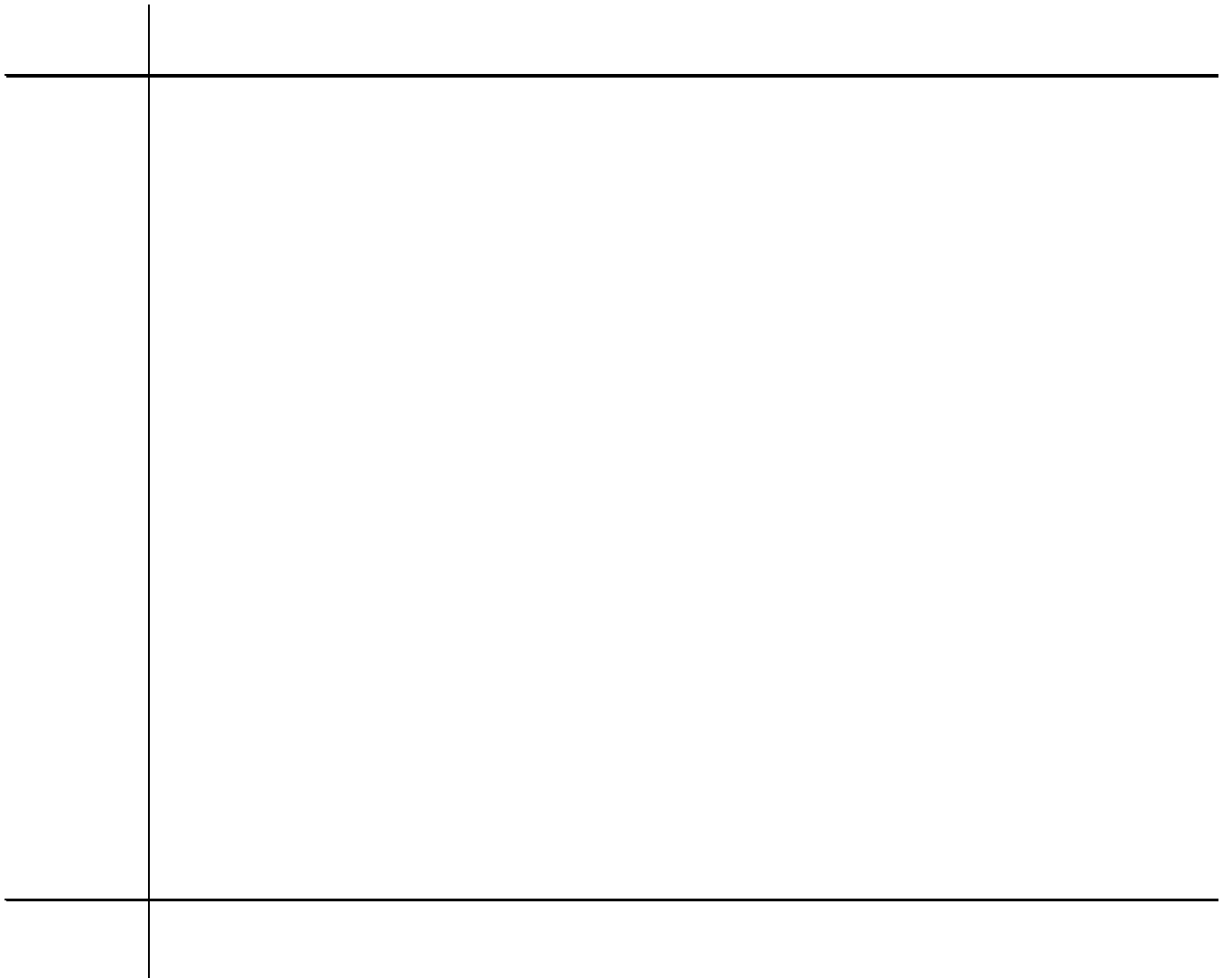




Department of
Economics and Finance



**Competitive Devaluations in Commodity-Based Economies:
Colombia and the Pacific Alliance Group**

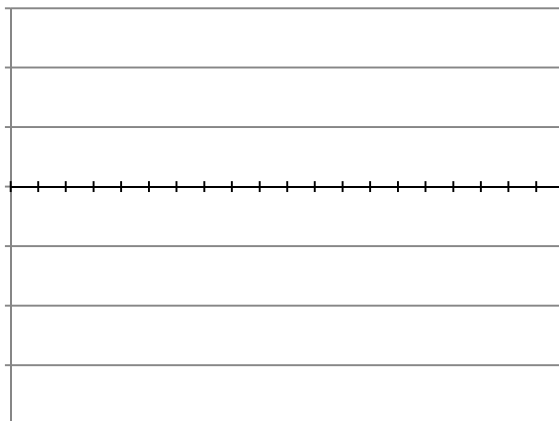
Guglielmo Maria Caporale

1. Introduction

The recent sharp decline in oil prices, as well as a significant deterioration of the trade balance in the Eurozone, have responded by devaluing the currency and signing up to the Pacific Alliance Group (PAG) Free Trade Agreement (FTA). The aim of this study is to evaluate the effects on trade flows of this type of competitive devaluation in a commodity-based economy such as Colombia. According to the price elasticity approach, a devaluation should increase exports by a larger percentage of the foreign currency and decrease imports by a larger percentage of the domestic currency. However, the empirical evidence is rather mixed. Maiti (2008) reported considerable effects, as these could be even more significant in the case of a country such as Colombia, which is highly dependent on oil exports that represent a large part of total exports.

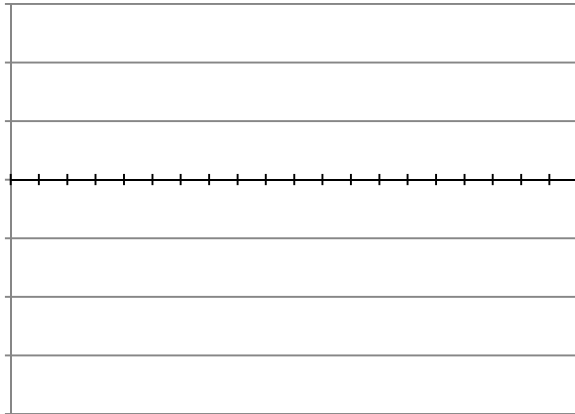
Figures and show that the Colombian trade balance is positively and significantly correlated to the oil price index, not only in the long run but also in the short run. It can be seen that during periods when oil prices fell in the first decade of this century, the trade balance was in surplus and the nominal exchange rate appreciated.

