

Price Setting Behaviour of Pakistani Firms: Evidence from Four Industrial Cities of Punjab

WASIM SHAHID MALIK, AHSAN UL HAQ SATTI, and GHULAM SAGHIR

Macroeconomic research has mostly been focused on investigating micro foundations of the theory and transmission channels of policy ever since rational expectations have found place in the literature. It was in the 1990s that macroeconomists started working on models incorporating the assumption of nominal rigidity in the optimal behaviour of individuals and firms. These models have gained empirical support from both aggregate as well as firm-level data. The evidence for developing countries on the issue is limited and Pakistan is no exception. This study aims at investigating the price setting behaviour of Pakistani firms. Besides this, the potential effects of changes in financial cost on the overall pricing and production decisions have also been investigated.

Pakistani firms perceive themselves to be operating in a competitive environment though most of their clientele is regular. The majority of the firms use current information while reviewing prices. Around 70 percent of the firms use either a state-dependent pricing rule or a combination of both time and state-dependent rules. Pakistani firms revise and change their prices usually in the months of June and July. The main determinants of change in the price level are the cost of raw material, energy and inflation. The competitors' price generally figures in price decrease. Among the causes of price stickiness, implicit contract with the customers is at the top; the fixed term contract comes next. Most of the firms change their wage structure annually. About half of the firms index their workers' wages to inflation and for the purpose refer to the earlier inflation rate. On the whole labour productivity and changes in inflation rate are observed as the main determinants of wage change.

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1. INTRODUCTION

Ever since rational expectations have found place in the literature much of the research in the area of macroeconomics has been focused on investigating micro foundations of macroeconomic theory and transmission channels of policy. Macroeconomists started working on macro models in the 1990s incorporating the assumption of nominal rigidity with explicit modelling of optimal behaviour of

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individuals and firms, [see for instance, Rotemberg and Woodford (1997); McCallum and Nelson (1999); Woodford (2003)]. These models incorporate various forms of price and wage rigidities making monetary policy effective, though only in the short run. More recently these models have gained empirical support¹ from both aggregate as well as firm-level data. In this regard micro-level evidence is more convincing since aggregated data may depend on the assumptions used and methodology employed, whereas micro-level research offers direct evidence. For instance, micro level data directly investigates the price-setting behaviour of firms.

Some studies in the literature on the price setting behaviour of the firms investigate the issue by collecting data from a particular sector of the economy or a group of firms [e.g. Kashyap (1995); Dutta, *et al.* (1999); Copaciu (2004)]. Another strand of literature, with the pioneer work of Blinder (1991), uses a survey-based approach to investigate various aspects of price stickiness. These studies have an added advantage as they allow additional insights and permit a clear ranking of the causes and patterns of price stickiness. Hall, *et al.* (1997) extended Blinder's work for UK firms. Similarly Apel, *et al.* (2005) investigated the price setting behaviour of Swedish firms and Fabiani, *et al.* (2004) did the same for Italian firms. A number of survey-based studies conducted within the Eurosystem's Inflation Persistence Network used this approach.²

A limited number of studies are also available that focus on developing countries. Studies in Pakistan have little micro level focus which this study as the first attempt to deal with the firms' price setting behaviour aims to do. Besides this, the potential effects of changes in financial cost on the overall pricing and production decisions have also been investigated. Moreover this study is different from others in that data has been collected through enumerators and field investigators instead of mailing questionnaires to respondents.

The study mainly focuses on four issues. First, the type of pricing rule; whether it is state-dependent or time-dependent? Second, what type of information (past, current or future forecast) is used for price calculations and, what is the frequency and size of the average price change. Third, it deals with different theories of price stickiness by investigating the determinants. The wage setting behaviour, which has certain implications for the effectiveness of monetary policy, is the fourth area the study deals with.

The study proceeds as follows: Section 2 highlights the methodological issues. Section 3 outlines the main characteristics of the market. Section 4 deals with the price setting behaviour while Section 5 highlights determinants of price change and causes of price stickiness. The wage setting behaviour is investigated in Section 6 and Section 7 concludes the study.

2. METHODOLOGICAL ISSUES

The survey was financed through a research grant of the Pakistan Institute of Development Economics (PIDE), Islamabad. It was conducted in May-Jun 2008 in four industrial cities of the Punjab namely Faisalabad, Gujrat, Gujranwala and Sialkot. About

¹See for instance Taylor (1999) and Wolman (2003).

²Fabiani, *et al.* (2005) offers a comprehensive overview of the results obtained through this research for the euro-area countries.

50 enumerators along with four field supervisors were hired who visited the firms to collect the data directly. Questions were put to owners or to managers of the firms. The enumerators were required to discuss the problems they faced in data collection with their field supervisors.

2.1. The Sample Design

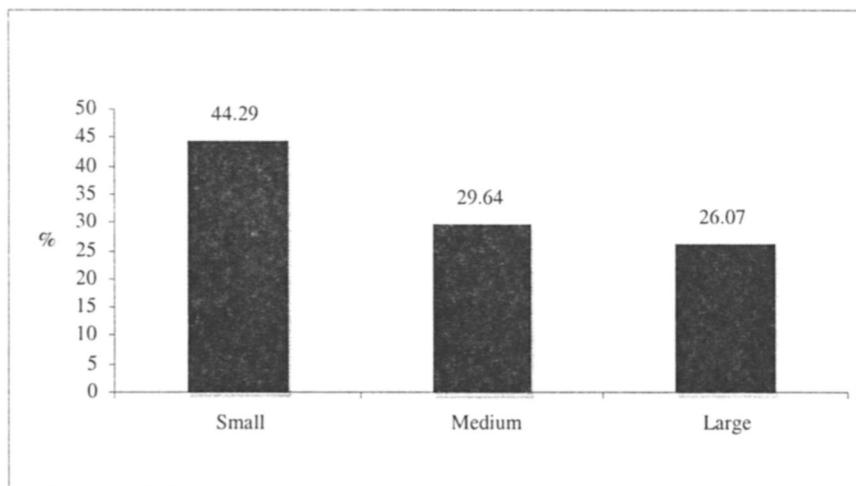
The Chambers of Commerce and Industry of the four cities provided the lists of firms that were registered before 2008. The data were filtered in three steps. First, the firms unproductive since the end of 2007 were ignored giving what Copaciu, *et al.* (2010) called *initial population*.

