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RESEARCH ARTICLE

EVOLUTION OF COFFEE TERMS OF TRADE OF COSTA RICA AND COLOMBIA

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ABSTRACT

The evolution of terms of trade in agriculture has been widely discussed in the research agenda, nonetheless, there is no observable unique path in the agriculture sector. This research addresses the evolution of coffee´s terms of trade in traditional coffee growing Costa Rica and Columbia by comparing coffee export prices and crude oil import prices during a 10-year span. Terms of trade are estimated and analyzed. Fairtrade certification as well as private and national strategies to increase the value and differentiation of coffee in the international market are offered as possible reasons for differences in terms of trade for the two countries.

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INTRODUCTION

There is evidence that the Terms of Trade (ToT) of a country somehow influences the behavior of other macroeconomic variables like Gross Domestic Product (GDP) fluctuations (Broda, 2004) and business cycles (Mendoza, 1995), (Kose, 2002). In this sense, the identification of coffee´s ToT of Costa Rica and Colombia could provide important information that could explain the behavior of macroeconomic variables linked to the agricultural sector. The paper focuses on Costa Rica and Colombia because of the important contribution of coffee amongst the exports balance of both, the tradition of both countries regarding coffee production and the socioeconomic importance of the product. In Costa Rica´s case, by 2014 coffee was the third most exported product, just after Banana and Pineapple (PROCOMER, 2014). In regards of socioeconomic importance, by 2014 there were 22961 farms which main activity was coffee; this means coffee production is the most important product for the largest number of farms in Costa Rica (INEC, 2014). Regarding Colombia, by 2016 coffee remained the main exported product of the agricultural sector (ProColombia, 2016). According to the National Coffee Grower Federation of Colombia, in 2010, there were 563 000 families whose coffee production was their main economic activity. In addition to this, by the same year, around only 5% of those 563 000 families owned farms larger than 5 hectares, which means that the benefits from the coffee sales contribute to enhance small farmers´ livelihood (Federación Nacional de Cafeteros de Colombia, 2014). On the other hand, these countries import petroleum, which represents an important proxy variable for the production cost and agricultural price movements (Baffes & Haniotis, 2016). In the case of Colombia, they have a positive petroleum balance of trade; however, its price moves according to the international petroleum price. On the other hand, Costa Rica has a negative balance of trade for petroleum. In addition to this, Costa Rica as a small country is supposed to be a petroleum price taker as happens with meat (Rodríguez & Montero, 2016) and mango markets (Zúñiga-Arias, *et al*., 2008) The main objective of this research is to provide analysis of the ToT of the coffee exported by Costa Rica and Colombia in relation to the prices of imported crude oil. The analysis is discussed in light of "important" events of the introduction and spread of the Fairtrade certification, market crisis and the roll of country brands, such as Britt Coffee in Costa Rica and Juan Valdés in Colombia.

Theoretical framework

The Prebisch (1950) hypothesis supported by Singer (1950) agues the price of agricultural commodities declines relative to industrial (or manufactured good) over time and it been empirically addressed in several studies since the 1950s. The main goal of most of these studies is to identify if different commodity products of developing countries follow the trend

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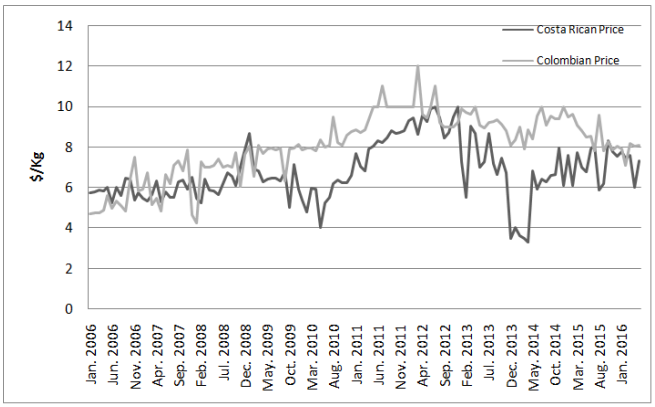
compared to industrialized products from developed countries. This trend being a decreasing ToT in the long run. Timmer & Richter (2009) defined ToT as the ratio of average prices on goods and services exported to the averaged prices on goods and services imported. Since Engel`s analysis on budget expenditures and the decreasing relationship of proportional consumption relative to income, several methods and data have been used to address the evolution of different products` ToT. Also, in 2000-2010, commodity prices experienced the largest price increase since World War II (Baffes & Haniotis, 2016), which raises the question if agricultural prices are still on decreasing terms of trade. On this regard Mollick *et al*. (2008), addressed how if poor countries exporting only non-process agricultural products and industrialized countries focus on manufactured products, the gradual worsening of the agricultural ToT would translate into a deterioration of the standards of living of the poor. The analysis was based on the effects of globalization and on the reduction of inequalities. Results from Mollick *et al*. (2008) agreed with Prebisch-Singer`s hypothesis as they stated globalization is not enough to eliminate the sources of disparities explained by the former hypothesis. According to Timmer & Richter (2009) and their research on bilateral product-level trade for developed countries, the conventional view, since ToT correlate positively with income levels, means richer countries benefit from higher terms of trade.

