

When do Firms Adjust Prices?

Evidence from Micro Panel Data*

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Abstract

This paper analyzes the price setting behavior of firms using data from a large panel of quarterly firm surveys from 1984 to 2006. The data allows to track changes in firms' prices, their price expectations and several other firm-specific developments such as changes in costs for input products and capacity utilization rates. The analysis shows that state dependent pricing is clearly important and that variables measuring the current situation of the firm add a lot to the explanatory power of a price adjustment probability model, compared to purely time dependent features. Although the rate of inflation is a significant explanatory variable, the inclusion of macroeconomic variables adds only marginally to the explanatory power of the model with the firm specific variables. Furthermore, when taking into account sticky plan models by excluding possibly predetermined price changes, the importance of state dependent factors becomes even larger. The data also display features that suggest that sticky information plays a role for price setting.

JEL classification: E31, E32, E50.

Keywords: Price setting behavior, time dependent pricing, state dependent pricing, sticky prices, sticky plans, sticky information.

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1 Introduction

Although it is well documented in the recent empirical literature that prices are sticky at the microeconomic level, it is not yet much known about the determinants of price adjustment. This paper attempts to shed some light on this issue by using a new data set from a quarterly firm survey of Swiss manufacturing firms. The data set contains qualitative information on firms' price changes, their price expectations, changes in costs of input products and several other factors describing the firms' current conditions. In previous empirical studies firms' current economic conditions had to be proxied by aggregate variables such as inflation and demand factors at the sector level. The advantage of this data set is that it allows to directly obtain proxies for firms' current microeconomic conditions. Especially the data on changes in costs gives valuable information. This allows to contribute to the price setting literature by focussing on three issues.

The first issue addressed is whether time dependent or state dependent features of price setting explain the frequency of price changes in the data.¹ In time dependent pricing models firms choose the size of price adjustments but the timing of price adjustment is given exogenously whereas in state dependent models firms choose both size and timing of price adjustment. State dependent pricing implies that the frequency of price changes (the extensive margin) reacts to the idiosyncratic and aggregate shocks firms are faced with, while in time dependent pricing models the extensive margin is inactive and hence the frequency of price changes does not vary with the state of the economy. Although the framework of state dependent pricing is intuitively more appealing, empirical evidence has not found strong support for the existence of state dependent pricing in micro data on price adjustments so far. One reason for these findings might be that micro data on prices employed for analyzing this question are mostly data on single goods prices underlying the calculation of the CPI. These data give a very precise picture of the price adjustments on the micro level, but they cannot be matched with observations on firms' marginal costs or mark-ups. Researchers have to rely upon macroeconomic information or unobserved components to estimate the shocks firms are faced with.² However, [Golosov and Lucas \(2007\)](#) stress that price changes are rather caused by shocks to the optimal price at the firm level than by aggregate shocks. This paper

¹For monetary policy makers it is important to know which of these models approximates firms' price setting behavior most accurately. For example, [Dotsey and King \(2005\)](#) show that there is a quantitatively important effect of state dependent pricing for economic outcomes in response to monetary shocks, even in periods of steady inflation. State dependent models predict that the effect of a nominal shock on real activity and inflation is also state dependent. Furthermore, the speed of adjustment of inflation to shocks to the economy depends crucially on the speed of price adjustment of individual agents.

²[Aucremanne and Druant \(2005\)](#) proxy the deviation of the current price from its desired level by the accumulated rate of inflation. [Dhyne et al. \(2006\)](#) use econometric techniques to identify the size of shocks, both common and idiosyncratic, from the observations of size and frequency of price adjustments in the micro data underlying the calculation of the CPI.

uses the survey data to proxy for the microeconomic state³ of firms such as their changes in costs of primary products or raw materials, changes in turnover, technical capacities, competitiveness, employment, stocks of primary products, the rate of capacity utilization and the size of the firm. To estimate the probability of observing a price change, these variables describing the state of the firm augment a model with purely time dependent factors, such as dummies for changing prices every n periods, to proxy for Taylor contracting, and seasonal dummies. The results show that both time and state dependent factors have explanatory power for the probability of observing a price adjustment. Adding microeconomic state variables, especially the measure for costs, significantly improves the explanatory power of the model, almost doubling the Pseudo R2 compared to the purely time dependent model. Unlike other studies, which analyze price data without further direct information on firms' microeconomic states, this paper stresses the importance of state dependence when taking such firm specific information into account.

The second question is whether the explanatory power of the price adjustment model can be increased by adding macroeconomic developments firms are faced with. To evaluate this question macroeconomic variables are added to the model to evaluate their relative importance for price adjustments. In low inflation countries such as Switzerland the impact of aggregate factors should have only a modest impact on the frequency of price adjustment (Goloso and Lucas 2007). The results show that –although some macroeconomic variables are significantly different from zero– the addition of macroeconomic factors improves the explanatory power of the model only marginally. Hence, the shocks that trigger price changes are already contained in the micro data. These findings support the theoretical literature using state dependent pricing rules to model price setting behavior where the microeconomic states of firms are the crucial factors in determining pricing decisions.⁴

Third, the paper addresses the question of whether it matters that some price changes might be parts of pricing plans and therefore are predetermined. Burstein (2006) develops a so-called sticky plan model, where firms may set an entire sequence of future prices (price plans) rather than one fixed price at a time.⁵ Taking into account the possibility that the type of pricing plans developed in the Burstein model exist, predetermined price changes that are part of a pricing plan

³The term microeconomic state used here is adopted from Dotsey et al. (2006). In their microstate framework the main source for price changes is fluctuating productivity at the micro level. Also Goloso and Lucas (2007), Gertler and Leahy (2006) and Midrigan (2006) stress the importance of idiosyncratic shocks at the firm level for price adjustment frequency.

⁴For example the models of Goloso and Lucas (2007), Gertler and Leahy (2006) and Midrigan (2006).

⁵In reality such pricing plans appear for instance in written contracts with customers, where prices are indexed to a constant growth rate. For example, Stahl (2006) reports that 50 per cent of German manufacturing firms have fixed contracts with average duration of nine months or longer.

should not be included in the estimations. These are determined in the past, not at the point in time they can be observed in the data. Thus, these price changes are not re-optimizations and therefore cannot contain new information. When estimating an econometric model for the frequency of price adjustment employing economic developments since the last price adjustment as explanatory variables, the predetermined price changes cannot react to these variables. This might bias the results. Data sets that allow to observe only whether a price has been changed or not but do not give further information about firms' pricing intentions cannot control for that. Using the survey data allows to distinguish expected from unexpected price changes by comparing a firm's expectation about price changes in the next quarter and the realization of the price change in the subsequent quarter. Price changes that are not expected by the firm in advance cannot be a result of such pricing plans, as in those plans future price changes are known to the firm already before they can be observed. Hence, unexpected price changes cannot be part of a pricing plan. Therefore, these non-predetermined price changes are analyzed separately. The estimations show that changes in state dependent variables are even more important for non-predetermined price changes than for expected changes. Variables describing the state of the firm and the economy add a lot more information to the model: the Pseudo R2 roughly triples compared to the purely time dependent model. For expected price changes the Pseudo R2 increases only by roughly fifty percent when adding the state variables to the time dependent model. A further interesting feature in the data is that unexpected price changes happen more often in the first quarter of the year and also happen regularly in fixed time intervals. This would provide some empirical support for the conjecture that firms update their information sets only at certain periods and are inattentive to newly incoming information outside those periods (Mankiw and Reis 2002 and Reis 2006).

The remainder of this paper is organized as follows: the next Section provides an overview of related theoretical and empirical literature, Section 3 outlines the KOF survey data, Section 4 the methodology and Section 5 presents the results. Finally, the conclusions are given in Section 6.

2 Related Literature

In the field of monetary economics the interest in price setting behavior has been present at least since the emergence of microfounded models of inflation. The assumption of fully flexible prices has not found much support in empirical studies (Bils and Klenow 2004). Therefore, to explain and understand inflation dynamics and also the persistence of inflation, some assumptions about price setting behavior have to be made. The choice of these assumptions have important implications

for explaining macroeconomic dynamics and the impact of monetary policy on economic outcomes (Dotsey and King 2005, Caballero and Engel 2007).

In the theoretical literature four different types of models that describe firms' price setting behavior exist: The time dependent sticky price model, the time dependent sticky plan model, the state dependent sticky price model and the state dependent sticky plan model. Those are summarized in Table 1.

In time dependent sticky price models, firms change their prices at exogenously given time periods. In Calvo models, these time periods are distributed randomly across time and firms. Another prominent time dependent model is the Taylor model, where firms are allowed to reset prices every n th period. Hence, the fraction of firms changing their prices at a given point in time is $1/n$. Firms then review their prices and change those based on their expectations on future economic developments. In these models the frequency of price changes does not vary with the state of the economy.

In state dependent sticky price models firms change their prices endogenously, conditional on the current state of the economy and also on idiosyncratic shocks. In the state dependent pricing model of e.g. Dotsey et al. (1999), firms only change their nominal prices when the gains from doing so outweigh the menu costs.⁶ The menu costs are subject to idiosyncratic shocks. Golosov and Lucas (2007) extend the model by allowing for idiosyncratic marginal cost shocks, making the timing of price changes endogenous to firms' economic environments.