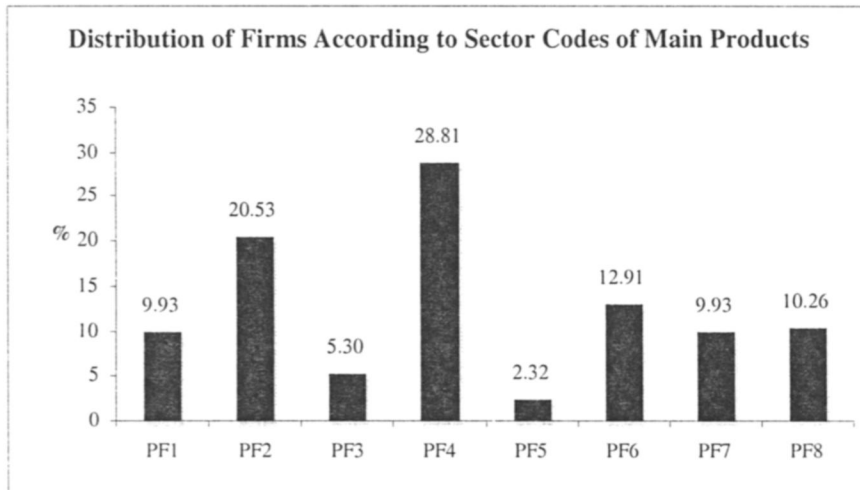
In the second step, firms involved only in trading were eliminated yielding the relevant population of firms engaged in production of goods. From among these, the firms with fewer than 10 employees were dropped. This filtering step is used in many studies like Alvarez and Hernando (2005) or Martins (2005) to avoid over-representation of small firms. The remaining companies are considered as the *population*.

As the Chambers of Commerce and Industry do not have member classification according to different sectors, the study devised its own classification based on the manufacturing activities taking place in the four cities. It covers manufacturing of agricultural implements (PF1), electrical appliances (PF2), engineering goods (PF3), food and sanitary items (PF4), textile industry and steel (PF5), plastic and china utensils (PF6). The population also includes hotels and restaurants (PF7), sports items and leather garments and furniture (PF8).

Following Copaciu, *et al.* (2010), the firms selected were split into three groups according to their number of employees; small firms (with 10 to 49 employees), medium firms (with 50 or more employees but less than or equal to 250) and large firms (with more than 250 employees). In this way, 24 strata were obtained with, eight sub sectors according to the type of manufacturing items, each having three categories of firm size. Finally the strata were subjected to random sampling to select a sample.

Fig. 1. Distribution of Firms on the Basis of Number of Workers





In this way 347 firms were selected. Initially ten firms were selected randomly from the actual sample of Gujrat for pre-testing. As questionnaires were not sent through mail, the problem of no response was not encountered. However four firms did not provide information on their pricing behaviour reducing the sample to 343 firms. After the pilot survey some of the questions were modified. It is clear from Figure 1 that there is still an overrepresentation bias in favour of small firms. So in drawing statistical inference for all Pakistani firms this over-representation must be considered. Throughout the survey 2007 has been considered as reference year.

2.2. The Questionnaire Design

The questionnaire was designed on the pattern of Copaciu, *et al.* (2010) and the Eurosystem's Inflation Persistence Network (IPN) but it was modified significantly in many respects. Modelling questions on a set pattern provides a ready reference to compare our results with. The questionnaire was organised in six sections with 44 questions.

Section A collects general information about the firm and its main product or service. Information is also gathered about the perceived number of the firm's competitors and its share in the market as well as the nature of its relationship with the clients.

Section B requires information on the price setting behaviour of the firm. Who was responsible for setting the price, the firm itself or the parent company etc.? The firms that set their prices by themselves were then asked how they calculated the price (e.g. mark-up pricing). Firms were also asked about price discrimination and the information they used for price computation. They were asked if their pricing policy was time-dependent or state-dependent. The frequency of price computation and price changes for the year 2007 and for other years was also asked. Firms were asked about their perceived price elasticity of demand and how did they manage when they were not able to change the prices for sometime. This section also includes information on the price contracts for inputs.

Section C deals with information about determinants (like inflation, labour cost, financial cost, cost of raw material, tax rate, seasonal factors and competition) of price increase and decrease to reveal the asymmetries between different directions of price change. The different determinants of price stickiness were required to explain different theories of price stickiness.

In section D information was gathered about how the firms set their wage structure, what were the determinants of change, the frequency and pattern of wage change, if wages were indexed to inflationary changes, future expectations about inflation, the number of workers and any fringe benefits provided to them.

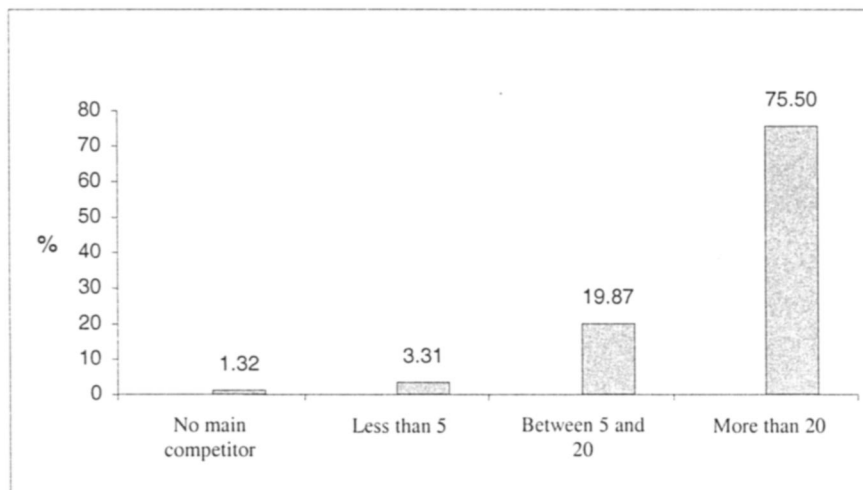
Finally, section F³ focuses on the cost channel of monetary policy. Information is collected regarding the firms' debt-equity ratio, percentage of interest cost in the overall unit cost and perceived response of the firms to changes in the interest rate.

