

Pricing Behaviour in Manufacturing Industry in South Africa: Implications for Competition Policy

Neelan Govender¹ and Mike Holland²

One of the concerns of competition authorities in South Africa is the price competitiveness of intermediate product markets in the economy. This paper outlines the results of a recent survey of pricing behaviour of 34 manufacturing firms in South Africa and their implications for competition policy. The survey shows that most firms have time-dependent pricing policies, changing their prices at regular intervals rather than state-dependent policies where firms adjust their prices to changes in market conditions. Prices are generally “sticky” with the median firm changing its prices twice a year. Cost-plus or mark-up pricing is the most popular pricing policy with prices increasing primarily in response to rising raw material and labour costs. Declining market share is the most important reason for firms reducing their prices. Price leadership is a common practice and together with price rigidity indicates tacit price coordination in some markets in the sector. Price discrimination is also a widespread policy. The findings confirm the need for the authorities to monitor competition in manufacturing industry.

This paper presents the findings of a recent survey of pricing behaviour in the manufacturing sector of South Africa and discusses some of its implications for competition policy. How firms set and adjust their prices is of intrinsic interest to competition authorities. The Competition Act in South Africa prohibits per se a number of pricing practices including price fixing and minimum resale price maintenance. Other pricing conduct such as excessive pricing and predatory pricing³ is prohibited if firms are considered dominant in their markets. Price discrimination is also a prohibited practice for dominant firms except under certain conditions.

The Competition Commission in recent years has been successful in uncovering numerous anti-competitive pricing practices through its own investigations, complaints from companies and the general public, and its Corporate Leniency Policy. Among the most notable is the recent settlement with 15 construction companies for collusive tendering with the firms agreeing to pay administrative penalties amounting in total to R1,46 billion. Other cases in the past year include Foodcorp paying an administrative penalty of R88,5 million for its participation in cartels relating to wheat flour and maize meal prices, and Telkom agreeing to pay a financial penalty and make pricing commitments to customers following a series of complaints against the company including excessive pricing. Another high-profile case involving alleged anti-competitive pricing behaviour is the recent hearing before the Competition Tribunal of the Commission’s referral of a complaint against Sasol Chemical Industries and Safripol for excessive pricing of polypropylene and propylene.

Despite these successes and efforts, the government is concerned at the low levels of effective price competition in some sectors of the economy where there are high levels of concentration and dominant firms, for example intermediate industrial products such as steel, chemicals, fuel and cement.⁴ If prices in these industries and in other areas of manufacturing are substantially above competitive levels the high costs of these products contribute to lower levels of competitiveness in other sectors of the economy, causing lower levels of employment and higher prices to consumers.

Studies of the pricing behaviour of firms can provide important insights for identifying competition issues in the economy. Recent research have been undertaken by Creamer and Rankin (2008⁵)

¹ Gordon Institute of Business Science.

² Gordon Institute of Business Science and PriceMetrics (Pty) Ltd

³ “selling goods or services below their marginal or average variable cost” is an exclusionary act unless a firm “can show technological, efficiency or other pro-competitive gains which outweigh the anti-competitive effect of its act.” (Competition Act No.89 of 1998, section 8(d)(iv))

⁴ Department of Trade and Industry (2013) Industrial Policy Action Plan 2013/14-2015/16.

⁵ Creamer, K., & Rankin, N. (2008). Price Setting in South Africa 2001 to 2007 – Stylised facts using consumer price microdata. *Journal of Development Perspectives*, (4)(1) 93-118.

and Creamer, Farrell and Rankin (2012⁶). The authors used price microdata to investigate the frequency and magnitude of price changes, the duration of prices and heterogeneity in pricing in a wide range of industries. Also, Fedderke et al⁷ have investigated the extent of mark-ups in the South African manufacturing sector using econometric analysis. While these studies are highly useful in providing detailed descriptions of price dynamics, quantitative analyses are often not enough to understand the underlying rationale of the behaviour of firms in setting and changing their prices (Fabiani et al⁸).

An approach to overcome these problems is to undertake surveys which ask firms directly how and why they make their pricing decisions. In recent years there have been a large number of surveys internationally to improve understanding of firms' pricing conduct, particularly by central banks wanting to know the impact of price rigidity on the implementation of monetary policy (Greenlade and Parker⁹). Our paper extends this literature by undertaking a survey of pricing behaviour in manufacturing industry in South Africa and uses the data to assess whether the findings provide evidence of behaviour that raises competition concerns.

The paper is in three sections. Section one summarises the findings of the survey.¹⁰ Section two discusses some of the implications for competition policy and section three provides a brief conclusion.

Section One: Major Findings of the Survey

The objective of this research survey was to understand the characteristics and determinants of the pricing behaviour of firms in the manufacturing sector in the country. The survey consisted of a structured questionnaire comprising a set of closed-ended and a few open-ended questions. The questions were based on questionnaires used in recent studies of price-setting behaviour by the Bank of England (Greenlade and Parker)¹¹ and the Bank of Canada (Amirault et al)¹² with some additional questions.