In the time- and state dependent pricing models described above, the common feature is the assumption that nominal prices are fixed in the periods between two points in time when firms reoptimize. A further line of pricing models, the sticky plan models, has developed the idea that once firms pay the menu costs for the price change they can choose an entire sequence of future prices rather than a fixed price. An important difference between the sticky price and sticky plan models is that in sticky plan models some of the observed price changes are predetermined. These are the price changes that occur between two points in time when firms update the entire price plans. Such predetermined changes do not contain new information on the state of the economy. Hence, only a subset of all observed price changes can contain new information. This is in contrast to sticky price models, where all price changes are reoptimizations: at least new

⁶The seminal contribution in menu cost models is Barro (1972), who showed a model in which firms are faced with fixed costs when changing their prices. That menu costs play a big role in firm's optimization and that these costs are much higher than previously assumed is shown in Zbaracki et al. (2004), who calculate that the managerial costs of adjusting prices, which include the costs of gathering information, making decisions, and communicating information internally, are more than six times larger than traditional menu costs (such as e.g. printing new catalogues or changing price tags) for a typical firm in the industrial sector. So-called customer costs (communication and negotiation costs) are found to be even 20 times larger.

Table 1: Four Models of Price Setting Behavior

	Time dependent Pricing	State dependent Pricing
Sticky Prices	Calvo (1983)	Dotsey, King and Wolman (1999)
	Fraction of firms updating does not depend on the state of the economy No change of the nominal price is predetermined	Fraction of firms updating depends on the state of the economy No change of the nominal price is predetermined
Sticky Plans	Mankiw and Reis (2002)	Burstein (2006)
	Fraction of firms updating does not depend on the state of the economy Some changes of nominal prices are predetermined	Fraction of firms updating depends on the state of the economy Some changes of nominal prices are predetermined

information about the accumulated inflation rate since the last price adjustment and expectations about future inflation and marginal costs are incorporated in the timing and size of each price change. Sticky plan models can also be combined with both, the assumption of time- and state dependent pricing.

For example [Mankiw and Reis \(2002\)](#) provide such a so-called sticky plan model, where the moments to change the pricing plan arrive in time dependent intervals: they propose a limited-information alternative to the sticky-price model by assuming that agents choose a sequence of future prices once they update their information sets. These updates arrive at random similar as the price updates in the Calvo model. Here prices are sticky because information acquisition is costly and therefore information is not continuously updated.⁷ As in the Calvo model, the points in time when these fixed schedules can be reoptimized arrive in a time dependent set up.

Sticky plan models can also be combined with state dependent pricing models. Such a recent extension is provided by [Burstein \(2006\)](#), who combines a sticky plan model with a state dependent framework where firms choose dynamic pricing plans. Firms have to pay a fixed menu cost in a period to choose an entire sequence of future prices, and this plan can be updated once the firm pays the menu cost again. Hence, the probability of updating a price plan varies according to the state of the economy and the idiosyncratic state of the firm.

Firm’s price setting behavior has been investigated also in the empirical literature. However, the evidence from these studies is not conclusive. So far, two different approaches have emerged from the empirical literature to evaluate the mechanisms of firms’ pricing behavior. One approach

⁷Also [Devereux and Yetman \(2003\)](#) develop a model of aggregate price and output adjustment under predetermined prices, where firms set a fixed schedule of nominal prices at the time of price readjustment.

uses one time firm surveys, where researchers directly ask firms about the frequency of changes in their selling prices and the reasons for these changes. The seminal contribution using this framework is [Blinder \(1991\)](#), followed by recent surveys of some Central Banks, such as the surveys of the European Countries by the Inflation Persistence Network (IPN) of the ECB or the surveys of the Bank of Canada. The second approach is to use micro data of actual goods prices, that are used to calculate the Consumer Price Index (CPI), collected by national statistical offices of the countries under review.⁸ These micro data of single goods allow to analyze the frequency and size of price changes, as done in e.g. [Klenow and Kryvtsov \(2005\)](#).

However, the conclusions drawn from these studies do not reveal a consistent picture: on the one hand, [Klenow and Kryvtsov \(2005\)](#) conclude that time dependent models are a good approximation to model micro price adjustments of U.S. goods included in the CPI. [Aucremanne and Druant \(2005\)](#) draw a similar conclusion from analyzing Belgian CPI data. On the other hand, [Nakamura and Steinsson \(2007\)](#) find that the frequency of price increases responds strongly to inflation using the U.S. CPI data. In a similar vein [Dias et al. \(2005\)](#) find that state dependent models are required to fully characterize the price setting behavior using Portuguese data. According to their estimates, inflation, the level of economic activity and the magnitude of the last price change are relevant variables affecting the probability of changing prices. However, the impact is relatively small. For the Euro Area countries, [Fabiani et al. \(2006\)](#) report a prominent role for state dependent pricing in their summary of the findings of single country studies conducted by the IPN. Also several studies find that time dependent pricing is a good approximation in the absence of larger shocks, but it is state dependent in the presence of shocks ([Gangon 2006](#), [Altissimo et al. 2006](#)).

3 Data

The data set consists of a large panel of firm surveys conducted by the KOF Swiss Economic Institute. The data employed in the empirical section are described in [Table 2](#) in the Appendix.

Since the second quarter 1984 Swiss manufacturing firms have been surveyed on a quarterly basis. Amongst other questions, firms have been asked whether they (i) changed the price of their main product in the previous three months (denoted by *selling price*_{*i,t*} for firm *i* at period *t*) and (ii) expect to change their prices in the coming three months, $E_t(\textit{selling price}_{i,t+1})$. On

⁸The analysis of micro data is necessary to evaluate the role of different price setting theories, especially as macro evidence can not distinguish between the various microfoundations ([Coenen and Levin 2004](#))

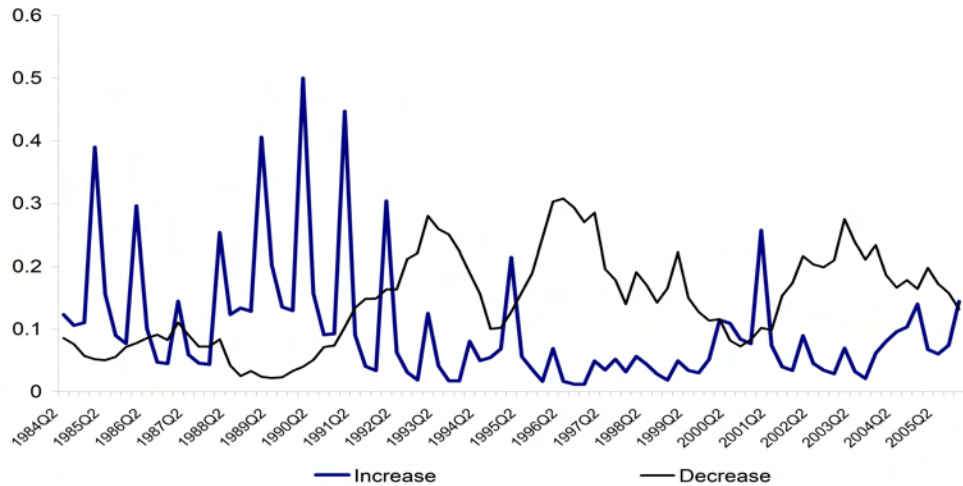
both questions firms can either not respond, which is treated as a missing value, or say that they either increased/expect to increase (+1), decreased/expect to decrease (-1) or left the price unchanged/expect to leave the price unchanged (0). These expectations are used to construct the measure of a non-predetermined change in the price setting plans of firms by checking whether the firm deviates from the previously expected price. If a price was changed and a firm has previously not indicated a price change, this is treated as a non-predetermined price change.

In a similar vein firms are asked whether (iii) the prices for their intermediate products and raw materials, $costs_{it}$, have changed and (iv) are expected to change $E_t(costs_{i,t+1})$. Furthermore several questions regarding the firms current conditions are used in the analysis below. These consist of qualitative responses about the (v) technical capacities (*technical capacities_{it}*) of a firm and (vi) the employment gap in a firm (*employment_{it}*), both are equal to +1 if the firm indicates technical capacities respectively employment to be too high, -1 if these are too low and zero if satisfactory. The survey also asks for changes in firms' situations since the last survey; whether (vii) firms' turnover (*turnover_{it}*) and (viii) stock of primary products (*stock primary products_{it}*) has increased (+1), decreased (-1) or remained unchanged (0). Furthermore some more quantitative statements from the surveys are included in the analysis. (ix) the rate of capacity utilization (*capacity utilization_{it}*) and (x) the log of the number of employees (*size_{it}*), where the latter is used as a proxy for firm size. For the period 1999-2006 also data on responses to questions concerning the firm's quantitative statements on (xi) the competitive position in Switzerland (*compet Home_{it}*) (xii) in the EU (*compet EU_{it}*) (xiii) and the competitive position outside the EU (*compet outside EU_{it}*) are available.

