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Price Adjustment Behaviour of Manufacturing and Service Sector Firms in Tanzania: A Survey Evidence of Price Stickiness

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Abstract

Price stickiness is one of the key assumptions of New Keynesians macroeconomic models used to support monetary policy analysis and medium term macroeconomic forecasting by central banks. However, there has been little micro level evidence to back this assumption in developing countries which are characterized by regular economic shocks. This study is therefore designed to investigate price adjustment behavior of manufacturing and service sector firms in Tanzania. More specifically, this paper examines the existence, extent and direction of price stickiness in Tanzania, establish factors which are associated with sluggish adjustment of nominal prices and explore whether companies in Tanzania react to demand and cost shocks symmetrically.

The survey method was used to study different aspects of pricing behavior among selected companies in Dar es Salaam, Tanzania. The preliminary results of the study suggest that: (i) majority of surveyed firms change price of main product/service yearly or more than a year, indicating that the overall prices are sticky in Tanzania, but the degree of price rigidity is lesser than in most of developed countries; (ii) price increases are substantially more prominent in Tanzania than price decreases implying that prices are generally sticky downward; (iii) implicit and explicit contracts theories are important in explaining price stickiness, while menu costs appears insignificant to companies; (iv) price adjustment is asymmetrical, companies are more prompted by shocks that lead to profit losses than those that led to profit gains.

Our micro level survey results support the modeling of inflation dynamics in Tanzania based on the assumption of price stickiness. The study therefore serves as an evidence based green light for the Bank of Tanzania to continue embark on Forecasting and Policy Analysis System (FPAS) framework which is grounded on new Keynesian assumptions to support forward looking monetary and exchange rate policy analysis and medium term forecasting.

Keywords: New Keynesian Economics, Forecasting, DSGE models, Price stickiness

1. Introduction

There is a growing consensus in the literature that price stability should be the primary goal of the monetary policy. To this end, a number of central banks have switched to a flexible form of forward looking inflation targeting framework, using interest rates as their operational target and with very limited role of monetary aggregates in the implementation of the policy (Berg et. al. (2010) and Berg et.al. (2006)). This case also applies to the Bank of Tanzania (BOT) which has for many years employed a quantity-based monetary policy framework, but it is now contemplating to intensify the role of interest rates in the operating framework and gradually transit to inflation targeting (Monetary Policy Statement (BOT, 2014)), see also Mbowe (2013).

Moving towards forward looking inflation targeting regime has become necessary for the monetary policy operations to be more pro-active in support of the macro-economic stability instead of being reactive or backward looking. The move is also justified by the fact that the existing monetary policy framework, which is based around the targeting of monetary aggregates, has become increasingly challenging, in part, because of the innovations in the financial sector, which make it difficult to predict money multiplier and velocity. Another motivation is that the move will enable the Bank to send a clear signal about the stance of monetary policy to the public and the markets in a transparent manner. Lastly, the move is part of the East African Community strategy of harmonizing monetary policy frameworks of member countries.

In the forward-looking inflation targeting framework, macro-economic modelling and forecasting plays a vital role since the central banks employ monetary policy instruments, mainly open market operations to bring inflation forecasts close to the inflation target (Croce and Khan, 2000), which is currently set at 5 percent in the medium term for Tanzania. In the price (interest rate) based framework, the BOT like several other inflation-targeting central banks will be using an in–house Forecasting Policy Analysis System (FPAS) to support policy analysis and medium term inflation forecasting.

The FPAS framework offers a number of advantages as it helps in collection and organization of high frequency data, employs simple quarterly projection model of the economy that integrates policymakers' sentiments about the transmission mechanism and the relevant shocks; and also, it assists in production of a reliable, model–based macroeconomic forecasts,

alongside measures of uncertainty and alternative scenarios (Laxton et al, 2009). The quarterly projection model (QPM) of the FPAS frameworks is grounded on New Keynesian open economy macroeconomic models which adopts many of the tools originally associated with Real Business Cycle (RBC) theory, including the systematic use of Dynamic Stochastic General Equilibrium (DSGE) models which are constructed on microeconomic fundamentals and underline economic agents' inter-temporal choice.

The DSGE models are referred to as general equilibrium models, implying general interaction between agents' behaviour and policy actions that led to prices and interest rates adjustments until demand equals supply in both goods and money markets. The models are also dynamic since the current choices of agents' behaviour as well as policy actions depend on expected future uncertain outcomes. Moreover, the DSGE models are stochastic; meaning that they incorporate the random components, commonly referred to as shocks. The shocks (for instance those that affect productivity and profitability as well as those that affect behaviour of financial markets) play crucial role in analysing the cyclical behaviour of the economy.

The DSGE models, lastly, assume nominal (prices and wages) rigidity or stickiness that drives persistence in inflation and output. Specifically, New Keynesians contend that prices and wages can become 'sticky ', indicating that they do not adjust instantaneously to changes in economic environment or shocks.

On the policy side, the fact that prices are sticky provides central banks' ability to influence economic activity through aggregate demand in the short run. See, for example, Mankiw and Romer (1991a, b), Calvo (1983) and Sheshinski and Weiss (1993). This implies that, the degree of price stickiness will affect the reaction of inflation and output gap to changes in the bank's official interest rate (policy rate), and in the medium term will also affect the impact of policy changes on the real economy.

Despite its relevance in macroeconomic frontiers, most of the empirical studies on price stickiness and price adjustment behaviour of companies were conducted in developed nations see for example Bils and Klenow (2004) for the United States and Dyhne et al. (2005) for the euro area, little is known about price stickiness in Africa and Tanzania in particular. Developing nations like Tanzania are characterized by regular economic shocks, imperfect markets and information, high and volatile inflation rates, undeveloped infrastructural systems, this being the case; they may perhaps experience unique behaviour of price adjustments among companies compared to developed economies. In view of this, price adjustment behaviour in developing countries may as a result dispute or agree with the conventional assumption of price rigidity as well as the macroeconomic models used to analyse the effect of monetary policy and other economic shocks on the macroeconomic and microeconomics environment in these economies.

It is against this background that the current study will attempt to bridge the gap in the literature on price stickiness in Tanzania- a low income African country. The study is sought to investigate the existence and extent of nominal price rigidities among firms in Tanzania in particular those engaging in manufacturing and service activities. The study is also pursued to investigate the significant shocks that trigger firms to change (increase or decrease) or do nothing with the price of the main products or service, size and the common direction of price change. Further, the study assesses the relative price adjustment (symmetry) behaviour of firms to cost and demand shocks.

In particular, the study will attempt to answer the following key questions: By examining frequency of price adjustment to change in economic environment, does price stickiness exist in Tanzania, and to what extent? What are the factors that mostly trigger firms to change price of the main products? Are prices sticky downward or upward in Tanzanian? Are price changes symmetric or asymmetric in Tanzania?

The findings of the study contribute to better understanding of existence and extent of price stickiness in a country which is in transition from targeting monetary aggregates to inflation targeting regime. Knowledge of micro-level price adjustment may thus help in understanding the mechanism by which monetary policy stance is transmitted to real economy in the short run and to general price level. It is also important to understanding the assumption of price stickiness that underlies the FPAS-DSGE based models; this in turn will help in better calibration of these models that the Bank has embarked on as a core policy tool and can be used as a tentative guide on how the Bank of Tanzania should react to bring inflation back to the target after a shock.

Likewise, since the majority of the literature on price stickiness focuses on developed countries, the current study will contribute to the literature using experience of developing country, Tanzania. We therefore use survey methodology to study price adjustment behaviour of selected companies engaging in manufacturing and service activities in Dar es Salaam.

The rest of the paper is organized as follows: After this introduction, follows a synopsis of policy evolution issues in Tanzania and price dynamics. Specifically, the section gives an overview of episodes of inherited pro-capitalistic episode, price controls episodes and sectoral regulations in Tanzania. Section 3 summarizes the theoretical ad empirical literature on price stickiness; it also summarizes the conceptual framework of the study. Section 4 describes research methodology, focusing on research design, size and nature of the sample, the questionnaire and data analysis. The discussion on the results is given in

section 5 focusing on market structure, pricing policy, price review and price adjustment, factors influencing price decrease and increase, size of price change, reasons for price stickiness as well as brief analysis of asymmetries in price adjustment. Section 6 concludes and provides policy implication.

2. A Synopsis of Policy Evolution Issues in Tanzania and Price Dynamics

2.1 Inherited pro-capitalistic Episode (1961-1967)

Price adjustment behaviour of firm among other is shaped by market structures as well as nature of economic and political environment in which it operates. In the period of six years after independence, Tanzania focused on building an independent nation characterized by market-led economic policies inherited from colonial masters. During the period, private sector acted as engine of growth with majority of businesses such as manufacturing industries, financial institutions and mines being under British and Asians. The manufacturing sector was import dependent and did not provide benefits to the large part of native Tanzanians. The businesses were market oriented and therefore the pricing behavior of firms in different sectors of the economy was anchored by competitive market environment. As expounded in Mwase and Ndulu (2005), investment and industrial growth rates during this episode were high and were reinforced by high level of domestic savings.

2.2 Episodes of Price Controls and Market Reforms (1967-Early 1990's)

Following the Arusha declaration in 1967, the Government of Tanzania opted for a public sector-led development approach based on 'controls'. The controls included both prices (comprising of goods prices, wages, exchange rate and interest rates) as well as volume allocation of credit and foreign exchange.

To implement this approach, the Government in 1971, set the National Price Control Advisory Board to set and administer prices of a limited number of food and essential industrial items to begin with. These commodities included urban consumer staples such as beer, sugar, rice, wheat and maize flour, matches, beans, bread, and Khanga (local dress). Price controls were further enhanced by the passing of Regulation of Prices Act of 1973. The Act aimed at protecting low-income groups from the impacts of inflation and also limiting monopoly pricing power of domestic producers thus allowing the central government to implement full price control in the manufacturing sector, (Mongi 1980). As a result of this Act, number of controlled goods increased to around four hundred items.

In 1974, National Price Commission replaced the National Price Control Advisory Board and was engaging in setting prices of goods irrespective of location and cost of transportation. The controls were administered at national, regional, and district levels. By the early 1980s, producer price adjustments were rare as price controls covered over 400 categories of products. During the period, majority of basic social services like education, water, agriculture extension services and health were offered by the Government freely or at subsidized prices.

During price control period (the period 1974 to 1985), the economy was affected by several macro-economic shocks from the first oil price shocks in 1973-1974 to severe drought in 1973-1974, subsequently commodity boom in 1976-1977, followed by second oil price shock in 1979, and the war with Uganda under Idd Amin in 1979. All these issues brought about economic imbalances coupled with uncertainties and eroded incentives to produce among firms and individuals.

These problems acted as a signal for the country to opt for more market oriented development approach beginning second half of the 1980's, under which price controls were dismantled considerably and the National Price Commission was abolished.

