



Some Preliminary Evidence of Price Setting Behaviour from the Industrial Estates of Khyber Pakhtunkhwa

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ARTICLE DETAILS	ABSTRACT
<p>History <i>Revised format: 30 Nov 2019</i> <i>Available Online: 31 Dec 2019</i></p>	<p>Price setting behaviour is a crucial issue for the knowledge of monetary policy transmission mechanism. The objective of the study is to analyze the relationship between firm's characteristics and the price setting behaviour of firms, using survey-based data. The survey is conducted in the year 2017 in four major industrial estates of Khyber Pakhtunkhwa, namely, Hayatabad, Nowshera, Gadoon and Hattar Industrial Estates. A sample of 342 firms is selected through stratified random sampling and respondents are the managers of the firms. According to results the price elasticity of demand will be inelastic and the number of time to change price decreases in case of less competitors. If the firm is engaged in a contract, then there are more chances that the firms have only regular customers and imperfect competitive market structure. Firms which are involved in input price contracts, they are also involved in output price contracts, so nominal wage rigidity leads to output price rigidity. This paper find that traditional channel of monetary policy is weak as degree of price rigidity is low. Therefore, it is important for monetary policy of Pakistan to focus on other channels of monetary transmission mechanism.</p>
<p>Keywords <i>Price Setting, Price Rigidity, Price Contracts, Market Structure, Price Elasticity of Demand</i></p>	
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1. Introduction

Why some of the firms change their prices more often than the other firms and the price setting time is not uniform across companies and exposes enormous volatility? Literature has shown some of the factors which can trigger price adjustment. These factors are level of competition, type of customers, size of the firm, the existence of the economies of scope and the presence of implicit or explicit arrangements and many other different actions (Blaudow & Burg, 2018). Likewise, firms can be hesitant to alter prices guided by the impression that customers could wrongly relate a cutback in price with a lowering in the quality of the products, so in this way blocking downward alterations in prices (Peneva and Ekaterina 2009). Moreover, collapse in coordination between different firms, can explain why a firm does not want to change the product price as it fears the competitors will not do the same (Hall and Yates, 1998). Arrow (1959) points out that in the absence of market power, a firm cannot affect the price of a commodity.

Blinder (1991) is the pioneer, who study the price setting behaviour by using micro data. After this, much research has been carried out to study price stickiness at the firm level, but most of the literature about price setting behaviour is related to developed countries. In the case of Pakistan, only few studies have focused on the price setting behaviour of firms using survey based data. However, these studies have ignored the heterogeneous response of firms to change in prices to different shocks and the role of the firm characteristics in price setting (Sohail, & Fatima, 2018; Choudhary, et.al, 2011; 2016; and Malik et. al, 2008).

The objective of the study is to analyse the price setting behaviour of firms located in four Industrial estates of Khyber Pakhtunkhwa, using survey-based data. In this regards different variables are linked with the price setting behaviour. These factors are price elasticity of demand, price contracts, market structure, price rigidity after calculation, inventories, output and input price contract.

Rest of the paper is organized as; in section 2 famous theories of price setting are discussed, in section 3 population and sample procedure is explained. in section 4, results are discussed and in section 5, conclusion is explained.

2. Theories of Price Stickiness

This section explains famous theories of price rigidity given in literature. Fixed incremental cost is an important theory of price rigidity. If there is any change in demand, then there will be no change in the price, if markups and marginal cost is constant (Hall and Yates, 1998). In the cost base pricing model, the demand for the product will not affect the price, the price of the commodity depends on the cost of production (Blanchard, 1983). According to the implicit contract theory, the firms try to not the change the price with higher frequency. While in the explicit contract theory the firms have a contract with their clients that they will not change the price of the product in a given time period (Okun, 1981). The price threshold is an important theory of price rigidity. The firm keeps the price in the given threshold, even if there is any shock to the economy because otherwise, they will lose the trust of their customers (Hall and Yates, 1998). An imperfect competitive market is also the leading cause of price rigidity because firms have monopoly power due to which they can set the price according to their desire (Blanchard and Fischer 1989). Imperfect information is also the source of price rigidity. According to the classical, in case of perfect information, the price and wage will flexible. While according to the Keynesian, the price and wage will be rigid in case of imperfect information (Taylor, 1979). High price is a symbol that this product will be of best quality. So that why the firm will not decrease the price of its product, because the people will think that price decrease means the quality of the product is decreased. Based on quality and price relationship, prices are downward rigid and upward flexible (Allen,1988). According to physical menu costs theory, when there is any shock, the restaurant does not change price due to reprinting menu cost and advertisement cost. However, most of the time shocks are temporary. So that is why menu cost is one of the determinants of rigidity (Ball & Mankiw, 1994).