Figure 1. Trade Balance and Oil Price Index



Source: DANE (www.dane.gov.co)

Figure 2. Trade Balance and Nominal Exchange Rate



Source: DANE (www.dane.gov.co)

Figure 3. Colombia's Trade Balance vis-à-vis Its Main Trading Partners

Source: DANE (www.dane.gov.co)

Figure 3 shows the Colombian trade balance vis-à-vis its main trading partners during the period 2000-2010. The trade balance was in surplus in all cases but vis-à-vis Mexico, where there was a negative trend with increasing deficits with respect to the USA and other

In commodity based economies higher power commodity prices could lead to appreciations/ depreciations of the currency. For instance Habb and Kaakova, Kapteva and Ootes, Juan Barvar and Moya ad, Koponen and Juurakka, Hasanov find that the real exchange rates in oil producing countries appreciate in the long run. Hassan et al.

defined as $P_{GPA} = \frac{P_C}{P_{GPA}}$ NE P_C P_{GPA} be the price level in each of the RGA countries and P_C the price level in Colombia. NE is the nominal exchange rate defined as the number of units of Colombian peso per unit of foreign currency. μB_i is the μB of industry sector i calculated as $TB_i = (X_i - M_i) / GDP$ where X_i and M_i stand respectively for exports and imports of industry i to/from each RGA country. μB is calculated divided the nominal μB by the GDP deflator. Note that a constant k is used in the S-curve.