Market liberalization policies inter alia brought about improved levels of economic activity, availability of consumer goods, and market determined producer prices. Through mid-1990's controls had been lifted for almost all products with the exception of oil products and public utilities whose prices were regulated by regulatory authorities.

2.3 Sectoral Regulations

Difference in price adjustment among firms in different sectors can also depend also on whether the price is market determined or regulated by some regulatory authority, sectoral regulations therefore matters. Usually, regulated goods and services tends to exhibit relatively infrequent price adjustments compared to other goods whose price adjustment dynamics depends on demand and supply conditions in the market, see for example Minella et al (2003). This slow adjustment might be related with hierarchical delays due to institutional bureaucracy and the long process required in changing prices. Usually, Governments regulate prices with the aim of influencing retail prices directly or indirectly.

In relation to price dynamics, four Multisector regulatory bodies worth mentioning in Tanzania, namely the Energy and Water Utilities Regulatory Authority (EWURA), Surface and Marine Transport Regulatory Authority (SUMATRA), Tanzania Civil

Aviation Authority (TCAA) and Tanzania Communications Regulatory Authority (TCRA).

EWURA is the economic regulator of the energy sector which according to Petroleum Products Price Setting Rules, published in January 2009, set, issue and monitor domestic prices pump of gasoline, diesel, and kerosene prices; on monthly basis. The regulator set price ceilings on gasoline, diesel, and kerosene for wholesale (one uniform price for each fuel) and retail (differing by region). In setting domestic prices of the petroleum products, the regulator considers trends in the global oil prices, trends in the exchange rate as well as domestic inflation rate. EWURA is also responsible for regulation of the electricity, and water sectors of the Tanzanian economy.

In the transport sector, The Surface and Marine Transport Regulatory Authority (SUMATRA) is a regulatory body established by the Act of Parliament No. 9 of 2001 to regulate railway, roads as well as maritime transport services. SUMATRA set maximum (capped) economic bus fares between regional centres with involvement of all stakeholders across the country. SUMATRA set transport fares and charges depending on exchange rate movement predominantly that of Tanzania Shilling against US Dollar. Dynamics of domestic oil prices partly reflecting developments in the world prices or as result of depreciation of Shilling against the US Dollar.

In the aviation industry, The Tanzania Civil Aviation Authority (TCAA) does not set tariffs, but monitors them. Hence, firms in the aviation industry are able to autonomously set fares consistent with the forces of demand and supply. The regulator ensures that the airlines and the operators comply with the requirements of the standards while also boosts marketing of the country in order to increase number of flights and operators in collaboration with Tanzania Tourism Board and the Tanzania Airport Authority.

Competition in the telecommunication industry in Tanzania has increased tremendously in recent period. The latest data from the Tanzania Communications Regulatory Authority (TCRA) indicate that number of mobile phones subscribers in Tanzania reached 27,442,823 during the end of 2013. Tariff on calls and data has been used by companies as a tool to survive in the tough competition particularly in attracting the mobile subscribers. It is worth to note that the regulator (The Tanzania Communications Regulatory Authority (TCRA)) do not regulate tariffs but develop variety of operating guidelines to operators on how to determine the price of the service. Among others, one of the guideline requires that the tariffs charged should be reasonable, efficient, cost oriented and reflect optimum consumer satisfaction.

3. Literature Review

3.1 Theoretical Literature Review

Before proceeding into the empirical and analytical discussions about the extent and existence of price stickiness in Tanzania it is imperative to position the issue within a theoretical context. Central argument in the theoretical literature provided by New Keynesians is that money and prices can have an impact on the real variables, at least in the short run due to price stickiness. What follows then are the explanations on the theories that give details on the issue of price stickiness as follows;

3.1.1 Contract based theories

Usually, most firms that trade goods and services have nominal agreements which can be either explicit or implicit that fix prices of goods and services for a pre-determined period of time.

The theory on explicit contracts assumes that prices are rigid to adjust to either demand or cost shocks under the written contracts. Under this theory, prices of goods and services are fixed for some specified period of time as an insurance against uncertainty and related transaction costs. Thus, companies cannot raise prices for existing customers without any contract renegotiation even with cost shocks or demand shocks (Carlton 1979).

Under implicit contracts, some sort of connection between clients and seller of the product develop when they transact with one another for periods, and therefore any price adjustment for the good or service, consequently, can be a nuisance to clients when they think that the adjustments are irrational (Okun, 1981, Bergen et al., 2003; Zbaracki et al., 2004).

The million-dollar question is to what extent will the explanations for price stickiness for the Tanzanian context base on the theory of explicit and implicit contracts? Still, there may be circumstances were these theories may do well to interpret the stickiness especially in the education sector. Empirical research is necessary to establish whether this will be the case.

3.1.2 Cost based theories

Existence of price stickiness implies that there are costs associated with changing or reviewing prices. Therefore, price stickiness among other things depends on whether the benefit of changing the nominal prices outweigh the costs as pointed out by Ball and Romer (1990). In this theory, price resetting is associated with ‘fixed adjustment costs’ also known as menu

costs, Mankiw's (1985). Menu costs are costs that are associated with adjusting price such as printing and distributing new price lists. When menu costs are high they may result into a situation where prices remain rigid, and thereby bring about the price stickiness see also Akerlof and Yellen (1985).

Prior to studies by Mankiw (1985) and Akerlof and Yellen (1985), menu costs were viewed to be too small to justify any significant impact on price rigidity. In recent studies menu costs have also been viewed as the managerial costs at firm level associated with time and efforts spent in collecting relevant data for price-decision making, Carlton (1997).

It is worth to note that quantitative analysis of the menu cost theory is challenging as there is a general lack of cost of price adjustment-related data.

3.1.3 Information Asymmetries' based theories

Under asymmetric information where one party (for instance firm) is having more information on prices than the other (for instance clients) then, clients are likely to transact with companies that offer reasonably stable price paths and avoid firms that make regular and/or large price adjustments, Stiglitz (1979).

Additional explanation associated with information asymmetry as a reason for price stickiness in oligopolistic market structure is given by the kinked demand curve. The companies' negligence to reduce prices can be explained by the facts that the competitors will match price reductions and as a result the first company will lose market share, Hall and Hitch (1939); Sweezy (1939). The company can also avoid raising price since the competitor will not match the price increase and ultimately the first company will lose market share. Thus, price stickiness can be a result of fear of the company to change price as a result of desire to retain market share under asymmetric information environment.

Lastly, firm may be negligible to reduce prices with the fear that clients may interpret price reduction as the loss in the quality of the products.

3.1.4 Pricing threshold theories

Another explanation of price stickiness is the existence of pricing thresholds as clearly elaborated by Kashyap's (1995). Some companies set their prices at psychologically attractive thresholds, for example, TZS 99,000 instead of TZS 100,000. This threshold pricing strategy can lead to price stickiness, since companies may delay price adjustments as they consider that raising prices above these thresholds will lead to a disproportionate fall in demand.

3.1.5 Industry Concentration and Price Adjustment Behaviour

It is well acknowledged that the extent of market competition has an impact on price adjustment behaviour of firms in the particular industry; see for example Carlton (1986). Conventional theories suggest that degree of competition increase when the number of market participants is higher. Study by Ginsburgh and Michel (1988) and Martin (1993)] found that companies in a more competitive environment are more likely to adjust prices in reaction to shocks than firms enjoying monopoly power. This argument is also supported by Domberger (1979) who found a positive correlation between the speed of price adjustment and market concentration. In this study, it was discovered that firms in the less concentrated markets tends to react to costs shocks faster due to easy availability of information unlike firms in the concentrated industries.

The cross-sectional survey study by Alvarez and Hernando (2007) in Euro area found that the fraction of firms in a sector, that change prices at least four times per year, is increasing in the degree of competition.

The market structure is therefore one of the critical variables that determines price-adjustment behaviour. As a matter of fact, Taylor (1999) provides several references going back to Arrow (1959) which all stress that some degree of market power is required to make the price decision of a company significant. In the perfect competition market structure, all firms are assumed to trade at a single market-clearing price. The standard explanation for price stickiness in oligopolistic market structure is usually given by kinked demand curve (Hall and Hitch 1939; Sweezy 1939) that explains the firm's reluctance to lower prices because competitors match price reductions and as a result the first firm cannot gain market share.

The theory of coordination failure according to Clower (1965), focuses on the interaction among companies within a particular industry as the source of infrequent price adjustment. According to the theory, a firm facing a shock may want to adjust the price but only if the other firms adjust their price too. Therefore, the price stickiness is explained by the fact that there is no coordination mechanism which can allow companies to move together in price adjustment following a shock within a certain market.

3.1.6 Time-dependent and State-dependent rules

Theoretically, the price adjustment process usually involves two phases: 'price review phase' and 'price changing phase. During the price review phase, firm employs all relevant available information to come up with the best price to charge for the product or service. In this stage, the firms evaluate whether there is significant deviation of the prevailing price from the 'best' price to necessitate price change. After reviewing price, companies make decision to change or leave the price of the product or service unchanged.

The theory considers two rules associated with price review strategy namely time dependent and state dependent rules.

For the case of time dependent rule, a firm adjusts its price periodically at certain time intervals. These intervals may possibly be deterministic (as per staggered contract model developed in Taylor 1980) or stochastic as in Calvo (1982, 1983). Therefore, the timing of the adjustment under this rule is exogenous and that it does not depend on particular state of the economy.

Under a state dependent rule, a firm adjusts its price when the difference between the actual price and the optimal price has become large enough (due to a large enough shock) to make up the cost of adjustment (Sheshinski and Weiss (1977), Caballero and Engel (1993), or Dotsey et al., (1997).

Hence, the basic difference among these two types of rules is that when a certain economic shock requires adjustment of price, a state-dependent rule assumes firms to react instantly, given that the shock is adequately large, while the time dependent rule assumes that firms will wait until the 'time has come'.

Compared to state-dependent models, most models based on time-dependent pricing rules have a tendency to be reasonably good and produce well-behaved dynamic adjustment paths for the price level to innovations in nominal money, or Central Bank policy rate.

3.1.7 Asymmetries in Price Adjustments

In examining the extent of price rigidity researchers have also studied asymmetric pricing or what is also known as asymmetric price adjustment, see for example Peltzman (2000), Hannan and Berger (1991) and Pick et al. (1991). The asymmetric price adjustment refers to a situation where prices of goods and services go up readily but decreases sluggishly.

Several studies in the literature provide evidence that price increases and price decreases do not occur with the same probability. Study by Dhyne et al. (2005) indicates that, for the euro area, price decreases are reasonably less frequent than price increases. The study reveals that four out of ten price changes are decreases. Similar results are confirmed in the paper by L¨unnemann and Math¨a (2005) using price index data.