3. Population and Sampling Plan

Khyber Pakhtunkhwa (KP) is the province of Pakistan. In KP, there are 14 main industrial estates, for this study four major industrial estates are selected, i.e. Hayatabad, Nowshera, Hattar and Gadoon Amazi industrial estate. The following procedure is adopted for the selection of the sample. First, those firms are included, which are registered before July 2017. Second, those firms who are not involved in production since June 2106, are excluded from in the initial population. Third, to avoid the over-representation of small firms, those firm who have less than ten employees, are not considered in the sample selection process. Fourth, only those firms are considered, which are involved in the production and not only involved in trading activities. The firms which are left after this filtration process make the initial population (i.e. 860 firms). A sample of 342 is calculated from the initial population on the basis of 95% confidence interval and 5% margin error. The data is collected through stratified random sampling technique.

To collect data about price setting of the firm, the structured face to face interview approach is used to collect quantitative data through questionnaire from Industrial Estates of Khyber Pakhtunkhwa. The design of the study questionnaire follows Blinder (1991). It consists of three sections: section A on general information of firms; section B on Price setting; and section C on determinants of price change.

4. Results

This section of the study relates firm characteristic, for example market structure, type of customers with different variables, price rigidity before calculation and after calculation, price elasticity of demand, price adjustment process.

4.1 Price rigidity after calculation

According to Akerlof (1970) price is not a meaningful and suboptimal behaviour due to negligible effect. In most of the situation the consumer has asymmetric information about the market price. So, the information to change the price may lead to a costly decision because it will push the consumer to reopen the set of alternatives available in the market. So that's why the manager will be careful to change price, which lead to price rigidity after calculation. To check this, the firm was asked that how many times did firm do such computations regarding the price of your main product and how many times did firm effectively change the price of your main product in 2017. According to table 1 number of time firm change the price in 2017 varies from 0 to 12 times and the number of time the firm did computations regarding price varies from 0 to 14. According to table 1 more the 80% of the firms occur in the range who did computation from 0 to 6 times and change price from 0 to 4 times. It means, the number of times the firm change the price of its main product is less than the number of times they did computation, which is the symptom of price rigidity. Similarly, according to the table 1 less than 20% of the firms, who did calculations from 6 to 14 times, the percentage of frequency of price change is greater than the percentage of the number of times firm did computation regarding price. So the hypothesis that price is not a meaningful and suboptimal behaviour due to negligible effect is accepted, it means price information and computation lead to price rigidity.

Table: 1 Number of time firm change the price in 2017 and Number of time firm did computations regarding price in 2017

			Number of time firm did computations regarding price in 2017													
			0	1	2	3	4	5	6	7	8	10	12	14	16	Total
Number of time firm change the price in 2017	0	Count	14	0	2	0	0	0	0	0	0	0	0	0	2	18
	1	Count	2	112	16	8	2	0	0	0	0	0	0	0	0	140
	2	Count	0	4	50	16	12	6	0	0	0	2	0	0	0	90
	3	Count	0	0	2	12	6	2	0	0	0	0	0	0	0	22
	4	Count	0	0	0	0	4	4	4	2	2	0	4	0	0	20
	5	Count	0	0	2	0	0	4	4	2	0	0	2	0	0	14
	6	Count	0	0	0	2	0	0	2	0	2	0	0	0	0	6
	7	Count	0	0	0	0	0	0	0	2	0	2	0	0	0	4
	8	Count	0	0	0	0	0	0	0	0	0	0	0	2	0	2
	9	Count	0	0	0	0	0	0	0	0	0	0	4	0	0	4
	10	Count	0	0	0	0	0	0	0	0	0	0	8	0	0	8
	12	Count	0	0	0	0	0	0	0	0	0	0	14	0	0	14
	Total		Count	16	116	72	38	24	16	10	6	4	4	32	2	2

4.2 Price Elasticity of Demand and Market Structure

Price elasticity of demand is important characteristics of the market structure. In perfect competition, the price elasticity of demand is elastic, while in the case of imperfect competition price elasticity of demand is inelastic. To capture the market structure, the firm is asked how many other firms are producing the

same product. To capture the role of price elasticity of demand in price decision making, the firms are asked that if they increase (decrease) the price of their main product by 10% and all the other things remain unchanged, by what percentage would the number of sold units of their product decrease (increase) i.e. more than 10%; approximately 10%; less than 10%; or uncertain. According to table 2, in case of less number of rival firms the price elasticity of demand of majority of firms is inelastic, while in case of more rival firms the firms give a mix results.