3. CHARACTERISTICS OF THE MARKET

3.1. Perceived Competition

The degree of competition that the firms perceive is an important variable in the price setting process. If the firm faces more competition, then there are more chances that the firm sets prices close to the marginal cost. The questionnaire includes several questions to assess Pakistani firms' perceived degree of competition.

Fig. 2. Distribution of Firms According to Perceived Competition

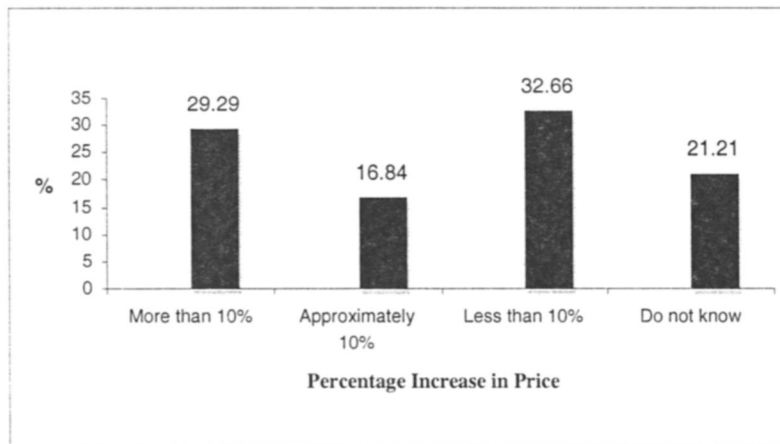


It is found that all other things being equal the degree of competition increases with increase in the number of competitors. About 75 percent of the firms perceive that they have more than 20 competitors in the market, with the percentage being higher in small firms. Only three percent of the firms have fewer than five competitors for the whole sample, but almost half of these are small firms.

³Section E gathers information regarding the awareness of the firms about working of central bank but results are not reported in this study.

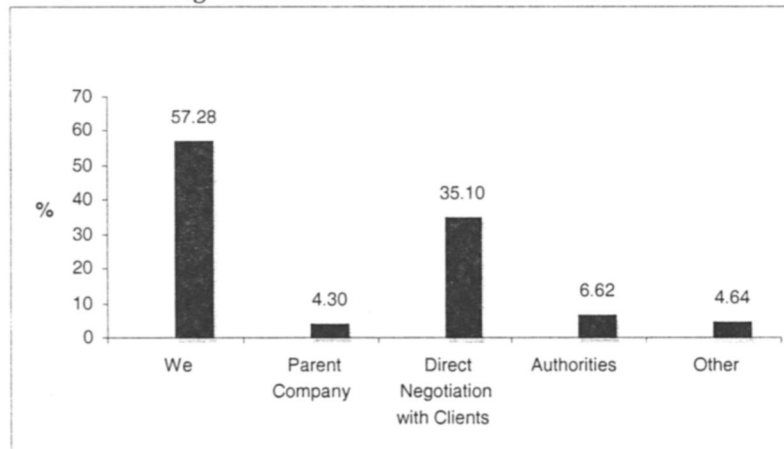
A relatively high degree of competition is confirmed by response of firms regarding the perceived elasticity of demand to a 10 percent increase in the price level. As many as 29 percent firms estimated that the quantity sold would go down by more than 10 percent; 17 percent indicated a unit elasticity and 32 percent below unit elasticity.⁴ The highest percentage of firms reporting an above unit price elasticity was recorded in the manufacturing of agricultural related items, while the lowest percentage was observed for large firms. Interestingly, most of the small firms perceived that they would lose less than 10 percent share in the market.

Fig. 3. Percentage Fall of Quantity Sold if Price Goes Up by 10 Percent



In setting the price, despite the high degree of perceived competition, as mentioned above, 57 percent of the firms reported full autonomy in setting their price followed by 35 percent who said they set their prices by direct negotiation with the clients. The autonomy of pricing was found to be below average for the large firms.

Fig. 4. Who Set the Price of Main Product



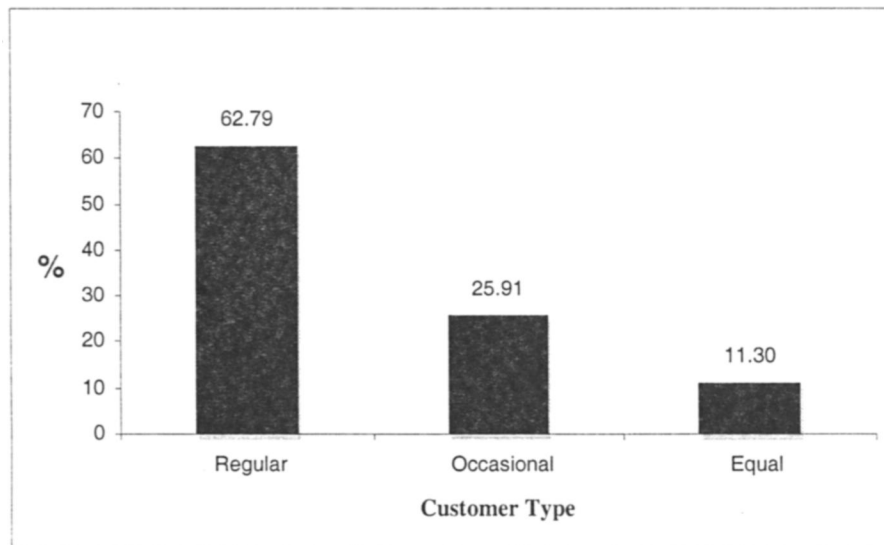
⁴Almost 23 percent of the respondents did not answer this question.

In sum it can be said that Pakistani firms operate in a competitive environment. This finding is further supported by the importance that firms attach to competitors' prices when setting their own; an aspect investigated in Section 5 below. Furthermore, the degree of competition is higher for small firms when compared to large ones. The latter finding is different from that reported by Fabiani, *et al.* (2005) for the EMU countries surveyed under IPN, where the degree of perceived competition is directly proportional with the size of the firms.

