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"From Agriculture to Mining: The Impact of Structural Changes in Australian Commodity Exports on the Australian Terms of Trade"

Mr. Mark Frost
Faculty of Business
Charles Sturt University
PO Box 883
Orange NSW 2800

Ph. 02 6365 7830
mfrost@csu.edu.au

Professor Kevin Parton
Faculty of Business
Charles Sturt University
PO Box 883
Orange NSW 2800

Ph. 02 6365 7500
kparton@csu.edu.au

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Australia has long been considered a commodity based economy, with the relationship between the terms of trade and the real exchange rate well documented. Less well documented are the determinants of the Australian terms of trade and how these have moved in response to structural change and growing internationalisation of the Australian economy. This paper examines the Australian terms of trade since 1983 and links movements with the increasing internationalisation of the Australian economy and structural changes within the export and import sectors.

Keywords: terms of trade, trade, commodity prices, Australian economy, resource sector, exchange rates.

Mark Frost is a first time presenter to the AARES conference.

Introduction

This conference paper is a preliminary report on doctoral research of the presenting author. While not finalised the research to date provides some insights into the impact of structural changes in the Australian trade sector on the Australian terms of trade.

Australia has long been considered a commodity-based economy with a strong correlation identified between movements in Australia's terms of trade and the real Australian exchange rate. Most studies have examined this relationship at an aggregate level, where exogenous shocks to the terms of trade are assumed and their impact tested empirically. However there have been fewer studies on potential sources of these shocks and their disaggregated impact on the terms of trade and the real exchange rate.

This paper provides an overview of the Australian traded sector, the role of primary commodity exports, and examines whether the Australian terms of trade have changed in response to structural changes over the past 25 years. The paper commences with an introduction to the role of trade in the Australian economy, the major traded sectors, and how these have changed. This is followed by some preliminary analysis on the terms of trade, components within the terms of trade and individual primary commodity prices. As detailed above any conclusions will be limited as this paper represents a "work in progress" within wider doctoral research.

Australian Trade

Australia has long been considered an "open" economy as almost everything that is produced or consumed in the economy has a tradeable component. Kriesler (1995) suggests that since European settlement in 1788 the Australian economy has been dependent on the economic well-being of the rest of the world for its own economic health. Gruen and Shuetrim (1994) support this by suggesting that Australia has always relied on crucial trade and financial links with the rest of the world.

Notwithstanding this, the role of trade in the Australian economy decreased for the majority of the twentieth century. The insular and protectionist economic policies adopted in response to the Great Depression until the collapse of the Bretton Woods Agreement in 1973 are evidenced in Table 1.

Table 1 Australian Trade as a Proportion of Australian GDP

GBP m	1901	1910	1920/21	1930/31	1938/39	1950/51	1960/61
Total exports	49.3	81.3	150.1	92.3	136.7	987.5	939.8
Total imports	38	53.6	130	61.8	109.4	720.6	1,027.90
Total Trade	87.3	134.9	280.1	154.1	246.1	1708.1	1967.7
Australian GDP	189.8	313.4	684.8	598.9	840.5	5,105	14,167
Total Trade as % GDP	46.0%	43.0%	40.9%	25.7%	29.3%	33.5%	13.9%

Source: McLean (1968); Vamplew (1987)

While Australian GDP and the nominal value of exports, imports and total trade were increasing in value, the relative role of trade within the economy decreased from 46 percent in 1901 to 13.9 percent in 1960/61. In this case the role of trade is measured by trade intensity, i.e. the sum of total exports and imports expressed in proportion to Gross Domestic Product. While a small rise was recorded in 1950/51 this was attributable to a short-term increase in world commodity prices in that year that were largely reversed by 1951/52.

Since the economy was deregulated in the early 1980's there have been dramatic changes in the structure and management of the economy, the traded sector and the trading patterns of the economy. The role of the resource sector in the economy has increased, an independent monetary policy introduced, and financial deregulation now sees investment largely dominated by the private sector, with increasing levels of foreign borrowing. Australia's trading activity has grown and now contributes more to the domestic economy.