3.2 Empirical Literature Review

Having laid down the theoretical underpinnings behind the subject of price stickiness, we now survey different studies in order to gain knowledge of the micro price adjustments. The empirical studies have reached quite different conclusions for different countries on the price adjustment patterns and their implications for the conduct of monetary policy. We review empirical works based on studies outside Africa as well as studies in emerging and developing countries. However, it is worth to note that the studies of price stickiness in developing countries are rare because data are seldom disclosed at the product level, or they are very unreliable and hence leaves much to be desired.

3.2.1 Studies outside Africa

The pioneering empirical study on price stickiness was undertaken by Blinder et al. (1998) in the US through intensive interviews of 200 private firms in United States. Blinder found that 10 percent of United States firms changed prices once a week, but 50 percent of firms changed prices at most once a year.

Many of the subsequent studies in U.S. establish a strong stickiness in price adjustment among firms. For instance, Cecchetti (1986) using a sample of 38 U.S. magazines indicates that even during episodes of hyper inflation, only 30 per cent of the sampled firms, on average, adjusted prices within 12 months' period. Also, a study by Carlton (1986) that examines adjustments in prices of intermediate goods used in 11 different manufacturing groups, calculates average price durations ranging from 6 to 19 months, depending on product group.

The study by Kashyap (1995) examined the retail prices in three mail-order catalogues in the US covering 12 items. In this study, it was estimated that price adjustment takes an average duration of 15 months. On the other hand, Bils and Klenow (2002), using disaggregated Bureau of Labour Statistics price data for the US, discovered price adjustment to be more

flexible than in these earlier studies and calculated a median price duration of four months. The latest surveys done in industrialized countries discover that the median company adjusts price almost once in a year. Klenow and Malin (2011), for instance, found a mean duration for price adjustment being of 9.4 months for services versus 3 to 5.8 months for goods in the US.

On the impact of firm size on price adjustment behaviour, there is virtually no theory of nominal rigidity that predict that certain industries or firms of a particular size will be more or less likely to change prices. However, findings from several empirical studies such as Dias, D.A et al. (2014) confirm that size matters for the speed of price adjustment. The findings suggest that in the face of cost shocks, large companies tend to adjust their prices slower than small companies because the importance of information costs is likely to be higher in large firms, Zbaracki et al. (2004). However, contrasting view is given by Buckle and Carlson (2000a & b) by using survey responses to Quarterly Survey of Business Opinion (QSBO), undertaken by the New Zealand Institute of Economic Research who found that large enterprises (as measured by number of workers) adjust prices more regularly than smaller enterprises, on account of lump sum menu costs, which are proportionately more expensive for smaller enterprises.

3.2.2 Studies in Emerging and Developing Countries

Studies of price adjustment behaviour of firms in Emerging and Developing Countries have to date been rare. The study by Gouvea (2007) examined the frequency of price changes for the Brazilian economy using CPI price quotes from 1996 to 2006 and discovered a lower duration of about 3 to 4 months. However, it is worth to not that the lower price adjustment duration was due to inclusion of a period during which Brazil suffered high and volatile inflations. In contrast, a later study conducted by Moura, M. et al. (2010) using a survey data give a strong evidence of nominal price rigidities. The study estimated an average and median price durations around 10.1 and 8.1 months.

In South Africa, Creamer and Rankin (2008 and 2012) investigated price adjustment behaviour of firms in South Africa and its implication on monetary policy. The study used both CPI and Producer Price Index (PPI) micro data from 2001. The studies found lower price duration compared to developed countries, averaging 5.0 months for domestically produced goods (CPI) and 6.1 months for the imported component of PPI micro data. The study concludes that the prices are less sticky than assumed in the New Keynesians DGSE models used for monetary policy analysis and forecasting.

In Tanzania, no study has virtually been done on the area of price stickiness. However, some insights on price rigidity can be derived from a study on food prices and inflation by Adam, C et al. (2012) which employed time series data to examine the determinants of food and other components of inflation in Tanzania. One of the conclusions of the study is that prices in Tanzania are generally flexible, more so for the food and energy sub-components but pointed out that for core prices (non-food non-energy prices) there is little evidence of persistence. This makes it an attractive field of research, and therefore the current study will use survey to explore evidence of persistence in non-food and non-energy commodities in Tanzania.

In conclusion, two things can be articulated from the literature review. The first observation is that price stickiness is relatively more pronounced in developed than emerging and developing economies as evidenced by frequencies of monthly price changes. Nevertheless, the extent of price stickiness differs depending on type of activity, size of firms as well as market environment in which the firm operates. It is also evident that prices are generally sticky downward, more in developing countries, and firms respond to shocks in asymmetric fashion.

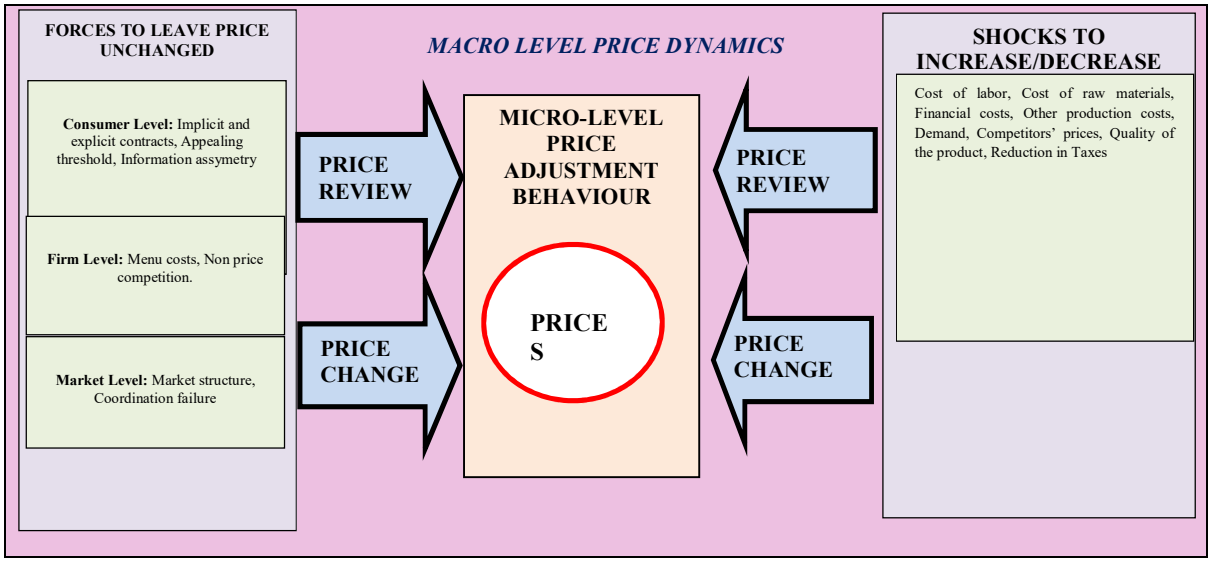
The second observation from the literature is on methodology. There are two common methodologies available in examining nominal rigidities; the first one being the use of quantitative methodology to analyse consumer price index (CPI) and producer price index (PPI) disaggregated data and the second one being the use of interview surveys methodology. In examining the behaviour of price adjustments, a lot empirical studies make use of disaggregated micro data in order to get in depth description of the periodicity and magnitude of price changes. However, this approach is weak particularly in the quest to identifying the underlying qualitative behaviours of firms. An alternative empirical approach that has also been employed is the use of surveys to investigate the price adjustment behaviour at micro level as pioneered by the work of Blinder (1991, 1994) and Blinder et al. (1998) for the United States.

In view of this and with good reasons, the current study has opted for the survey methodology as a technique to investigate price adjustment behaviour among firms in Tanzania.

3.3 Conceptual Framework for the Analysis of Price Stickiness

In order to examine the existence of price stickiness, we build our framework from micro level price adjustment behaviour of firms which is assumed to be the source of macro level price dynamics. A conceptual framework for analysing the analysing price adjustment behaviour of firms is illustrated in **figure 3.1.**

Figure 3.1: Conceptual Framework for Analysing Price Stickiness



Source: Author

As pointed out previously, the intention is to validate this macro-level New Keynesians theoretical assumption of price stickiness employed in monetary policy analysis models. To operationalize it, the current study assumes that, the extent of price stickiness is determined by the frequency of price changes at the firm level within a particular period. Theoretically, it is assumed that if firms adjust prices of goods and services infrequently, then the macro level price is highly sticky and therefore cannot offset monetary policy shocks, while if micro level prices adjust frequently i.e. flexible, then the macro level price is flexible and therefore can offset the monetary policy shocks. However, it is worth to note that, before deciding to change price, a firm facing shock usually review prices to check whether they call for a change, therefore the study considers frequency of price reviews in analysing micro level price decisions.

In particular, the study surveys firms about their price-adjustment behaviour by focusing on the forces/shocks that necessitate strategic decision of the firm to increase, decrease or leave the price of the good or service unchanged within a particular period of time. The study therefore on one hand explore the relevant shocks that bring about price decreases or increases and on the other hand, examines the relevance of forces that necessitate firms to leave price unchanged based on factors emanating from consumers, firms and market structure as depicted in Figure 3.1. The study also assumes that, in face of shocks that prompt price change, firms do not react in a symmetrical fashion. Companies may be more prompted to change price in one particular direction than the other directions.

4. Research Methodology

4.1 The Survey

As pointed out earlier, in examining existence and extent of price rigidity, a lot empirical studies make use of either disaggregated micro data especially price indices such as consumer price indices and producer price indices or alternatively use the surveys/interviews.

The design and implementation of the micro level survey on price adjustment behaviour for Tanzania draws upon the results and lessons learned from previous price-adjustment studies undertaken in the USA and UK. In particular, the current study employs a methodology that was initiated by the work of Blinder (1994), Blinder et al. (1998) for the US and of Hall et al. (2000) for the UK. In this methodology, information about firm-level price adjustment is gathered qualitatively through behavioural surveys.

It is worth to note that surveys have several limitations; there is a risk that firms' responses may not articulate what they really do in practice and for that reason the answers are surrounded with a degree of uncertainty. Sometimes responses may be sensitive to various factors, like wording of questions and the economic environment in which they are answered. Besides that, they lack dynamic property in the sense that they cannot be used to assess evolution of pricing adjustment behaviour among firms over time. Finally, surveys are in most cases expensive and very time-consuming, which make them to a certain

extent difficult to undertake on a regular basis.

However, the survey methodology possesses a number of advantages compared with other methodologies. One vital benefit of using survey analysis is the opportunity of asking companies in a straight way several aspects of their price adjustment behaviour for instance the motivations underlying the price changes or the reasons why they decide not to adjust their prices immediately after a significant change in their costs or demand. This cannot be undertaken on the basis of quantitative data coming from disaggregated consumer price indices.

Another strong point in favour of survey analysis is the possibility of dividing the process of price adjustment into its two main phases (the 'price reviewing phase' and the 'price changing phase') and evaluate them independently, something that it is impossible with quantitative data. CPI and PPI quantitative data, on the contrary, only provide information as to the final outcome of the price adjustment process. Survey data also provide a useful mechanism to substantiate the evidence stemming from the analysis of micro price data.

