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THE EXPORTS TRANSMISSION MECHANISM OF FOREIGN BUSINESS CYCLES TO AUSTRALIA*

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Abstract

This paper examines the impact of foreign business cycles on Australian exports. After accounting for the effect of domestic activity on exports we find that foreign activity has at times had a large impact on Australian exports and, therefore, also on Australian GDP. We also find evidence that the US and Japan have a high output elasticity of demand for Australia's exports. Consequently, their business cycles have a larger impact on Australia's exports than that suggested by their market shares of Australian exports.

Keywords: Business Cycles, Exports, Cointegration.

JEL Classification: E32, F14, F41, O56

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CONTENTS

1. INTRODUCTION

The strong correlation between the Australian and foreign business cycles both before and after the floating of the Australian dollar is well documented.[1] A common explanation of the correlation focuses on the output and / or income effects of foreign business cycles. These affect domestic activity either indirectly, through the terms of trade, or directly through Australia's exports.[2] The terms of trade mechanism in turn operates through two channels: an export supply response to changing export prices, and an income effect which leads to changes in domestic demand. The impact of the terms of trade on domestic activity through these channels may have been blunted since the floating of the Australian dollar, since currency fluctuations have tended to be positively correlated with the terms of trade.[3] This leads to higher export prices being offset by the exchange rate and some of the increased demand being satisfied by imports rather than domestic output. As a consequence, while there is some evidence that the terms of trade affect Australian GDP, the effect does not appear to be large.[4]

Evidence concerning direct effects of foreign activity on exports is also unclear. Gruen and Shuetrim (1994) argue that because Australia's business cycle is better explained by US or OECD activity than by activity in Australia's trading partners, the transmission mechanism is not through exports. Debelle and Preston (1995) reach a similar conclusion using a disaggregated approach that fails to find a significant direct effect of foreign GDP on exports.

While the existing empirical work on the impact of foreign activity on exports has been less than convincing this has, in part, been because the influence of domestic activity on exports has not been adequately modelled. An increase in foreign income will simultaneously increase the demand for Australian exports and Australian income. The increased Australian income and subsequent increase in domestic demand may be satisfied partly by an increase in imports and domestic production and partly by a *decrease* in exports. It follows that an empirical investigation of the relationship between exports and foreign business cycles will be difficult due

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1 The 'best' empirical description of the correlation is Gruen and Shuetrim (1994). See also McTaggart and Hall (1993), Barry and Guille (1976), Backus and Kehoe (1992), Haslem, Hawkins, Heath and Tarditi (1993), Debelle and Preston (1995), Phipps and Sheen (1995) and Dungey and Pagan (1997). Appendix A of de Roos and Russell (1996) provides a short survey of work explaining the correlation in Australian and foreign business cycles.

2 For example, see Pitchford (1992, 1993), Gruen and Shuetrim (1994), and Debelle and Preston (1995).

3 See Blundell-Wignall and Thomas (1987), Gruen and Wilkinson (1991) and Tarditi (1996).

4 Downes, Louis and Lay (1994) and Gruen and Shuetrim (1994) conclude that the terms of trade has a large, rapid and significant impact on gross national expenditure but an insignificant impact on GDP.

to the masking effect of the feedback onto exports through domestic demand. Therefore, to identify the relationship between foreign activity and exports alone one must also identify the relationship between domestic activity and exports so as to eliminate the feedback effect.

This paper attempts to identify separately the influence of domestic and foreign activity on exports. In the next section an unrestricted error correction model of exports is estimated that identifies a long-run cointegrating relationship between exports, domestic activity and foreign activity. In doing so, we find that foreign activity has a large and significant impact on Australia's exports. Furthermore, this channel of foreign influence has at times had a sizeable impact on Australian GDP. We also find that higher domestic activity serves to reduce exports. The impact of foreign and domestic activity on exports are opposite in nature and often largely offset each other. Consequently, the cycle in exports and either the foreign or Australian business cycles is largely uncorrelated.

2. THE FOREIGN BUSINESS CYCLE AND AUSTRALIAN EXPORTS

Figure 1 shows the cycles in exports, Australian constant price gross domestic product (GDP) and US GDP.[5] The correlations between Australian exports and the two GDP series are low, at 0.25 and 0.09 respectively. At first sight these low correlations seem to imply that foreign activity is not important for Australia's exports and that exports, in turn, do not affect Australian activity. However, this analysis ignores the fact that exports may be driven by movements in both foreign and domestic demand as argued above. By recognising this, the following 'exports' mechanism for the transmission of business cycles can be posited. Suppose that a high level of world activity increases the demand for Australian exports and, furthermore, that a high level of domestic activity reduces exports. The latter assumption follows because Australian producers divert exports to satisfy domestic demand. As a result, the net effect on exports of an increase in domestic and foreign activity may be small. Consequently, the correlation between exports and either domestic or foreign activity will appear low, *even though Australia's exports are in part dependent on foreign activity*.