Table 2 shows the role of the traded sector since 1982/83.

Table 2 Australian Trade as a Proportion of Australian GDP 1983/84 to 2006/07

$A m	1983/84	1988/89	1993/94	1998/99	2003/04	2006/07
Total exports	28,888	55,322	83,301	114,095	147,205	215,850
Total imports	32,162	62,296	85,504	127,519	168,714	227,883
Total Trade	61,050	117,618	168,805	241,614	315,919	443,733
Australian GDP	434,458	533,775	595,329	739,629	873,197	952,733
Total Trade as % GDP	14.1%	22.0%	28.4%	32.7%	36.2%	46.6%

Source: ABARE 2007

Table 2 is almost the reverse Table 1. Trade intensity in 1983/84 is similar to the 13.9 percent recorded in 1960/61, and since then has increased from 14.1 per cent of Australian GDP to 46.6 percent in 2006/07, which is similar to the 46 percent recorded in 1900. Over the period since 1983/84 Australian GDP has increased by 119 percent to $952,733 million however the traded sector has increased by 626 percent to $443,733 million. In short the last 30 years has seen a reversal of the

decline of the previous 70 years such that the role of trade in the economy is almost similar to that recorded in 1900.

Furthermore the structure of Australian exports has also changed, as evidenced in Table 3.

Table 3: Industry Sectors as a Proportion of Total Australian Exports 1982/83 to 2006/07

	1982/83	**1987/88**	**1992/93**	**1997/98**	**2002/03**	**2006/07**
Agricultural commodities	18%	20%	21%	20%	18%	14%
Resource commodities	39%	39%	39%	36%	37%	49%
Other commodities	13%	10%	2%	2%	2%	0%
Total Commodities	*70%*	*69%*	*62%*	*58%*	*57%*	*63%*
Manufacturing	*13%*	*12%*	*12%*	*20%*	*22%*	*17%*
Services	*17%*	*19%*	*22%*	*22%*	*21%*	*20%*
	100%	100%	100%	100%	100%	100%

Source : ABS (1985; 1989; 1996; 1999; 2005; 2008).

The role of primary commodity exports has fluctuated between 57 percent and 70 percent of total exports since 1983. After remaining largely steady until 2002/03, the role of resource commodity exports in total exports has increased through until 2006/07.

The relative role of agricultural exports has remained steady apart from the period since 2002/03. The relative role of manufactured exports has increased over the last 25 years. One issue for further consideration is the distinction between some agricultural exports and manufactured exports can be blurred in official trade data. For example many of Australian agricultural commodities such as cotton, diary, wool, beef cattle, and wine now undertake some form of first-stage processing in Australia before export, and these can be classified as manufactured exports. While these are included in agricultural export data above, there could be some inconsistencies with data.

In line with their growing role in the economy, services exports (e.g. education, computer technology, financial advice) increased their contribution to Australian exports in the first part of the period, but have remained steady since 1992/93.

As an aside the rising role of the resource exports has not lead to the dramatic collapse of non-commodity exports as predicted by Gregory (1976). One benefit of the 1973 OPEC-induced oil price shocks (and by nature other energy commodities) was that the resource sector in Australia was stimulated with the assistance of Japanese exploration (Anderson 1995). In response to the rapid growth in the resource sector Gregory (1976) suggested

> *"The growth of mineral exports in the 1970's will generate pressures for change in the structure of the Australian economy. Mineral exports reduce the size of traditional exports as the price of traditional exports relative to the price of non-traded goods falls. This leads to a decrease in existing exports, a decrease in import competing goods and an increase in imported goods, which leads to a lower Australian dollar."*

This is similar to the effects of "Dutch Disease" which Jones and Neary (1985) suggest is where some participants in the traded sector are squeezed by the result of a boom in other traded goods. In an Australian context Lindert (1991) linked these concepts together suggesting that the windfall of new natural resource exports would erode the profits and production in the traded manufactured goods sector.