3.2. Relationship with the Customers

The pricing decision depends to a large extent on the relationship of firms with the customers. A stable relationship could withhold price adjustment in the face of a shock. The responses of firms on the issue are in line with those in most surveys. The majority of firms (62 percent) regarded most of the clients as regular. With respect to size, the larger firms responded that most of the clients were regular while the proportion was slightly lower than the overall average for smaller firms. The large firms had foreign firms and other large Pakistani companies as their main clients which influenced the price-setting behaviour of these firms. Regular relationship between firms and clients reflects the role contracts—both formal and informal—play in providing incentives for firms to maintain prices stable.

Fig. 5. Relationship with Customers



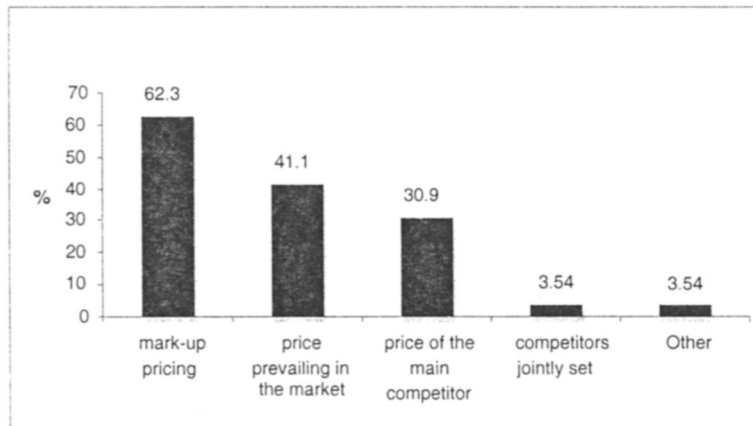
4. PRICE SETTING BEHAVIOUR

4.1. How is the Price Set?

Among 57 percent of the firms which set the price on their own, 62 percent set their price as a markup over cost. About 41 percent of the firms adopted the market price, which was consistent with the finding of this study that most firms were operating in a

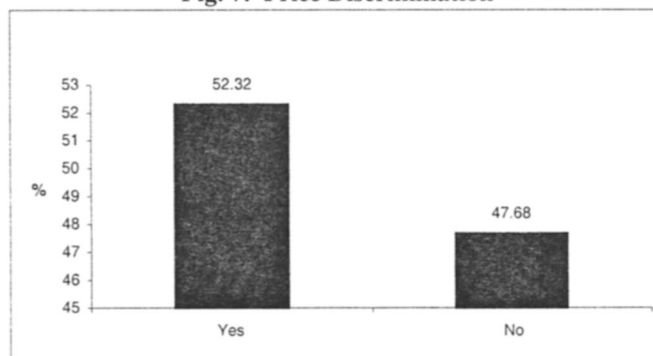
relatively competitive environment. Medium-sized and especially the large firms that set the price of their product inside the company adopted a markup pricing strategy, while the small firms mostly followed the market price trend. This pattern is consistent with the earlier results on perceived competition, and the findings about the influence of long-term relations with customers in the case of medium and large firms when compared with smaller ones.

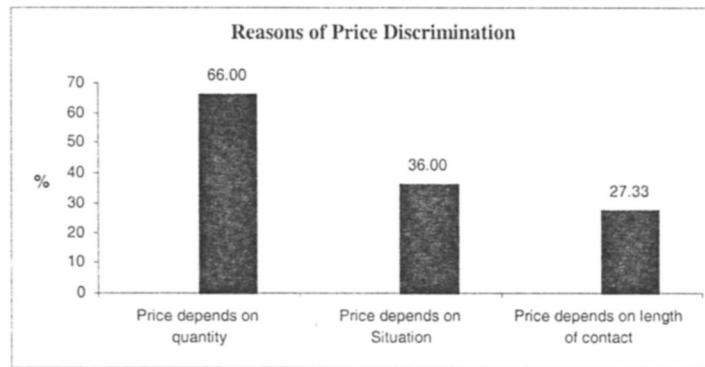
Fig. 6. How the Price is Set Inside the Firm?



This result is also in line with the traditional theory, as larger firms, having full autonomy over their price setting process and operating in a nearly monopolistic environment, tend to have a higher probability of choosing markup pricing compared to smaller firms. The opposite is reported, however, by Fabiani, *et al.* (2005) for the EMU countries in which similar surveys have been carried out. In most of such countries, smaller firms adopt markup pricing in higher proportion than larger ones. However, markup pricing remains correlated to the degree of perceived competition as in EMU large firms which face a more competitive market compared to smaller ones. Price discrimination can be an additional feature of the price setting mechanism for some firms that want to extract a higher consumer surplus.

Fig. 7. Price Discrimination



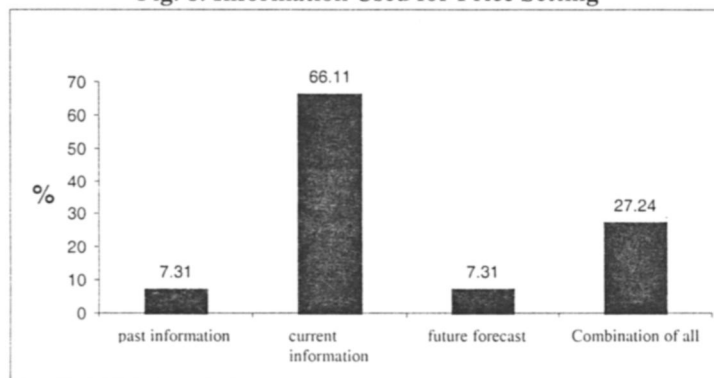


Only 48 percent of the firms declared that they charged the same price from all customers. This figure might seem low at first glance, but when compared with similar figures from other countries, it is in fact relatively high.⁵ In the present sample, 66 percent of the companies which employ price discrimination do so depending on the quantity sold while the others decide the price on a case to case basis. Price discrimination in relation to the quantity sold is higher for large firms (54 percent), while small and medium firms rarely involve in this practice. This reflects the higher degree of competition perceived by small firms.

4.2. Information Used in Price Setting Process

The New Keynesian literature highlights the importance of forward looking behaviour in modelling macroeconomic variables such as inflation. While the purely forward-looking Phillips curve is rarely used in forecasting models, the hybrid Phillips curve, such as the one given in Fuhrer (1997) and Smets (2003) is most commonly used. The results of this study seem to support such a specification, since only 7 percent of the firms claim to use exclusively past information when setting their prices and only 7 percent use forecasts alone, while 27 percent of the firms use a combination of past information and price projections. About 66 percent of the firms use current inflation for pricing decision.