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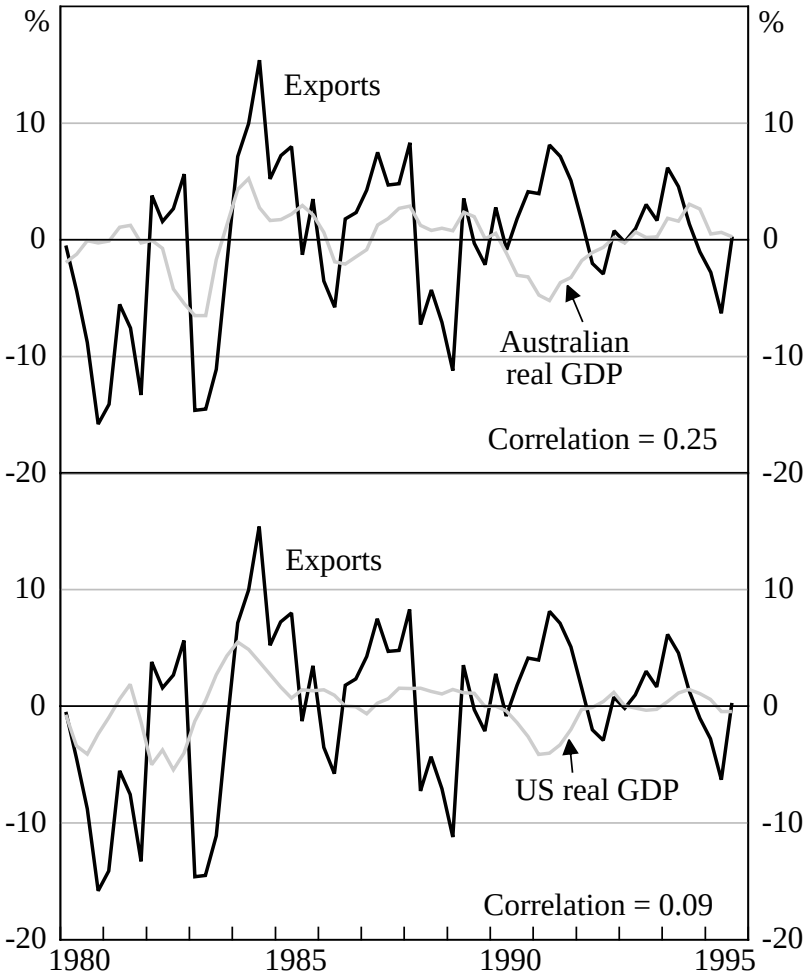
5 US GDP is used as the measure of foreign business activity as it is found following the estimation of the model that US GDP better explains Australian exports than OECD GDP or GDP of Australia's export-markets.

Figure 1: Cycles in Exports, and Domestic and Foreign Activity

Four-quarter-ended percentage change



Notes: The figures show the deviation from the sample average four-quarter-ended growth in each series.

While the idea that increased foreign activity increases exports is straightforward, the idea that domestic demand *decreases* exports is less so. Menzies and Heenan (1993) argue that producers switch in the short run between foreign and domestic markets depending on domestic activity. However, domestic activity also affects the level of exports in the long run for the following reason. As a first approximation, the trend growth in output for an economy is determined by supply factors such as capital accumulation, growth in the workforce and changes in technology. If technological progress is largely independent of export growth, then faster growth in exports must be at the expense of slower growth in that part of output that is consumed domestically.[6] In

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6 This is not as bleak as it sounds. All else equal, increased exports may have little effect on Australia's total output but still improve the standard of living. Selling exports to buy imports reveals that the imports are valued more than the exports.

the short run this is also true but possibly less clear-cut if there are idle resources.[7] However, in general, a surge in domestic demand will be satisfied partly by increased production and imports, but also partly by reduced exports.[8] It is for this reason that we argue that there may be a long-run relationship between exports, Australian output consumed domestically, and foreign output.