Contrasting the concept of Dutch disease is the Prebisch-Singer hypothesis. This hypothesis links with early trade models that assumed there are more growth-inducing incentives associated with manufacturing industries than with primary production. Grilli and Yang (1988) compared the indexes of manufactures and primary commodities and concluded that the price of primary products relative to manufactures in international markets appears to have been on a long-run decline for a century or more. This may partly explain the increasing share of manufacturing over the last 20 years of the 20th Century.

In hindsight Gregory has proved partially accurate. The growth of exports and trade as a percentage of GDP has impacted on the structure of the economy, with the contribution of the resource export sector increasing and the role of imports increasing such that trade intensity has increased so that the current account now records consistent deficits. However in line with Grilli and Yang (1988), manufacturing exports have increased their contribution, while service and agricultural exports are largely unchanged. In short Australia evidences symptoms of Dutch Disease and the Prebisch-Singer hypothesis over the past 25 years.

Notwithstanding this, primary resource commodities now dominate the Australian export sector. In 2006/07 primary commodities represented eight of the top ten export goods. Of these eight seven are resource commodities, with beef cattle exports representing the sole agricultural commodity. However over the period since 1983/84, wool and wheat have also provided significant export contributions, with 2006/07 data being impacted by the drought. Table 4 shows an amended top eight primary commodities and their relative contribution to total exports.

Table 4: Top Eight Commodity Goods Exports as a Percentage of Total Exports (By Value)

	1982/83	1987/88	1992/93	1997/98	2002/03	2006/07
Coal	12.00%	9.20%	9.80%	8.40%	8.10%	9.50%
Alumina / Aluminium	5.00%	6.90%	5.70%	5.40%	5.20%	5.50%
Crude Petroleum	4.50%	3.80%	4.30%	3.40%	5.70%	3.60%
Gold	1.10%	4.70%	5.60%	5.50%	3.80%	5.30%
Iron Ore	6.40%	4.40%	5.30%	5.00%	3.60%	7.50%
Cattle	4.50%	3.90%	3.90%	2.40%	2.70%	2.10%
Wool	6.90%	10.00%	3.90%	2.00%	2.20%	1.20%
Wheat	5.40%	3.30%	2.60%	3.20%	2.10%	0.90%
Total	45.80%	46.20%	41.10%	35.30%	33.40%	35.60%

Source: ABS (1985; 1992; 1995; 1999; 2003)
Department of Foreign Affairs and Trade (2008)

The contribution of these eight commodities has decreased from nearly 46 percent of total exports to 36 percent of total exports over the past 30 years. The relative contribution of coal and crude petroleum have decreased, although not as substantially as the relative decline in the contribution of beef cattle, wool and wheat. While the drought may have impacted the latter figures in 2006/07, a trend decline in their relative role was clear by 1997/98 and 2002/03. In contrast the relative contributions of gold and iron ore have increased, while alumina / aluminium has remained largely steady.

Table 5 distinguishes the eight commodities into resource commodities and agricultural commodities.

Table 5: Proportion of the Five Resource Commodities and Three Agricultural Commodities to Total Exports (By Value)

	1982/83	1987/88	1992/93	1997/98	2002/03	2006/07
Top 5 Resource	29.00%	29.00%	30.70%	27.70%	26.40%	31.40%
Top 3 Agricultural	16.80%	17.20%	10.40%	7.60%	7.00%	4.20%
Total Top 8	45.80%	46.20%	41.10%	35.30%	33.40%	35.60%

Source: ABS (1985; 1992; 1995; 1999; 2003)
Department of Foreign Affairs and Trade (2008)

The relative contribution of the top five resource commodities to total exports has remained largely stable since 1982/83. Relative declines in coal and crude petroleum have been offset by increases in gold and iron ore, such that the net contribution to total exports of these resource commodities is largely unchanged. Furthermore within the resource sector the top five resource commodities have remained relatively stable, i.e. in 1982/83 the top five resource commodities contributed 29 percent of the 39 percent of resource commodity exports and in 2006/07 contributed 31 percent of the 49 percent contribution of resource commodity exports.