Therefore, the study opted for survey method which consisted of structured interviews involving mainly face-to-face and telephone with persons who are in charge of setting and adjusting prices in their companies most of whom were managers, financial managers and sales managers. The survey data collection exercise was carried out from July 2014 to September 2014. To standardize the responses, all respondents were asked the same questions in the same way.

At the time of conducting the survey, in 2014, Tanzania presents an essentially stable macroeconomic environment, with an average annual GDP growth of 7.0 percent, and an annual inflation of around 6.0 percent. Monetary policy framework is quantity based conducted under a market determined exchange rate policy and with a 5.0 percent medium term inflation objective.

4.2 Sampling Method and Characteristics of Surveyed Firms

The initial targeted population of the study from which the sample was drawn was formal companies engaging in manufacturing and service activities in Tanzania, who are profit maximizing and not in price-regulated markets. In terms of importance, the two activities covered by the survey account for almost 60.0 percent of the Tanzanian Gross Domestic.

We ignored companies in primary industries (agriculture), due to the fact that prices in these industries (agriculture, fishing, forestry and extraction) are assumed to broadly depend on seasonality, Adam, et al. (2012) and balance of demand and supply in both domestic and international markets and therefore firms are consequently assumed to be price takers. This decision was also based on previous surveys, e.g. Blinder et al. (1998), Amirault et al. (2006), Greenslade and Parker (2012), which did not focus on primary commodities especially food. However, companies dealing with processed food and beverages such as maize flour, bakeries, juices, processed fish products and others were included in the sample. Likewise, firms operating in the health, transport and energy sectors often have some form of regulatory control over pricing and were filtered out in the current study. Therefore, we included private and for profit companies which are be able to autonomously adjust their prices in reaction to changes in economic situations, rather than having their prices imposed by some regulatory authority.

For the case of manufacturing activities, the population frame was estimated from the Business Survey of 2007/08 undertaken by National Bureau of Statistics (NBS). From the survey, NBS reported that manufacturing sector in Tanzania comprises of 24,979 establishments with permanent premises out of which Dar es Salaam account for about 63 percent. In this regard, Dar es Salaam was chosen as the focal point of the study due its relative significant importance compared to other regions in the country. Among the 24,979 manufacturing enterprises, as much as 88.0 percent are categorized as Micro Manufacturing Enterprises (MMEs) with less than 5 workers. The survey also indicated that the ratio reaches as high as 96.9 percent when small scale manufactures with less than 10 workers are included.

In the NBS survey, only 5,520 enterprises had been formerly registered by Business Registration and Licensing Agency (BRELA) as of June 2008, carrying out manufacturing activities. This implies that, the majority of the manufacturing industry enterprises of Tanzania are MMEs operating in the informal sector.

Table 4.1: Structure of manufacturing firms in Tanzania

Number of Workers	1 - 2	3 – 4	5 – 9	10 - 19	20 - 49	50 – 99	100 - 499	500+	Total
Manufacturers	15,066	6,921	2,216	411	215	62	70	18	24,979
Percentage	60.3	27.7	8.9	1.6	0.9	0.2	0.3	0.1	100.0
Definition	Micro Manufacturing Enterprises (MMEs)		Small Scale Manufacturing Enterprises (SMEs)			Medium Scale Manufacturing Enterprises (SMEs)	Large Scale Manufacturing Enterprises (SMEs)		

Source: National Bureau of Statistics, Business Survey 2007-08

The initial population of 24,979 companies in Tanzania was then filtered in several steps. To avoid over representation of Micro Manufacturing Enterprises (MMEs) most of which are in informal sector, firms with less than 10 employees were filtered out and remained with only 776 companies in line with the previous similar studies such as Martins (2005) and Alvarez and Hernando (2005). The decision to filter micro-enterprises was also based on the fact that majority of them are sole proprietorships with simplified operational activities and their decisions on wage and price setting are less important for the economy. The remaining companies after this point were considered to be called by the study as the population. The final estimated population size of firms was 776 enterprises.

Bearing in mind the resources and time frame allocated for conducting the study; it was felt that 32 respondents would be a reasonable target for this study. This is relatively a small sample size when compared to previous studies on the subject matter, but pragmatism had to be applied, given the constraints of a single researcher and a short survey time. Non-probability sampling technique was employed to select the elements of the sample from the population frame of firms located in Dar es Salaam, the industrial hub of the country. In sample selection, we adopted a judgment sampling meaning that we sampling was done with a purpose in mind, we applied it owing to the nature of the study since it explicitly targets selected firms. In this fashion, we finally got the sample of 32, which is about 4.1 percent of the population. However, of these 32 companies, 5 did not respond to the survey despite all effort made by the field workers.

For the case of service sector, the sampling was relatively complicated as there is no formal population frame available for firms engaging in the services sector in Tanzania. It was felt that 52 respondents would be a reasonable target for this study. In the service activities, we impose the following constraints on the sample selection which are the same as those applied in the manufacturing activities. First, to minimize the chance of selecting firms in the informal sector, we only selected firms that had been registered. Secondly, to avoid small firm bias, firms with less than 10 employees were ignored in our sample. Thirdly, we only included firms involved in economic activities where it is possible to identify a main service.

Using purposive sampling method, a total of 52 firms was finally selected from telecommunication, Transport, Education, Medical and veterinary, Insurance, Hotels and conference, Media, Clearing and Forwarding Services and other Services on the basis of sectoral distribution. In the service sector all firms provided information on their price adjustment behaviour.

As a result, a total of 84 companies from both manufacturing and service sectors were purposively identified and considered as a sample.

4.3 The Questionnaire Design

The questionnaire was administered by the principal researcher accompanied by enumerators due to the following reasons:

i. Complexity of the questionnaire,

ii. The fact that pricing information is a sensitive issue to firms,

iii. Potential poor response rate through traditional mail and,

iv. The doubt that questionnaires might not reach the appropriate person

The questionnaire was structured and comprised of three parts, as discussed hereunder:

i. Part one: Questions were asked with respect to general information of the company such as name of the company, name of the interviewee, position of the interviewee, location and contacts details.

ii. Part two: deals with details of the company such as the sector it belongs, main products or service, number of employees, strength of the competition on the main product or service, and number of competitors on the main product or service.

iii. Part three: Contained questions on pricing information such as frequency of price reviews and price changes and other.

During the interview the researchers explained the objective of the study and collected supplementary facts through follow-up questions. Given that most companies sell a wide range of products; they were required to relate their responses just with the main product or service.

In order to exclude the effect of specific events during one particular year on the findings of the survey, it was explicitly agreed to reference the economic situation during the time of undertaking the study and disregard other previous periods of time. In the questionnaire, it was assumed it would be fine just to pose questions on overall situation at the time of undertaking the study.

4.4 Data Analysis

Data analysis is defined as a systematic organization and synthesis of the research data and the testing of research hypothesis using the collected data (Polit and Hungler 1991:643). It further entails categorizing, ordering, manipulating and summarizing the data and describing them in meaningful terms (Brink 1996:178).

Data preparation involved three stages, namely data entry and validation, data processing and data analysis. All cleaned data from the questionnaire was initially entered into the computer using US Census Survey program (CSPro) data package which is one of the commonly used packages for coding census and survey data. Data were further exported to Statistical Package for Social Sciences (SPSS) for further statistical analysis. Final data processing, analysis, simulations and tabulations was done using SPSS statistical package basing on the planned descriptive statistics.

In carrying out data analysis, the current study employs descriptive statistics such as mean score in determining the frequency, size and reasons for price adjustment among companies in Tanzania. Tables, charts and figures have been used in this study to present the key findings.

5. Discussion of Field Findings

5.1 Market Structure and Pricing Policy

The existence and extent of price stickiness depend on several macro issues with sectoral characteristics (such as the degree of competition) being among them. In the current study, to reveal the nature of market structure of which the surveyed companies operate, companies were asked about the number of domestic competitors, strength of competition in the Tanzanian market excluding foreign imported goods as well as whether they align the timing of price adjustment with competitors. In this study, imported goods were excluded due to the fact that the pricing process is carried out by parent company and that such goods are exposed to large and frequent exchange rate changes that drives their prices.

Majority of companies (73.4 percent) responded that they have between 6 or more competitors in the domestic market, with the percentage being higher in the service sector compared to manufacturing sector. Only 1 company engaging in processing food product and beverages reported that they have one competitor in the industry. Majority of companies also revealed that they operate in a strong and severe competition environment in Tanzania.

Conversely, about 21.5 percent of the surveyed companies revealed that they do not align the timing of price change of their own products with those of the competitors and 46.8 percent do so sometimes (**Annex 4, 5 and 6**).

Economic theory on pricing focuses on profit-maximizing firms that are capable of determining their own price of the product or service, and to further investigate the details of market power, firms were also asked on who set price of the main product or service. Majority of firms (almost 90.0 percent) affirmed to have full autonomy in setting their price. This is in

line with the selection criteria that firms should be able to adjust their prices independently in response to a shock or changing economic environment. Majority of firms pointed out that they set price of the main product or service independently. The remained 10.0 percent of the surveyed firms pointed out that price setting is determined at group level or is subject to some form of regulation by public institution and were also included in the study. Out of these companies, some are dealing with food processing and textile activities whose prices were mainly determined at group level; other companies came from education service who also pointed to group price setting policy. On the other hand, some few private companies (dealing with trucks) in the transportation service lamented that Government intervention in the operation of transport businesses affect the way they set prices and mentioned also that the transport costs and prices have always been the main determinant of the price they charge for the service.

About 61 percent of the sampled companies had a differential pricing policy for the product or service. In terms of sector characteristics, about 63.5 percent of firms in the service sector had differential pricing policy while only 56.0 of the firms in the manufacturing sector had differential pricing policy. Firms pointed out that the differential pricing depends on customer preferences, available discounts and selling strategies.

The aviation and hotel services subsectors offer the best noticeable case in point of differential pricing policies basing mainly on seasonality and demand. The cost of airplane from one point to another varies considerably depending on (among things) the time or date on which the passenger departs as well as the time that elapses before the return. Usually, prices in the travel industry may decrease or increase during low and peak demand periods respectively. In the telecommunication subsector price differential policy is applied among student, low income earners and corporates. In the processed food products and beverage prices depends on customers' relationship with the company as well as volume of the products sold. In the education subsector, prices differ among local and international students. Firms engaging in hotels and conferences reported to have both local and foreign rates for their services.

Finding on market structure and pricing policy therefore reveal that to a large extent Tanzanian companies operate in a monopolistic competition structure since majority possess strong autonomy in setting the price of the product, practice differential pricing policy and do not always align price adjustment. The study by Fabiani et al. (2004) indicated that companies in a severe competitive environment have more flexibility in adjusting prices than ones in a weak competition environment. It follows that, the result of the current study on market structure and pricing policy may not disclose much on the extent of price stickiness since all companies under monopolistic competitive environment makes independent decisions about price adjustment, based on product, customers, as well as its costs of production.