Feenstra, *et al*. (2009) argues how GDP from the output side measures the production possibilities of the economy and should exclude the ToT. However, the evolution of globalization, and consequently international trade, has developed into a wide range of international agreements to normal trade. In terms of international trade, Ludema & Mayda (2013) investigate whether the most favored-nation tariffs chosen by existing World Trade Organization (WTO) members from of the Uruguay Round are consistent with the ToT hypothesis. Cross country data demonstrate how these agreements are intended to mitigate the effects of ToT. Baffes & Etienne (2014) analyse the negative relationship between ToT and income and how it results from a two-sector model. These models were applied to five food commodities: maize, soybeans, wheat, rice and palm oil. Results show how income has a negative and highly significant effect on real agricultural commodity prices. Baffes & Haniotis (2016) addressed the main causes of the agricultural price cycle; the analysis focused on 6 commodity prices in order to account for as much arable land as possible. Results show how real income increases cause a negative effect on real agricultural prices, raising concerns about food security, especially in net exporters of agricultural products. Their results also show how both stocks and energy prices explained agricultural price movements, since a percentage change in stock-to-use ratios has twice as great of an impact on agricultural prices as does the same percentage change in the crude oil price (Baffes & Haniotis, 2016).

RESULTS AND DISCUSSION

In order to understand how the ToT for coffee of Costa Rica and Colombia have been developing, monthly data from January 2006 to May 2016 was collected for roasted coffee without decaffeination in dollar per kilogram exported. Figure 1 shows the behavior of coffee prices for both countries. Costa Rican and Colombian coffee prices show marked downs and peaks; however, Costa Rican prices had a remarkable peak in November 2008 in which its price reached 14US dollars ($) per kilogram.



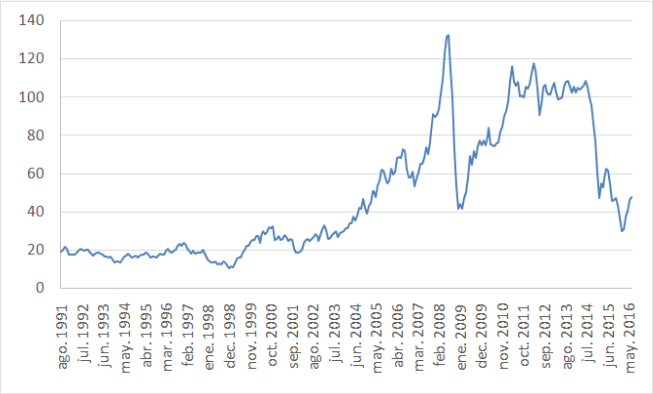
* The November 2008 Costa Rican Price of $14 was replace by the average of the previous and next month values.

Source. Data from Trademap

Figure 1. Evolution of export coffee prices for Costa Rica and Colombia

In order to do not interfere with the analysis of ToT, this specific value was replaced by the mean of the previous and next month value. For Costa Rica, three important events can be distinguished. The first one happened by the beginning of 2009, which was the lowest harvest registered since 1989 and explains why the price of Costa Rican coffee reached $8,68 in January 2009. Another important date is November 2012 when Costa Rican coffee was considered the most expensive one sold at Starbucks cafeterias. In 2012, Costa Rica exported a type of coffee called Geisha, which was sold at higher prices than the Jamaican coffee "Blue Mountain" which had been considered the most expensive coffee sold by Starbucks. At Starbucks stores, a bag of 226g of Geisha Costa Rican coffee reached prices around $40 (Salazar, 2012). Finally, between the end of 2013 and April 2014, Costa Rican exported coffee reached the lowest price for the study period. This price behavior was driven by an excess of production versus consumption, caused by the high prices in 2011 and 2012 which encouraged producers to invest in production; they increased their production and prices dropped.