In contrast there have been significant structural changes in the role of beef, wool and wheat within the agricultural export sector. These three agricultural commodities have seen their combined contribution to total exports fall from 16.8 percent to 4.2 percent between 1982/83 and 2006/07. While some of the decline may be due to the current drought, the underlying trend is for a long-term decline, with the figure for 2002/03 showing an export contribution of 7.0 percent.

While the contribution of beef, wool and wheat (i.e. the top three agricultural commodities) to total exports has declined, the decline in the relative role of agricultural commodities in total exports has not been as great. In 1982/83 beef, wool and wheat represented 16.8 percent of the 18.0 percent contribution of all agricultural commodities. In contrast these three commodities represented 7.0 percent of the total 18.0 percent contribution in 2002/03 and 4.2 percent of the total 14 percent contribution in 2006/07.

In short the role of the top five resource commodities within total exports has increased, while the role of the top three agricultural commodities has decreased. While the latter has been partially offset by increased exports of other agricultural commodities (e.g. dairy, wine, cotton and rice), the agricultural export sector is still dominated by beef cattle, wool and wheat. Furthermore the role of manufactured and service exports increased initially, but has remained largely stable since the late 1990s.

Such structural changes are important to consider as any changes in the traded sector can impact of the terms of trade. Traditionally manufactured goods prices (export and imported) are considered less volatile than commodity prices. Gruen and Shuetrim (1994) suggest that mineral commodities are about 40 percent less volatile than agricultural commodities given they are more susceptible to changes in demand while agricultural commodity prices tend to be more susceptible to changes in supply. Furthermore semi-manufactured agricultural product prices such as dairy, cotton, rice etc should be less volatile than the larger more homogenised agricultural commodities.

This raises key issues for the period 1984 – 2003 in Australia. The large role of commodity-based-exports within total exports suggests that Australia has become more specialized in commodity based production, despite the increase in the role of the manufactured export sector. However, the terms of trade may be less volatile given that manufactured export prices and resource commodity prices are less volatile than agricultural prices.

Terms of Trade and the Real Exchange Rate

Key Australian studies on the terms of trade have tended to focus on the key aggregate relationship between the terms of trade and real exchange rate. Some studies have utilised commodity exports as a proxy for the terms of trade on the basis that most shocks come from this component within the terms of trade. In chronological order some key studies include:

Clements and Freebairn (1990) – An analysis of the annual terms of trade from 1860 to 1988 highlighted a general trend decline in the Australian terms of trade as export prices rose slower than import prices. Furthermore the authors concluded that most of the volatility in the terms of trade was due to sharp swings in export commodity prices, and there is a positive correlation between individual commodity prices which indicate that movements in one commodity price correspond with the other commodities in the same group.

Gruen and Wilkinson (1991) – Concluded there is a long-run stable relationship between the terms of trade and the real exchange rate over the period 1969 – 1990, where they estimated that a one percent change in the terms of trade sees a change in the real exchange rate of between 0.82 percent and 1.08 percent.

Blundell-Wignall et al. (1993) – Also identified a positive correlation between the terms of trade and the real exchange rate of around 0.8 over the period 1983 – 1993 .

Bleaney (1996) - Examined the relationship between the annual average exchange rate and relative price of exports from 1900 – 1991. They concluded that while there is a significant positive correlation, the real exchange rate does not display the downtrend that has been observed in the price of primary commodities (and the terms of trade).