The survey was conducted over the period May 2012 to August 2012 and consisted primarily of face-to-face and telephone interviews¹³ with individuals who were responsible for setting prices in their companies. The sampling unit was all firms in the manufacturing sector that were registered with the Companies and Intellectual Property Commission (CIPC) at the time the study was undertaken. The sample excluded firms that were in the public sector and not-for-profit firms. A non-random sample was used and 167 companies were requested to participate in the survey. Of this sample, 69 companies declined, there was no response from 64 companies and 34 agreed to be interviewed. The response rate was 20% compared to 30% in the Bank of England survey.¹⁴

Characteristics of Firms in the Survey

The 34 firms which responded were classified by number of employees into small, medium and large firms. The majority of the firms were large (20 firms) each with 250 or more employees; nine

⁶ Creamer, K., Farrell, G. & Rankin, N. (2012). What price-level data can tell us about pricing conduct in South Africa. *South African Journal of Economics*, Vol. 80(4) 490-509.

⁷ Fedderke, J., Kularatne, C., & Mariotti, M. (2005). Mark-up pricing in South African industry. *Journal of Economic Literature*, 1-41.

⁸ Fabiani, S., Druant, M., Hernando, I., Kwapil, C., Landau, B., Loupas, C., Martins, F., Matha, T., Sabbatini, R., Stahl, H., & Stokman, A. (2006). What firms' surveys tell us about price setting behaviour in the Euro area. *International Journal of Central Banking*, 3-47

⁹ Greenlade, J., & Parker, M. (2010). New insights into price-setting behaviour in the United Kingdom. *Working paper No. 395*, Bank of England.

¹⁰ More detailed findings are in Govender, N. (2012). Price setting behaviour of manufacturing firms in South Africa. *MBA Research Report*, Gordon Institute of Business Science, University of Pretoria.

¹¹ Greenlade, J., & Parker, M. (2010). New insights into price-setting behaviour in the United Kingdom. *Working paper No. 395*, Bank of England.

¹² Amirault, D., Kwan, C. & Wilkinson, G. (2006). Survey of Price-Setting Behaviour of Canadian Companies. *Working paper 2006-35*, Bank of Canada.

¹³ In a few cases an online questionnaire was used for respondents who agreed to participate in the survey but who were unavailable for face-to-face or telephone interviews.

¹⁴ The Bank of England sent its survey to 2 331 firms during the period December 2007 to February 2008 and received replies from 693 companies. 154 of those companies were in the manufacturing sector. No response rate was stated in the Bank of Canada survey. In this instance the researchers surveyed 170 companies over a ten-month period from July 2002 to April 2003 of which 44 were in manufacturing industry.

were medium-sized with between 50 and 249 employees each and five firms were small, each having fewer than 50 employees. A high proportion of the companies (26 companies or 76% of the sample) had sales turnover in their last financial year of over R50 million; five had annual sales turnover between R5 million and R50 million and three had annual sales turnover of less than R5 million.

All of the firms were multiproduct with nearly half of the sample (16 firms) selling more than 20 products. Most firms' sales were to domestic customers: 27 firms (nearly 80% of the sample) sold 30% or less of their total production in export markets. As would be expected for an intermediate goods sector in the economy, over three-quarters of the firms sold their main products primarily to retailers, distributors or other companies. More than 60% of the firms said their largest share of sales turnover came from non-contract customers; 27% stated contracts were their largest source of sales and 12% replied there was an equal share of sales from contract and non-contract customers. Asked about the level of competition in their main market, nearly all of the companies classified it as 'strong' rather than 'weak.' Most companies (62%) had between five and twenty competitors for their main product and 35% had fewer than five rivals. The market shares of the firms varied widely.

Characteristics of Prices

Firms were asked to answer the questions for their main product sold. Over 85% of the sample stated that price-setting for their main product was also representative of the price-setting process used for their other products.

About 60% of the firms had price lists or posted prices publicly available to their customers. Nearly 60% of the firms stated that their transaction prices differed from their list prices. Primary responsibility for decisions to discount or to vary the transaction price were made by finance managers and senior management (44% of firms), sales managers (29% of firms) or delegated to sales people (18% of firms). In setting their prices most firms had access to their competitors' prices but with varying degrees of difficulty. The majority of firms (just over 60%) stated it was difficult but with effort competitors' prices could be obtained while 29% of the firms replied they could 'easily' obtain rivals' prices.

Price Setting Methodologies

The most common method of price setting in manufacturing industry is cost-plus pricing. Table 1 shows that 38% of respondents stated a variable mark-up over direct costs as 'very important' in setting prices, 35% considered a constant mark-up over costs as 'very important,' while 27% believed pricing to earn a targeted rate of return on capital/assets was 'very important.' Pricing largely based on competitors' prices was also common with 32% of firms stating it was 'very important' in setting prices, suggesting these firms lacked market power (price takers) or were involved in some form of price coordination.

Table 1: How Firms Determined the Prices for their Main Product

Rank	Determining Factors	Not Applic.	Not Important	Slightly Important	Fairly Important	Very Important	Mean	Median
1	Price is made up of direct costs plus a variable percentage mark-up	5.9%	2.9%	17.6%	35.3%	38.2%	2.97	3.0
2	Price is primarily specified by competitors' price	5.9%	5.9%	29.4%	26.5%	32.4%	2.74	3.0
3	Price is made up of direct cost plus a fixed percentage mark-up	14.7%	8.8%	20.6%	20.6%	35.3%	2.53	3.0
4	Price is based on targeted return on Capital/Assets	20.6%	5.9%	17.6%	29.4%	26.5%	2.35	3.0
5	Price is primarily specified by principal customer	20.6%	23.5%	26.5%	26.5%	2.9%	1.68	2.0