The average number of price increases in the data on a quarterly basis for the entire period is 9.8 percent and the average number of decreases is 14.3 percent. In the period from 1984 to 1994, the average number of increases was 13.5 percent compared to 10.5 percent of decreases. In the latter period from 1995 to 2005 the average number of increases dropped to 7 percent and the number of decreases rose to 17 percent. More detailed descriptive statistics can be found in Table 3 in the Appendix. The development of the average number of increases and decreases are plotted in Figure 1.

It is already observable from Figure 1 that price increases display a highly seasonal pattern with price increases being more likely in the first quarter. This result is also found in other studies such as Nakamura and Steinsson (2007). Price decreases are much less seasonal. When comparing expected with unexpected increases in prices plotted in Figure 4 in the Appendix it

Figure 1: Fraction of increases and decreases in prices over time



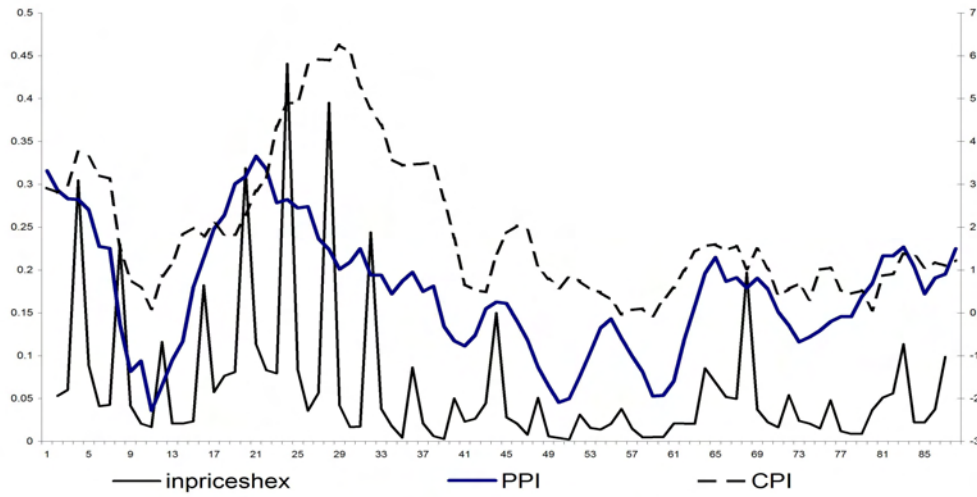
Source: KOF Industry Survey

can be observed that a large fraction of the seasonal adjustments are expected price increases, the series with unexpected price increases is much smoother. Increases are more often expected than unexpected, which is not the case for decreases (See Figure 5).

One purpose of this paper is to find out whether price setting can better be described by time- or by state dependent models as described in Table 1. By inspection from the charts it can be observed that the fraction of expected price increases and decreases is about as large or even larger than the fraction of unexpected changes, therefore the possibility that some price changes are a result of a predetermined plan is important and has to be taken into account. Another purpose of the paper is to examine whether the unexpected increases and decreases can be explained by macroeconomic variables. We have plotted the expected increase in prices in Figure 2 and the unexpected increase in Figure 3 against the growth rates of the Swiss CPI and PPI. Here, the correlation between inflation and unexpected price increases is much larger than the correlation of inflation with expected price increases, suggesting that analyzing expected and unexpected price changes separately might be reasonable.

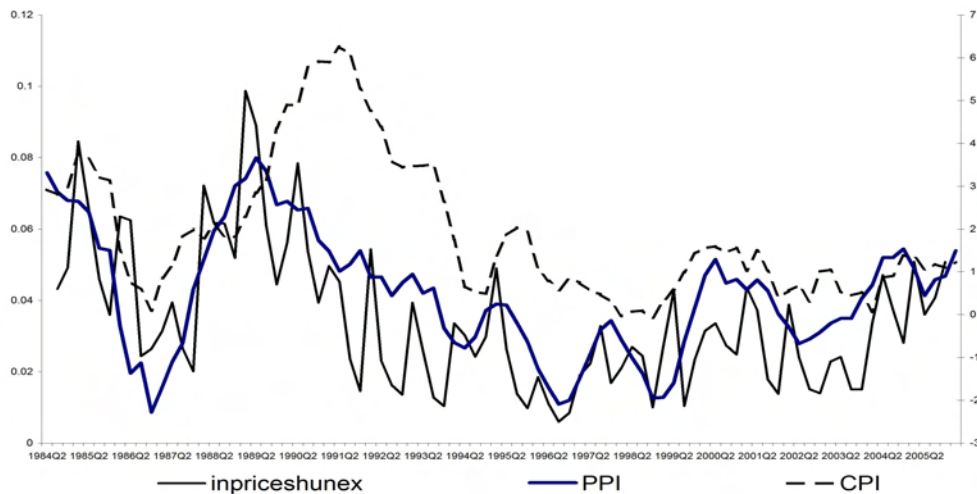
The most important advantage of the data is the large panel structure containing observations from 1984Q2 to 2006Q1 of up to 4501 Swiss manufacturing firms, giving information not only on prices but also on other firm characteristics and firms' current situations. The data also have the

Figure 2: Fraction of expected increases in prices and PPI and CPI inflation



Note: Share of expected increases in prices per quarter on the left hand scale, PPI and CPI on right hand scale. Source: KOF Industry Survey and IMF IFS Database

Figure 3: Fraction of unexpected increases in prices and PPI and CPI inflation



Note: Share of unexpected increases in prices per quarter on the left hand scale, PPI and CPI on right hand scale. Source: KOF Industry Survey and IMF IFS Database

advantage that firms are not asked directly on their pricing rules such as for example in [Blinder \(1991\)](#), but the information on their pricing behavior can be extracted from their answers without explicitly asking for it. In a critical comment on [Blinder et al. \(1998\)](#), [Blanchard \(1994\)](#) notes that firms might recognize theories during the question such as "Now that you say it, yes, maybe that is kind of what we do" (p 150).⁹ This might reduce some bias in responses, as some firms might be reluctant to respond to questions honestly or they might not consider some variables as important ad hoc in a one-time survey, which, however, are important when looking deeper into their pricing behavior over time.

Furthermore, compared to the studies on European Monetary Union (EMU) Countries, analyzing Swiss data has the advantage, that there is no large clear structural change in the economic environment as in the EMU Countries. In addition Switzerland has been experiencing relatively moderate inflation rates over the observation period (see [Figures 2 and 3](#)).

However, there are also some shortcomings in the data: as firms respond on a voluntary basis, not all firms respond every quarter, i.e. the data set is unbalanced. The number of firms in the data set is 4501, and each quarter about 1000 firms replied.¹⁰ It would of course be desirable to match the data with information regarding the size of price changes, which are not contained in the data.

4 Specification of the Model

In this section the econometric model is presented using different sets of explanatory variables. The main challenge in the estimation is to properly account for the underlying heterogeneity across individual items. This problem is being addressed by modeling the probability of an individual price change using a conditional fixed effects logit model ([Chamberlain 1980](#)). The conditional fixed effects logit estimator compares all observations within a given firm when there is a price adjustment with all the observations when there is no price adjustment.

4.1 Time and State Dependence and the Influence of Macroeconomic Developments

To address the first and second question raised in the introduction, i.e. first, whether price setting is state- or time dependent and second, the relative importance of microeconomic states versus

⁹As quoted also in [Wolman \(2000\)](#), who also discusses the shortcomings of such direct survey evidence.

¹⁰The minimum number of firms responding in a quarter is 739, the maximum 1295.

macroeconomic states for the frequency of price adjustments, three types of dependent variables are defined: the probability of observing price changes, price increases and price decreases are analyzed separately. The dependent binary variable y_{it} is defined as 1 if the price of the product produced by firm i in t has changed in the last three months and zero otherwise:

$$y_{it} = 1 \text{ if } \textit{selling price}_{it} \neq 0 \quad (1)$$

$$y_{it} = 0 \text{ otherwise.} \quad (2)$$

In a second step a more detailed analysis is conducted by distinguishing between price increases and decreases to investigate whether asymmetries play a role in price setting behavior, i.e. whether price increases behave differently in response to explanatory variables than price decreases. The dependent variable is then defined as

$$y_{it}^+ = 1 \text{ if } \textit{selling price}_{it} = 1 \quad (3)$$

$$y_{it}^+ = 0 \text{ otherwise.} \quad (4)$$

for price increases and

$$y_{it}^- = 1 \text{ if } \textit{selling price}_{it} = -1 \quad (5)$$

$$y_{it}^- = 0 \text{ otherwise.} \quad (6)$$

for price reductions. The probability that firm i changes its price in period t is given by

$$P(y_{it} = 1|x_{it}) = \frac{\exp(x'_{it}\beta + \alpha_i)}{1 + \exp(x'_{it}\beta + \alpha_i)}. \quad (7)$$

α_i are the unobserved firm-specific characteristics for firm i , x_{it} are the observed firm characteristics at time t for firm i and ε_{it} denotes the random error term. Further information from the surveys described in the data section is employed as explanatory variables.