Wren-Lewis (2004) - This study was predominantly focused on the New Zealand exchange rate, with parallel analysis undertaken on the Australian exchange rate for comparisons. Their results show:

- a 10% increase in all export prices leads to a 5% increase in the $A TWI
- a 10% increase in food export prices leads to a 1.1% increase
- a 10% increase in metal prices leads to a 0.7% increase

Hatzinikolaou and Polasek (2005) – The authors tested the relationship between the commodity prices and the real Australian exchange rate over the period 1984 – 2003 and found that a 10 percent improvement in the terms of trade is associated with a real appreciation by about 8 percent. The

authors used commodity prices as a proxy for the terms of trade given that the former are easier to source as terms of trade data are usually only available quarterly and with a long publication lag.

In a series of studies in 1998, 2001 and 2004 Swift estimated the amount of pass through exporters and importers were able to achieve. The 1998 study found that at an aggregate trade level Australian exporters could transmit 60 percent of real exchange rate movements to destination prices and 40 percent is transmitted domestically. The 2001 study examined selected metal exports and concluded that the amount of pass through is dependent on the good and the destination. The 2004 study expanded on this and concluded that agricultural products have lower destination pass through than metal goods given the homogenised and export market structure of agriculture. Manufactured exports also have varying pass through opportunities given the impact of trade barriers and quotas.

The relationship between the terms of trade and the real exchange rate shows a strong positive correlation that has been examined over both medium-term and long-term time periods. The previous section suggested that the growth of resource commodity and manufactured exports should see the volatility in the terms of trade and hence the real exchange rate decrease. The next section details some preliminary empirical analysis on the Australian terms of trade, the real exchange rate, and the top eight commodity prices for the period 1984 – 2007.

Preliminary Analysis

Analysis below includes the Australian terms of trade, the real Australian TWI (as a proxy for the real exchange rate), All Australian Commodity Price Index, Non-rural Australian Commodity Price Index and a Rural Australian Commodity Price Index. All data are provided in quarterly index format by the Reserve Bank of Australia. Commodity price index data is an index weighted according to the role of each commodity in the various components. Individual commodity price data have been sourced from the International Financial Statistics series of the International Monetary Fund in nominal form. World prices have been utilised in lieu of local prices given that Australia is largely considered a price taker in world trade and the use of overseas prices eliminates the complexity of exchange rate pass through. Similarly the USD domiciled index for the RBA commodity indexes has been utilised.

Quarterly data has been sourced from the December quarter 1983 until the December quarter 2007, logged and then analysed through SPSS.

Key highlights are as follows:

Figure 1 shows the Australian terms of trade and the RBA All Commodity Index for the period 1983 to 2007. It shows a similar pattern between the two indices over time, although the terms of trade movements appear less volatile than the All Commodity Index. It also appears that key turning points in the Commodity Index may lead similar movements in the terms of trade by one or two quarters. Movements since January 2004 in the All Commodity index appear larger than the terms of trade, given the divergence in the figure. Preliminary correlations suggest a contemporaneous correlation of 0.877 over the period, with potential lagged correlations not estimated yet.

Figure 1: Quarterly logged Australian Terms of Trade and RBA All Commodity Price Index