Fig. 8. Information Used for Price Setting



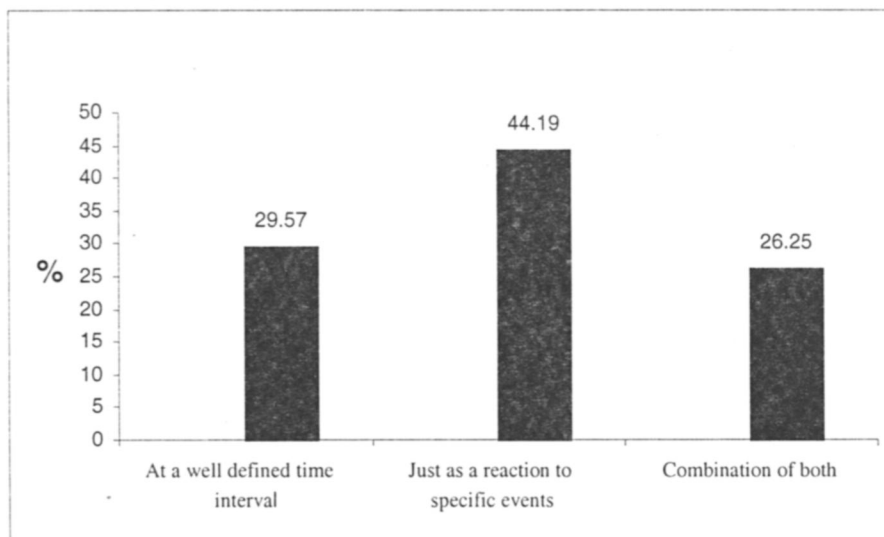
⁵ For instance, Loupias and Ricart (2004) report that only 19 percent of French firms charge same price.

4.3. When are Prices Changed?

4.3.1. Time-Dependent versus State-Dependent Strategies

Depending on the nature of the price adjustment process, two main branches of literature on price stickiness can be identified; one is based on time-dependent and the other on state-dependent models. Both types of models assume that firms operate in an environment of imperfect competition, that is, they are price setters.

Fig. 9. Computations Regarding Price of Product are Made



The models that assume companies follow a time-dependent pricing policy, like the ones developed by Taylor (1975) or Calvo (1983) that imply a constant duration of price quotations. While Taylor assumes that the price setter knows in advance, through contracts, the path of the price adjustment process, in Calvo's model the price is altered only when the firm has an opportunity to do so, which is random in the model. Fischer (1980), instead assumes that prices are predetermined but not fixed; different prices for each period are possible when multi-period contracts are established. The main advantage of time-dependent models of price adjustment is the analytical tractability that allows the analysis of aggregate dynamics. However, their major drawback is that firms are assumed to be unable to respond to shocks that occur in the intervals between two consecutive dates of price adjustment. In contrast, in state-dependent models prices are not fixed at any moment in time between exogenously fixed periods of adjustment. Prices are fixed only if they are not driven too far from the optimal one. Moreover, firms are allowed to respond to shocks. As pioneered by Sheshinski and Weiss (1977, 1992), the optimal policy for firms facing a fixed cost of price adjustment is the one in which firms change the nominal price in a discrete manner each time the real price falls below a predetermined level. The frequency of price adjustments in these models is therefore random. Yet, the expected inflation rate is an important determinant in choosing the target and threshold prices.

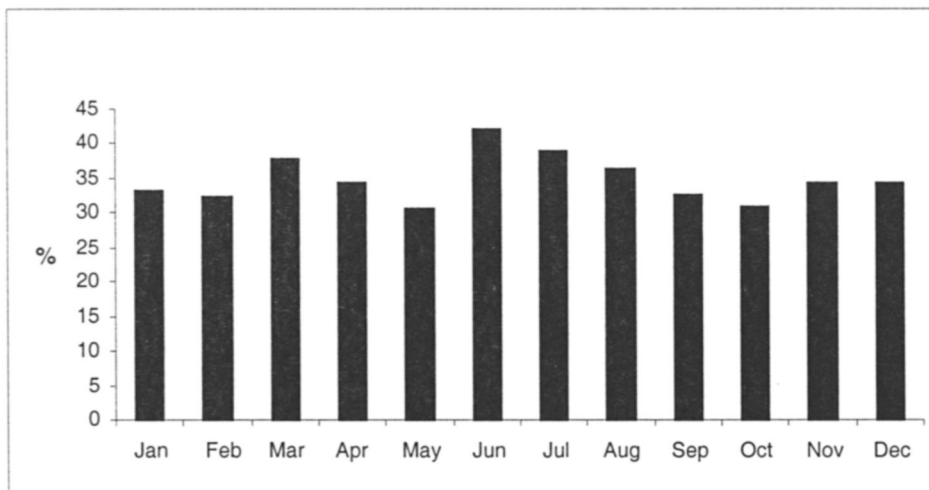
In order to test which of these theories seems to be closer to Pakistani firms' practice, the firms were asked whether their prices were reviewed—without necessarily being changed—at regular time intervals, in reaction to shocks such as from fluctuations in demand or a combination of both.

The responses show that approximately 30 percent of the firms appear to follow a purely time-dependent rule, 44 percent follow a purely state-dependent rule, while the rest employ a mixed strategy. Time-dependent pricing is more prominent in the case of firms in the sanitary and utensils sector. Small and Medium firms follow mostly state-dependent strategies, while for large firms the mixed strategy is the most preferred one.⁶

4.3.2. Frequency of Price Revisions/Changes

Firms were asked about the number of price revisions and the number of price changes for the year 2007. All firms were asked these questions, but the main focus was on firms which indicated to follow time-dependent and/or mixed pricing rules. This is also related to the fact that when asked if there was a specific month when the price was changed, only firms with time-dependent and mixed rules answered the queries.