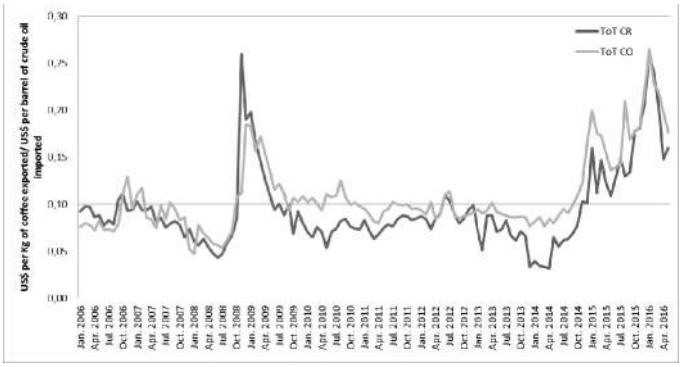
Regarding Colombian coffee, by the beginning of 2008 there was an important decrease in prices due to speculation caused by the entry and exit of important amounts of capital amongst raw material markets. The rest of the time series shows a similar behavior in price movements as the Costa Rican time series with the exceptions noted in previous paragraph. To address ToT, we contrasted the international price of crude oil (barrel) against the export price of one kilogram of coffee for each country. The evolution of international prices of crude oil can be observed in Figure 2. Crude oil was included in our estimations because of the coffee transport costs as well as the share agrochemicals represent in total coffee production costs. According to Araya Molina (2016), agrochemical costs for the 2016-2017 harvest accounted for 17.7% of coffee cherry production while transportation costs accounted for 3.4%. Regarding coffee processing, transportation costs accounted for 7% of coffee processing costs (ICAFE 2017). Costa Rica depends on agrochemical imports, for example in 2016, $61.2 million were imported there were no exports (Procomer 2016)



Source. Trademap

Figure 2. Evolution of international price of oil ($/barrel)

This ratio (Price of kilogram of coffee exported/ international price Crude oil) shows how many barrels of crude oil are worth per one kilogram of coffee sold by farmers. We considered this ratio as an important result because the crude oil price affects transport cost and fertilizer prices. In this sense if crude oil prices increase and coffee prices remain unchanged, the farmers get poorer. On the other hand, if crude oil prices decrease and coffee prices increase or remain unchanged, the farmers get richer. Figure 2 shows the evolution of the ToT trade (coffee price/crude oil price) for Costa Rica and Colombia from 2006 to May 2016.



Source. Data from Trademap and Indexmundi

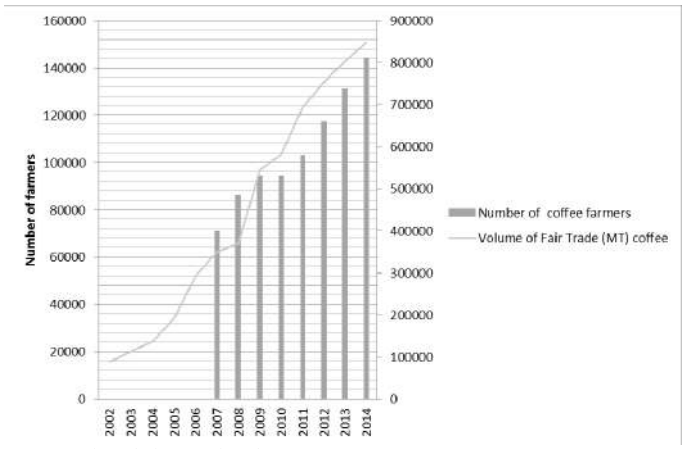
Figure 3. Evolution of Terms of Trade (coffee price relative to crude oil price)