31/12/1983 to 31/12/2007

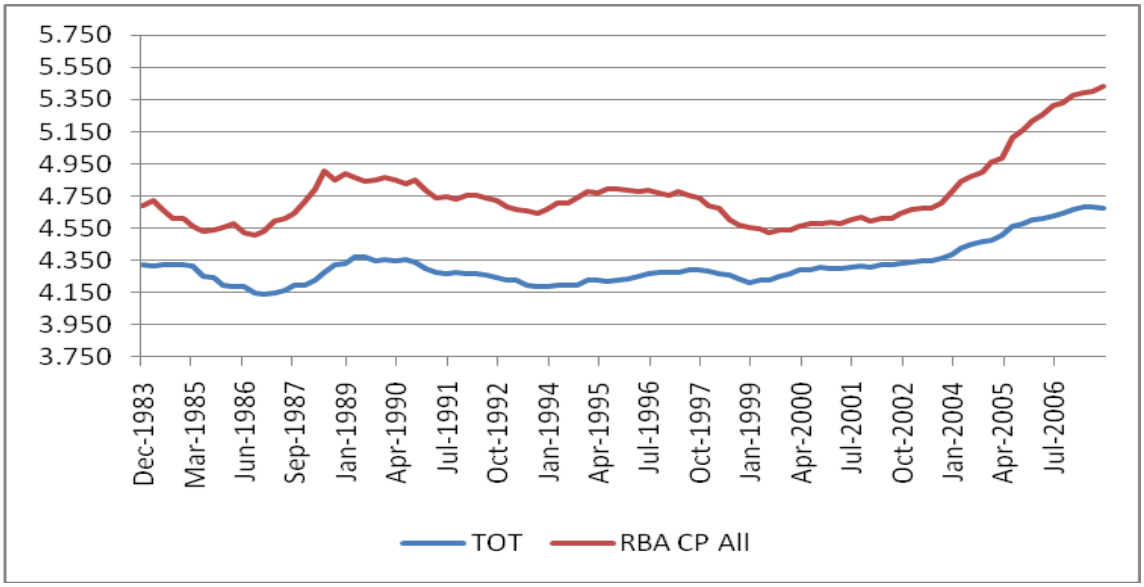


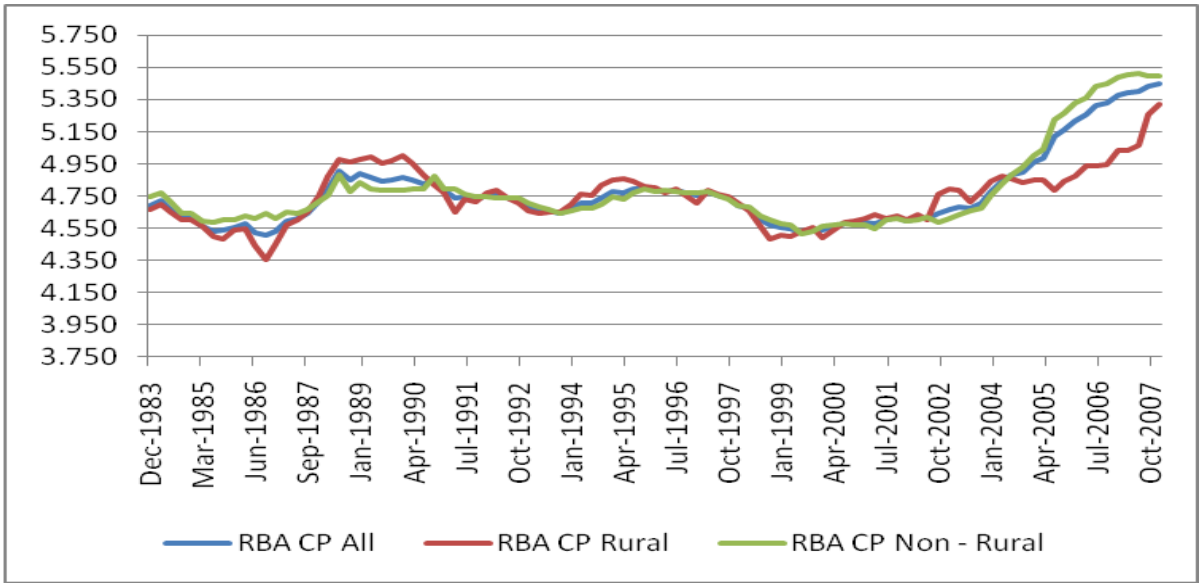
Figure 2 details the movements in the three key Commodity Indexes over the time period, i.e. the RBA All Commodity, Non-Rural and Rural Indices.