Fig. 10. Monthly Frequency of Price Change during 2007



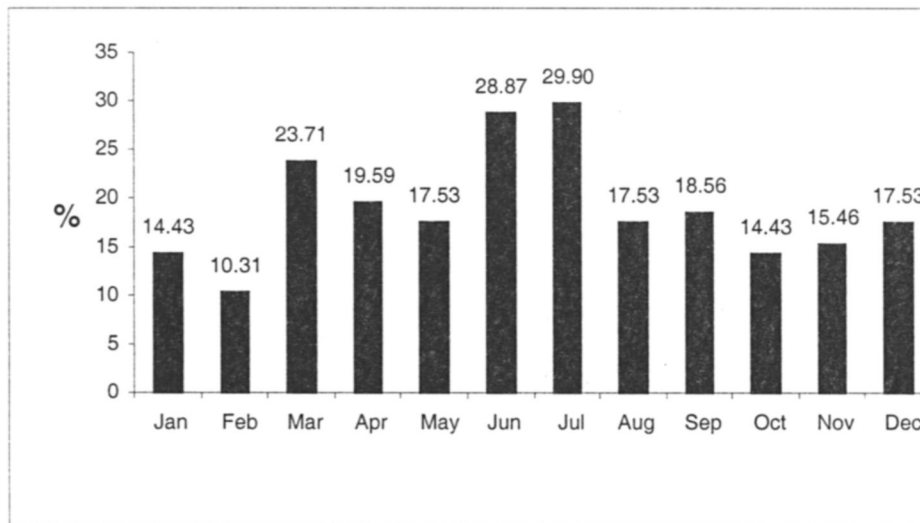
Large firms reviewed their prices more often than medium or small ones did. This might be the result of their stronger concern regarding cost of wrong pricing, a higher diversity of their products, as well as the lower degree of competition perceived. The average number of price reviews and changes for all firms in the sample is slightly higher than the similar measure computed only for firms which indicated to follow a time dependent or a mixed pricing strategy.

⁶Overall, the share of firms choosing a time-dependent strategy alone is smaller when compared with the average for the US [40 percent reported in Blinder, *et al.* (1998)], the UK [79 percent reported in Hall, *et al.* (1997)] and the euro area [34 percent reported in Fabiani, *et al.* (2005)], but there are some similarities to the results obtained in some of the countries such as Belgium [26 percent reported in Aucremanne and Duant (2005)] and Sweden [23 percent reported in Apel, *et al.* (2005)].

Regarding the price changes in any particular month(s) of 2007, no significant differences were observed in the answers. Furthermore, among the firms that followed a price-setting strategy incorporating a time dependent pattern, almost 40 percent indicated that there was no specific month when prices were changed, in general. This can be reconciled with the strategy followed if the decision was taken, for example, in a certain quarter and not a specific month. Among those indicating a specific month, the distribution was quite uniform with some minor hikes in March, June, July, and September.

Besides the frequency of price reviews and price changes in the year 2007, a certain asymmetry was found between price increases and price decreases, with the former being more evenly distributed between the 0–4 percent and the 4–8 percent intervals (38 percent–38 percent), while the latter were obviously skewed towards the 0–4 percent interval. While the prevalence of upward price changes was to be expected in a moderate-to-high inflationary environment, the role of higher frequency and magnitude of upward price shocks in 2007 was also noticeable. The highest proportion of large price increases, (i.e. larger than 12 percent) was obtained for firms in the manufacturing sector.

Fig. 11. Months in which Prices are Usually Changed



5. DETERMINANTS OF PRICE CHANGES AND CAUSES OF PRICE STICKINESS

An effort was made in the survey to explore the determinants of price changes and the main causes of price stickiness.

5.1. Determinants of Price Changes

To explore the main determinants of price changes, the importance of each of the factors in a given list, separately for price increases and for price decreases, was assessed on a 1 (not important) to 4 (very important) scale. The factors considered were similar to those used in similar studies except that this study included additional determinants, such

as exchange rate fluctuations and the inflation rate. The change in the cost of raw material, overall inflation, and the cost of energy were found to be at the top of the drivers of price increases, whereas the change in cost of energy, competitors' prices, raw material's cost and the fluctuations in demand led to price decrease. Overall, it was found that supply side factors were more relevant for price increases and less for price decreases, while the reverse was true for demand side factors.

Table 1

Determinants of Price Change

	Price Increase		Price Decrease	
	Mean	S.E	Mean	S.E
Inflation	3.33	0.05	2.25	.07
labour costs	2.77	0.06	2.13	.07
Change in financial costs (e.g. interest rate)	2.09	0.06	1.71	.06
Change in the cost of raw material	3.56	0.04	2.79	.07
Change in the cost of energy	3.04	0.05	2.33	.06
Change in the exchange rate	1.9	0.06	1.53	.06
Change in the demand for your product	2.29	0.06	2.11	.07
Change in the price of the competitors	2.45	0.06	2.22	.07
Seasonal factors	2.06	0.06	1.87	.07
Changes in the tax	2	0.06	1.67	.06
Government regulation	2.05	0.06	1.82	.07
Change in the level of competition	2.07	0.06	1.88	.07
Valid N (listwise)				

* S.E stands for standard error.

5.2. Determinants of Price Stickiness

Different explanations have been advanced by economists that motivate price stickiness. In the present case, following Copaciu, *et al.* (2010), the following seven possible explanations were listed for firms to assess their importance: explicit contracts, menu cost, information and decision cost, coordination failure, implicit contract, price readjustment and perceived quality. The results show that only three of the above factors were regarded as important (scored above 2), namely, the existence of explicit contracts (2.41), the fear of being the first in changing price (2.35) and stable relationship with customers (2.66). All of the other options received little importance (scored close to 2 or below).