5.2 Existence of Price Stickiness

As already outlined in the literature review, the price adjustment process usually involves two phases: 'price review phase' as well as 'price changing phase, of which price review phase involves time dependent rules and state dependent rules.

In the current study, firms were not asked whether they follow time or state dependent rules but whether they have fixed time intervals of reviewing prices in order to avoid confusion in understanding the meaning of the two rules. Results reveal that almost half of the surveyed firms follow time-dependent pricing as they adjust price on fixed time intervals. The other half of firms asserted that they have no specific time intervals in reviewing prices as the price change depends on market conditions. This result is on the lower side compared to findings of Blinder et al. (1998) and Hall et al. (2000), where 60 percent and 79 percent, respectively, of the sampled firms reported mainly to follow time-dependent pricing rules.

It is expected that, firms which follow state-dependent rules are supposed to possess more flexibility in adjusting prices than those following time dependent rules in the face of shock. We found no general conclusion on extent of price stickiness based on price review strategy due to the fact that both time- and state-dependent pricing strategies are employed by Tanzanian firms.

The follow up question was on how often firms review the price of their products or service. The findings indicate significant degree of heterogeneity. Overall, 49.4 percent of firms review prices on annual basis. Comparing results across sectors, the results indicate comparatively more frequent price reviews in manufacturing sector compared to service sector. About 19.0 percent of firms review prices on quarterly basis; while 27.9 percent of firms review prices at least on monthly basis, **appendix 10**. There are also significant differences in the responses by company size and sub sector. It was also found that companies in the telecommunication subsector review prices more frequently – more than a quarter of these companies review prices at least weekly. We believe that this may be explained by the recent intensified competition in the telecom industry in Tanzania whereby companies are trying to come out with strategic marketing plan to win the market share mainly of the mobile phone subscribers.

After discussing about frequency of price reviews, companies were also requested to reveal how often they actually change prices. As pointed out in the conceptual framework, usually the price stickiness assumption of the New Keynesian DSGE

models which are utilized by central banks in policy analysis and forecasting is based on frequency of price change (used as an indicator of the extent and existence of price stickiness) at micro level. In the questionnaire, companies were asked: At what interval they change the price of the main product or service? Consistent with previous studies, prices adjustment in Tanzania occurs infrequently. Almost 67.3 percent of the respondents revealed that they undertake price adjustment in a year or more than a year, while only 32.8 percent adjust prices less than once per year. In Blinder et al (1998) almost half of companies change prices once per year whereas the corresponding statistic in our study is 44.3 percent (**Table 5.1**). The median firm change price almost once a year, which is also consistent with previous micro studies of price stickiness such as that of Taylor (1999) which concludes that prices in England change on average once a year.

Based on this finding, the firms adjust price infrequently and price stickiness is evident particularly on non-food and non-oil commodities and services, this is almost consistent with the DSGE models that assume price stickiness and inflation persistency.

Table 5.1: Price Adjustment Intervals

	Manufacturing	Services	TOTAL	Per month implied duration
Daily	-	2.4%	1.6%	1/30
Weekly	10.5%	-	3.3%	¼
Monthly	15.8%	4.8%	8.2%	1
Quarterly	15.8%	21.4%	19.7%	3
Yearly	31.6%	50.0%	44.3%	12
More than a year	26.3%	21.4%	23.0%	>12
Total	**100.0%**	**100.0%**	**100.0%**	**-**

Source: Authors own computation

Another interesting result of the current study is that firms review prices of the product relatively more frequently than actual price change. While 49.4 percent of sampled firms review their price on annual basis, only about 44.3 percent of them actually change it.

In theory, there are three implication of high relative frequency of price reviews when compared with actual price changes: First implication is that cost associated with collecting information about prices is not a significant issue in determining price flexibility, secondly; this could happen either because the results of the price review exercise often does not justify the need for a price change and thirdly; because firms recognize that there are additional costs related with a price change that could likely be greater than their benefits.

5.3 Direction of Price Changes and Factors Influencing Price Change

To assess the direction of price change companies were asked whether on average they increased, lowered or left the price of main commodity unchanged last year. The survey revealed that majority of firms 55.7 percent raised the price of the main product or service in 2013, see **Table 5.2**. Companies were also asked on the order of importance of several factors which made them undertake such a decision and pointed out that cost of factors of production (labour, raw materials and other production costs), taxes and improvement in the quality of the product are the most important factor driving prices upwards with their mean score being higher than in other factors, **appendix 11**. This is not a surprise given the fact that the economic fate of a firm is linked to balance between the income received from the sale of goods or service and the production costs of the goods sold or service rendered. In price increase, other factors such as an increase in financial costs, an increase in competitor's prices, an increase in demand and cash flow or financing problem are given the lowest ranking and therefore are considered less important in driving prices upwards. The fact that actual or expected rises in competitors' prices have less importance in price increase suggests that there is less interdependence in pricing decisions in the two economic activities covered by the survey.

Table 5.2: Direction of Price change

		Raised the price	Lowered the price	Left the price unchanged	**Total**
Subsector	Transport	45.5%		54.5%	100.0%
	Telecommunication	28.6%	57.1%	14.3%	100.0%
	Education	33.3%	11.1%	55.6%	100.0%
	Medical and veterinary	100.0%			100.0%
	Insurance	50.0%	25.0%	25.0%	100.0%
	Hotels and conference	70.0%	10.0%	20.0%	100.0%
	Media			100.0%	100.0%
	Processed Food product and beverage	64.3%	14.3%	21.4%	100.0%
	Agro-chemicals		100.0%		100.0%
	Textile	100.0%			100.0%
	Manufacturing of construction materials	50.0%	50.0%		100.0%
	Clearing and Forwarding Services			100.0%	100.0%
	Other Services	60.0%	20%	20.0%	100.0%
	Other manufacturing	75.0%		25.0%	100.0%
Sector	Manufacturing	70.4%	14.8%	14.8%	100.0%
	Services	48.1%	15.4%	36.5%	100.0%
Size	Small	44.0%	16.0%	40.0%	100.0%
	Medium	64.3%	16.7%	19.0%	100.0%
	Large	50.0%	8.3%	41.7%	100.0%
	Total	**55.7%**	**15.2%**	**29.1%**	**100.0%**

Source: Authors own computation

On the other hand, Price decreases take place infrequently in Tanzania due to generalized downward nominal rigidities whereby only 15.2 percent of firms lowering their prices in 2013 majority of who are in service sector. The factors that necessitated firms to reduce prices of product or service are somewhat the same, which suggests some symmetry in pricing decisions between price increases and price decreases. The importance and ranking of various factors in determining a fall in prices is illustrated in **appendix 12**. Although reductions in taxes and cost of factors of production (raw materials, and other production costs) seems to be the same dominant factors in the decline in prices, unlike price rises, demand conditions and competitors' prices are also significant factors for the decline in prices.

5.4 Size of price changes

In addition to frequency of price review and price changes, companies were also requested to specify the average size (in percent) of a price adjustment in any particular year. Responses from firms indicate fairly high asymmetries among price increase and price decreases. Sizes of price increase are more distributed between 0-5 percent as well as between 6-10 percent. On the other hand, price decreases are more between 0-5 percent brackets, **appendix 13**.

Results of the survey expose that the magnitude of price increases is significantly larger than that of price decreases. With reference to the sectoral aspect, the highest price decreases were recorded in agrochemicals, manufacture of construction materials as well as telecommunication subsector. On the other hand, highest price increases were recorded in insurance and the transport subsector.

Generally, the findings suggest high prevalence of positive price changes consistent with the fact that Tanzania is high inflation economy. In the past 50 years, the inflation has been positive with varying magnitude driven mostly by domestic supply shocks. This finding is also consistent with findings of Adam, C. et al (2012) who observed a downward stickiness of Tanzanian inflation, in both food and non-food components. The downward stickiness may possibly substantiate a higher inflation objective in order to expedite relative price adjustment following shocks.

5.5 Reasons for Existence of Price Stickiness

As earlier pointed out, the critical finding of the study is the existence of fairly strong price stickiness among firms in Tanzania with median firm reviewing and changing its price only once a year. To understand the reasons behind the existence of stickiness, respondents were asked to list down by level of importance the most important factors (ranked on a scale of 1 (most significant) to 5 (least significant)) responsible for the delay in adjusting prices of their main product or service. The list contained 8 factors, all clarified to the respondents as illustrated in **Table 5.3**.

Table 5.3: Reasons for the sluggish price adjustment

Theory	Description given to Respondents	Manufacturing	Services	Total	Ranking
		Mean Score	Mean Score	Mean Score	
Implicit Contracts	Our customers expect stable prices and a change could damage customer relations	1.96	2.02	2.00	1
Explicit Contracts	Existence of a written contract implies that the price can only be changed if the contract is renegotiated	3.29	2.37	2.70	2
Pricing threshold	Prices are set at 'appealing' thresholds	3.00	2.90	2.94	3
Lowering prices can misinterpreted as decline in quality	-	3.18	3.12	3.14	4
Coordination Failure	Fear that competing firms will not adjust their price	3.04	3.41	3.28	5
Prefer to change other conditions	Instead of changing prices, prefer to change other conditions like terms-of-payment, service level	3.39	3.29	3.33	6
Menu Costs	Presence of high menu costs of changing prices (e.g. printing new catalogues, costs of adjusting price tags, etc.)	3.86	3.35	3.53	7
Temporal factors	Fear that we may need to revise the price in the opposite direction	3.75	3.65	3.68	8

Source: Authors own computation

Note: Mean scores correspond to a scale from 1 (very significant) to 5 (very insignificant)

The responses were further ordered based on the mean scores. According to the results provided by our respondents, implicit contract, i.e. the preference of customers for stable prices, turned out to be the most important factor underlying infrequent price adjustments (**Table 5.4**).

The implicit contract theory explains infrequent price changes as it is in companies' own interest to create a long-run relationship with their clients in order to make their sales more predictable. In this regard, companies try to retain the reliability of their customers by changing their prices infrequently. The comments from managers on implicit contracts included statements such as: 'Price changes are a nuisance to clients, and disliked by the market,' and regular adjustment of price would push away customers. The implicit contract theory also according to Okun (1981) favours customers for the reason that more stable prices reduce search costs (e.g. saving shopping time).

The second most pertinent explanation for price stickiness given by the respondents was presence of explicit contracts that companies had with their clients that make it hard for companies to transmit price increases in the course of the contract. The existence of explicit (written) contracts recommends that prices can only be adjusted when the contracts are renegotiated.

5.6 Asymmetries in Price Adjustment

One of the objectives of the study was to analyse as to whether or not prices adjust symmetrically or asymmetrically in Tanzania.

