The Effects of Exchange Rate Fluctuations on Canada's Automotive Industry

March 17, 2017

APRC
Automotive Policy Research Centre

Introduction

- What is the relationship between exchange rates and auto industry growth?
- Studies show exchange rate depreciation accelerates economic growth in developing countries
- Low dollar value expected to boost auto GDP growth
- In Canada does this correlation still hold?

Automotive Policy Research Centre

Methodology

- Collected data on motor vehicle manufacturing (NAICS 3361) and motor vehicle parts manufacturing (NAICS 3363) GDP from 2000 to 2015
- Detrended time series by differencing observations
- Lagged independent variables by 6 months, 12 months and 24 months
- Performed OLS regressions for total motor vehicle GDP growth, assembled motor vehicle GDP growth and motor vehicle parts GDP growth

APRC Automotive Policy Research Centre

Preliminary Results

- Statistically significant correlation found between exchange rate fluctuations and auto GDP growth

- Relatively weaker Canadian dollar found to positively impact motor vehicle GDP growth
  - Correlation between motor vehicle GDP growth and appreciation of US, Japanese, South Korean currencies
  - Correlation between decrease in motor vehicle growth and appreciation of Mexican peso – seemingly anomalous results could be due to other variables not measured (i.e. lower production costs)

United States

- Canada's most important auto trade relationship
- Represents 79.3% of Canada's total auto trade by value
- USD fluctuated between $0.96 and $1.60 CAD from 2000 to 2015
- USD appreciation found to **increase** total motor vehicle GDP growth and motor vehicle parts GDP growth on 24 month lag

Automotive Policy Research Centre

Japan

- Accounts for 3.3% of Canada's total auto trade
- Yen worth between $0.008 and $0.014 CAD from 2000 to 2015
- Yen appreciation shown to **increase** growth of total motor vehicle GDP, assembled motor vehicle GDP and motor vehicle parts GDP on 24 month lag

Automotive Policy Research Centre

South Korea

- Accounts for 2.1% of Canada's total auto trade
- Won worth between $0.0009 and $0.0013 CAD from 2000 to 2015
- Won appreciation shown to **increase** growth of total motor vehicle GDP, assembled motor vehicle GDP and motor vehicle parts GDP on 6 month lag

Mexico

- Represents 7.7% of Canada's total auto trade – up from 2.7% in 1999
- Peso fluctuated between $0.07 and $0.18 CAD from 2000 to 2015
- Peso appreciation found to **decrease** motor vehicle parts GDP growth on 6 month lag
- Result may be influenced by lower Mexican labour costs and/or other factors

APRC Automotive Policy Research Centre

Mexico

- Regression analysis most effective with leading drivers of causal relationship
- Statistical noise from variable exclusion can cause anomalous results – particularly if excluded variables are key drivers
- Auto labour costs are one such exclusion that could drive production decisions and motor vehicle GDP

APRC Automotive Policy Research Centre

Oil Prices

- CAD links oil price to auto industry
- Price of crude oil (USD per barrel) included as independent variable
- Increase in oil price found to **decrease** assembled motor vehicle GDP growth on 6 month lag

Conclusion

- Results provide evidence weaker Canadian dollar increases auto industry growth
- Consistent with literature on exchange rate-economic growth relationship
- Further study topics include longer sample period, trade agreements