Table 2

Determinants of Price Stickiness

	Mean	S.E
The existence of a fixed term contract	2.41	0.07
Price changes imply printing cost	1.59	0.05
The information necessary to change the price is costly in terms of money and time	1.62	0.05
There is the risk of being the first to adjust the prices	2.35	0.06
Our customers prefer stable prices	2.66	0.06
There is the risk that shortly we may have to change the price again in the opposite direction	1.84	0.05
A price reduction might be interpreted as a change in quality	1.84	0.06

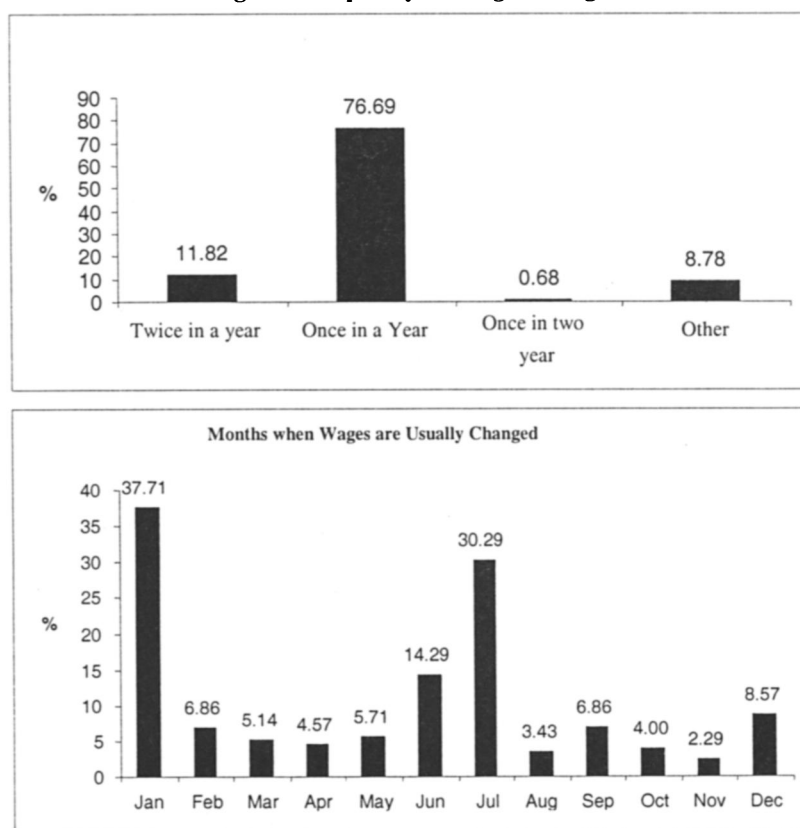
* S.E stands for standard error.

6. WAGE SETTING BEHAVIOUR

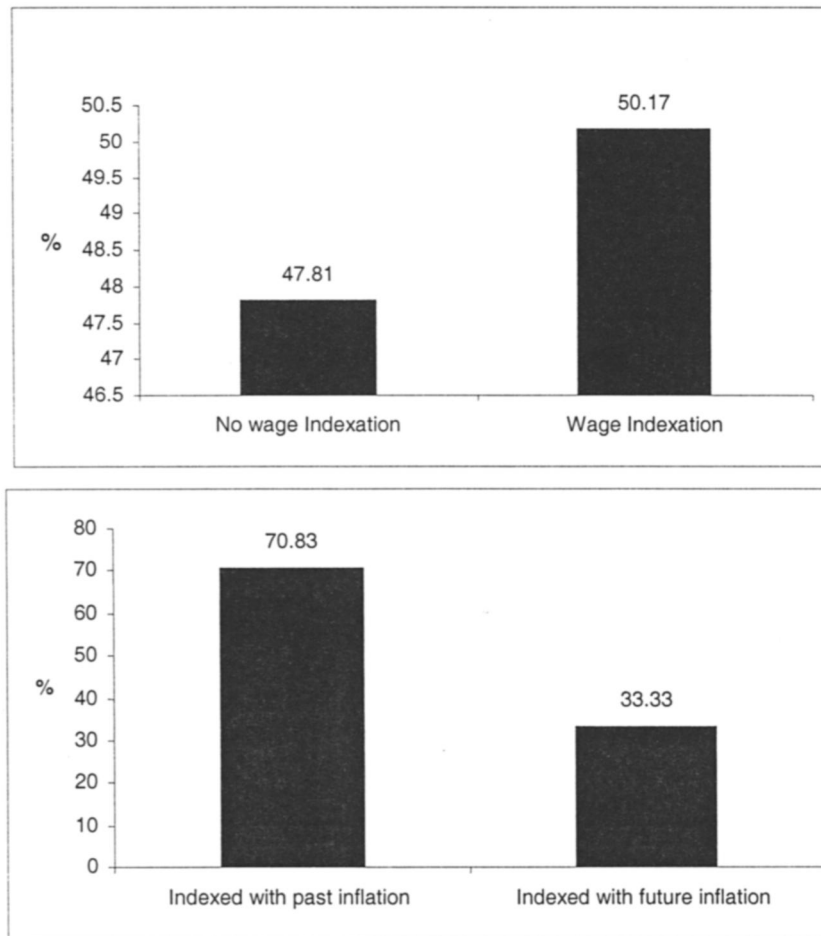
Wage setting behaviour is an important aspect to consider when assessing the impact of monetary policy on both the real side and the nominal side of the economy. Thus, wage stickiness is often brought up in the context of a New Keynesian model as an explanation of the inertia in inflation found empirically [see for example Blanchard and Gali (2006)] as well as in real output [see Christiano, *et al.* (2001)].

The results of this study suggest that in the case of Pakistan wages are stickier than prices. According to the answers received, more than half (77 percent) of the sampled firms generally change their employees' wages only once per year while 12 percent have two changes per year.

Fig. 12. Frequency of Wage Change



Around half of the firms (51 percent) mentioned that there was no specific month(s) when the wages were most likely to be changed. However, in contrast to the similar question on price setting, where the distribution across months was pretty uniform, in the case of wage setting, January and July were reported as the months preferred for changes. These results are close to the ones obtained for Portugal, where about 56 percent of the firms change their wages in a particular month and, out of those, almost half do so in January [Martins (2005)].

Fig. 13. Wage Indexation with Inflation

In a relatively high inflationary environment, indexation of wages to inflation is considered a common practice. Surprisingly however, 48 percent of the firms indicated that inflation indexation was not resorted to. Among those 50 percent firms which indexed wages to inflation, approximately 71 percent of the firms reported to index wages to past inflation and 33 percent to the expected inflation rate. These results combined with the answers on determinants of wage changes are contrary to the widespread practice of wage indexation to inflation. The ratio of firms, which index wages to inflation, seems to be marginally higher in the case of medium-sized firms.