Table 2 Price Elasticity of Demand and Market Structure

			Market Structure				Total
			No main	Less than 5	Between 5 & 20	More than 20	
Price Elasticity of Demand	More Than 10%	Count	8	10	22	14	54
		% within Price Elasticity	14.8%	18.5%	40.7%	25.9%	100%
		% within Market Structure	36.4%	12.8%	14.1%	16.3%	15.8%
	Approximately 10%	Count	8	16	12	8	44
		% within Price Elasticity	18.2%	36.4%	27.3%	18.2%	100%
		% within Market Structure	36.4%	20.5%	7.7%	9.3%	12.9%
	Less than 10%	Count	0	22	36	18	76
		% within Price Elasticity	0%	28.9%	47.4%	23.7%	100%
		% within Market Structure	0%	28.2%	23.1%	20.9%	22.2%
	Uncertain	Count	6	30	86	46	168
		% within Price Elasticity	3.6%	17.9%	51.2%	27.4%	100%
		% within Market Structure	27.3%	38.5%	55.1%	53.5%	49.1%
Total	Count	22	78	156	86	342	
	% within Price Elasticity	6.4%	22.8%	45.6%	25.1%	100%	
	% within Market Structure	100.0%	100%	100%	100%	100%	

4.3 Price rigidity and Market Power

According to the economic theory market power is the necessary condition for price rigidity. To the market power in table 3, the firms are asked that how they set the price of their main products? To capture the price rigidity, the firms were asked that on average how many times do you change the price of your product in one year?

Table 3 shows the number of time firm change price varies from 0 to 6 in one year. 0 to 2 times means price rigidity and 3 to 6 times mean price flexibility. According to table 3, 208 firms out of 342 said that we set the price. Within these firms, 73% of firms change price from 0 to 2 times. Furthermore, as the number of time increases from 1 to 6, the percentage within the category that "we set the price" decreases. Similarly, if table 3 is analyzed from the angle of price rigidity, it gave the same picture. According to the last row 248 firms out of 342 firms change the price from 0 to 2 times and 61.3% of these firms occurs in the category of "we set the price". So, the above discussion shows that as the market power increases, the tendency to change price decreases.

Table 3 Market Power and Price Rigidity

			Number of times price change						Total	
			0	1	2	3	4	5		6
Market Power	We set the price	Count	6	88	58	16	14	8	18	208
		% within Market power	2.9%	42.3%	27.9%	7.7%	6.7%	3.8%	8.7%	100%
		% within Price Rigidity	60%	61.1%	61.7%	44.4%	77.8%	80%	60%	60.8%
	The price is set by the parent company	Count	0	30	24	10	0	0	0	64
		% within Market power	0%	46.9%	37.5%	15.6%	0%	0%	0%	100%
		% within Price Rigidity	0%	20.8%	25.5%	27.8%	0%	0%	0%	18.7%
Price is set through	Count	0	16	6	4	4	0	6	36	

direct negotiation with the clients	% within Market power	0%	44.4%	16.7%	11.1%	11.1%	0%	16.7%	100%
	% within Price Rigidity	0%	11.1%	6.4%	11.1%	22.2%	0%	20%	10.5%
The authorities regulate the price	Count	2	10	6	6	0	2	4	30
	% within Market power	6.7%	33.3%	20%	20%	0%	6.7%	13.3%	100%
	% within Price Rigidity	20%	6.9%	6.4%	16.7%	0%	20%	13.3%	8.8%
Other	Count	2	0	0	0	0	0	2	4
	% within Market power	50%	0%	0%	0%	0%	0%	50%	100%
	% within Price Rigidity	20%	0%	0%	0%	0%	0%	6.7%	1.2%
Total	Count	10	144	94	36	18	10	30	342
	% within Market power	2.9%	42.1%	27.5%	10.5%	5.3%	2.9%	8.8%	100%
	% within Price Rigidity	100%	100%	100%	100%	100%	100%	100%	100%

4.4 Contract and Market Power

As market power increases, the tendency of longer contract increases. To capture it the firms were asked whether they engage in price contract for periods longer than one year. According to table 4, only 124 out of 342 firms are involved in price contract, which is low. Furthermore, within 124 firms, 98 firms who are engaged in price contract, set the price by itself or the parent company and only 12 firms does negotiate with their clients, it means most of the firms who are engaged in price contract have imperfect competitive market structure.