There is a strong overlap between the three indices, with the All Commodity and Non-Rural indices almost replicating each other. The Rural index varies below and above the other two indices suggesting it is the more variable of the three. The period since January 2004 is also interesting as both the All Commodity and Non-Rural indices increased and then peaked while the Rural Index initially flattened before peaking in the last few quarters.

Preliminary correlation analysis suggests that the RBA All Commodity index and Non-Rural index had a correlation of 0.982 over the period against a correlation of 0.84 between the All Commodity

Index and the Rural Index. While the strength of the former correlation is not surprising, the strength of the latter correlation is unexpected given the relative lower contribution of agricultural exports.

Figure 2: Quarterly logged RBA All Commodity Price Index, RBA Non-Rural Commodity Price Index and RBA Rural Commodity Price Index 31/12/1983 to 31/12/2007



In addition to examining the correlation over the 25-year period, observing the relationship in five-yearly intervals also provides some interesting insights. Table 6 highlights the key correlations in the five yearly periods as indicated.

Table 6: Key Quarterly Correlation – Real Australian Exchange Rate, Australian Terms of Trade, RBA All Commodity Index, RBA Non-Rural Commodity Index, RBA Rural Commodity Index 1984 - 2007

Key Correlation	1984 - 1988	1989 - 1993	1994 - 1998	1999 - 2004	2005 - 2007	All
Real TWI & TOT	0.904	0.878	0.787	0.289	0.701	0.652
TOT and All Commodities	0.493	0.98	0.145	0.93	0.996	0.877
All Commodities & Non-Rural	0.962	0.872	0.962	0.948	0.995	0.982
All Commodities & Rural	0.984	0.931	0.937	0.933	0.752	0.84

There is a strong correlation between the RBA Real TWI and the Australian terms of trade across all time intervals apart from the period 1999 – 2004, where the relationship fell sharply.

The relationship between the terms of trade and the RBA All Commodity Index is more variable across the various time intervals then a relationship between the terms of trade and the RBA Non-Rural and Rural Commodity Indices respectively. The period 1994 -1998 shows minimal correlation between the terms of trade and the RBA All Commodity Index despite the latter maintaining strong correlations between the two commodity indices. This suggests that other components of the terms of trade (e.g. manufactured and service exports or import prices) may have more than offset the impact of primary commodity prices on the terms of trade during this period. Notwithstanding, a strong correlation has existed between the terms of trade and the RBA All Commodity Price Index since 1999. Further investigation into the contribution of other components in the terms of trade is warranted.

The disparity in the correlation levels of the terms of trade and RBA All Commodity Index in 1994 – 1999 and the terms of trade and Real TWI also requires additional investigation. While no firm conclusions can be drawn from this preliminary analysis, the impact of pass through and sticky export prices could be a reason, and should be included in subsequent investigation.

Table 4 highlighted the contribution to total exports of the top eight primary commodity exports. Table 7 shows the correlation between the top five resource commodity prices and the RBA Non-Rural Commodity Index from 1984 to 2007.

Table 7: Quarterly Correlation between Metallurgical Coal, Aluminium, Petroleum, Gold and Iron Ore Prices to RBA Non-Rural Commodity Price Index 1984 - 2007

RBA Non-Rural Commodity &	**1984 - 1988**	**1989 - 1993**	**1994 - 1998**	**1999 - 2004**	**2005 - 2007**	**All**
Coal	0.236	0.837	0.94	0.314	0.099	0.832
Aluminium	0.98	0.951	0.917	0.792	0.975	0.927
Petroleum	-0.253	0.516	0.829	0.436	0.945	0.745
Gold	0.648	0.465	0.746	0.861	0.92	0.866
Iron Ore	-0.518	0.207	-0.173	0.831	0.943	0.913

Quarterly commodity price data have been sourced from International Financial Statistics of the International Monetary Fund. Metallurgical coal prices represent the average Australian export price to Japan (in USD per tonne). Aluminium and gold prices are the closing spot prices from the London Metal Exchange at the end of each quarter (USD per tonne and ounce respectively). Petroleum prices are the average spot closing price across all petroleum exchanges (USD per barrel), and iron ore is the average Brazilian export price for Europe for each quarter (US cents per dry metric tonne equivalent).