The idea that firms switch between markets depending on domestic demand conditions appears at first to apply more to manufactured goods than to non-manufactured goods. However, domestic demand conditions may affect the export of non-manufactured mineral and agricultural goods if domestic firms hold long-term contracts with domestic suppliers. In these cases a fall in domestic demand may lead to an excess supply of non-manufactured inputs that firms may then export. Furthermore, some service industries (for example tourism) can readily offset low domestic demand by focusing more on overseas markets. Even so, it would be expected that at the margin domestic demand has a greater impact on the export of manufactured goods than on the export of non-manufactured goods and services.[9]

Having characterised the long-run determinants of Australian exports in this way, the following unrestricted error-correction model of exports is estimated:

$$\begin{aligned}\Delta x_t = \alpha + \sum \delta_j \Delta tot_{t-j} + \sum \kappa_j \Delta rer_{t-j} + \sum \eta_j \Delta x_{t-j} + \sum \gamma_j \Delta y^{dc}_{t-j} + \sum \chi_j \Delta y^{f}_{t-j} \\ + \beta x_{t-1} + \phi y^{dc}_{t-1} + \theta y^{f}_{t-1} + \psi \text{TREND} + \varepsilon_t\end{aligned} \tag{1}$$

where the level of exports, x, is determined in the long run by the level of domestically consumed output (equivalent to GDP less exports), y^{dc}, the level of foreign output, y^{f}, and a time trend to capture differences in domestic and foreign output trends and structural shifts towards exports in the Australian economy. Short-run influences on exports include changes in the terms of trade, tot, and the real exchange rate, rer.[10] Lower case variables are in natural

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7 The correlation between four-quarter-ended growth in exports and domestically consumed GDP (i.e. GDP less exports) is 0.16.

8 In a sense, the 'switching' argument set out in this paper is similar to the expenditure switching aspects of the absorption approach to the balance of payments as developed in a classic series of papers by Alexander (1952), Meade (1952), Swan (1955), Salter (1959), Corden (1960), Mundell (1962) and Tsiang (1969). Although explanations of the absorption approach tend to highlight the impact of changes in expenditure on imports the arguments also apply to exports.

9 This conclusion does not invalidate the use of total exports of goods and services in the empirical analysis that follows if the cycle in total exports is not entirely due to variations in manufactured exports.

10 Two alternative measures of the relative price of exports were investigated. The first was the relative price of exportable to non-traded goods. The second was the ratio of the terms of trade to the real exchange rate. Both

logarithms and 'Δ' signifies the change in the variable. The proposition that we wish to test empirically is that lower domestically consumed output, y^{dc}, and higher foreign GDP, y^{f}, both increase Australian exports.

The initial long-run specification of (1) included the terms of trade and the real exchange rate but were found to be insignificant and excluded from the analysis reported here. The impact of a change in relative prices on exports will depend on whether the change in prices is due to demand or supply influences. The finding that relative prices do not enter the long-run relationship may therefore be due to the model being unable to distinguish the underlying cause of the changes in relative prices and therefore cannot identify the impact on exports.

Before estimating the model, the time series properties of the data were investigated using ADF (Said and Dickey 1984) and KPSS (Kwiatkowski, Phillips, Schmidt, and Shin 1992) univariate unit root tests.[11] We find that domestically consumed output and foreign output are best characterised as I(1) variables while first differences of these variables and the remaining explanatory variables are best described as stationary, I(0) series. There is some evidence that exports are trend-stationary. However, we proceed under the assumption that exports are non-stationary.[12]

The results of estimating equation (1) are reported in Table 1.[13] Model (1) uses US GDP as the measure of foreign output, models (2) and (3) use OECD GDP, and models (4) and (5) use

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measures were incorporated in a general dynamic structure and found to be either insignificant or not robust to small changes in dynamic specification. Furthermore, these measures of relative export prices usually did not display the expected sign.

11 The sources of the data are reported in the appendix. The results of the unit root tests are reported in Appendix E of de Roos and Russell (1996).

12 Interpretations of the results differ somewhat under the alternative characterisations of exports. If exports are non-stationary, equation (1) specifies the adjustment of exports to deviations from the cointegrating relationship between exports, domestically consumed output and foreign output. Alternatively, if exports exhibit trend growth, deviations from trend growth will be determined by deviations from the cointegrating relationship between the activity variables.