6	Price is determined by a regulatory agency	58.8%	17.6%	14.7%	0.0%	8.8%	0.82	0.0
7	Price is set at a statutory level	58.8%	14.7%	20.6%	2.9%	2.9%	0.76	0.0

Colour Key

Highest Score	
Top 3 Mean Score	

Ranking based on mean scores

Weighting Used (0 = Not applicable, 1 = Not important, 2 = slightly important, 3 = fairly important and 4 = very important)

The survey confirms the findings of Fedderke et al (2005)¹⁵ who also found that mark-up pricing was a common practice in the South African manufacturing sector. The overall results were similar to international surveys of pricing behaviour. Table 2 compares the survey with similar research in the U.K., the Euro area and Canada. In these countries mark-ups on cost (both variable and constant) were the most common form of pricing followed by pricing to meet competitors' prices.

Table 2: International comparison: Type of Price-Setting (share of firms selected "very important")

Type of Price Setting	UK	Euro Area	Canada	Netherlands	Germany	France	SA (Manufacturing firms)
Fixed Mark-up	25%	54%	n/a	24%	4%	37%	35%
Variable Mark-up	33%		n/a	35%	69%		38%
Competitors Prices	33%	27%	n/a	22%	17%	35%	32%

Key

Not Available	n/a
Mark-up combination	

Sources: (Amirault et al., 2006;¹⁶ Fabiani et al., 2006¹⁷; Greenslade & Parker, 2010¹⁸; Hoerberichts & Stokman, 2006¹⁹; Kwapil et al., 2005²⁰; Loupias & Ricart, 2004²¹; Stahl, 2005²²)

The information firms used in setting their prices plays an integral part in the speed at which firms adjust their prices in response to changes in the market and economic environment. (Greenslade & Parker, 2010). Over half (53%) of the manufacturing firms in South Africa made price setting decisions on information relating to their current trading conditions. Only a quarter of the firms were forward-looking in basing their decisions on the expectations about future conditions, suggesting that most of the firms either behaved non-optimally by not taking the future outlook sufficiently into account or there was great uncertainty about future trends in market and economic conditions.

Price Changes and Adjustments

Typically, the firms adopted a two-stage approach to changing their prices. Firstly, they reviewed their prices; then they decided whether to adjust them. The survey showed that firms generally

¹⁵ Fedderke, J., Kularatne, C., & Mariotti, M. (2005). Mark-up pricing in South African industry. *Journal of Economic Literature*, 1-41.

¹⁶ Amirault, D., Kwan, C. & Wilkinson, G. (2006) Survey of Price-Setting Behaviour of Canadian Companies. *Working paper 2006-35*, Bank of Canada.

¹⁷ Fabiani, S., Druant, M., Hernando, I., Kwapil, C., Landau, B., Loupas, C., Martins, F., Matha, T., Sabbatini, R., Stahl, H., & Stokman, A. (2006). What firms' surveys tell us about price setting behaviour in the Euro area. *International Journal of Central Banking*, 3-47

¹⁸ Greenslade, J., & Parker, M. (2010) New insights into price-setting behaviour in the United Kingdom. *Working paper No. 395*, Bank of England.

¹⁹ Hoerberichts, M., & Stokman, A. (2006). Price setting behaviour in the Netherlands (*Working Paper No. 607*).

²⁰ Kwapil, C., Baumgartner, J., & Scharler, J. (2005). The price setting behaviour of Austrian firms (*Working Paper No. 464*), European Central Bank.

²¹ Loupias, C., & Ricart, R. (2004) Price setting in France (*Working Paper No.423*) European Central Bank.

²² Stahl, H. (2005) Price Setting in German Manufacturing (*Working Paper No. 561*), European Central Bank.

reviewed their prices more often than they changed them. According to the theoretical literature there are two types of rules or strategies firms use for the review and adjustment of their prices (Calvo, 1983²³ and Taylor 1980²⁴). The first is time-dependent pricing where firms review and change their prices at fixed dates or on a regular basis where the timing is independent of changes in market conditions or the economic environment. Alternatively, firms practise state-dependent pricing review by adjusting their prices in response to changes in market demand, production costs or the 'state' of the economy.

Table 3 summarises the frequency of price changes by firms in the survey and shows that more than two-thirds of the firms followed a time-dependent strategy by changing their prices at regular intervals. Of the firms using time-dependent pricing rules, there was considerable variation in the timing of their price changes. The mean period for a change in prices was just over six months; the median change was six months and the mode 12 months. Firms were also asked how many times they had changed their prices in the last twelve months. The mean duration between price changes was nearly eight months and the median duration was six months. The results indicate price rigidity or 'price stickiness' in the manufacturing sector in South Africa.

Table 3: Frequency of Price Changes/Adjustments

	Frequency	Percent
Monthly or more frequently	2	6%
Quarterly	5	15%
Half yearly	4	12%
Annually	12	35%
Total time dependent	23	68%
Sporadically	1	3%
In response to a specific event	7	21%
Other (combination)	3	8%
Total	34	100%

The results differ substantially from firms' behaviour in other countries. Table 4 shows the number of South African firms using time dependent pricing was nearly three times higher than for German manufacturing firms, substantially greater than French and U.K. manufacturing firms and double the number of companies using time-dependent pricing policies in the Euro area. It appears that the prices of South African manufacturing companies are less flexible to changes in market and economic conditions compared to companies in Europe where state dependent or a combination of state and time dependent rules are generally more popular.