Table 4 Contracts and Market Power

			Market Power					
			We Set the Price	The Price is set by the Parent Company	The price is set through direct negotiation with the clients	The Authorities regulate the Price	Other	Total
Contracts	No	Count	132	42	24	18	2	218
		% within Contracts	60.6%	19.3%	11%	8.3%	0.9%	100%
		% within Market power	63.5%	65.6%	66.7%	60%	50%	63.7%
	Yes	Count	76	22	12	12	2	124
		% within Contracts	61.3%	17.7%	9.7%	9.7%	1.6%	100%
		% within Market power	36.5%	34.4%	33.3%	40%	50%	36.3%
	Total	Count	208	64	36	30	4	342
		% within Contracts	60.8%	18.7%	10.5%	8.8%	1.2%	100%
		% within Market power	100%	100%	100%	100%	100%	100%

4.5 Contract and Type of Customers

Type of customers is a significant factor in price rigidity. According to the table 5 within 124 firms, which are involved in price contracts, 6.5% of the firms have only occasional customers, while 41.9% of the firms have only regular customers and 51.6% of the firms have combination of both. So, majority of the firms which are involved in price contracts have regular customers. According to the table 5 within 218 firms, which are not involved in price contracts, 9.2% of the firms have only occasional customers, while 33% of the firms have only regular customers and 57.8% of the firms have combination of both. So, majority of the firms which are not involved in price contracts have regular customers. Based on the above result it can be concluded that if firms have regular customers, then it is not necessary that firm will be involved in contract. However, if firm is engaged in price contract, then there are more chances that the firms have only regular customers.

Table 5 Contract and Type of Customers

		Type of Customers			Total	
		Regular	Occasional	Both		
Contracts	No	Count	72	20	126	218
		% within Contracts	33.0%	9.2%	57.8%	100%

		% within Type of Customers	58.1%	71.4%	66.3%	63.7%
	Yes	Count	52	8	64	124
		% within Contracts	41.9%	6.5%	51.6%	100%
		% within Type of Customers	41.9%	28.6%	33.7%	36.3%
Total		Count	124	28	190	342
		% within Contracts	36.3%	8.2%	55.6%	100%
		% within Type of Customers	100%	100%	100%	100%

4.6 Output Price Contract and Input Price Contract

Output price rigidity and input price rigidity is the central point of discussion in the macroeconomic theory: if firms are involved in both inputs and output contracts then aggregate supply curve will be horizontal. According to results in table 6, 124 firms are involved in price contract for longer periods than one year. And within these 124 firms, 35% firms are engaged in contracts for input purchases at a constant price. Similarly, 100 firms are involved in input price contract, and within these 44% firms are engaged in price contract for longer periods than one year. According to the table 6, the percentage of the firms involved in both types of contract are low, i.e. output price contracts (36.3%) and input price contracts (29.2%). According to results in table 6, 218 firms out of 342 are not involved in price contract. And within these 218 firms, 74.3% are not engaged in contracts for input purchases. Similarly, 242 firms are not involved in input price contract, and within these 66.9% are not engaged in price contract. It means majority of the firms are not involved in both types of contract. However, firms which are involved in input price contracts, they are also involved in output price contracts, so nominal wage rigidity leads to output price rigidity. But firms who are involved in the output price contract, it is not necessary, that these firms will be involved in input price contract.

Table 6 Output Price contract and Input Price Contract

		Input Price Contract			
		No	Yes	Total	
Output Price Contract	No	Count	162	56	218
		% within Output Price Contract	74.3%	25.7%	100%
		% within Input Price Contract	66.9%	56%	63.7%
	Yes	Count	80	44	124
		% within Output Price Contract	64.5%	35.5%	100%
		% within Input Price Contract	33.1%	44%	36.3%
	Total	Count	242	100	342
		% within Output Price Contract	70.8%	29.2%	100%
		% within Input Price Contract	100%	100%	100%
% of Total		70.8%	29.2%	100%	

5. Conclusion

The objective of the study is to analyze the relationship between firm's characteristics and price setting behaviour. According to results as the degree of market power increases, the price elasticity of demand will be inelastic and the number of time to change price decreases. If firms have regular customers and imperfect competitive market structure, then it is not necessary that firm will be involved in the contract, However, if the firm is engaged in a contract, then there are more chances that the firm has only regular customers and less competitors. Firms which are involved in input price contracts, they are also involved in output price contracts, so the above hypothesis is accepted that nominal wage rigidity leads to output price rigidity. But firms who are involved in the output price contract, it is not necessary, that these firms

will be involved in input price contract. This paper find that traditional channel of monetary policy is weak as degree of price rigidity is low. Therefore, it is important for monetary policy of Pakistan to focus on other channels of monetary transmission mechanism.

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