Research Note
ERG 6721 | APR 2023

An Analysis of Price Setting Behaviour in the Economic Community of West African States

Authors: Taiwo Owoeye and Olufemi Ajiboye

This project has two basic objectives. First, we analyse the stylised facts that characterise price setting behaviour in the Economic Community of West African States (ECOWAS). Second, we examine the extent of product market integration within the West African sub-region using the 'law of one price'. Our dataset consists of disaggregated micro-level retail price data underlying the computation of National Consumer Price Index in three sample countries - Nigeria, Togo and Benin, collected monthly for five years from January 2011 to December 2015. Our findings for price setting behaviour show that, across the three countries, price volatility is higher in Nigeria than Togo and Benin. Our results for product market integration show that relative price divergence is lower within-country than between-country. This supports the hypothesis that product market integration in ECOWAS is weak.

Introduction

Price setting behaviour impacts the economy from both a microeconomic and a macroeconomic perspective. The former reflects the competitive behaviour at the sectoral level and how firms react to their economic environment and its impact on their competitiveness and profitability (Marahay, 2012). The latter deals with its implications on welfare consequences of business cycles and behaviour of real exchange rates (Parker, 2014: Nakamura and Steinsson, 2008). The presence of price stickiness therefore explains why markets do not reach equilibrium. It is regarded as a starting point in modern micro-founded macro models because it is viewed as a principal determinant of the response to nominal shocks that strike an economy (Nchake, 2013; Dias, Marques & Santos-Silva, 2007).

Market setting behaviour also defines market integration within a trading block and the extent of inter-regional trade. For West Africa, it is important because the region has the lowest level of inter-regional trade compared to other regions. Specifically, inter-regional trade accounts for between 12 and 15% of total trade for ECOWAS, 24.1% for ASEAN and 43.8% and 64.4% for NAFTA and the EU respectively (UNCTAD, 2022). This shows that ECOWAS lags behind other regional economic blocks in promoting market integration, despite its purpose of increasing trade and integration possibilities among member countries.

Despite the importance of the price-setting behaviour of firms and product market integration, research in this field lacks evidence on West Africa as there are very limited studies on price-setting behaviour in ECOWAS. This is largely due to the requisite disaggregated data being unavailable for developing countries where

economic shocks are frequent and inflation rates are often high and variable. Moreover, the existence of weak infrastructure, poor distribution networks and inefficient markets create frictions in price adjustment.

This study documents and contrasts the empirical results observable in the ECOWAS data and thereby gains insight into the typical pattern of price changes and product market integration at the microeconomic level by addressing two basic questions. First, what characterises the price-setting behaviour in ECOWAS? Second, what is the extent of product market integration in ECOWAS? The answers to these questions will help policymakers in considering the impact of monetary policy and inflationary dynamics on the welfare of the people of the region.

Methodology

This study focuses on the Republic of Benin, Nigeria and Togo, that is three out of fifteen countries in ECOWAS. These three countries represent 76% of the economy of the sub-region and belong to two different monetary unions: Benin and Togo belong to the West African Economic and Monetary Union (WAEMU) with a common monetary policy and currencies pegged to the French Franc, while Nigeria belongs to the West African Monetary Zone (WAMZ) and has an independent monetary framework. Also, the geographical location is such that Benin is located between Nigeria and Togo. The second dataset comprises the geographical distances between city pairs both within and between countries. The distance data was collected from geographical websites such as Google maps and Travel Matter. This dataset allows to calculate the shortest distance (by road) between city pairs within and between countries.

The uniqueness of the dataset is that it varies by product, price of the item, date of reporting (month, year), location, product category, and brand and packaging of the item. The use of product price at the retail level for this study facilitates the estimation of the long run levels of price differentials in different locations within the country, enhances the comparability of product prices between locations and minimises the bias from aggregating products that are heterogeneous and in different locations. One thousand three hundred and twenty (1320) records were observed in the raw database for each country. The monthly disaggregated data cover a period of five years (sixty months) from January 2011 to December 2015. We use month-to-month prices because it allows for the investigation of price-setting behaviour to be influenced by seasonal prices as these can cause price fluctuations in particular locations. It is important to capture such fluctuations across the countries for the study period because it allows the comparison of prices of individual products. Specifically, twenty-two products were categorised by classification into analytical product types. The dataset by analytical product type consists of perishable food (30.36%), non-perishable (13.64%), non-food durable (9.09%), non-food non-durable (31.82%) and services (9.09%) in all countries. By COICOP classification, the shares of product categories are given as food and non-alcoholic beverages (50%), clothing and footwear (31.82%), household equipment (9.09%) and services (9.09%).