4. Empirical Results

4.1 Data and S-curve Analysis

Data related data from DANE Departamento Administrativo Nacional de Estadística are used in this study to avoid any potential arbitrage bias in evaluating the effects of a devaluation on trade flows. The frequency is annual and the sample period goes from 1990 to 2014. The data are station based on the detrended CII. Classification of Industry International in each industry classification. Industry sectors from a total of 10 were included in the analysis. These are bilateral trade flows between Colombia and other RGA countries. A potential annual

Table 1. S-Curve and Bilateral Analysis by Industrial sector

CIU Code	Industrial Sectors	Chile	Ecuador	México	Peru
10	Manufacture of food products	Yes	Yes	No	No
11	Manufacture of beverages	No	No	No	No
12	Manufacture of tobacco	No	No	No	No
13	Manufacture of textiles	No	No	No	No
14	Manufacture of chemicals	No	No	No	No
1	Manufacture of leather and leather products, manufacture of suitcases, handbags and similar articles and manufacture of saddles and harness, dressmaking and dyeing of fur	No	Yes	No	No
1	Food processing and manufacture of products of wood and cork except furniture, manufacture of articles of straw and rattan	No	Yes	No	No
1	Manufacture of paper, cardboard and paper products and cardboard	No	No	No	Yes

10. 3.44 (c)-2.0 34(a)-2.0 34(r)-4. 1 0 34(n). 134(n) . 2023(d)- .33 ref 3 4 2 . 4 119.99 2 (r)-4. 129(n) .

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Source: DANE (www.dane.gov.co)

However for the free of the manufacturing sectors Manufacture of basic metals products sector Manufacture of computer, electronic and optical products and Manufacture of Motor vehicles, trailers and semi-trailers a deviation does not have the desired effects on trade flows

Figure shows the net B n rea ter s by industr a sector The sectors with the best
def c t are Manufacture of bas c eta products

rate v s a v s Co o b a s RGA trad n partners As a ready ent oned h e ser es are
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Table 2. Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Trade Balance of Manufacture of basic metal products, total Dollars	555				

The estimated panel model is given by

$$TB_{it} = \alpha + \beta_1 \cdot RBER_{it} + \beta_2 \cdot GDP_{it} + \eta_i + u_{it}$$

where TB_{it} is the annual trade balance measured in US dollars for sector i at time t , $RBER_{it}$ is the corresponding annual real exchange rate expressed in dollars and GDP_{it} is the gross domestic product in constant prices for sector i at time t .

**Table 2. Regression output. Sector CIU classification 24:
Manufactures of Basic Metal**

Variables	(i) OLS	(ii) FE	(iii) FE Time effects
Real Batera Export rate			
GDP			
Constant			
Observations			
squared			
Number of Country			
Country FE		YES	YES
Year FE			YES

Country fixed effects have been included in a specification of the dependent variable
 as BE is significant at the 1% level, significant at the 1% level, significant at the 1% level

would be to pursue industrial restructuring, but our results cannot be applied to the short run and instead are educational in nature.

Endnotes

¹ <http://www.dane.gov.co/index.php/compcoercio/externa/banaza/compcoercia>
To ensure that the FE model is efficient, we tested for the distributed errors term u_{it} had a constant variance across t and no serial correlation. In this study we applied the Durbin-Watson test developed by Durbin (1950) based on the residuals from OLS estimation of the first difference of equation (1) as a so-called test for heteroscedasticity, robust standard error to potential unknown variance and covariance properties of the errors and data.

² http://www.dane.gov.co/files/observatorio/competitividad/entorno/economia/compendio_a.pdf

Appendix

Figure A2. S-Curve: Ecuador



Figure A3. S-Curve: Mexico

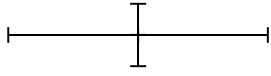
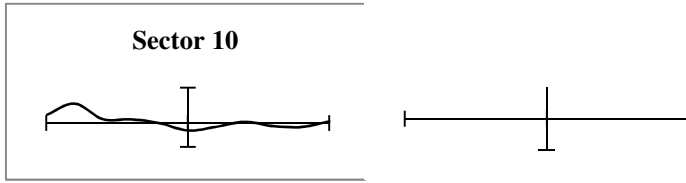


Figure A4. S-Curve: Peru



References

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