To find the main reasons for wage changes, seven factors were considered: changes in labour productivity, change in the overall inflation rate, change in tax rate, change in the demand for the firm's product, overall employment level in the economy, government regulations, and pressure of labour unions. Change in labour productivity, inflation rate, government regulations, and change in the demand for the firm's product were found to be important factors behind wage change. The results were generally similar across different sectors and firm size.

Table 3

Determinants of Wage Change

	No.	Minimum	Maximum	Mean	S.E
Change in the labour productivity	301	1	4	2.88	0.063
Change in the inflation	302	1	4	2.70	0.06
Change in taxes	301	1	4	1.57	0.05
Changes in demand for your product	302	1	4	2.13	0.06
Employment level in the economy	300	1	4	1.58	0.05
Government regulations (e.g. minimum wage law)	301	1	4	2.34	0.07
Pressure from the labour (e.g. labour unions)	293	1	4	1.70	0.05

* S.E stands for standard error.

7. CONCLUSION

The study presents the results of a survey on price setting behaviour of Pakistani firms carried out in May 2008. The main conclusions drawn are the following.

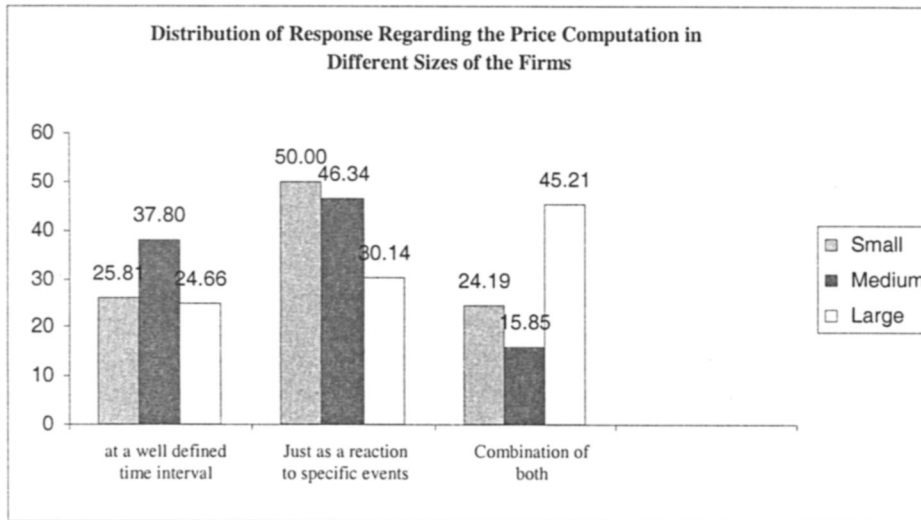
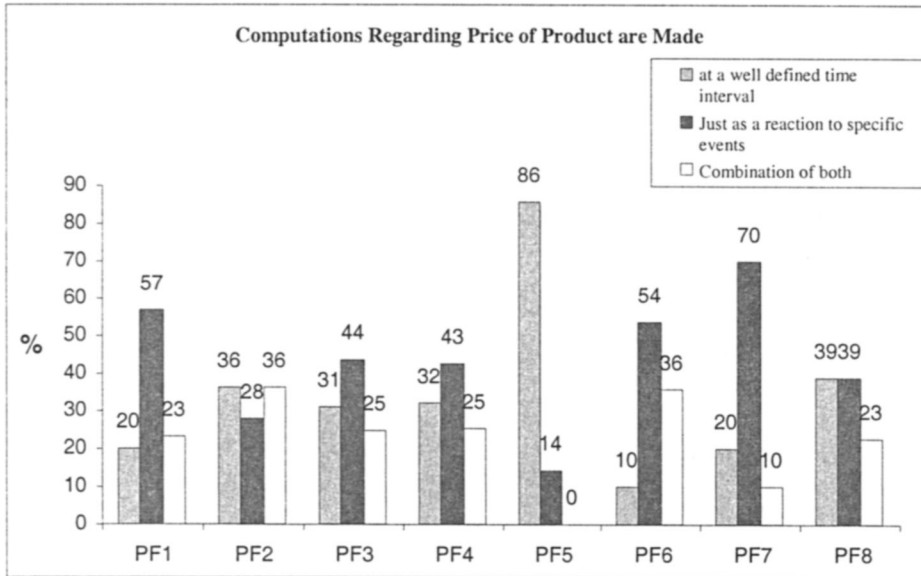
Pakistani firms perceive themselves to be operating in a competitive environment. This is mainly due to greater representation of small firms in the sample and the higher degree of competition for them when compared to large ones. Most of the firms set their own prices. Among these, around 62 percent use mark-up pricing, whereas about 41 percent set their prices at a level prevailing in the market. Most of the clients of the firms are regular and firms' relationship with the customers is long-term. Most of the firms employ price discrimination.

The majority of the firms use current information while reviewing prices. Around 70 percent of the firms use either a state-dependent pricing rule or combination of both time and state-dependent rules. Pakistani firms revise and change their prices usually in the months of June and July. Moreover, costs of raw materials, cost of energy and inflation are the main determinants of price increase while the costs of raw materials, cost of energy and competitors' price are responsible for decrease in prices. Among the main causes of price stickiness, implicit contract with the customers is at the top followed by explicit fixed term contracts.

Most of the firms change their wages once in a year. January and July are the months in which wages are most probable to change. About half of the firms index their workers' wages with inflation and past inflation rate is usually used for the purpose. Labour productivity and changes in inflation rate are found to be the main causes of wage change.

In the end we must say that the evidence in this piece of research is not enough to recommend policy measures. There are, however, some unanswered questions which may be highlighted. First, the degree of price rigidity is found quite low in Pakistan. In macroeconomic models, monetary policy affects the real sector if wages and/or prices are fixed. So it is not clear, whether monetary policy has a limited role in changing economic activity or, there are other (non-traditional) channels through which monetary policy can affect the real side of the economy. Second, the financial cost factor is not found to be significant in causing price change. In this case, what is the rationale of targeting interest rate? Third, most of the firms, while setting price structure, are found to be backward-looking and state-dependent. The first characteristic calls for policy changes that are based on past data while the second calls for a contemporaneous response of monetary policy to changes in the state of the economy. How to design monetary policy in such a scenario?

APPENDIX-A



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