Table 4: Firms' Price-Setting Rules – International Comparison

Percentages	Time-Dependent	State-Dependent	Combination State- & Time-Dependent
S.A. Manufacturing Firms (2012)	68	21	11
Austrian Firms (2005)	38	26	36
Euro Area Firms (2006)	34	20	46
Netherlands Firms (2006)	32	39	29
German Manufacturing Firms (2005)	26	19	55
French Manufacturing Firms (2004)	39	6	55
U.K. Firms (2010)	42	15	43

Sources: (Fabiani et al., 2006²⁵; Greenslade & Parker, 2010²⁶; Hoeberichts & Stokman, 2006²⁷; Kwapil et al., 2005²⁸; Loupias & Ricart, 2004²⁹; Stahl, 2005³⁰)

²³ Calvo, G. (1983). Staggered Prices in a utility-maximizing framework. *Journal of Monetary Economics*, 12(3), 383-398.

²⁴ Taylor, J. B. (1980). Aggregate dynamics and staggered contracts. *Journal of Political Economy*, 88(1), 1-23.

²⁵ Fabiani, S., Druant, M., Hernando, I., Kwapil, C., Landau, B., Loupas, C., Martins, F., Matha, T., Sabbatini, R., Stahl, H., & Stokman, A. (2006). What firms' surveys tell us about price setting behaviour in the Euro area. *International Journal of Central Banking*, 3-47.

Reasons for Adjusting Prices

Firms were asked which factors contributed to their decisions to change their prices and to rank them in order of importance. Table 5 summarises the results for why firms increase their prices. The most important factor is increases in the costs of raw materials and other inputs or components in the manufacturing process. Over 70% of respondents stated it was a 'very important' and a further 21% replied it was 'fairly important' as a determinant of price increases.

Increases in labour costs and fixed costs were also regarded as important causes for firms raising their prices. Over 70% of respondents reported that increases in labour costs were 'very important' or 'fairly important' in decisions to raise their prices. Approximately two-thirds of firms considered rises in fixed costs as 'very important' or 'fairly important' in causing increases in their prices. The fact that increases in fixed costs raise prices suggest that marginal cost pricing is not practised significantly by firms and total-cost plus pricing policies are commonly used by firms. Another important reason for price increases were actual or expected rises in competitors' prices which suggests interdependence in pricing decisions in the industry. Increases in factors such as market demand or market share were regarded as less important than rising costs in determining whether prices should increase.

Table 5: Survey Results for Factors of Importance for Causing an Increase in Prices

Rank	Factor	Not Applic.	Not Important	Slightly Important	Fairly Important	Very Important	Mean	Median
1	Increase in the price of fuel, raw materials or inputs / components.	0.0%	0.0%	8.8%	20.6%	70.6%	3.62	4.0
2	Labour Costs increase	0.0%	5.9%	23.5%	38.2%	32.4%	2.97	3.0
3	Fixed Costs increase	0.0%	5.9%	26.5%	38.2%	29.4%	2.91	3.0
4	Actual Price increase by domestic rivals	5.9%	14.7%	20.6%	41.2%	17.6%	2.50	3.0
5	Finance Costs increase	5.9%	17.6%	32.4%	26.5%	17.6%	2.32	2.0
6	Actual Rise in Demand	5.9%	26.5%	26.5%	20.6%	20.6%	2.24	2.0
7	Market Share Increase	8.8%	26.5%	17.6%	26.5%	20.6%	2.24	2.0
8	Expected Price increase by domestic rivals	8.8%	20.6%	26.5%	35.3%	8.8%	2.15	2.0
9	Expected Rise in Demand	11.8%	26.5%	26.5%	29.4%	5.9%	1.91	2.0
10	Actual Price increase by overseas rivals	11.8%	35.3%	23.5%	14.7%	14.7%	1.85	2.0
11	Regulation Costs increase	29.4%	14.7%	23.5%	17.6%	14.7%	1.74	2.0
12	Expected Price increase by overseas rivals	17.6%	35.3%	26.5%	11.8%	8.8%	1.59	1.0
13	Increase-Never	85.3%	0.0%	5.9%	2.9%	5.9%	0.45	0.0

Colour Key

Highest Score	
Top 3 Mean Score	

Ranking based on mean scores

Weighting Used (0 = Not applicable, 1 = Not important, 2 = slightly important, 3 = fairly important and 4 = very important)

The factors causing a decline in prices are somewhat different, which suggests some asymmetry in pricing decisions between price increases and price decreases. Table 6 shows the importance and ranking of various factors in determining a fall in prices. Although reductions in the prices of raw materials and other inputs are important with 65% of firms stating it was a 'very important' or 'fairly important' for cutting prices, the most salient factor was a decline in the firm's market share with

²⁶ Greenslade, J., & Parker, M. (2010). *New insights into price-setting behaviour in the United Kingdom (Working Paper No. 395)*.

²⁷ Hoerberichts, M., & Stokman, A. (2006). *Price setting behaviour in the Netherlands (Working Paper No. 607)*.

²⁸ Kwapil, C., Baumgartner, J., & Scharler, J. (2005). *The price setting behaviour of Austrian firms (Working Paper No. 464)*, European Central Bank.

²⁹ Loupias, C., & Ricart, R. (2004) *Price setting in France (Working Paper No.423)* European Central Bank.