Following [Aucremanne and Druant \(2005\)](#) and [Gagnon \(2006\)](#) the set of regressors is defined as a mixture of time dependent and state dependent variables. The empirical part of the paper

runs five regressions for each explanatory variable defined above. These are reported in Tables 4 to 6. Each column in the tables refers to one selection of regressors defined as follows:

- First, Taylor pricing rules are allowed for in the empirical specification. The Taylor dummies indicate that the last price change occurred one (*Taylor1*), four (*Taylor4*) or eight (*Taylor8*) quarters ago. The dummies account for the observation that some firms reset their price in fixed time intervals. Furthermore, dummies for each quarter (season) and year are added. The seasonal dummies included in the regressions are the first quarter of the year (*winter*), the third (*summer*) and the fourth quarter (*fall*) compared to the benchmark, which is the second quarter. If these variables are significant this would be consistent with time-dependence in the data.
- Second, in the state dependent part, variables describing the microeconomic state of the firm are included. The time dependent equation described previously is augmented by a proxy for an expected change in costs (*expected change costs_{it}*), which is defined as a dummy that is equal to 1 if the firm previously expected the input prices ($E_{t-1}[\text{costs}_{it}]$) to move in the same direction as the actual realization (*costs_{it}*). In a similar vein, unexpected increases/decreases in costs are defined as a dummy that is equal to 1 if the firm previously expected the input prices ($E_{t-1}[\text{costs}_{it}]$) to move in another direction or to remain unchanged and the actual realization *costs_{it}*. Cost based pricing would imply that firms increase their prices in response to increases in marginal costs (Blinder et al. 1998). Also the firms rate of capacity utilization (*capacity utilization_{it}*) is included to capture effects of bottlenecks in production that could lead to price increases (Evans 1985). To account for the possibility that firms choose between changing the price or changing the capacity utilization, the change in capacity utilization ($D(\text{capacity utilization}_{it})$) is included.¹¹ The size of the firm is proxied by the logarithm of the number of employees ($\ln(\text{size}_{it})$), as some previous studies found effects of the firm size on pricing behavior (e.g. Blinder 1991). In addition, technical capacities (*technical capacities_{it}*), the current employment gap (*employment_{it}*), the firm's change in the turnover (*turnover_{it}*) and the stock of primary products (*stock primary products_{it}*) are included. To account for the distance of firms' actual prices from their desired level, the time elapsed since the last price change and the cumulated inflation rate since the last price change are added to the set of regressors¹² (Ceccetti 1986): a count variable defined as the

¹¹There is a robust relationship between price increases and capacity constraints at the micro level. See Köberl and Rupprecht (2007) for a detailed examination employing the same data set.

¹²The theoretical reasoning is that the longer a nominal price is held fix the higher is the distance from the

time elapsed since the last price change ($duration_{it}$) is included as an interaction term with a dummy being equal to 1 if the last price change was an increase ($last\ incr * duration_{it}$). An analogous interaction term is defined for the last price change being a price reduction ($last\ decr * duration_{it}$). Additionally, the amount of cumulated inflation in producer prices since the last price change ($Cumulated\ Inflation_{it}$) is included.

- Third, the variables competitive position ($compet\ Home_{it}$) in Switzerland, the EU ($compet\ EU_{it}$) and outside the EU ($compet\ outside\ EU_{it}$) are included in a separate regression as those are only available from 1999 onwards, where the survey has dropped some questions regarding changes in costs, technical capacities, employment and stocks of primary products.
- Fourth, also macroeconomic variables are added to the regression defined in the second bullet to evaluate the relative importance of such developments. A higher inflation rate erodes the relative prices of firms' goods more quickly and hence should increase the probability of firms adjusting their prices. Hence, the current level of consumer price inflation rate (CPI) and the producer price inflation rate (PPI) are included.¹³ By including the change in the oil price index ($D(oil)$) and the change in the price index for metals ($D(metals)$) changes in demand for input products are captured. An improvement in economic conditions could change the pricing behavior of firms: they might be faced with stronger demand which should be captured with the real-time rate of growth of real GDP ($real\ time\ GDP$). To test for the pass-through of the exchange rate to domestic prices, the SFR/USD exchange rate ($exchange\ rate$) is also added to the regressors.¹⁴
- The fifth equation adds the macroeconomic variables to the specification with the microeconomic variables including the competition variables in the third regression.

Hence, the first, second and third regression evaluate the question of whether price setting is time- or state dependent. The fourth and fifth regression allow to compare the explanatory

optimal frictionless price and hence it is more likely that the firm has to adjust the price (see also Gagnon (2006)). For example, in menu cost model of Golosov and Lucas (2007), a positive aggregate shock induces the lowest-priced firms to increase prices. At the same time, it offsets negative idiosyncratic shocks and some firms that would otherwise have decreased prices choose to wait. As a result, the lowest-priced firms do most of the adjusting, their adjustments are large and positive. Ceccetti's specification takes this into account by approximating the distance of the actual from the desired price to the time elapsed since the last price adjustment, the amount of cumulated inflation and the change in aggregate demand.

¹³It would of course be desirable to have a measure of unexpected changes in CPI and PPI. Unfortunately, there is no data on firms' expectations of CPI and PPI available. Arguably, this is still a good proxy as forecasting inflation is not straightforward and therefore it is assumed that firms react to the most recent numbers.

¹⁴With inclusion of the macroeconomic variables the year dummies have to be dropped, except for the years when Switzerland had a change in the VAT rate.

power of the models with time dummies for every year with the models including macroeconomic developments in the set of regressors.

4.2 The Role of Predetermined Price Changes

The third issue addressed in the introduction is the possibility that some observed price changes might be parts of so-called sticky plans and therefore be predetermined. In the econometric model defined above such predetermined price changes might bias the regression coefficients. Therefore, non-predetermined price changes should be separated from those that might be predetermined. To address this identification problem, expected (possibly predetermined) price changes are distinguished from unexpected (non-predetermined) price changes. The latter cannot be predetermined, as predetermined price changes are known to the firm in advance and therefore the identification problem does not play a role when looking at unexpected price changes only.

The dependent variable *expected change in selling price* is defined as

$$y_{it} = 1 \text{ if } \textit{selling price}_{it} \neq 0 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] = \textit{selling price}_{it} \quad (8)$$

$$y_{it} = 0 \text{ otherwise.} \quad (9)$$

Analogously an *expected increase in selling price* is defined as

$$y_{it} = 1 \text{ if } \textit{selling price}_{it} = 1 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] = 1 \quad (10)$$

$$y_{it} = 0 \text{ otherwise.} \quad (11)$$

and the binary dependent variable *expected decrease in selling price* is defined as

$$y_{it} = 1 \text{ if } \textit{selling price}_{it} = -1 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] = -1 \quad (12)$$

$$y_{it} = 0 \text{ otherwise.} \quad (13)$$

The models for expected price changes, increases and decreases employ the same set of regressors as the model described in the previous Section 4.1. The regression results are reported in Tables 7, 8 and 9, respectively.

For *unexpected changes in prices* the dependent variables are defined as

$$y_{it} = 1 \text{ if } \textit{selling price}_{it} \neq 0 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] \neq \textit{selling price}_{it} \quad (14)$$

$$y_{it} = 0 \text{ otherwise} \quad (15)$$

for price changes,

$$y_{it}^+ = 1 \text{ if } \textit{selling price}_{it} = 1 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] \neq 1 \quad (16)$$

$$y_{it}^+ = 0 \text{ otherwise} \quad (17)$$

for price increases and

$$y_{it}^- = 1 \text{ if } \textit{selling price}_{it} = -1 \text{ and } E_{i,t-1}[\textit{selling price}_{it}] \neq -1 \quad (18)$$

$$y_{it}^- = 0 \text{ otherwise.} \quad (19)$$

for price reductions.

The regression results using only the unexpected price changes, increases and decreases as dependent variable are reported in tables 10 to 12.

5 Results

Regression results for the conditional logit model are reported in Tables 4 to 12 in the Appendix. Tables 4, 5 and 6 report the results for the dependent variables *all price changes*, *all price increases* and *all price decreases* respectively. Analogously, Tables 7, 8 and 9 show the results for expected price changes, expected price increases and expected price reductions only. Finally, Tables 10 to 12 refer to the regressions using only unexpected price changes, unexpected price increases and unexpected price reductions as dependent variables.

Each of the tables contains five columns, where the first corresponds to the purely time-dependent model defined in the first bullet in section 4.1. Columns two and three extend the model by the microeconomic state variables described in the second and third bullet, respectively. The last two columns augment the model additionally by the macroeconomic developments captured by the variables described in bullets four and five.

5.1 Time- versus State Dependence

In the first column of each Table the regression results for the purely time dependent model are reported. The Taylor dummies all have a large significant positive effect on the probability of observing a price change. Similarly, for the regressions separating increases and decreases the Taylor dummies indicating that the last change in prices was one, four or eight quarters ago significantly increases the probability of observing a price increase and decrease. Also some of the seasonal dummies are significant. Price changes in general happen significantly more often in the first quarter of the year compared to the second. Distinguishing increases from decreases shows to be necessary here. Price increases happen significantly more often in the first quarter of the year and significantly less often in the last quarter, whereas price decreases happen more frequently in summer. This might be the effect of sales and promotions. Thus, time dependence clearly can be found in the data.

