Analysing the terms of trade effect on GDP and employment in the presence of low real unit labour costs

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Outline

- Background and motivation
- Descriptive and business cycle analysis
- VECM exploratory analysis
- Remarks
Background & motivation

PERCENTAGE CHANGE,  

%change

1.5
1.0
0.5
0.0
-0.5
-1.0

Quarter

EMP
NFGDP

trend - qoq

Australian Bureau of Statistics
Background & motivation

TERMS OF TRADE AND REAL UNIT LABOUR COSTS,
Descriptive analysis

![Graph showing trends in DFD/GDP, RGDI/GDP, and TOT indices from March 1980 to March 2004. The graph illustrates fluctuations in these indices over time.]
The terms of trade effect, real gross domestic income (RDGI) and domestic final demand (DFD)

- Relative price change not directly reflected in volume measure of GDP
- Increased real purchasing power of the Australian economy
- Boost to real incomes
- Flow on to domestic demand
Employment is usually a lagging indicator of GDP.

RGDI and DFD are usually coincident indicator of GDP.

These usual patterns seem distorted since 2004.
Business cycle analysis
Aims and VECM approach

- Better understand the relationship between GDP, employment, the terms of trade and labour costs
  - effect of terms of trade shocks?
  - role played by historically low but stable real unit labour costs?

- Can the recent relationship between GDP and employment be explained by these factors?

- Analysis is data driven. No a priori economic structure imposed.
Aims and VECM approach

- Multivariate time series model - vector error correction model (VECM).

- Variables chosen:
  - non-farm real GDP (NFGDP)
  - total employed persons (EMP)
  - the terms of trade (TOT)
  - real unit labour costs (RULC)
  - the gap between DFD and GDP (DFD Gap)
  - the trade weighted index (TWI)

- RGDI is directly derived from TOT and GDP and excluded due to collinearity with TOT
Direct and indirect relationships between the variables

- Identified model dynamics - Granger causality tests
Long run relationships

- Cointegration between GDP, employment and real unit labour costs

\[
\log(\text{EMP}_{t-1}) = 0.436 \log(\text{NFGDP}_{t-1}) - 0.649 \log(\text{RULC}_{t-1})
\]

(t-stats)  
(24.383)  
(-4.526)

- Low real unit labour costs support the long run level of employment
Effects of a terms of trade shock

DOMESTIC FINAL DEMAND MINUS GDP,
Impulse response to a terms of trade shock

%  
0.8
0.6
0.4
0.2
0.0
-0.2

Lags

0 2 4 6 8 10 12 14 16 18 20

DFD GAP
lower 5%
upper 5%
Effects of a terms of trade shock

NON-FARM REAL GDP,
Impulse response to a terms of trade shock

% 0.75
0.50
0.25
0.00
-0.25
-0.50
-0.75

Lags
0 2 4 6 8 10 12 14 16 18 20

Non-Farm GDP
lower 5%
upper 5%
Effects of a terms of trade shock

EMPLOYMENT,
Impulse response to a terms of trade shock

%  
0.6
0.4
0.2
0.0
-0.2

Lags  
0  2  4  6  8  10  12  14  16  18  20

Employment
lower 5%
upper 5%
Impact of terms of trade shocks

- Historical Decomposition 1995 - 2005:

Employment growth in 2004-05 is stronger than what it would have been in the absence of terms of trade shocks.
Remarks

• Usual lagging relationship between GDP and employment can be disrupted by various shocks to the economy.

• The VECM suggests that
  • the usual relationship can be altered temporarily by real gross domestic income and domestic final demand induced by a rapid increasing in terms of trade;
  • the macro economic variables under this study still provide a coherent picture of the economy.

• This VECM exercise also paved a methodological way for the ABS to make better data assessment in future.
Questions ?