³⁰ Stahl, H. (2005) *Price Setting in German Manufacturing (Working Paper No. 561)*, European Central Bank.

76% of respondents citing it as 'very important' or 'fairly important.' Market demand conditions were also important factors as were reductions in competitors' prices. Nearly 65% of the firms stated actual or expected declines in market demand were 'very important' or 'fairly important' for reducing their prices and similarly about 65% of firms considered actual price declines in competitors' prices were 'very important' or 'fairly important' in deciding to cut their prices.

Table 6: Survey Results for Factors of Importance for Causing a Reduction in Prices

Rank	Factor	Not Applic.	Not Important	Slightly Important	Fairly Important	Very Important	Mean	Median
1	Market share decline	2.9%	2.9%	17.6%	35.3%	41.2%	3.09	3.0
2	Decrease in the price of fuel, raw materials or inputs / components	11.8%	8.8%	14.7%	17.6%	47.1%	2.79	3.0
3	Demand Decline Actual	2.9%	14.7%	17.6%	38.2%	26.5%	2.71	3.0
4	Actual price reduction of domestic rivals	2.9%	11.8%	20.6%	44.1%	20.6%	2.68	3.0
5	Demand Decline Expected	2.9%	17.6%	20.6%	41.2%	17.6%	2.53	3.0
6	Expected price reduction of domestic rivals	2.9%	20.6%	29.4%	35.3%	11.8%	2.32	2.0
7	Productivity Increase	8.8%	29.4%	23.5%	29.4%	8.8%	2.00	2.0
8	Actual price reduction of overseas rivals	14.7%	35.3%	17.6%	17.6%	14.7%	1.88	2.0
9	Finance Costs decrease	17.6%	32.4%	26.5%	8.8%	14.7%	1.71	1.5
10	Labour Costs decrease	20.6%	29.4%	26.5%	8.8%	14.7%	1.68	1.5
11	Expected price reduction of overseas rivals	11.8%	44.1%	23.5%	11.8%	8.8%	1.62	1.0
12	Regulation Costs decrease	47.1%	11.8%	14.7%	14.7%	11.8%	1.32	1.0
13	Reduction-Never	79.4%	2.9%	2.9%	8.8%	5.9%	0.59	0.0

Colour Key

Highest Score	
Top 3 Mean Score	

Ranking based on mean scores

Weighting Used (0 = Not applicable, 1 = Not important, 2 = slightly important, 3 = fairly important and 4 = very important)

These results suggest that higher costs, especially raw materials, inputs and labour, are the most important determinants of price increases. Although costs matter, demand factors such as a fall in market share, lower market demand and declines in competitors' prices are the main factors leading to firms cutting their prices.

Reasons for Price Rigidity or Price Stickiness

One of the most important findings from the survey is the inflexibility, rigidity or stickiness of prices in the industry. To understand which factors were responsible for firms deciding to delay price adjustments, respondents were asked to select from a list of theories of price stickiness which ones were relevant to them.

The answers were ranked based on the mean scores. Table 7 shows that costs of labour and raw materials used in the production of goods were most important to firms: their prices would not change until their costs actually changed. The next most relevant theory to the respondents was explicit contracts the firms had with their customers which made it difficult for firms to pass on increases during the contract.

Table 7: Survey Results for Applicable Factors/Theories that lead to Delays in Price Adjustment

Rank	Theories of price stickiness	N	Minimum	Maximum	Mean	Std. Deviation
1	Prices do not change until costs change	34	1	3	2.26	0.864
2	Fixed price contracts make it difficult to pass on increases when contract is active (Explicit Contracts)	34	1	3	1.59	0.783
3	Do not want to be first in industry to increase prices	34	1	3	1.35	0.597
4	Implied understanding with customers will not increase prices in depressed markets (Implicit Contracts)	34	1	2	1.35	0.485
5	Information set used to review and change prices - available infrequently	34	1	3	1.32	0.535
6	Do not want to be first in the industry to reduce prices	34	1	2	1.32	0.475
Colour Key						
Top 2 Mean Score						

Ranking based on mean scores

Weighting Used (1 = No, 2 = Yes, slightly applicable and 3= Yes, very applicable)

Firms typically wait until their actual costs changed before making a price adjustment. Respondents were asked their policy if they expected an increase in costs; most indicated that they would purchase raw materials and other inputs in advance or hedge against cost increases as opposed to increasing their prices. For firms that replied they would not change their prices until their costs changed, 36% indicated they would buy raw materials and stock in advance and 28% indicated they would hedge against cost increases. Only 20% indicated that they would increase their prices. Amirault et al. (2006)³¹ suggested that this was a typical approach for firms in the manufacturing sector.

The respondents were asked further questions for their reasons for not adjusting prices more frequently. The respondents were asked to rate the importance of certain factors as reasons for, firstly, not increasing their prices and, secondly, not reducing their prices. The rationale behind asking the respondents to rate the importance separately between price increases and decreases was to determine whether there was any asymmetry in the reasons for deciding not to change their prices. The results show a different ranking in the reasons for not raising prices and not reducing prices.

Table 8 shows the ranking of factors responsible for firms deciding not to increase their prices. Over 60% of the firms replied that co-ordination failure - the risk that competitors would not change their prices - was the most important factor. This result also indicates a fairly high level of interdependence and perhaps coordinated policies in pricing conduct in manufacturing industry.