Findings of the study suggest that, overall, companies view cost shocks (an increase or decrease in raw materials prices, taxes, labour costs, and other production costs) to be rather significant in driving prices of their main products or services upwards than downward, **Table 5.4**. This suggest that cost shocks affect price adjustment asymmetrically, since they appear to bring about much stronger pressure on prices when these have to be increased. Contrary to shocks related to costs, shocks emanating from market and demand conditions appear to affect price changes symmetrically. This implies that an increase or decrease in competitor's prices, and demand appear to have relatively the same significance level given by mean scores in driving prices both upwards and downwards.

One can conclude that, in adjusting prices of main products and services, companies in Tanzania care much about shocks that would lead to profit losses (rising costs of raw material and labour as well as an increase in tax) than to shocks leading to profit gains (decreasing raw material and labour costs as well as reduction in taxes).

Table 5.4: The Significance of different factors driving price adjustment (Mean Scores)

	Price Increase	Price Decrease
SHOCK	**Mean Score**	**Mean Score**
An increase/decrease in raw materials prices	2.06	2.91
Increase/decrease in taxes	2.41	3.11
An increase/decrease in labor costs	2.77	3.49
An increase/decrease in other production costs	2.85	3.38
Improvement/decrease in quality of product	2.91	3.81
An increase/decrease in financial costs	2.99	3.54
An increase/decrease in competitor's prices	3.13	3.2
An increase/decrease in demand	3.32	3.33

Source: Authors own computation

Note: Mean scores correspond to a scale from 1 (very significant) to 5 (very insignificant)

5.7 Comparison with other Studies

Overall, price adjustment behaviour in Tanzania to some extent corresponds with other studies in developed countries as well as developing countries where firms change prices at least once per year. The current study slightly contrasts the study by Creamer and Rankin (2008) on price adjustment among South Africa firms based on micro-data which revealed relatively more frequent price adjustments of after an average of six months for PPI. However, it is worth to note that the study by Creamer and Rankin (2008) used alternative method of studying price stickiness by using CPI and PPI micro dataset.

On the factors behind price stickiness, the current study is also consistent with studies undertaken in Canada, United Kingdom, and Sweden as well as in the Euro Area which underscored the implicit and explicit contracts as the main reasons for price stickiness. On the other hand, menu costs, was among the theories of price stickiness that was least recognized by companies, consistent with other studies in developed countries, ranking tenth in Canada, eighth in the euro area, eleventh in Sweden and eighth in the United Kingdom see **Table 5.5**. It follows therefore that price stickiness seems to be significant, but not so much in the form of menu costs compared to different types of contracts. The profound exploration of such contracts remains, however, to be expounded more exhaustively.

Table 5.5: Comparison of theories on Price Stickiness

Theory	Sweden	United Kingdom	Canada	United States	Euro Area	New Zealand	Tanzania
Explicit Contracts	3	3	3	5	2	1	**2**
Implicit Contracts	1	4	6	4	1	2	**1**
Coordination failure	4	1	5	1	4	3	**5**
Temporal factors	n.a.	5	n.a.	n.a.	6	4	**8**
Pricing threshold	7	7	n.a.	8	10	5	**3**
Non-price factors	n.a.	n.a.	4	3	7	6	**6**
Menu costs	11	8	10	6	8	7	**7**
Respondents (Response rate, %)	**626 (49)**	**693 (30)**	**170 (unknown)**	**200 (61)**	**11,150 (46)**	**5369 (82)**	**79(94)**

Sources: Amirault, Kwan and Wilkinson (2006); Fabiani et al. (2006); Apel, Friberg and Hallsten (2005); Greenslade and Parker (2012); Blinder et al. (1998).

6. Conclusion

Better understanding of micro level price adjustment behaviour of firms is important in analysing inflation dynamics, monetary policy transmission and proper calibration of macro-economic models used by central banks. The study was set out to explore the existence and extent of nominal price stickiness among 79 companies in Tanzania, by using enterprises survey methodology that was pioneered by the works of Blinder (1994), Blinder et al. (1998) for the US and of Hall et al. (2000) for the UK. The study has brought numerous insights on the characteristics and determinants of price adjustment among companies engaging in manufacturing activities and provision of services in Tanzania.

To begin with, majority of firms set prices independently and adopt differential pricing policy for their main products or service.

On the other hand, there is no general conclusion on price stickiness based on price review strategy since both time- and state-dependent pricing strategies are used by Tanzanian firms. About 51 percent of the respondents pointed out that they have no specific time of adjusting prices and price adjustment primarily depends mainly on market sentiments. This evidence is consistent with findings from US and the UK, where both rules co-exist. Furthermore, for the firms which had specific time interval of reviewing prices, they do so more frequently than actually changing them. About 49 percent of firms review price only once per year. But there are marked differences between sectors — for example, firms in the manufacturing sector review their prices more often than the ones in the service sector.

Furthermore, there is evidence of relatively high degree of price stickiness since 67.3 percent of firms adjust their prices of goods and services yearly or more than a year. The mean duration of price change is once a year, with results indicating somewhat more price stickiness in service sector compared to manufacturing sector the fact that could reflect its higher labour share, which in general is associated with lower frequencies of price changes.

Moreover, price increases are considerably more pronounced in Tanzania than that of price decreases. The high dominance of positive price changes is consistent with the fact that Tanzania is high inflation economy. This is also contrary to findings of studies conducted in low inflation-developed countries such as Portugal and for the euro area where the absolute size of price decreases appears to be even larger than the magnitude of price increases. This finding is consistent with actual data that indicate an average inflation rate of 6.1 for 2014, the time of conducting the study and average inflation rate of around 0 to 2 percent in Euro and US.

Again, different factors influence price rises and price falls. Increase in costs of production - in particular, labour costs and raw materials – and higher taxes are the most important drivers behind price increases, whereas decrease in price of raw material, reduction in taxes and decrease in competitors' prices are the main factor resulting in price falls.

In addition, with regards to factors which were most important in causing price stickiness, the existence of implicit and explicit contracts was viewed as the most important. Pure menu costs (time, effort, re-printing etc.) were not widely cited as important factors preventing price adjustment.

Similarly, in making decision about changing prices, companies in Tanzania are more prompted by shocks that would lead to profit losses (rising costs of raw material and labour as well as an increase in tax) than shocks that would lead to profit gains (decreasing raw material and labour costs as well as reduction in taxes), signalling asymmetric price adjustment.

Concerning validity of the assumptions built in the FPAS models, this study finds that the assumption of sticky prices underlying FPAS models that are employed for monetary policy analysis and forecasting are considerably fair enough to match the main micro founded stylized facts in Tanzania at least for non-food and non-energy prices. The finding of a relatively sluggish price adjustment among firms has two implications for the monetary policy.

First implication is on monetary policy transmission mechanism. When prices are sticky it is expected to render persistence in the aggregate inflation as per Schmitt-Grohe and Uribe (2004b) and Siu (2004). This implies that, inflation may be less responsive to monetary policy actions (changes in the policy rate) in the short run. As a result, inflation targets could be achieved with longer lags and with more impact on economic activity.

Second implication is on price stability, in an environment of rigid prices, monetary policy actions are supposed to be strong enough to a particular deviation of inflation from the target when compared to an environment with flexible prices.

It can therefore be concluded that, the New Keynesians, forward-looking DSGE models are key in understanding the functioning of the economy. Like other Central Banks in the world, the Bank of Tanzania should continue embark on DSGE models for policy analysis and forecasting.

In the end, the current study has examined only one of several building blocks of these New Keynesian DSGE models. Indeed, as a next step, further studies particularly those based on micro level analysis are needed to be undertaken to explore other attributes of the existing DSGE models. For example, the assumption of rational expectations assumption, secondly to get rigorous understanding of price stickiness for the whole economy, a price adjustment study for the Tanzanian economy need to be undertaken for across all sectors. Moreover, the analysis of price stickiness need to be undertaken through a further research, focusing on alternative methodology based on disaggregated consumer price index data. Another avenue for further study would be research into wage-setting behaviour in Tanzania in order to understand price dynamics in Tanzania.

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Appendices

Appendix 1: Brief overview of the Quarterly Projection Model (QPM) of the FPAS Framework

In the QPM used for monetary policy analysis and forecasting, variables are estimated in 'gap' form. That is, the variables are specified in terms of deviations away from their trend values. The movement of variables towards their trends is the key driver of forecasts in the model. Importantly, in the medium-to-long term, the gap variables will be zero and variables will grow by their trend rate of growth. For example, in the long-run, the output gap will be equal to zero, with GDP growing at its trend rate of around 6.5 per cent. The QPM consist of four building blocks namely aggregate demand, aggregate supply, uncovered interest rate parity (UIP), and monetary policy reaction function (modified Taylor's rule).

1. Aggregate Demand

$$\hat{y}_t = a_1 \hat{y}_{t-1} - a_2 mci_t + a_3 \hat{y}_t^* + \varepsilon_t^y$$
$$mci_t = a_4 \hat{r}_t + (1 - a_4)(-\hat{z}_t)$$

The output gap is a function of (weights, or importance of each variable are in **appendix 3**)

- Previous values of the output gap, measuring persistence
- Impact of monetary policy on real economy which consists of real interest rate gap: and real exchange rate gap.
- Foreign output gap.

2. Aggregate Supply (Phillips curves)

a. Core Inflation

$$\pi_t^{core} = b_1 \pi_{t-1}^{core} + (1 - b_1)\pi_{t+1}^e + b_2 rmc_t + \varepsilon_t^{core}$$
$$rmc_t = b_3 \hat{y}_t + (1 - b_3)\hat{z}_t$$

Inflation is a function of (weights, or importance of each variable are reported in **appendix 3**)

- Previous inflation-capturing the persistence of inflation emanating from micro level price stickiness in price adjustment by firms.
- Inflation expectations- capturing the forward looking behaviour of agents
- Real marginal costs which is defined in terms of:
  - o Domestic price pressures (as represented by domestic output gap)
  - o External price pressures (as represented by real exchange rate gap)

From the equation weights it is clear that one of the main drivers of inflation in the FPAS QPM model is backward looking inflation (persistence). Core inflation will be quite persistent due to the coefficient being close to 1. This means shocks to inflation (due to poor rainfall for example) will have a long-lasting effect. For the forecasts, the high persistence coefficient means that inflation is slow to reduce from the current high rates or slow to increase from the current low rates.

b. Food Inflation

$$\pi_t^{food} = b_{21} \pi_{t-1}^{food} + (1 - b_1)\pi_{t+1}^e + b_{22}\hat{\psi}_t + \varepsilon_t^{\pi f}$$
$$\hat{\psi}_t = b_{23}\hat{z}_t^{food} + (1 - b_{23})\hat{y}_t$$

Food inflation differs from core inflation by using an alternative measure of the real exchange rate (measuring external price pressures) in the real marginal cost term. Here the relative food price is defined as the difference between world food prices (converted to domestic prices) and domestic food prices.

c. Energy Inflation

$$\pi_t^{en} = b_{31} \pi_{t-1}^{en} + (1 - b_1)\pi_{t+1}^e + b_{32}\hat{\upsilon}_t + \varepsilon_t^{en}$$
$$\hat{\upsilon}_t = b_{33}\hat{z}_t^{en} + (1 - b_{33})\hat{y}_t$$

Similarly, energy inflation uses a real energy exchange rate gap measures in its marginal cost term. In the current formulation, world energy prices are oil prices.