Given that coal has remained Australia's largest commodity export across the time period, the strength and variance in its correlation with the Non-Rural Commodity index is surprising. In contrast the strength and nature of the correlation between aluminium prices and the Non-Rural Commodity index appears stronger and more consistent than that of coal. The overall correlation between iron ore prices and the Non-Rural Commodity index is variable between positive and negative correlation, although the later interval correlations appear more consistent with the contribution of iron ore exports. The two intervals of negative correlation also add to the complexity of the preliminary results. The observations for gold are arguably what should be expected for most of the resource commodities. The results for petroleum are also complex given that while it is one of Australia's key resource exports, Australia is an importer of petroleum, and thus movements in export and import petroleum prices should offset each other in the terms of trade.

The results for the three agricultural commodities and the RBA Rural Commodity Index also provide some interesting insights. Table 8 shows the key correlations between the various agricultural export prices and the RBA Rural Commodity Index.

Table 8: Quarterly Correlation between Beef Cattle, Wheat, and Wool

to RBA Rural Commodity Price Index 1984 - 2007

RBA Rural Commodity &	1984 - 1988	1989 - 1993	1994 - 1998	1999 - 2004	2005 – 2007	All
Beef Cattle	0.886	-0.063	0.491	0.238	0.066	0.49
Wheat	0.496	0.617	0.64	0.897	0.979	0.739
Wool	0.939	0.879	0.774	0.891	0.763	0.845

The quarterly commodity prices have been sourced from International Financial Statistics of the International Monetary Fund. Beef cattle prices are the Australian beef export price to the United States (which take one-third of Australia's beef cattle exports ABARE 2007)) and are expressed in US cents per pound. Wheat prices are the US export price expressed in US dollars per tonne, where the United States is the largest wheat exporter. Wool prices are the Australian export price expressed in Australian cents per pound.

Beef cattle prices show a sound correlation with the RBA Rural Commodity Index over the full time period, however there is sizeable variance in this correlation over the five-yearly intervals. The size of the correlation decreases over time which is consistent with the fall in contribution of beef exports to both agricultural exports and total exports.

In contrast while the contribution of wheat exports to total exports has decreased from 5.4 percent in 1982/83 to 0.9% in 2006/07, the correlation between the wheat price and the RBA Rural Commodity Index has been increasing across the five-yearly intervals. In addition the correlation across the time intervals has been gradual and in a linear trend when compared to other key commodities.

While wool exports have recorded the greatest decrease in contribution to total exports (from 6.9 percent in 1982/83 to 1.2 percent in 2006/07), the wool price has the strongest correlation with the RBA Rural Commodity Index of all three agricultural commodities. Notwithstanding this, the correlation appears to be more variable than that of wheat.

Conclusion

In conclusion the growth of the resource sector within Australian exports since 1983 coincided with expansion of the role of the Australian traded sector. Over the same period the role of imports, manufactured exports and service exports have increased, while the role of agricultural exports has remained steady. At first glance these structural changes in the traded sector suggest that both Dutch Disease and the Prebisch-Singer hypothesis are both applicable in an Australian context, although further investigation is warranted before conclusions can be confirmed.

Preliminary analysis highlights some inconsistencies between the role of resource commodity exports and the expected correlation between their relative prices and the Non-Rural Commodity Index (and ultimately the terms of trade). Similarly the link between the All Commodity Price Index and the Australian terms of trade requires additional investigation as does the variance of the terms of trade in response to the increase in imports, manufactured exports and services exports which tend to have less variable prices.

Furthermore while the contribution of beef cattle, wheat and wool to total agricultural exports and total exports have decreased over the past 25 years, the correlation between their prices and the RBA Rural Commodity Index remains high.

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