The next most important factor was a price increase would antagonise customers. About 55% of firms stated this factor as being 'very important' or 'fairly important' for deciding not to increase prices. This is an expected result when it is considered that 82% of the firms in the survey indicated that their five largest buyers generated 26% or more of their sales. Firms generally want to maintain strong relationships with their customers and not alienate their customers by frequently increasing their prices. (Fabiani et al., 2006)³².

³¹ Amirault, D., Kwan, C. & Wilkinson, G. (2006) Survey of Price-Setting Behaviour of Canadian Companies. *Working paper* 2006-35, Bank of Canada.

³² Fabiani, S., Druant, M., Hernando, I., Kwapil, C., Landau, B., Loupas, C., Martins, F., Matha, T., Sabbatini, R., Stahl, H., & Stokman, A. (2006). What firms' surveys tell us about price setting behaviour in the Euro area. *International Journal of Central Banking*, 3-47.

Table 8: Ranking of Factors Firms Considered Important as Reasons to Decide Not to Increase Prices

Rank	Factor	Not Applic.	Not Important	Slightly Important	Fairly Important	Very Important	Mean	Median
1	The risk is too high that our competitors do not change their prices. (Co-ordination Failure)	8.8%	11.8%	17.6%	44.1%	17.6%	2.50	3.0
2	It would antagonise our customers	11.8%	8.8%	23.5%	35.3%	20.6%	2.44	3.0
3	The risk is too high that we subsequently have to re-adjust our prices in the opposite direction. (Temporary Shocks)	8.8%	17.6%	26.5%	29.4%	17.6%	2.29	2.0
4	The existence of written contracts specifying that prices can only be changed when the contract is renegotiated. (Explicit Contracts)	11.8%	29.4%	26.5%	17.6%	14.7%	1.94	2.0
5	The variable costs in our company do not change by much with market conditions, making our price quite stable. (Cost based Pricing)	14.7%	29.4%	32.4%	17.6%	5.9%	1.71	2.0
6	The existence of an implicit contract (regular contact with a customer without any written contract). (Implicit Contracts)	14.7%	29.4%	35.3%	17.6%	2.9%	1.65	2.0
7	The costs implied by price changes (e.g. printing of price lists or information gathering costs). (Menu Costs)	23.5%	58.8%	8.8%	8.8%	0.0%	1.03	1.0
8	The preference for maintaining prices at a certain threshold (e.g. you would rather charge R9.99 than R10.00). (Pricing Threshold)	38.2%	35.3%	17.6%	5.9%	2.9%	1.00	1.0
Colour Key								
Highest Score								
Top 3 Mean Score								

Ranking based on mean scores

Weighting Used (0 = Not applicable, 1 = Not important, 2 = slightly important, 3 = fairly important and 4 = very important)

Table 9 ranks the factors firms considered important in deciding not to reduce their prices. No specific reason ranked prominently. The most important factor is a price reduction may be temporary in nature and there will be a risk to readjust prices in the opposite direction. The second most important reason was co-ordination failure - the fear that the firm's competitors will not simultaneously reduce their prices. If the firm reduced its prices because of a cost or demand shock, albeit a short-lived one, there would be a risk for the firm in losing potential profit margins to its competitors if the respective firm's competitors did not simultaneously reduce their prices. There was also the risk of the firm starting a price war if one firm reduces its prices and the other firms initially had decided to keep their prices unchanged (Greenslade & Parker, 2010³³).

³³ Greenslade, J., & Parker, M. (2010). New insights into price-setting behaviour in the United Kingdom (*Working Paper No. 395*).

Table 9: Survey Results for Factors of Importance as Reasons to Decide not to Reduce Prices

Rank	Factor	Not Applic.	Not Important	Slightly Important	Fairly Important	Very Important	Mean	Median
1	The risk is too high that we subsequently have to re-adjust our prices in the opposite direction. (Temporary Shocks)	5.9%	20.6%	35.3%	26.5%	11.8%	2.18	2.0
2	The risk is too high that our competitors do not change their prices. (Co-ordination Failure)	11.8%	29.4%	26.5%	20.6%	11.8%	1.91	2.0
3	The existence of written contracts specifying that prices can only be changed when the contract is renegotiated. (Explicit Contracts)	14.7%	29.4%	29.4%	8.8%	17.6%	1.85	2.0
4	The variable costs in our company do not change by much with market conditions, making our price quite stable. (Cost based Pricing)	11.8%	32.4%	26.5%	17.6%	11.8%	1.85	2.0
5	The existence of an implicit contract (regular contact with a customer without any written contract). (Implicit Contracts)	11.8%	41.2%	29.4%	11.8%	5.9%	1.59	1.0
6	It would antagonise our customers	20.6%	32.4%	29.4%	8.8%	8.8%	1.53	1.0
7	The costs implied by price changes (e.g. printing of price lists or information gathering costs). (Menu Costs)	26.5%	52.9%	14.7%	2.9%	2.9%	1.03	1.0
8	The preference for maintaining prices at a certain threshold (e.g. you would rather charge R9.99 than R10.00). (Pricing Threshold)	35.3%	41.2%	14.7%	5.9%	2.9%	1.00	1.0

Colour Key	
Highest Score	
Top 3 Mean Score	

Ranking based on mean scores

Weighting Used (0 = Not applicable, 1 = Not important, 2 = slightly important, 3 = fairly important and 4 = very important)

Conclusion

The survey shows that the most common form of price-setting by firms in the manufacturing sector is cost-plus pricing followed by setting prices at the levels of competitors. The most important reason for changing prices is increases in the costs of raw materials, other inputs and labour costs. There is asymmetry in price changes: cost increases are the most important factor determining price increases; demand factors are mainly responsible for price decreases. Prices in the industry are often inflexible and are changed at pre-determined regular intervals (time-dependent pricing) rather than responding to changes in market conditions (state-dependent pricing). There is significant evidence of recognition of interdependence in pricing decisions: firms adjust their prices

when competitors change their prices and often do not increase their prices unless they believe competitors will also raise their prices.