Since energy prices are flexible compared to core prices, energy inflation is much less persistent than core inflation, with the backward looking coefficient less than that in the core inflation equation.

The FPAS equation for energy inflation contains an additional term compared with core and food inflation. This term measures the direct pass of world oil prices and the exchange rate to domestic oil prices. In the current specification of the model however, the coefficient on this term is zero.

d. Uncovered Interest Rate Parity (UIP)

The UIP condition links the domestic and international economies. This condition relates changes in the nominal exchange rate with differences in foreign and domestic interest rates, as well as a risk premium for investing in the domestic economy.

$$s_t = s_{t+1}^e + (i_t^* - i_t + prem_t)/4 + \varepsilon_t^s$$

To better match the data FPAS alters the UIP equation by changing the expectations term s_{t+1}^e.

$$s_{t+1}^E = (1-e_1)s_{t+1}^e + e_1(s_{t-1} + 2\Delta\bar{s}_t)$$

The first part of this equation is the forward-looking component. The second part is the backward looking part (persistence). The backward looking component grows the previous exchange rate value by the trend rate of growth of the real exchange rate and the average inflation differential approximated by the difference in inflation targets. By construction, $\Delta\bar{s} = \Delta s$ in the long-run.

$$\Delta\bar{s}_t = \left(\bar{\pi}_t - \bar{\pi}_t^* + \Delta\bar{z}_t\right)/4$$

Substituting the changed expectations formulation gives the final UIP formula.

$$s_t = (1-e_1)s_{t+1}^e + e_1(s_{t-1} + 2/4(\bar{\pi}_t - \bar{\pi}_t^* + \Delta\bar{z}_t)) + (i_t^* - i_t + prem_t)/4 + \varepsilon_t^s,$$

e. Monetary Policy Reaction Function (Modified Taylor Rule)

Monetary policy is set by changing the nominal interest rate. In the model the central bank changes the rate to respond to output being different from trend and/or inflation being different from its target. is the policy neutral interest rate, which is the rate that prevails if the output gap is zero and inflation is equal to the target; it is the sum of the trend real interest rate and model consistent inflation expectations.

$$i_t = f_1 i_{t-1} + (1-f_1)(i_t^n + f_2(\pi_{t+1}^e - \pi^T) + f_3\hat{y}_t) + \varepsilon_t^i$$

APPENDIX 2: Steady State Assumptions

Domestic Inflation Target	5.0 per cent
Foreign Trend Inflation (US)	2.0 per cent
Foreign Trend Inflation (EZ)	2.0 per cent
Trend Real Interest Rate	0 per cent
Trend Real Exchange Rate (US)	-2.0 per cent
Trend Real Exchange Rate	-4.0 per cent
Potential GDP growth	6.5 per cent
Trend Real Interest Rate (US)	-1.0 per cent
Relative Food Price Trend	10.0 per cent
Relative Oil Price Trend	9.0 per cent

Appendix 3: Parameter and Convergence Assumptions

a_1	Output persistence varies between 0.1 (extremely flexible) and 0.95 % (extremely persistent)	0.6
a_2	Policy pass through (impact of monetary policy on real economy) varies between 0.1 (relatively low impact) to 0.5 (strong impact)	0.3
a_3	External demand impact varies between 0.1 and 0.6	0.2
a_4	Weight of real interest rate and real exchange rate in monetary conditions varies from 0.3 to 0.8	0.6
b_1	Inflation persistence; varies between 0.4 (low persistence) to 0.9 (high persistence)	0.9
b_2	policy pass through (impact of output gap on inflation); varies between 0.1 (a flat Phillips curve and high sacrifice ratio) to 0.5 (steep Phillips curve and low sacrifice ratio)	0.15
b_3	(1-b3) is a ratio of imported goods in firms marginal costs; varies between 0.9 for low ratio of imported goods in CPI basket to 0.7 for high ratio	0.8
b_{21}	varies between 0.1 (low persistence) to 0.9 (high persistence)	0.8
b_{22}	the impact of world food prices and the business cycle on food prices); varies between 0.1 (low pass through) to 0.5 (high pass through)	0.3
b_{23}	the impact of world food prices and the business cycle on food prices; is usually high, e.g. 0.9 - 0.8 with limited impact of the business cycle on food prices	0.2
b_{31}	varies between 0.1 (low persistence) to 0.9 (high persistence)	0.5
b_{32}	pass through including level effect (the impact of world oil prices and the exchange rate on oil prices); varies between 0.05 (low pass through) to 0.5 (high pass through)	0.15
b_{33}	the impact of world oil prices and the business cycle on energy prices; is usually high, e.g. 0.9 - 0.8 with limited impact of the business cycle on energy prices	0.9
b_{34}	direct pass through (the impact of world oil prices and the exchange rate on oil prices); varies between 0.05 (low pass through) to 0.5 (high pass through)	
e_1	captures for backward-looking agents on the financial market; varies between zero to 0.8 (high ratio of backward-looking agents)	0.2
f_1	policy persistence; f1 varies from zero (no persistence in policy setting) to 0.8 ("wait and see" monetary policy)	0.7
f_2	policy reactiveness (weight put on inflation by policy maker); no upper limit but must be always higher than zero (Taylor principle)	2
f_3	policy reactiveness (weight put on output gap by policy maker); has no upper limit but must be always higher than zero	0.5

Appendix 4: Characteristics of The Sampled Companies (Count)

		Location			Total
		Ilala	Kinondoni	Temeke	
Size	Small	10	15	0	25
	Medium	16	22	4	42
	Large	7	4	1	12
Subsector	Transport	6	5	0	11
	Telecommunication	1	5	1	7
	Education	3	5	1	9
	Medical and veterinary	3	2	0	5
	Insurance	4	0	0	4
	Hotels and conference	1	9	0	10
	Media	1	1	0	2
	Processed Food product and beverage	6	6	2	14
	Agro-chemicals	0	1	0	1
	Textile	2	1	1	4
	Manufacturing of construction materials	0	2	0	2
	Clearing and Forwarding Services	1	0	0	1
	Other Services	3	2	0	5
	Other manufacturing	2	2	0	4
Sector	Manufacturing	13	11	3	27
	Services	20	30	2	52
Total		**33**	**41**	**5**	**79**

Source: Authors own computation

Appendix 5: Number of Competitors in Tanzania, Sector Cross Tabulation

		One	2 - 5	6 - 20	20 or more	Total
Subsector	Transport		27.3%	36.4%	36.4%	100.0%
	Telecommunication		42.9%	57.1%		100.0%
	Education			33.3%	66.7%	100.0%
	Medical and veterinary		40.0%	20.0%	40.0%	100.0%
	Insurance			25.0%	75.0%	100.0%
	Hotels and conference		30.0%	30.0%	40.0%	100.0%
	Media		50.0%	50.0%		100.0%
	Processed Food product and beverage	7.1%	42.9%	28.6%	21.4%	100.0%
	Agro-chemicals				100.0%	100.0%
	Textile			100.0%		100.0%
	Manufacturing of construction materials			100.0%		100.0%
	Clearing and Forwarding Services				100.0%	100.0%
	Other Services		20.0%	20.0%	60.0%	100.0%
	Other manufacturing		25.0%	50.0%	25.0%	100.0%
Total		**1.3%**	**25.3%**	**38.0%**	**35.4%**	**100.0%**

Source: Authors own computation

Appendix 6: Strength of Competition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Severe competition	22	27.8	27.8	**27.8**
	Strong Competition	56	70.9	70.9	**98.7**
	Weak Competition	1	1.3	1.3	**100.0**
	Total	79	100.0	100.0	-

Source: Authors own computation

Appendix 7: Aligning The Timing of Own Price Change with That of The Competitor

		No	Sometimes	Often	Always	Total
Subsector	Transport	9.1%	45.5%	27.3%	18.2%	100.0%
	Telecommunication	14.3%	28.6%	-	57.1%	100.0%
	Education	33.3%	55.6%	11.1%	-	100.0%
	Medical and veterinary	40.0%	40.0%	-	20.0%	100.0%
	Insurance	-	50.0%	50.0%	-	100.0%
	Hotels and conference	20.0%	40.0%	30.0%	10.0%	100.0%
	Media	-	100.0%	-	-	100.0%
	Processed Food product and beverage	14.3%	57.1%	7.1%	21.4%	100.0%
	Agro-chemicals	-	100.0%	-	-	100.0%
	Textile	25.0%	50.0%	-	25.0%	100.0%
	Manufacturing of construction materials	50.0%	-	-	50.0%	100.0%
	Clearing and Forwarding Services	100.0%	-	-	-	100.0%
	Other Services	-	80.0%	-	20.0%	100.0%
	Other manufacturing	75.0%	-	-	25.0%	100.0%
	Total	**21.5%**	**46.8%**	**12.7%**	**19.0%**	**100.0%**

Source: Authors own computation

Appendix 8: Independence in Setting Price of the Product or Service

		Who determine the price		Total
		Company	Other	
Subsector	Processed Food product and beverage	72.7%	27.3%	100.0%
	Hotels and conference	100.0%		100.0%
	Transport	77.8%	22.2%	100.0%
	Education	100.0%		100.0%
	Telecommunication	100.0%		100.0%
	Other Services	100.0%		100.0%
	Medical and veterinary	100.0%		100.0%
	Textile	85.7%	14.3%	100.0%
	Insurance	100.0%		100.0%
	Other manufacturing	100.0%		100.0%
	Clearing and Forwarding Services	50.0%	50.0%	100.0%
	Media	100.0%		100.0%
	Manufacturing of construction materials	100.0%		100.0%
	Agro-chemicals	100.0%		100.0%
Sector	Services	90.4%	9.6%	100.0%
	Manufacturing	88.9%	11.1%	100.0%
Size of the company	Small	80.0%	20.0%	100.0%
	Medium	95.2%	4.8%	100.0%
	Large	91.7%	8.3%	100.0%
	Total	**89.9%**	**10.1%**	**100.0%**