13 It is assumed that y^{dc} and y^{f} are weakly exogenous. This assumption is supported by single equation error-correction models and Johansen (1988) system estimates where deviations from the long-run relationship between x, y^{f}, and y^{dc} significantly impact only on exports.

export-markets' GDP.[14] Model (1´) will be discussed later. Exports, domestically consumed output and foreign output are cointegrated only in the model using US GDP. In particular, the long-run coefficients reported in Table 1 indicate the proposition set out above concerning the impact on Australian exports of domestically consumed output and US GDP is supported. In the OECD and export-markets models (2 and 4), domestically consumed output does not enter the long-run relationship. Excluding this variable fails to improve either of these models (3 and 5). While not reported, a cointegrating relationship can be found between exports and either OECD or export-markets' GDP if the trend is also excluded. However, the models have less than half the explanatory power of the US based models as measured by $\overline{R}^2$.[15]

The relative performance of these models is counter-intuitive. In an exports equation it would be expected that the export market and OECD models would outperform the US model because the US only accounts for around 10 per cent of Australia's export market. However, the cycle in Australia's exports will depend not only on a country's export share, but also on its output elasticity of demand for Australia's exports, ε_f^x. When $\varepsilon_f^x = 0$, Australia's exports are insensitive to the business cycle in that country. For $\varepsilon_f^x > 0$, Australia's exports and that country's business cycle will, all else equal, be positively correlated. Countries with a high output elasticity of demand will have a large impact on Australia's exports over their business cycle. Conversely, countries with a low or negative elasticity of demand will have little or even a 'perverse' negative impact on Australia's exports over their business cycle.

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[14] Export-markets GDP is calculated using a weighted average of the growth in GDP of Australia's trading partners where the weights are the respective countries' shares in Australia's exports.

[15] The long-run findings of the single equation models are robust to a range of estimation methods and specifications of the model. The I(1) techniques of Johansen (1988) and the DGLS techniques of Stock and Watson (1993) provide essentially the same long-run results. In particular, the terms of trade and the real exchange rate do not enter the long-run relationship, domestically consumed production and foreign activity are weakly exogenous, there is only one cointegrating relationship and that domestically consumed production does not significantly enter the long-run relationship in the OECD and Export Markets models. Furthermore, the system estimates of the long-run coefficients in the US models are very similar to the single equation estimates. However, given the relatively short sample and low degrees of freedom the sytem results are not reported.

Table 1: Models of Australian Exports [(a)]
(1980:Q2-1995:Q3)
Dependent variable: Log change in exports

	GDP	United States		OECD		Export markets	
	Lag	(1)	(1′)	(2)	(3)	(4)	(5)
Constant		5.935 (3.36)	7.860 (4.20)	-3.704 (-2.85)	1.788 (0.69)	3.187 (1.87)	3.008 (2.12)
Exports	1	-0.566 (-6.13)	-0.556 (-6.31)	-0.295 (-3.22)	-0.398 (-4.42)	-0.378 (-4.25)	-0.387 (-4.39)
Domestically consumed GDP	1	-1.007 (-3.52)	-1.183 (-4.19)	-0.286 (-1.22)		-0.292 (-1.54)	
Foreign GDP	1	1.207 (3.64)	1.197 (3.79)	1.019 (2.88)	0.189 (0.66)	0.817 (4.01)	0.106 (0.33)
Trend		0.008 (4.65)	0.009 (5.34)		0.006 (2.70)		0.006 (1.70)
Domestically consumed GDP (log change)	0 to 2	0.952 {0.000}	1.068 {0.000}	0.883 {0.019}		1.244 {0.005}	
Foreign GDP (log change)	1	-1.740 (-2.99)	-1.909 (-3.42)				
Japanese GDP (log change)	0		1.397 (2.35)				
Terms of trade (log change)	1 to 4	-0.717 {0.060}	-0.693 {0.034}	-0.753 {0.142}	-0.688 {0.107}	-1.055 {0.073}	-0.693 {0.114}
Real exchange rate (log change)	1 to 4	0.396 {0.043}	0.380 {0.020}	0.118 {0.147}	0.282 {0.188}	0.237 {0.136}	0.297 {0.195}
Long-run Coefficients							
Australian GDP less exports		-1.779	-2.129	-0.972		-0.773	
Foreign GDP		2.133	2.152	3.458	0.475	2.164	0.275
Trend		0.013	0.015		0.015		0.015
Joint significance of terms of trade and real exchange rate		1.746 {0.114}	2.051 {0.062}	1.352 {0.242}	1.218 {0.308}	1.592 {0.153}	1.197 {0.320}
Diagnostics of residuals							
$\bar{R}^2$		0.499	0.545	0.271	0.262	0.360	0.257
LM (1)[(b)]		0.115 {0.735}	0.289 {0.591}	0.306 {0.580}	0.271 {0.603}	0.097 {0.755}	0.257 {0.612}
Standard error of equation		0.027	0.025	0.032	0.032	0.030	0.032
DW		1.90	2.05	1.85	1.99	1.98	2.00

(a) Each model was initially estimated with 4 lags of the short-run variables. Insignificant variables were then eliminated following individual exclusion tests. Finally, all the eliminated variables were tested for joint significance and rejected. Numbers in parentheses () are t-statistics and numbers in brackets {} are probability values. The distribution of the t-statistics on the level variables in the model lie between a N(0, 1) and a Dickey Fuller distribution (See Kremers, Ericsson and Dolado 1992).