Main Findings

Results from our empirical analysis provide interesting results for both price setting behavior and product market integration. First, the frequency of price change is higher in Nigeria (91%) than both Benin (44.6%) and

Togo (43.9%). Such volatility suggests the adverse effect of different monetary regimes on price stability. Second, the frequencies of price change for the three countries are relatively high compared to those of developed countries, where low frequency of price change is common. For example, the frequency of price change in the Euro Area is 15% (Dhyne et al., 2006). Third, there are more price increases than price decreases across the three countries, representing downward price rigidity. Fourth, the average price spell varies across the three countries with Nigeria having a shorter spell than Togo and Benin. The frequency of price changes also shows a seasonal pattern across the three countries but at different times of the year. Fifth, Inflation also co-varies with the size of price changes for the three countries indicating that the state-dependent pricing model fits the data for the region better than the time-dependent pricing model. Also, the result for product market integration shows that within-country relative price dispersion is less than the between-country one. The result also indicates that distance and borders have positive and significant effects on price dispersion. The magnitudes of their two effects increases after taking into account product, time and country pair effects. This result supports the hypothesis that product market integration in ECOWAS, as in other developing regions, is weaker than in developed regions.

Policy Implications

These results have important policy implications. First, policymakers in the region should strive for a stable macroeconomic environment to reduce the consequences of state-dependent price setting in a region where the economy is prone to exogenous macroeconomic shocks. Second, there is evidence of lower price volatility in Togo and Benin than in Nigeria and this may be because they belong to different monetary unions. There is the need, therefore, to reduce the negative effect of different monetary unions on price adjustments in ECOWAS. Third, these results demonstrate weak market integration in West Africa and the need for policy makers to pursue policy options that will strengthen economic integration in the sub-region.

Moving Forward

An interesting finding of this project is how price setting behaviour differs between our sample countries that are characterised by different monetary unions. This result requires further investigation and we plan to explore this puzzle going forward. In addition, we also plan to expand our dataset in two ways. First, we intend to add two more countries to our sample – one from each of the two monetary unions in the region. Second, we intend to use customs data to better track the prices of goods traded between countries, as this will improve our results and provide better insights for policy making.

References

Dhyne, E., Alvarez, L. J., Le Bihan, H., Veronese, G., Dias, D., Hoffmann, J., Vilmunen, J. (2006). Price changes in the euro area and the United States: Some facts from individual consumer price data. *The Journal of Economic Perspectives, 20*(2), 171-192.

Dias, D.A., Marques, C.R., and Santos-Silva,J (2007). Time or state-dependent Price Setting Rules? Evidence from Micro Data. *European Economic Review*, 51(7), 1589-1613

Maharaj, R. (2012), Price Setting Behaviour in South Africa Retail Sector MBA Dissertation, *Gordon Institute of Business Science, University of Pretoria.*

Nakamura, E. & Steinson, J. (2008), Five Facts About Prices: A Revaluation of Menu Cost Models, The *Quarterly Journal of Economics, 1*23(4), 1415-1464.

Nchake, M.A. (2014), Product market price integration in developing countries, Ph.D. Thesis, University of Cape Town.

Parker, Miles (2014), Price Setting Behaviour in New Zealand, *Reserve Bank of New Zealand, Discussion Paper Series.* 2014/04

United Nations Conference on International Trade and Development (2022) Key Statistics and Trends In International Trade 2021. UNCTAD, New York. https://unctad.org/system/files/official-document/ditctab2022d3_en.pdf

This note is based on research conducted as a part of PEDL ERG 6721.