Section Two: Some Implications of the Research Findings for Competition Policy

The survey's findings indicate some potential competition concerns. In this section we discuss results that show price leadership, price discrimination and indirect evidence of price coordination in the manufacturing sector. All of these practices can lead to a weakening of competitive processes in the industry and result in elevated prices above competitive levels.

Price Leadership

Price leadership occurs when prices are set by a specific firm, "the leader," and other firms in the market, "price followers," match its prices. When the price leader changes its prices the price followers also change their prices by the same or a similar amount either at the same time or very shortly afterwards.

Economists commonly distinguish three types of price leadership: dominant firm, barometric and collusive, all of which can lead to prices elevated above competitive levels through unilateral or collective market power.

Dominant firm price leadership exists when a single firm dominates supply in a market, typically a market share above 40% or 50%, and competes with other firms each having a much smaller share of the market. The dominant firm sets a price to meet its objectives taking into account the likely supply by the "fringe" firms. The smaller firms set the price at the level of the dominant firm and are essentially price takers in the market. If the dominant firm's objective is profit maximisation, market prices will be generally above competitive levels but below monopoly levels. The concern for competition authorities that results from this market behaviour is the market power of the dominant firm not collusion: the dominant firm is setting prices in the market and the smaller firms are acting independently in their own best interests with no influence over prices.

In barometric price leadership a firm which is not necessarily the largest firm is considered "well-informed" regarding market conditions and sets and changes prices in the market to meet its own interests. Other firms independently recognise the ability of the firm and follow its prices. The "barometric" firm in the industry may change from time to time.

A different form of price leadership can occur in concentrated markets with a few large firms where the recognition of mutual interdependence and common interest induces firms to choose coordinated rather than independent price behaviour in setting and adjusting their prices. In this collusive price leadership model one firm, either the largest, dominant firm or a "barometric" firm, is regarded as being "the best informed" about market conditions and is delegated as the price decision-maker or "leader". This firm sets prices in the market by announcing them in the market, expecting other firms to follow its prices. The existence of a meeting of minds and mutual understanding of reliance on the "leader" results in the other firms in the market also raising their prices. Rotemberg and Saloner describe this kind of collusive behaviour as simple to implement with low adherence costs and "no overt collusion either through information transfer or price-fixing"³⁴ and which results in largely parallel changes in prices in the market similar to dominant firm price leadership

The survey found substantial evidence of price leadership in the manufacturing sector. Firms were asked for details of their pricing strategies in relation to competitors. The firms' responses are shown in Table 10. Over half of the firms stated they were either price leaders or price followers in their markets. Most of the firms were price leaders.

³⁴ Rotemberg, J.J., & Saloner, G. (1990). Collusive Price Leadership. *The Journal of Industrial Economics*, Vol. 39(1) 93-111.

Table 10: Firms Price-Setting Strategy in Relation to Competitors

	Frequency	Percent
Price leader	15	44%
Price follower	3	9%
Independent	14	41%
Don't know	2	6%
Total	34	100%

To analyse the type of price leadership that was being practised in the sector, firms were classified by their market shares for their main product. Table 11 summarises the results. Using the economist's convention that a firm having a market share of over 40% is regarded as a dominant firm,³⁵ the table shows that dominant price leadership is the most common form of price leadership. Nine firms or 50% of the firms in price leadership markets are dominant firms having market shares above 40%. Of the remaining firms, however, the data cannot distinguish between barometric and collusive price leadership.³⁶ Nevertheless, the results indicate the common existence of either unilateral or collective market power in manufacturing industry.

Table 11: Price-Setting Strategy by Market Share of Firms

Market share	Price Leader	Price Follower	Independent	Don't know	Total
>50%	6	1	1	0	8
41%-50%	2	0	0	0	2
31%-40%	1	2	2	1	6
21%-30%	4	0	2	1	7
11%-20%	0	0	4	0	4
5%-10%	0	0	1	0	1
<5%	2	0	4	0	6
Total	15	3	14	2	34

Price Discrimination

There is no unanimity among economists regarding the definition of price discrimination but a broad description is that "price discrimination occurs when a product is sold to different customers at different prices that do not reflect differences in the costs of supply."³⁷ There are three types of price discrimination. First-degree discrimination occurs when each buyer is charged a different price reflecting his or her maximum willingness to pay. Second-degree price discrimination is the practice of offering declining prices for different quantities of a product or service and the buyer chooses based on the willingness to pay, for example volume discounts. Third-degree price discrimination exists when firms charge different groups of buyers different prices, for example children or old age pensioners.