(b) LM (1) is a Lagrange multiplier test for first order autocorrelation.

Table 2 shows, for some of Australia's major trading partners, the correlation between Australian exports to a particular country and its business cycle. A large positive correlation is an indication of a high output elasticity of demand for Australia's exports. Among the countries with the highest positive correlations are Japan and the US; Australia's two largest export partners. These results may reflect Australia's role as a major supplier of inputs for the Japanese economy and that the US economy is relatively open. A reasonably high correlation is also found with the NIEs. In contrast, among the lowest correlations are those with countries within Europe which may reflect less open markets. The impact of changes in activity in these countries on Australia's exports will, on average, be much lower. This helps to explain why the OECD-based model does worse than the US-based model as the OECD-wide measure of foreign activity contains countries that have low or negative output elasticity of demand for Australia's exports. As a result, demand for Australia's exports will depend not only on OECD activity, but also on the composition of that activity. A similar argument applies to the export-markets model, since this gives weight to countries with a high average share of Australia's exports rather than to those whose demand for Australian exports is highly responsive to the business cycle.

Table 2: Correlation between Australian Exports by Destination and Foreign Activity (1980-1994)

	Japan	US	NZ	South Korea	UK	Singapore	Taiwan
Correlation coefficient	0.69	0.72	0.44	0.23	0.18	0.69	0.57
Average export share (%)	26.50	10.40	5.20	4.70	3.90	3.60	3.30
	Hong Kong	Germany	Italy	France	Canada	EU	NIEs
Correlation coefficient	0.70	-0.63	0.74	0.14	0.23	0.32	0.60
Average export share (%)	3.00	2.40	2.00	1.9	1.60	13.90	14.50

Notes: Data are for the period 1982-1994 for NZ and for the period 1981-1994 for Taiwan and the NIEs. The logarithms of the series are detrended using linear trends. The exports series were detrended to remove structural reasons for the change in exports over the past 14 years and to ensure the series are stationary. The NIEs are Hong Kong, South Korea, Singapore, and Taiwan.

Given that Table 2 suggests that Japan's output elasticity of demand for Australian exports may be high, the US-based model was re-estimated using US and Japanese GDP. While the level of Japanese GDP is insignificant in the long-run relationship, the contemporaneous change in Japanese GDP has a positive and significant impact on Australia's exports. These estimates are reported as Model (1´) in Table 1 and now referred to as the 'preferred' model.

Turning to the short-run specification of the preferred model we find that the terms of trade has little effect on exports and its sign is opposite to that expected. This may be because the industries that respond to the prices that drive the cycle in Australia's terms of trade are agricultural and resource based which are constrained by the weather or long-term contracts. The impact of the terms of trade on exports, therefore, is more diffuse and long-term. A higher terms of trade may well lead to higher investment and exports but the lead time varies and depends, in part, on the perceived permanence of the change in export prices. In contrast, it has been shown that the terms of trade appears to have a large, positive and rapid impact on domestic demand (see footnote 4). The model, therefore, may not be able to distinguish between the more rapid negative impact on exports through domestic demand, and the more long-term positive price effect. A similar explanation can be invoked to explain the persistent unexpected sign to the real exchange rate variable.[16]

3. THE IMPACT OF FOREIGN AND DOMESTIC ACTIVITY ON EXPORTS

We now wish to look more closely at two issues using the preferred model estimated above. First, the impact of foreign and domestically consumed output on exports. Second, identifying separately the influence that foreign activity has on Australian activity through exports.

To look at the short-run impact of domestically consumed output and foreign activity on exports we can use impulse response functions generated from the preferred model. The effects on exports of permanent shocks to domestically consumed output and US and Japanese GDP are shown in Figure 2.[17] We see in the top two panels of the figure that higher foreign activity raises the level of exports while higher domestically consumed output reduces exports. In the lower panel we see that the net effect of a simultaneous shock to both activity variables is minimal change in the level of exports in the long run.[18] However, in the short run, the net impact