Adding the variables describing the state of the firm roughly doubles the Pseudo R2, indicating the importance of state dependent pricing. Most striking is the proxy of changes in costs: for all specifications, the impact is large and significant. Also other micro state variables are significant across different specifications: the level of capacity utilization positively affects the probability to observe a price increase and negatively affects the probability of a price reduction. The reverse sign applies for the change in the capacity utilization rate. This suggests that firms use increases in capacity utilization as an alternative to increasing prices.¹⁵ Thus, an increase in the capacity utilization rate significantly decreases the probability of observing a price increase. The reverse applies for price reductions. The size of the firm shows to be not significantly related to price adjustment probabilities. If a firm assesses its technical capacities as too high, it has a significantly lower probability of increasing its price and a higher probability of decreasing it. The same applies for the assessment of current employment being too high. A higher turnover than in the period before significantly raises the probability of price increases and reduces the probability of observing price reductions. The stock of inventories of primary products does not appear to be robustly related to price adjustments. The last three variables related to state dependent models is the time elapsed since the last price change interacted with the dummies for the last price change being a price increase and decrease, respectively, and the cumulated inflation rate since the last price adjustment. The cumulated rate of inflation does not appear to be significant in most regressions, whereas a longer time elapsed since the last price change significantly affects the probability of

¹⁵See Köberl and Rupprecht (2007).

observing a price change. The latter is in line with expectations, whereas the first finding is counterintuitive: a higher rate of inflation should erode relative prices and therefore trigger more price increases and make price decreases less likely. However, it might be that these effects are less important for price setting behavior when controlling for the microeconomic effect. Furthermore, it might be the case that including the duration variable together with the cumulated inflation rate introduces collinearity as both should capture the distance of the current price from the frictionless level.¹⁶ The competition variables in the third columns of each table mostly are insignificant. Only for price reductions, an improved competitive position within the EU makes price reductions less likely. As the data on firms' assessment of the competitive position is available only since 1999, this finding might reflect the fact that due to the process of European economic integration, there is a structural change in the EU market that has not happened within Switzerland, as the country has not been reducing trade barriers as substantially as EU countries.

5.2 Influences of Macroeconomic Developments

This section discusses the results related to columns four and five in each table, where macroeconomic developments are added to the models specified in columns two and three. Whereas the micro variables remain largely in line with the previous picture, the results indicate that firms' price setting behavior is indeed also influenced by macroeconomic developments: a higher level of the inflation rate significantly increases the probability that firms increase their prices. For price decreases there is no clear picture. The other macroeconomic variables are significant in some specifications, but not consistently across specifications. Although some macroeconomic variables are significantly different from zero, they do not add explanatory power compared to just including time dummies for each year. Hence, most information relevant for price adjustments is already contained in the micro data. The Pseudo R2 in columns four and five in tables 4 to 6 improve only marginally, compared to those in columns two and three.

5.3 The Role of Predetermined Price Changes

Tables 7 to 9 report the results for price changes, increases and decreases that were expected in the previous period and hence might be predetermined. In this specification the addition

¹⁶Indeed, when excluding the duration variable from the model, the cumulated rate of inflation becomes significant. This might be due to the fact that inflation has been relatively stable in Switzerland and therefore the counting variable and the cumulated inflation rate are very much collinear. This could also explain why this finding is different to Gangon's (2006) finding for Mexico, where both variables are significant: Mexico had periods of very high and very low inflation in his sample period.

of state dependent variables does not improve the explanatory power as much as it does for unexpected price changes, increases and decreases reported in Tables 10 to 12. Here, the Pseudo R2 almost triples with introducing state dependent variables. Also, some of the state dependent explanatory variables become insignificant in the expected price adjustment specifications: the time elapsed since the last price change is not significant for all specifications and even reverts signs in the specification for expected price reductions. When looking at the non-predetermined price increases and decreases, the duration variable is still significant and positive if the last price adjustment was a reduction. These findings suggest that state dependence is even more evident in the data when excluding price changes that might be parts of pricing plans and therefore might be predetermined. Here, the distinction between expected and unexpected changes in costs is important: For expected price reductions, only expected decreases in costs are significant. For unexpected price decreases, expected decreases in costs even significantly reduce the probability of observing an unexpected price decrease.

A further interesting feature in the data is that unexpected price adjustments happen more likely when the last price change was one, four or eight quarters ago, and also happen more often in certain seasons. Such features could be evidence for inattention: firms review their prices only in certain periods and are inattentive to newly incoming information and developments that would make a price adjustment necessary during the rest of the time. For example, a firm might review its prices only in January and not follow what its desired price would be during the rest of the year, taking into account new information. In the following January it again computes the desired price updating its information set with the developments that happened during the year. This would imply that if a firm is asked in the last quarter of the year if it expects a price change, the firm relies upon the outdated information from last January when it has adjusted the price to the desired level. Thus, with this information, no price adjustment seems necessary. Hence, the firm responds that it does not expect a price change. When updating its information again in January, however, the firm realizes that it is necessary to adjust prices. This might explain why unexpected price changes happen more likely at certain periods and seasons. In the theoretical literature, the mechanism described is known as the sticky information model. In the version of Reis (2006) firms update their information only from time to time as information acquisition is costly. During the rest of the time firms are inattentive and do not react to newly incoming information.¹⁷

¹⁷Inattentiveness also implies that firms review their prices not continuously but only from time to time. Stahl (2006) reports that about two thirds of the German firms in an IPN ad hoc survey state that they review their prices at fixed intervals. See also Fabiani et al. (2006) for results of the ECB's Inflation Persistence Network (IPN) surveys of other European countries, where firms also indicate that they usually do not review prices continuously.

6 Conclusion

This paper addresses three questions regarding price setting behavior of firms using qualitative data of Swiss firms at the plant level from 1984-2006. The data allow to keep track of firms' price changes and their price expectations. Furthermore, the survey contains a large set of information regarding firms' current economic conditions such as changes in costs for input products, capacity utilization rates and several other variables.

The first question raised is whether the pricing behavior of firms can be explained better by time or state dependent models. In line with other empirical studies the findings show that both time- and state dependent features are present in the data. However, compared to previous studies, which only include macroeconomic variables as determinants for price adjustments, the inclusion of firm specific state variables substantially improves the explanatory power of the model. Especially changes in firms' costs trigger price adjustments. Also the level of capacity utilization, the firm's employment gap, changes in turnover and the assessment of the technical capacities are significant. Furthermore, the time elapsed since the last price change, indicating the deviation of the firm's current price from its desired level is positive and significant. This is clear evidence for the importance of state dependent pricing, even in a low inflation environment.

The second question addressed is whether macroeconomic developments significantly affect firms' pricing decisions. In line with previous literature the level of inflation has an impact on price adjustments. Price increases are more likely if inflation is higher, whereas the probability of observing price reductions becomes significantly lower. However, macroeconomic information add only marginally to the explanatory power of the model. The findings suggest that the relevant information is already included in the microeconomic state variables. These findings suggest that it is necessary to the richness of state dependence to models such as [Goloso and Lucas \(2007\)](#) to correctly identify microeconomic adjustments.

A third issue examined is whether it matters for empirical studies that some firms use pricing plans, and hence do not set one price at a point in time when they readjust but set an entire sequence of future price changes. Such price changes might bias the results of regressions as some price changes are predetermined, and hence cannot react to new information. Thus, not each price change observed is necessarily a reoptimization: it could either be a change according to a pricing plan or a reoptimization of the firm's price, taking into account all new information about the current conditions of the firm. Only the latter price type of price changes should be taken into account for answering the question whether price setting is time or state dependent. This is

a point that has not been taken into account in previous studies, mainly because the data used do not offer the possibility to distinguish reoptimizations from predetermined price changes. In contrast to those studies the data allow to distinguish expected price changes from unexpected price changes. This information is essential as predetermined price changes can be excluded from the analysis. When estimating the probability of price adjustments for those data points that are not predetermined, the explanatory power of the state dependent model is even stronger: the Pseudo R2 roughly triples compared to the specification with time dependent factors only. An additional interesting feature is the finding that unexpected price changes happen more likely in some seasons than in others. This suggests that inattention and sticky information also plays a role for price setting behavior.