Source: Authors own computation

Appendix 9: Pricing Policy

		Pricing Policy		Total
		One price policy	Differential price policy	
Subsector	Transport	45.5%	54.5%	100.0%
	Telecommunication		100.0%	100.0%
	Education	55.6%	44.4%	100.0%
	Medical and veterinary	60.0%	40.0%	100.0%
	Insurance	25.0%	75.0%	100.0%
	Hotels and conference	30.0%	70.0%	100.0%
	Media	100.0%		100.0%
	Processed Food product and beverage	42.9%	57.1%	100.0%
	Agro-chemicals		100.0%	100.0%
	Textile	25.0%	75.0%	100.0%
	Manufacturing of construction materials	100.0%		100.0%
	Clearing and Forwarding Services		100.0%	100.0%
	Other Services	40.0%	60%	100.0%
	Other manufacturing	25.0%	75%	100.0%
Sector	Manufacturing	44.4%	55.6%	100.0%
	Services	36.5%	63.5%	100.0%
Size of the Company	Small	44.0%	56.0%	100.0%
	Medium	33.3%	66.7%	100.0%
	Large	50.0%	50.0%	100.0%
Total		**39.2%**	**60.8%**	**100.0%**

Source: Authors own computation

Appendix 10: Price Reviews

		Occasionally	Daily	Weekly	Monthly	Quarterly	Yearly	Do not know	Total
Subsector	Transport	9.1%	-	-	9.1%	27.3%	45.5%	9.1%	100.0%
	Telecommunication	14.3%	14.3%	14.3%	-	42.9%	14.3%	-	100.0%
	Education	-	-	-	-	-	100.0%	-	100.0%
	Medical and veterinary	-	-	-	-	20.0%	60.0%	20.0%	100.0%
	Insurance	-	25.0%	-	-	25.0%	50.0%	-	100.0%
	Hotels and conference	10.0%	-	-	20.0%	10.0%	60.0%	-	100.0%
	Media	50.0%	-	-	-	-	50.0%	-	100.0%
	Processed Food product and beverage	7.1%	7.1%	14.3%	7.1%	28.6%	35.7%	-	100.0%
	Agro-chemicals	100.0%	-	-	-	-	-	-	100.0%
	Textile	-		25.0%	-	25.0%	25.0%	25.0%	100.0%
	Manufacturing of construction materials	-	50.0%	-	-	-	50.0%	-	100.0%
	Clearing and Forwarding Services	-	-	-	-	-	100.0%	-	100.0%
	Other Services	-	40%	-	-	20.0%	40.0%	-	100.0%
	Other manufacturing	25%			25%		50.0%	-	100.0%
Sector	Manufacturing	11.1%	7.4%	11.1%	7.4%	25.9%	29.6%	7.4%	100.0%
	Services	7.7%	7.7%	1.9%	5.8%	15.4%	59.6%	1.9%	100.0%
Size	Small	8.0%	4.0%	8.0%	8.0%	16.0%	48.0%	8.0%	100.0%
	Medium	11.9%	11.9%	2.4%	4.8%	19.0%	47.6%	2.4%	100.0%
	Large	-	-	8.3%	8.3%	25.0%	58.3%	-	100.0%
	Total	**8.9%**	**7.6%**	**5.1%**	**6.3%**	**19.0%**	**49.4%**	**3.8%**	**100.0%**

Source: Authors own computation

Appendix 11: Ranking of Various Factors That Drive Prices Upwards

Sector	Manufacturing		Services	Total	Overall Ranking
	Minimum (Most Significant)	Maximum (Least significant)	Mean Score	Mean Score	Mean Score	
An increase in raw materials prices	1	5	1.61	2.31	2.06	1
Increase in taxes	1	5	2.18	2.53	2.41	2
An increase in labor costs	1	5	2.89	2.71	2.77	3
An increase in other production costs	1	5	2.43	3.08	2.85	4
Improvement of quality of product	1	5	3.46	2.61	2.91	5
An increase in financial costs	1	5	2.89	3.04	2.99	6
An increase in competitors prices	1	5	3.11	3.14	3.13	7
An increase in demand	1	5	3.36	3.29	3.32	8
Cash flow or financing problem	1	5	3.82	3.82	3.82	9

Source: Authors own computation

Note: Mean scores correspond to a scale from 1 (very significant) to 5 (very insignificant)

Appendix 12: Ranking of Various Factors that Drive Prices Downward

Sector	Minimum (Most Significant)	Maximum (Least significant)	Manufacturing	Services	Total	Ranking
			Mean Score	Mean Score	Mean Score	
A decrease in raw materials prices	1	5	2.14	3.33	2.91	1
A decrease in competitors prices	1	5	2.86	3.39	3.20	2
Reduction in taxes	1	5	2.89	3.24	3.11	3
A decrease in other production costs	1	5	3.04	3.57	3.38	4
A decrease in demand	1	5	3.14	3.43	3.33	5
A decrease in labor costs	1	5	3.32	3.59	3.49	6
A decrease in financial costs	1	5	3.39	3.63	3.54	7
A decrease in quality of product	1	5	3.93	3.75	3.81	8

Source: Authors own computation

Note: Mean scores correspond to a scale from 1 (very significant) to 5 (very insignificant)

Appendix 13: Size of Price Change

		Percentage change in price in a given year									
		No change	Increase between 0-5 percent	Increase between 6-10 percent	Increase between 11-15 percent	Increase between 16-20 percent	Increase by more than 20 percent	Decrease between 0-5 percent	Decrease between 6-10 percent	Decrease by more than 20 percent	Total
Subsector	Transport	45.5%	18.2%	9.1%	-	-	27.3%	-	-	-	100.0 %
	Telecommunications	14.3%	-		-	14.3%	14.3%	42.9%	-	14.3%	100.0 %
	Education	11.1%	22.2%	33.3%	-	11.1%		-	22.2%	-	100.0 %
	Medical and Veterinary		40.0%	20.0%	20.0%	-	20.0%	-	-	-	100.0 %
	Insurance	50.0%	-	-	-	-	50.0%	-	-	-	100.0 %
	Hotels and Conference	10.0%	50.0%	20.0%	10.0%	-	10.0%	-	-	-	100.0 %
	Media	50.0%	50.0%			-	-	-	-	-	100.0 %
	Processed food products and beverages	21.4%	35.7%	14.3%	7.1%	-	7.1%	7.1%	-	-	100.0 %
	Agro-chemicals	-		-	-	-	-	-	-	100.0%	100.0 %
	Textile	25.0%	75.0%	-	-	-	-	-	-	-	100.0 %
	Manufacturing of construction materials	-	-	50.0%	-	-	-	50.0%	-	-	100.0 %
	Clearing and Forwarding Services	-	100.0%	-	-	-	-	-	-	-	100.0 %
	Other Services	-	20.0%	-	-	-	40.0%	40.0%	-	-	100.0 %
	Other manufacturing	50.0%		50.0%	-	-			-	-	100.0 %
Sector	Manufacturing	22.2%	37.0%	14.8%	7.4%	-	3.7%	7.4%	3.7%	3.7%	100.0 %
	Services	21.2%	23.1%	15.4%	1.9%	3.8%	19.2%	9.6%	3.8%	1.9%	100.0 %
Size	Small	16.0%	36.0%	12.0%	-	4.0%	24.0%	-	4.0%	4.0%	100.0 %
	Medium	16.7%	26.2%	19.0%	7.1%	2.4%	7.1%	14.3%	4.8%	2.4%	100.0 %
	Large	50.0%	16.7%	8.3%	-	-	16.7%	8.3%	-	-	100.0 %
	Total	21.5%	27.8%	15.2%	3.8%	2.5%	13.9%	8.9%	3.8%	2.5%	100.0 %

Source: Authors own computation

Appendix 14: Questionnaire

PART I: General Information **INTERVIEWER INITIALS: _____**

1.1	**Name of Company:**
1.2	Name of Interviewee:
1.3	Position of Interviewee:
1.4	Location:
1.5	Office Telephone No.:
1.6	Interviewee's Mobile No.:
1.7	Interviewee's E-mail Address:

PART II: Company Details

			Comments
2.	Sector:	☐ Manufacturing ☐ Service	
3.	Main Products/Services:	1. _____ 2. _____ 3. _____	
4.	Number of Employees:		
5.	How strong is the competition on the main products/ services?	☐ Severe competition ☐ Strong Competition ☐ Weak Competition ☐ No Competition	
6.	Please indicate the number of competitors on the main products/services?	☐ None ☐ 2 – 5 ☐ 20 or more ☐ - 20	

PART III: Pricing Information

			Comments
7.	What is your key Pricing Policy for Main Products/service?	☐ One Price Policy ☐ Differential Price Policy	
8.	Who determines the price of main products?	☐ Company ☐ Other	
9.	On average, how often do you review the adequacy of the price of main product/service?	☐ Occasionally ☐ ly ☐ Weekly ☐ nthly ☐ Quarterly ☐ rly ☐ Do not know	
10.	Do you adjust the selling price of your main products/service at fixed time intervals?	☐ YES ☐ NO	
11.	At what intervals do you adjust the selling price of your main products/service?	☐ Daily ☐ ekly ☐ Monthly ☐ rterly ☐ Yearly ☐ N ☐ More than one year	
12.	Did you change the selling price of your main products/service last year?	☐ Raised the price ☐ Lowered the price ☐ Left price unchanged	
13.	On average, by what percentage does the selling price change in a year?		
14.	Do you align the timing of your own price changes with those of your competitors?	☐ NO ☐ Sometimes ☐ Often ☐ Always	

15. Please rank on a scale of 1(*most significant*) to 5 (*least significant*) factors which are likely to cause an increase in the price of your main product or service.

Factor		1	2	3	4	5
1.1	An increase in the cost of labor					
1.2	An increase in the cost of raw materials					
1.3	An increase in financial costs					
1.4	An increase in other production costs					
1.5	An increase in demand					
1.6	An increase in competitors' prices					
1.7	An increase in quality of the product					
1.8	A cash flow or financing problem					
1.9	Increase in Taxes					

1.10 Others. Please specify.
……
……
……

16. Please rank on a scale of 1(*most significant*) to 5 (*least significant*) factors which are likely to cause a decrease in the price of your main product or service.

Factor	1	2	3	4	5
1.1 A decrease in the cost of labor					
1.2 A decrease in the cost of raw materials					
1.3 A decrease in financial costs					
1.4 A decrease in other production costs					
1.5 A decrease in demand					
1.6 A decrease in competitors' prices					
1.7 A decrease in quality of the product					
1.8 Reduction in Taxes					

1.9 Others. Please specify.
……
……
……

17. Please rank on a scale of 1(*most significant*) to 5 (*least significant*) factors which might delay price changes for the **main product or service**?

Factor		1	2	3	4	5
1.1	The presence of a formal contract: prices can only be changed when the contract is re-negotiated					
1.2	Our customers expect us to keep prices as stable as possible					
1.3	Lowering prices might mistakenly be interpreted as quality loss					
1.4	Fear that competing firms will not adjust their price					
1.5	Fear that we may need to revise the price in the opposite direction					
1.6	Prices are set at 'appealing' thresholds					
1.7	Presence of high menu costs of changing prices (e.g. printing new catalogues, costs of adjusting price tags, etc.)					
1.8	Instead of changing prices, prefer to change other conditions like terms-of-payment, service level					
1.9	Others. Please specify. …… …… ……					

INTERVIEWER INITIALS: _____