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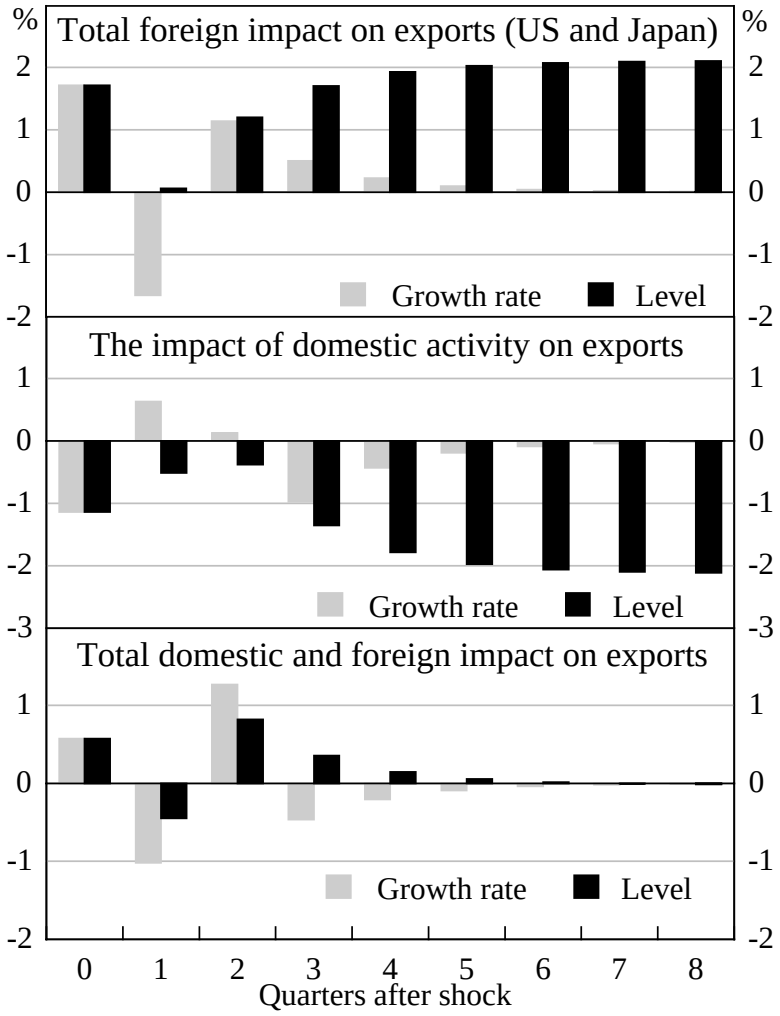
16 These arguments may also explain the somewhat surprising result that the levels of the terms of trade and real exchange rate do not significantly enter the long-run relationship as the 'price' effects on the supply of exports are difficult to distinguish from the demand effects even in the long-run.

17 The impulse response is for a 1 per cent permanent shock to the level of domestically consumed GDP. The shocks to the levels of foreign GDP are in the ratio of their respective average growth rates of GDP to that of Australia's growth in domestically consumed GDP.

18 This may be considered a visual 'test' of the long-run condition that domestic and foreign economic cycles have no impact on the level of exports in the long run. That is, trend growth in exports is the result of 'supply' factors alone and captured by the linear time trend.

generally increases exports. The impulse response functions imply that if the shocks to foreign and domestic activity are not highly correlated then the impact on exports and GDP will be large. However, if the shocks are highly correlated, then the net impact on exports and GDP, although positive, will be considerably reduced.

Figure 2: Exports Impulse Response Functions for a Permanent Shock to the Level of Domestic and Foreign Activity