Competition policy is concerned with second-degree and third-degree price discrimination as first-degree price discrimination is generally not possible. In the Competition Act price discrimination is regarded as an abuse of dominance by firms under certain conditions. The welfare effects of price discrimination are ambiguous and in most competition law jurisdictions are assessed on a case-by-case basis. The effects depend on the welfare standard chosen.³⁸ Where price discrimination does not lead to an increase in sales compared to uniform pricing it will reduce overall economic welfare. If a consumer welfare standard is used, consumers can be harmed as economic surplus is redistributed from them to the firm. Price discrimination can also be anti-competitive if it reduces the level of competition in a market by excluding competitors (particularly small rivals) or potential entrants into a market.

³⁵ For example Scherer F.M., (1980) *Industrial market structure and performance* (second edition). Houghton Mifflin Company.

³⁶ Dominant price leadership is usually seen as an example of unilateral market power. However, as Scherer points out, it may also be "evidence of an agreement among members of an industry to use the leadership device as the basis of a price-fixing scheme." (Scherer, page 521.)

³⁷ Bishop, S. & Walker, M. (2010) *The Economics of EC Competition Law: Concepts, Application and Measurement*, Sweet and Maxwell.

³⁸ Ibid.

The survey found that price discrimination is a very common practice. Table 12 shows that 88% of firms charge their customers prices either on quantity or volume of product purchased or on a case-by-case basis. These findings were similar to surveys of firms in the Euro area which reported 82% of firms practised some form of price discrimination. In the U.K. survey (Greenslade and Parker) 89% of firms in the manufacturing sector stated prices charged depended on the quantity sold or were priced on a case by case basis. The results are not surprising considering price discrimination is a pervasive practice in business.

Table 12: Evidence of Price Discrimination

Price charged for firm's main product	Frequency	Percent
The same for all customers irrespective of quantities sold	4	12%
Depends on the quantity sold	10	29%
Decided case by case	20	59%
Total	34	100%

Tacit Coordination of Prices

Price collusion occurs when firms in an industry coordinate their price-setting policies to reflect their common interests. The result is prices are generally above the levels that would exist with independent price decision-making. Price coordination involves a unity of purpose or meeting of minds by firms which can be reached by agreement, concerted practice or tacitly where firms engage in consciously parallel conduct. Although competition law currently distinguishes for liability between explicit collusion (an agreement or concerted practice) and tacit coordination, economists view price collusion in terms of its effects or market outcomes. The economic approach is that the decision of a rational, profit-seeking firm to coordinate its activities with its competitors, whether expressly or tacitly, is essentially the same: the firm decides by balancing the benefits from colluding against the costs, including the risk of punishment by competition authorities. As Kaplow points out in regard to explicit or tacit collusive attempts to elevate prices above competitive levels, 'the harm from price coordination depends most directly on the extent and duration of supracompetitive pricing, not on the means of reaching or maintaining the heightened price.'³⁹

A survey of pricing behaviour will not uncover direct evidence of explicit price collusion because it is illegal. Tacit coordination involving no communication or contact between firms is not currently a prohibited practice although it can lead to elevated prices above competitive levels. The survey provides some indirect evidence of tacit coordination in at least some markets in the sector. The evidence includes:

- Many of the firms in the survey compete in oligopolistic markets. Oligopolists are "interdependent" in their pricing decisions: the prices they charge are in part based on their competitors' anticipated responses. A recognition of their common interest often leads to price competition being less vigorous and prices elevated substantially above competitive levels.
- Price rigidity. Prices in the industry often do not adjust when market conditions change as would be expected in competitive markets with independent price-setting. The industry's median price duration in the survey was six months and the mode duration one year.
- A high level of time-dependency pricing. Over two-thirds of firms in the survey followed a time-dependent strategy by changing their prices at fixed intervals. This kind of pricing behaviour can provide a focal point which facilitates price coordination, for example through parallel pricing.
- Parallel pricing. In the survey nearly 60% of firms stated that the prices set by their competitors were 'very important' or 'fairly important' in setting their own prices. Nearly 60% of firms replied that the actual price increases of competitors were 'very important' or 'fairly important' in causing an increase in their prices. In addition when asked to rank the reasons why firms decided not to increase their prices the most important factor was the risk that

³⁹ Kaplow, L. (2011) Direct versus Communication-Based Prohibitions on Price Fixing. *Working Paper*, Harvard Law School at 2.

competitors would not increase their prices (over 60% regarded the risk as 'very important' or 'fairly important').

- Price leadership is a common practice in the sector. It can act as a facilitating practice for tacit coordination and sometimes members of a cartel use the leadership device as the basis for their price-fixing.⁴⁰

It is difficult to assess from a qualitative survey the extent or seriousness of tacit coordination in the industry but the evidence does suggest that competition authorities and the government are justified in expressing concern at the levels of price competition in the sector.

Section Three: Conclusion

The most common price-setting methodology in manufacturing industry is cost-plus pricing followed by pricing at the levels of competitors. Price inflexibility is a feature of the sector with prices changing at regular intervals rather than in response to changes in market and economic conditions. There is significant evidence of the recognition of mutual interdependence of pricing decisions reflecting the existence of oligopolistic competition in many markets in the sector. Price leadership is a common practice and there is indirect evidence of tacit coordination in at least some markets in the sector. The findings of the survey provide support for the competition authorities' concern at the level of competition in the manufacturing sector and the need to monitor price behaviour in the industry.

⁴⁰ Scherer, F.M. (1980) *Industrial market structure and performance* (second edition). Houghton Mifflin Company, at 521.