As a remark, an increasing trend in the ToT means that the country must sell fewer kilograms of coffee in order to buy one barrel of crude oil, which is good for farmers. If instead there is a decreasing trend in the ToT, it means that more kilograms of coffee must be exported in order to get one barrel of crude oil imported. As shown by Figure 2, Costa Rican and Colombian ToT show similar behavior. We estimated the average ToT per country before and after the November 2008 peek. Costa Rican ToT before averaged 0,079 while after the average was 0,097. Regarding Colombian ToT before the November 2008 peek price for Costa Rican coffee, the average was 0,081 while after the. Another important aspect is the noticeable change at the ToT level after the 2008 United States economic crisis, which is the main importer of coffee for both Costa Rica and Colombia. From January 2006 to November 2008 Colombian and Costa Rican ToT both averaged 0,08, which means that by selling one Kilogram of coffee, 0,08 barrels of crude oil can be afforded. After 2008, both ToT increased, averaging 0,12 and 0,10 respectively meaning an appreciation of both coffees in relation to crude oil; however, Colombian ToT increased its ToT by 50% on average after 2008, whereas Costa Rican ToT just increased 25%. Most of the increases in ToT for both countries began in mid-2014 as crude oil prices decreased.

Initiatives to improve coffee prices

The results of the analysis suggest that Colombia took actions to obtain better prices than Cost Rica at the international market; in this sense, Fairtrade certification and other private initiatives could be part of those actions. This section describes the evolution and impact of both, Fairtrade certification and private companies' efforts for differentiation: Britt in Costa Rica and Juan Valdez in Colombia. Certified coffee farmers and workers numbered more than 812500, representing 445 coffee producer organizations in 2015 and are located in 30 countries World Wide (Fairtrade, 2016). More than 75% of Fairtrade coffee domes from Latin America and the Caribbean Latin American countries, such as Colombia, Brazil, Perú, Nicaragua and Costa Rica, because these countries are traditional coffee growers. Nonetheless, Colombia produces the most Fairtrade coffee. Fairtrade International provides annual reports which includes coffee as its main product. Within the annual reports is information on number of farmers, number of organizations and exported quantities. Coffee has traditionally been one of the most important products in terms of certifications, and its importance has continuously grown from the creation of Fairtrade to nowadays.

Fairtrade coffee production has clearly increased from 2002 and in 2014 Latin America produced 80% of worldwide Fairtrade coffee. Nonetheless Colombia is the country with the largest production capacity with 162 700 MT (Fairtrade, 2016) in 2014while Costa Rica, stands on the 5th position, with a production capacity of 32200 MT (Fairtrade, 2016) in the same year.



Source. Fairtrade international, 2005-2015

Figure 4. Evolution of the number of coffee Fairtrade organizations

With regards of strategies to manage with international competition and marketing, Juan Valdez Café in Colombia was created in 2002 as a national strategy to cope with international challenges derived from coffee price crisis as well as add value by producing premium coffee; as for 2013, 75% of premium coffee was branded by Juan Valdéz (Colombian Coffee Association, 2013). On the other hand, Costa Rica´s strategy to increase value added has been guided by firms, Britt for example was founded in 1985 with a gourmet approach to

coffee production. Currently both, Juan Valdez and Britt have evolved into similar brand concepts in which coffee is only one of their diversified array of products.

Conclusion and Recommendations

Colombian ToT improved more than Costa Rican ToT after 2008; this result calls for research to identify and understand the underlying factors that explain the difference in their ToT. Columbian coffee international market price was higher relative to Costa Rican price. Juan Valdes, Fairtrade Certification and other initiatives should be studied in detail in future research with the aim to adapt them to Costa Rica production or marketing, to reach better prices and therefore, better ToT. Colombia has used Juan Valdez as a national strategy for promoting Colombian coffee. Although the concept of this brand is similar to Costa Rica, Britt is a private company and therefore, the brand does not include all exported coffee from Costa Rica and therefore not all exports are associated with the same brand. One important aspect to consider is production size for both countries. While Costa Rica produced 90916 tonnes in 2014, Colombia produced 728 400 of green coffee (FAO, 2014), therefore, actions taken by Colombia have a relatively stronger effect worldwide than those taken by Costa Rica. On the other hand, after mid-2014 both ToT showed an important increase, however it was not due to an improvement in coffee prices but due to a decrease in crude oil prices. Besides the importance of crude oil on the production of coffee inputs, coffee prices are not totally indexed to crude oil prices. This behavior could be explained by the added value of an external factor that is not necessarily linked to crude oil prices. In this line, future research on how added value minimizes volatility of prices could be important.

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