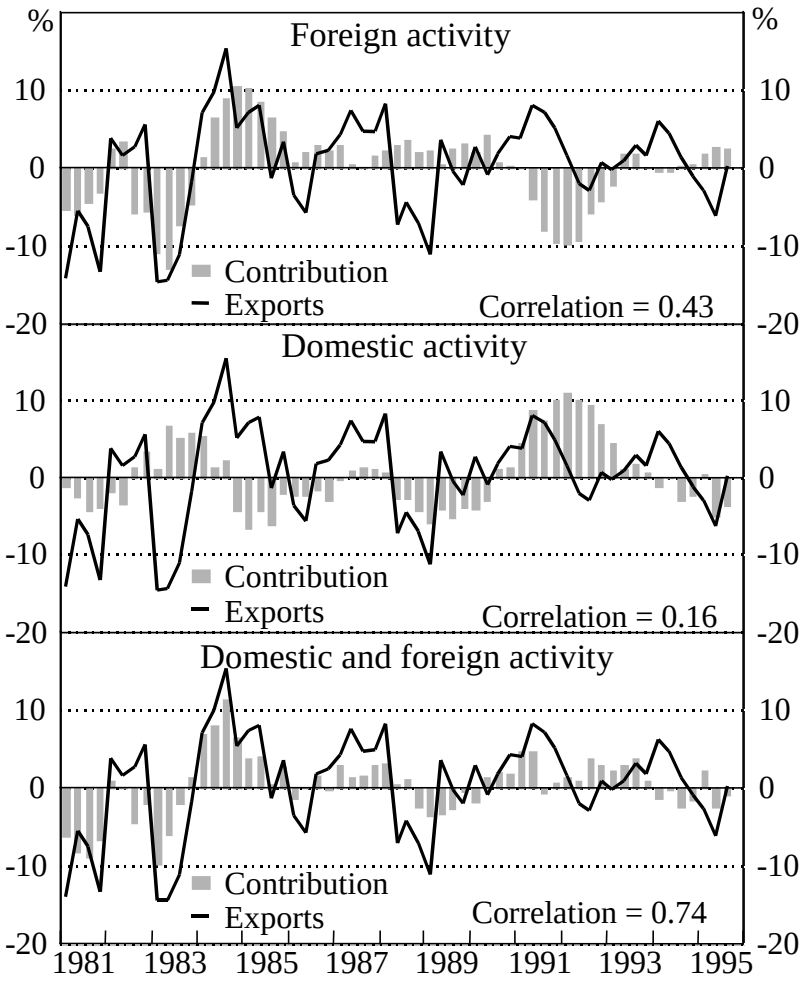
Note: The shocks to the level of domestically consumed GDP, US GDP and Japanese GDP are 1%, 0.98% and 1.23% respectively.

Using the preferred model we can disentangle the historical impact of the foreign and domestic business cycles on exports. The top panel of Figure 3 shows the impact that deviations from the average growth in foreign GDP (US and Japanese) has had on exports over the sample. The impact is large and persistent. Similarly, the second panel shows the estimated impact of deviations from average growth in domestically consumed output on exports. Periods of high domestic activity serve to reduce exports. The third panel combines the effects of both the

domestic and foreign business cycles on Australian exports. A large part of the cycle in exports can now be explained by the combination of these activity variables.[19]

Figure 3: The Impact of Domestic and Foreign Activity on Exports

Four-quarter-ended percentage change



Note: The export growth rate is the de-meaned four-quarter-ended growth in exports. The contributions are calculated as follows. Predicted values for export growth are calculated using the actual values of the exogenous variables and the predicted level of exports. Predicted values are also calculated holding a particular exogenous variable to its sample average growth rate or level over the entire sample. The contribution of that exogenous variable is then the difference between these predicted values.

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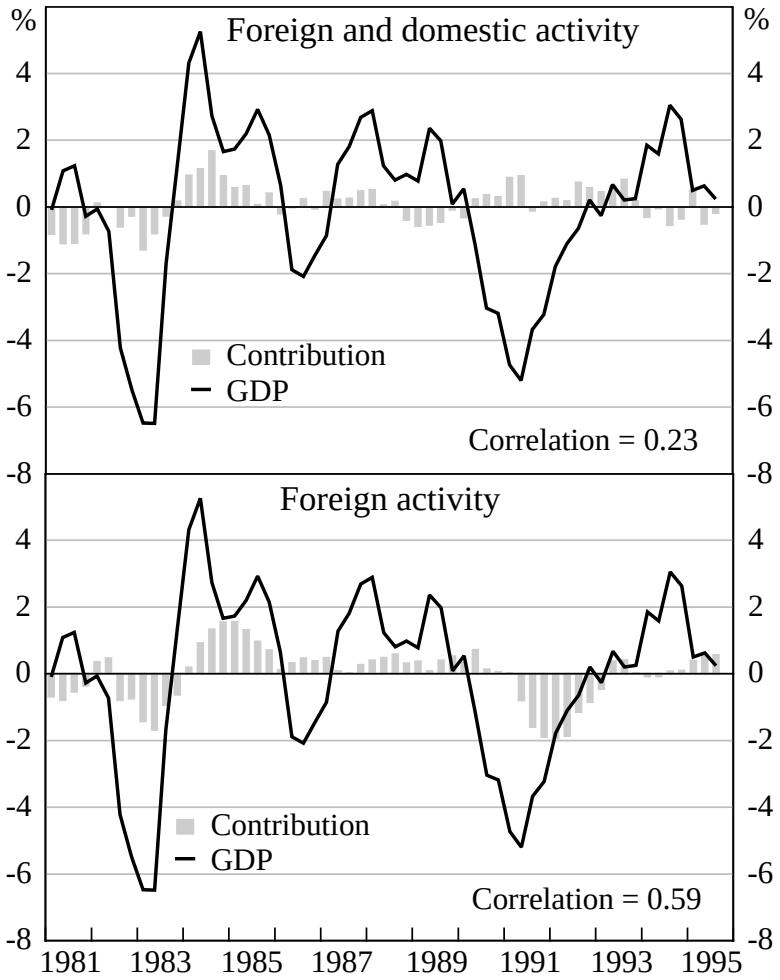
19 Closer inspection of Figure 3 reveals that the explanatory power of the model may have diminished after the mid 1980s. However, if we re-estimate equation (1) over a more recent sample (say 1985:Q4 to 1995:Q3), the results are qualitatively similar. Results are not reported as the sample is too short to generate meaningful long-run parameter estimates.