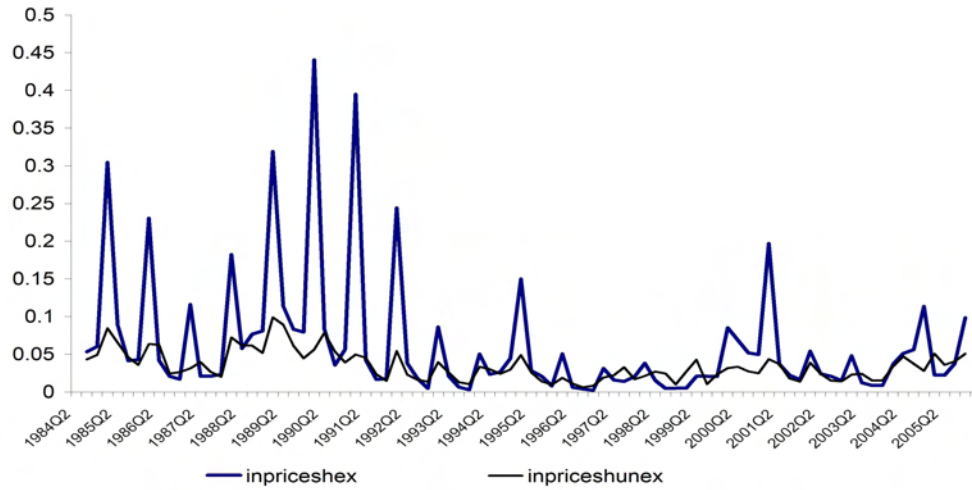
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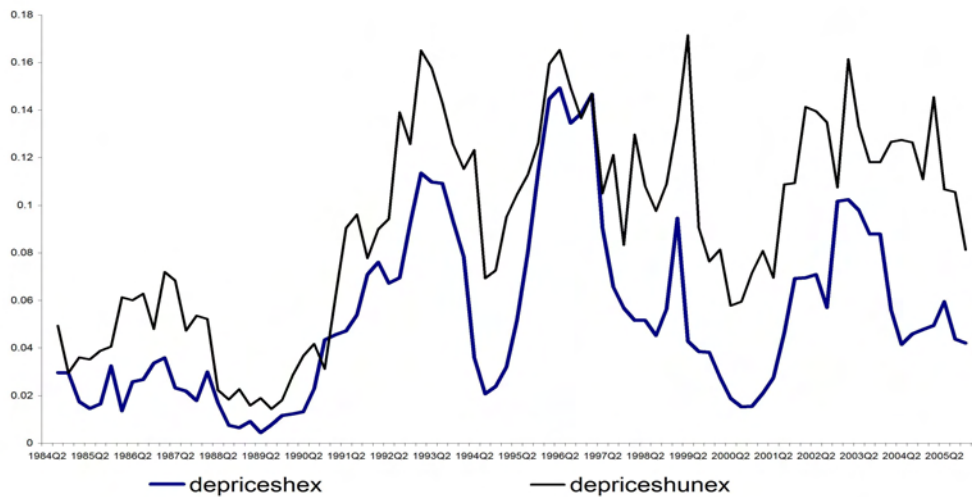
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Figure 4: Fraction of expected and unexpected increases over time



Source: KOF Industry Survey

Figure 5: Fraction of expected and unexpected decreases over time



Source: KOF Industry Survey

Table 2: Data Description

Variable	Availability	Description
		Source: KOF quarterly manufacturing survey
Selling Price	1984-2006	The price of the firm's main product has increased (+1), decreased (-1) or remained unchanged (0) in the last three months
Employment	1984-2003	Current employment in the firm is too high (+1), too low (-1) or satisfactory (0)
Technical Capac.	1984-2006	Technical capacities are too high (+1), too low (-1) or satisfactory (0)
Change Costs	1984-1999	The price of primary products and raw materials has increased (+1), decreased (-1) or remained unchanged (0) in the last three months
Turnover	1984-2006	The firm's turnover increased (+1), decreased (-1) or remained unchanged (0) in the last three months
Stocks Primary Prod.	1984-1999	The firm's stock of primary products has increased (+1), decreased (-1) or remained unchanged (0) in the last three months
E(Selling Price)	1984-2006	The firm expects to rise (+1), decrease (-1) or leave unchanged (0) its selling price in the coming three months
E(Change Costs)	1984-2006	The firm expects its input prices to rise (+1), decrease (-1) or remain unchanged (0) in the coming three months
Compet Home	1999-2006	The firms competitive position in the home country has improved (+1), worsened (-1) or remained unchanged (0) in the previous three months
Compet EU	1999-2006	The firms competitive position in the EU has improved (+1), worsened (-1) or remained unchanged (0) in the previous three months
Compet outs. EU	1999-2006	The firms competitive position outside the EU has improved (+1), worsened (-1) or remained unchanged (0) in the previous three months
Capacity Utilization	1984-2006	Quantitative response of the firm indicating its capacity utilisation in production in percent in the last three months
ln(Size)	1984-2006	Number of employees in the firm (in logs)
		Source: IMF IFS Database
PPI	1984-2006	Growth rate of the producer price index y/y
CPI	1984-2006	Growth rate of the consumer price index y/y
D(Oil)	1984-2006	Growth rate of the oil price index y/y
D(Metals)	1984-2006	Growth rate of the metal price index y/y
Exchange Rate	1984-2006	Official exchange rate SFR/USD
		Source: Swiss Federal Statistical Office, own calculation
GDP growth	1984-2006	Real-time growth rate of real GDP y/y

Table 3: Descriptive Statistics

	Expected decrease in prices	Unexpected decrease in prices	Expected increase in prices	Unexpected increase in prices
Mean	0.1177	0.0531	0.0628	0.0343
Median	0.1255	0.0445	0.0376	0.0300
Maximum	0.2320	0.1437	0.4474	0.0928
Minimum	0.0167	0.0039	0.0019	0.0061
Std. Dev.	0.0561	0.0357	0.0835	0.0189
Skewness	-0.1062	0.8564	2.7683	0.9253
Kurtosis	1.9477	3.0129	10.9136	3.5882
Observations	89	89	89	89

	Expected decrease in costs	Unexpected decrease in costs	Expected increase in costs	Unexpected increase in costs
Mean	0.0200	0.07798	0.1713	0.0972
Median	0.0180	0.07511	0.1190	0.0836
Maximum	0.0681	0.1597	0.5687	0.2198
Minimum	0.0010	0.0099	0.0200	0.0322
Std. Dev.	0.0139	0.0410	0.1377	0.0443
Skewness	0.9402	0.1712	1.1130	0.8410
Kurtosis	4.0417	2.0255	3.5065	3.2185
Observations	59	59	59	59

	Employment	Technical Capacities	Turnover	Capacity Utilisation
Mean	-0.0054	0.0297	-0.1205	74.4686
Median	0.0253	0.0330	-0.0949	82.6820
Maximum	0.2390	0.1779	0.0538	87.4513
Minimum	-0.3190	-0.1450	-0.3681	1.3742
Std. Dev.	0.1455	0.0736	0.1108	24.6552
Skewness	-0.3693	-0.1802	-0.4131	-2.5895
Kurtosis	1.9286	2.7232	1.9685	7.8268
Observations	79	89	89	89

	ln(firmsize)	Compet. Abroad	Compet. EU	Compet. Home
Mean	4.0905	-0.0305	-0.0505	0.0145
Median	4.1027	-0.0164	-0.0297	0.0137
Maximum	4.4633	0.1297	0.0741	0.1084
Minimum	3.5878	-0.1845	-0.2044	-0.0820
Std. Dev.	0.2693	0.0973	0.0756	0.0570
Skewness	-0.5826	0.0161	-0.5839	-0.0844
Kurtosis	2.1029	1.8662	2.3151	1.9237
Observations	89	29	29	29

Note: The statistics correspond to the time series constructed for the charts. Each observation is the average of all firms' responses regarding the variables at a given point in time. Employment, Technical Capacities, Turnover and Competitiveness are net variables. Example: For Employment firms respond either too high (+1), too low (-1) or satisfactory (0), these mean in the Table displays the mean of all observations across time and firms.

