	p_values	r_square
1	Total population (AU)	0.839	9.55	0.000	91.90%
	Total population (CHN)	0.836	9.732	0.000	92.20%
2	GDP per capita (AU)	0.126	0.389	0.708	1.90%
	GDP per capita (CHN)	0.875	7.696	0.000	88.10%
3	Employment in services (AU)	0.689	3.216	0.012	56.40%
	Employment in services (CHN)	0.725	6.996	0.000	85.90%
4	Merchandise trade (% of GDP) (AU)	-0.121	-0.347	0.737	1.5%
	Merchandise trade (% of GDP) (CHN)	-0.594	-3.607	0.007	61.9%
5	Government expenditure on education (AU)	0.61	2.661	0.029	47.00%
	Government expenditure on education (CHN)	0.139	0.374	0.718	1.70%
6	Foreign direct investment (AU)	0.389	1.384	0.204	19.30%
	Foreign direct investment (CHN)	-0.01	-0.033	0.975	0.00%

Source: World bank, UN Comtrade Database, [www.abs.gov.au](http://www.abs.gov.au).

And that is why the China's GDP per capita positively influence the bilateral service trade.

Employment in services (% of total employment). Both the two countries have a P-value lower than 0.05, indicating a significant relationship between the variable of employment in service and the Sino – Australia trade service value. Meanwhile, the positive parameter value illustrated the relationship to be positive. However, the R square of Australia's employment is 56.40%, which is 29.6 % lower than that of China, showing the employment in services in Australia affect the bilateral service trade to a smaller degree. This phenomenon might be due to the services that Australia export to China is dominated by travel service. The DFTA report showed travel service accounted for 90.46% of the total service exports to China. Further, 72.2% of the travel service is education-related travel. These service sectors are not labour – intensive but generate high profit. As Australia service sector is not labour-oriented, employment in service has less impact on the trade value.

Merchandise trade (% of GDP). From the results we could find that the Sino -Australia service trade value is negatively correlated with both Australian and Chinese percentage of Merchandise trade. The logic behind these results is straightforward: increase percentage of Merchandise trade might decrease service trade. However, the p-value of Merchandise trade (% of DGP) (AU) is 0.737 indicating this factor is insignificant, which may be due to the lack of data.

Government expenditure on education, total (% of government expenditure). From the regression result, the China's government expenditure on education has no relationship with the Sino -

Australia service trade value as its P-value is greater than 0.05. However, the Australia's variable influences the trade value to a extent of 47% positively (parameter =0.61, P-value =0.029, R square = 47.00%). As explained above, the education-related service accounts for a large share of Australia's service export, and it contributed greatly to the total bilateral trade value. In contrast, China's strength does not fall into the education sector. Thus, there is no significant relationship found.

Foreign direct investment, net inflows (BoP, current US\$). The regression result shows there is no relationship between the FDI, net inflows and Sino - Australia service trade value because both countries have P-value higher than 0.05. This might due to the finance sector does not occupy a significant share in the Sino- Australia service trade value.

## 6. Recommendations

Since the percentage of service employment out of the total employment in China affects the Sino- Australia service trade value profoundly (relationship expressed as  $Y=6.996 +0.725 X$ ), the Chinese government can provide more job opportunity on service sector before the trade structure transformed. This can include providing training for those who were unemployed due to skill mismatch, offer incentives for service sector employers and so on.

As government expenditure on the education sector in Australia has a positive impact on the service trade (relationship expressed as  $Y=2.661+0.61 X$ ).Australia, as a knowledge-based economy, takes great benefits from the Free Trade Agreement with China. Australia government can keep leveraging on its advantage can increase the budget on the education sector, so that to make itself more attractive as the country provides world-class educational service.

From the competitiveness index analysis, China' service trade is with weak global competitiveness. The level of economic development determines the China's strength is on the traditional service trade sectors. The government should come up with policies to promote the transformation from labour-intensive model to knowledge base model so that to increase the international competitiveness and increase the diversification between the service trade with Australia.

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