Figure 4: Impact of Business Cycles Through Exports on GDP

Four-quarter-ended percentage change



Note: The export growth rate is the de-meaned four-quarter-ended growth in exports. Contributions to GDP growth are calculated by multiplying the contributions to export growth by the share of exports in GDP.

In Section 2 it was argued that because both domestic and foreign activity affect exports, the correlation between domestic activity alone and exports is likely to be low. The top panel of Figure 4 shows the total direct contribution to the growth in Australian GDP from domestic and foreign activity through the export channel. The correlation is low, and it does not appear to explain the cycle in Australian GDP. Therefore, the export cycle, when driven by shocks to foreign and domestic activity, is a poor explanator of domestic activity. However, it was also argued above that this does not imply that foreign activity does not influence Australian activity through exports. The lower panel shows the direct contribution to domestic activity of that component of exports which is the result of the cycle in foreign activity alone. This is equivalent to removing from exports the feedback from domestic activity. Now the explanation of domestic

activity is more substantial. We conclude, therefore, that foreign activity does influence domestic activity via an exports channel.

4. CONCLUSION

Previous studies have identified the extent of the correlation between Australian and foreign business cycles and at an aggregate level showed that foreign business cycles 'cause' the Australian business cycle. However, the transmission mechanisms that underpin the correlations have been more difficult to identify.

The most popular and widely accepted transmission mechanism is through exports even though it has been difficult to show empirically. By allowing for the effect of domestic activity on exports we show that US activity has a large impact on exports as expected. Also shown is that, after allowing for the feedback of domestic activity onto exports, Australia's exports are not only highly correlated with the cycle in US GDP but large enough to have a sizeable impact on Australian activity at times. US activity has at times added or subtracted nearly 2 percentage points to Australian GDP.

Finally it was argued that the effect on Australia's exports of the US and Japanese economic cycles is greater than indicated by their average shares of our export markets. This is because, as well as being Australia's two largest export markets, their output elasticities of demand for Australia's exports appear to be relatively high. This explains why the export equations based on OECD or export-markets' GDP perform poorly relative to the US-based model. By implication, it may also explain why the US-based GDP model in Gruen and Shuetrim (1994) performs so well relative to the OECD and export markets based models.

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APPENDIX: DATA SOURCES AND DESCRIPTION

Australian Data

Data	*Source*
GDP (Average)	ABS Cat. No. 5206, Table 48.
Exports of goods and services	ABS Cat. No. 5206, Table 52.
Terms of trade (goods and services)	ABS Cat. No. 5302, Table 9.
Real exchange rate	RBA 22 country real export weighted exchange rate.
Export shares	ABS Cat. No. 5410, Table 5. Prior to 1992/93, ABS Cat. No. 5424 used. Historical data taken from ABS Annual Yearbooks and ABS Overseas Trade publications.

Foreign Data

Data	*Source*
US GDP	Datastream, USGDP...D.
Japan GDP	Datastream, JPGDP...D.
OECD GDP	Datastream, OCDGDP...D.
Export-markets GDP	An export weighted average of quarterly percentage changes in the GDP of Australia's major trading partners is used to form a GDP index.
New Zealand GDP	Datastream, NZGDP...D.
South Korea GDP	Datastream, KOGDP...C, seasonally adjusted using EZ X-11.
UK GDP	Datastream, UKOCGDPDD.
Singapore GDP	Datastream, SP10073.D.
Taiwan GDP	Datastream, TWGDP...C, seasonally adjusted using EZ X-11.
Hong Kong GDP	Datastream, HKGDP...C, seasonally adjusted using EZ X-11.
European community GDP	Datastream, EECGDP..D.
Newly industrialised economies GDP	The sum of the GDP of Hong Kong, Singapore, South Korea and Taiwan, in 1985 exchange rates and US dollars.