Table 4: Conditional Logit–Dependent Variable: Change in Selling Price

Dependent Variable	Price Change				
Taylor1	21.9563*** (0.0372)	23.6229*** (0.1425)	21.7610*** (0.3756)	23.1217*** (0.1414)	22.1554*** (0.4415)
Taylor4	22.8741*** (0.0620)	24.9958*** (0.0966)	22.4027*** (0.2418)	24.4560*** (0.0959)	23.8171*** (0.2956)
Taylor8	23.8093*** (0.0880)	25.9438*** (0.3480)	23.8304*** (0.3264)	25.4785*** (0.4271)	26.5305*** (0.5214)
Winter	1.1693*** (0.0362)	0.8021*** (0.0670)	0.0809 (0.1819)	0.7643*** (0.0676)	0.0309 (0.2257)
Summer	-0.0365 (0.0343)	0.1864*** (0.0649)	-0.1133 (0.1692)	0.2089*** (0.0741)	-0.2666 (0.2213)
Fall	-0.0486 (0.0340)	0.0687 (0.0642)	-0.0780 (0.1618)	0.0638 (0.0716)	-0.3133 (0.2315)
Expected Change Costs		0.9236*** (0.0675)		0.9257*** (0.0684)	
Unexpected Change Costs		0.6735*** (0.0641)		0.6802*** (0.0646)	
Capacity Utilisation		-0.0020 (0.0025)	-0.0152 (0.0109)	-0.0001 (0.0027)	-0.0147 (0.0109)
Ln(size)		0.1257 (0.1841)	0.3152 (0.3785)	0.1192 (0.1845)	0.3074 (0.3688)
D(Capacity Utilisation)		-0.0007 (0.0022)	0.0044 (0.0066)	0.0001 (0.0024)	0.0052 (0.0071)
Technical Capacities		0.1346* (0.0713)		0.1404** (0.0713)	
Employment		0.1123** (0.0571)		0.1252** (0.0573)	
Turnover		-0.2152*** (0.0439)	-0.2859** (0.1308)	-0.2238*** (0.0441)	-0.3291** (0.1301)
Stocks Primary Products		-0.1002** (0.0398)		-0.1008** (0.0399)	
Cumulated Inflation		-0.0078 (0.0058)	0.0223 (0.1197)	-0.0038 (0.0060)	0.1497 (0.1251)
Last Incr * Duration		0.1607*** (0.0204)	0.2779** (0.1128)	0.1499*** (0.0210)	0.1807 (0.1166)
Last Decr * Duration		0.1956*** (0.0237)	0.3162*** (0.1097)	0.1865*** (0.0239)	0.2070* (0.1133)
Compet Home			-0.3162* (0.1626)		-0.3028* (0.1643)
Compet EU			-0.1428 (0.1511)		-0.1155 (0.1518)
Compet outs EU			0.0353 (0.1623)		-0.0014 (0.1646)
CPI perc y/y				-0.1914*** (0.0684)	-0.4301 (0.4609)
PPI perc y/y				-0.1761*** (0.0555)	0.1634 (0.4201)
D(Oil)				0.0033* (0.0018)	0.0117** (0.0059)
D(Metals)				-0.0103*** (0.0026)	0.0069 (0.0189)
Real time GDP y/y				0.0116 (0.0335)	0.0542 (0.1520)
Exchange Rate				0.4370 (0.4420)	-2.6675 (1.7952)
Observations	60864	31967	3546	31967	3546
Pseudo R-squared	0.370	0.611	0.597	0.612	0.602
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 5: Conditional Logit–Dependent Variable: Increase in Selling Price

Dependent Variable	Price Increases				
Taylor1	1.8234*** (0.0513)	3.6117*** (0.0923)	3.6569*** (0.2678)	3.6199*** (0.0928)	3.6999*** (0.2780)
Taylor4	3.3554*** (0.0863)	5.1656*** (0.1500)	3.8406*** (0.3812)	5.1846*** (0.1524)	3.8197*** (0.3965)
Taylor8	3.3349*** (0.1639)	4.3030*** (0.2605)	3.4715*** (0.8864)	4.3390*** (0.2628)	3.5691*** (0.9137)
Winter	1.3637*** (0.0452)	0.8614*** (0.0798)	0.3485* (0.2076)	0.8175*** (0.0848)	0.7129** (0.3038)
Summer	-0.2741*** (0.0415)	-0.1220 (0.0761)	-0.0343 (0.1996)	-0.0722 (0.0854)	0.0363 (0.2639)
Fall	-0.3209*** (0.0435)	-0.3183*** (0.0794)	-0.3811 (0.2354)	-0.2118** (0.0919)	-0.7028** (0.3190)
Expected Increase Costs		2.1605*** (0.0837)		2.0950*** (0.0851)	
Unexpected Increase Costs		1.7755*** (0.0940)		1.7526*** (0.0952)	
Capacity Utilisation		0.0123*** (0.0038)	0.0271** (0.0136)	0.0124*** (0.0036)	0.0236 (0.0144)
Ln(size)		-0.2571 (0.1925)	0.0722 (0.4431)	-0.2513 (0.1905)	0.0373 (0.4423)
D(Capacity Utilisation)		-0.0081*** (0.0030)	-0.0119 (0.0084)	-0.0077*** (0.0025)	-0.0092 (0.0087)
Technical Capacities		-0.2180** (0.0862)		-0.2014** (0.0864)	
Employment		-0.2097*** (0.0696)		-0.1819*** (0.0702)	
Turnover		1.0832*** (0.0637)	1.0575*** (0.1683)	1.0803*** (0.0639)	1.0790*** (0.1763)
Stocks Primary Products		0.0760 (0.0499)		0.0690 (0.0505)	
Cumulated Inflation		0.0183*** (0.0067)	-0.0240 (0.1247)	0.0238*** (0.0070)	-0.0474 (0.1322)
Last Incr * Duration		0.0977*** (0.0205)	0.2502** (0.1076)	0.0825*** (0.0213)	0.2712** (0.1177)
Last Decr * Duration		0.1386*** (0.0264)	0.3270*** (0.1181)	0.1276*** (0.0273)	0.3576*** (0.1210)
Compet Home			-0.1139 (0.2044)		-0.0935 (0.2087)
Compet EU			0.2780 (0.1811)		0.2795 (0.1854)
Compet outs EU			0.0694 (0.2103)		0.1169 (0.2178)
CPI perc y/y				0.1892** (0.0793)	1.3834** (0.5797)
PPI perc y/y				-0.0802 (0.0777)	0.3379 (0.5338)
D(Oil)				0.0044** (0.0022)	-0.0074 (0.0076)
D(Metals)				-0.0009 (0.0030)	0.0147 (0.0280)
Real time GDP y/y				0.2990*** (0.0424)	0.1603 (0.2086)
Exchange Rate				0.2004 (0.5107)	-2.2539 (1.7028)
Observations	51436	26413	2123	26413	2123
Pseudo R-squared	0.293	0.580	0.458	0.583	0.472
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 6: Conditional Logit–Dependent Variable: Decrease in Selling Price

	Price Decreases				
Taylor1	2.6497*** (0.0475)	3.8836*** (0.0807)	3.9533*** (0.2353)	3.9360*** (0.0820)	3.9767*** (0.2441)
Taylor4	1.5398*** (0.0789)	2.2413*** (0.1181)	3.5971*** (0.3850)	2.4045*** (0.1212)	3.5992*** (0.3985)
Taylor8	2.2361*** (0.1573)	2.5739*** (0.2762)	3.8414*** (1.0056)	2.6638*** (0.2740)	3.9255*** (1.0253)
Winter	0.2571*** (0.0376)	-0.0434 (0.0750)	-0.2079 (0.1717)	-0.0221 (0.0759)	-0.4025* (0.2194)
Summer	0.0818** (0.0360)	0.1848*** (0.0693)	-0.0556 (0.1738)	0.0542 (0.0820)	-0.1163 (0.2266)
Fall	0.0824** (0.0362)	0.1394** (0.0706)	0.1934 (0.1844)	0.0254 (0.0786)	0.2449 (0.2605)
Expected Decrease Costs		2.1613*** (0.1514)		2.1018*** (0.1516)	
Unexpected Decrease Costs		1.8710*** (0.1043)		1.8191*** (0.1064)	
Capacity Utilisation		-0.0125*** (0.0032)	-0.0291*** (0.0110)	-0.0138*** (0.0034)	-0.0287*** (0.0110)
Ln(size)		0.2970 (0.2698)	0.1655 (0.3683)	0.2924 (0.2689)	0.1717 (0.3718)
D(Capacity Utilisation)		0.0126*** (0.0030)	0.0122* (0.0067)	0.0105*** (0.0030)	0.0132* (0.0069)
Technical Capacities		0.3260*** (0.0722)		0.3149*** (0.0725)	
Employment		0.3727*** (0.0616)		0.3442*** (0.0620)	
Turnover		-1.1926*** (0.0588)	-1.1326*** (0.1441)	-1.1776*** (0.0595)	-1.1482*** (0.1459)
Stocks Primary Products		-0.1209** (0.0492)		-0.1109** (0.0501)	
Cumulated Inflation		-0.0018 (0.0087)	-0.0881 (0.1231)	-0.0079 (0.0086)	-0.0425 (0.1297)
Last Incr * Duration		0.0942*** (0.0327)	0.3136** (0.1265)	0.1181*** (0.0329)	0.2723** (0.1298)
Last Decr * Duration		0.1283*** (0.0232)	0.3308*** (0.1139)	0.1464*** (0.0238)	0.2919** (0.1174)
Compet Home			-0.1405 (0.1758)		-0.1438 (0.1798)
Compet EU			-0.3349** (0.1642)		-0.3214* (0.1664)
Compet outs EU			0.0290 (0.1497)		0.0079 (0.1510)
CPI perc y/y				0.1051 (0.0818)	-0.8385* (0.4871)
PPI perc y/y				0.1898*** (0.0637)	-0.0420 (0.4366)
D(Oil)				-0.0022 (0.0022)	0.0135** (0.0060)
D(Metals)				-0.0081** (0.0032)	-0.0081 (0.0190)
Real time GDP y/y				-0.3709*** (0.0411)	-0.1305 (0.1675)
Exchange Rate				-1.3637*** (0.5250)	0.8048 (1.9005)
Observations	47833	22774	2709	22774	2709
Pseudo R-squared	0.246	0.519	0.476	0.527	0.481
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 7: Conditional Logit–Dependent Variable: Expected Change in Selling Price

Dependent Variable	Expected Price Change				
Taylor1	2.5774*** (0.0457)	3.2587*** (0.0662)	3.3246*** (0.1966)	3.2614*** (0.0663)	3.3583*** (0.1979)
Taylor4	2.8576*** (0.0763)	3.6290*** (0.1097)	2.9098*** (0.2755)	3.6086*** (0.1110)	2.9586*** (0.2782)
Taylor8	2.6877*** (0.1379)	3.0302*** (0.2010)	2.5790*** (0.5802)	3.0370*** (0.2055)	2.5024*** (0.5603)
Winter	1.3188*** (0.0491)	0.9411*** (0.0681)	0.5191*** (0.1907)	0.8661*** (0.0679)	0.6386** (0.2495)
Summer	-0.0067 (0.0425)	0.0854 (0.0653)	-0.1494 (0.1630)	0.1133 (0.0717)	-0.1992 (0.1999)
Fall	0.1630*** (0.0424)	0.1958*** (0.0634)	-0.0055 (0.1749)	0.2338*** (0.0722)	-0.2862 (0.2111)
Expected Change Costs		1.3831*** (0.0687)		1.3683*** (0.0692)	
Unexpected Change Costs		-0.2627*** (0.0695)		-0.2580*** (0.0696)	
Capacity Utilisation		-0.0074** (0.0030)	-0.0104 (0.0091)	-0.0053* (0.0031)	-0.0103 (0.0092)
Ln(size)		-0.1548 (0.1801)	-0.7740** (0.3629)	-0.1736 (0.1816)	-0.7673** (0.3717)
D(Capacity Utilisation)		0.0029 (0.0029)	0.0032 (0.0078)	0.0044 (0.0029)	0.0043 (0.0081)
Technical Capacities		0.0103 (0.0648)		0.0259 (0.0648)	
Employment		-0.0098 (0.0552)		0.0114 (0.0555)	
Turnover		0.0246 (0.0387)	0.1652 (0.1167)	0.0099 (0.0390)	0.1520 (0.1151)
Stocks Primary Products		-0.0564 (0.0365)		-0.0599 (0.0365)	
Cumulated Inflation		-0.0058 (0.0058)	0.0235 (0.0935)	-0.0033 (0.0060)	0.0822 (0.0997)
Last Incr * Duration		0.1116*** (0.0212)	0.2092** (0.0922)	0.1045*** (0.0217)	0.1615* (0.0973)
Last Decr * Duration		0.0582*** (0.0223)	0.0595 (0.0952)	0.0540** (0.0227)	0.0073 (0.1005)
Compet Home			-0.0175 (0.1531)		-0.0372 (0.1510)
Compet EU			-0.0477 (0.1632)		-0.0446 (0.1649)
Compet outs EU			0.0262 (0.1172)		0.0323 (0.1151)
CPI perc y/y				-0.0666 (0.0697)	0.2173 (0.4375)
PPI perc y/y				-0.2674*** (0.0581)	0.1472 (0.3909)
D(Oil)				0.0031 (0.0019)	0.0002 (0.0052)
D(Metals)				-0.0107*** (0.0027)	0.0236 (0.0187)
Real time GDP y/y				0.1117*** (0.0349)	-0.0061 (0.1738)
Exchange Rate				0.4267 (0.4298)	-3.3940** (1.6843)
Observations	49919	28803	2816	28803	2816
Pseudo R-squared	0.285	0.433	0.348	0.436	0.353
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 8: Conditional Logit–Dependent Variable: Expected Increase in Selling Price

Dependent Variable	Expected Price Increases				
Taylor1	1.4883*** (0.0603)	2.3701*** (0.0923)	3.0946*** (0.3190)	2.3642*** (0.0930)	3.1734*** (0.3282)
Taylor4	3.0877*** (0.0895)	4.1783*** (0.1445)	3.2110*** (0.4431)	4.1763*** (0.1452)	3.3874*** (0.4555)
Taylor8	2.7604*** (0.1662)	3.2405*** (0.2551)	2.7454*** (0.9040)	3.2744*** (0.2558)	2.4762** (1.0092)
Winter	1.7216*** (0.0630)	1.1105*** (0.0949)	0.8569*** (0.2732)	1.1438*** (0.1016)	1.7613*** (0.4789)
Summer	-0.1987*** (0.0591)	-0.1045 (0.0944)	-0.1774 (0.2480)	-0.1110 (0.1030)	-0.1049 (0.3157)
Fall	-0.1525** (0.0644)	-0.1561 (0.0960)	-0.2804 (0.3130)	-0.1462 (0.1106)	-1.1488*** (0.4022)
Expected Increase Costs		2.2670*** (0.0876)		2.1851*** (0.0887)	
Unexpected Increase Costs		0.3431*** (0.1108)		0.3138*** (0.1111)	
Capacity Utilisation		0.0060 (0.0039)	0.0169 (0.0151)	0.0042 (0.0040)	0.0214 (0.0153)
Ln(size)		-0.2644 (0.1804)	-0.6570 (0.6154)	-0.2461 (0.1769)	-0.6275 (0.6928)
D(Capacity Utilisation)		-0.0089*** (0.0021)	-0.0231** (0.0102)	-0.0088*** (0.0020)	-0.0253** (0.0105)
Technical Capacities		-0.2523*** (0.0952)		-0.2370** (0.0957)	
Employment		-0.1739** (0.0821)		-0.1423* (0.0827)	
Turnover		0.7313*** (0.0638)	0.7681*** (0.1903)	0.7214*** (0.0644)	0.7570*** (0.1943)
Stocks Primary Products		0.0258 (0.0544)		0.0182 (0.0546)	
Cumulated Inflation		0.0070 (0.0071)	0.2392* (0.1336)	0.0097 (0.0073)	0.2601* (0.1460)
Last Incr * Duration		0.1281*** (0.0221)	0.0872 (0.1318)	0.1217*** (0.0227)	0.0755 (0.1414)
Last Decr * Duration		0.1139*** (0.0283)	0.0207 (0.1761)	0.1119*** (0.0291)	0.0159 (0.1777)
Compet Home			-0.0669 (0.2720)		-0.1273 (0.2736)
Compet EU			0.3281 (0.2142)		0.3461 (0.2216)
Compet outs EU			0.0367 (0.1938)		0.0732 (0.2032)
CPI perc y/y				0.1959** (0.0956)	2.0717** (0.9207)
PPI perc y/y				0.1327 (0.0854)	0.4826 (0.5810)
D(Oil)				0.0060** (0.0028)	-0.0220** (0.0112)
D(Metals)				-0.0013 (0.0034)	0.0629* (0.0369)
Real time GDP y/y				0.3922*** (0.0535)	0.6589*** (0.2424)
Exchange Rate				-0.5279 (0.5745)	0.7236*** (2.3871)
Observations	39978	23406	1540	23406	1540
Pseudo R-squared	0.338	0.553	0.425	0.559	0.460
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 9: Conditional Logit–Dependent Variable: Expected Decrease in Selling Price

Dependent Variable	Expected Price Decreases				
Taylor1	2.8976*** (0.0594)	3.2305*** (0.1001)	3.0310*** (0.2377)	3.2291*** (0.1008)	3.0757*** (0.2489)
Taylor4	1.3311*** (0.1384)	1.3635*** (0.2006)	2.3384*** (0.3815)	1.4075*** (0.2027)	2.4224*** (0.3920)
Taylor8	1.9578*** (0.2720)	1.5541*** (0.4138)	2.1786*** (0.8437)	1.6104*** (0.4102)	2.0377** (0.8906)
Winter	0.2586*** (0.0614)	0.2768*** (0.0902)	0.1330 (0.2365)	0.2285** (0.0941)	-0.0443 (0.2916)
Summer	0.0940 (0.0603)	0.0879 (0.0955)	-0.1297 (0.2107)	-0.0200 (0.1065)	0.1884 (0.2850)
Fall	0.3556*** (0.0579)	0.3380*** (0.0880)	0.1438 (0.2050)	0.2697*** (0.0990)	0.4976 (0.3044)
Expected Decrease Costs		2.7816*** (0.1860)		2.7181*** (0.1889)	
Unexpected Decrease Costs		0.1606 (0.1043)		0.1119 (0.1057)	
Capacity Utilisation		-0.0123*** (0.0039)	-0.0160 (0.0108)	-0.0111*** (0.0041)	-0.0178 (0.0110)
Ln(size)		-0.1945 (0.2995)	-0.7974 (0.4897)	-0.2047 (0.2962)	-0.8510* (0.4947)
D(Capacity Utilisation)		0.0108*** (0.0037)	0.0158* (0.0090)	0.0096*** (0.0037)	0.0206** (0.0088)
Technical Capacities		0.2514*** (0.0877)		0.2446*** (0.0876)	
Employment		0.1930** (0.0797)		0.1879** (0.0798)	
Turnover		-0.7205*** (0.0602)	-0.4875*** (0.1656)	-0.6956*** (0.0607)	-0.5099*** (0.1663)
Stocks Primary Products		-0.0676 (0.0541)		-0.0635 (0.0544)	
Cumulated Inflation		0.0275** (0.0137)	-0.1682 (0.1385)	0.0205 (0.0140)	-0.1738 (0.1472)
Last Incr * Duration		-0.1319** (0.0614)	0.3165** (0.1587)	-0.1027* (0.0610)	0.3228** (0.1613)
Last Decr * Duration		0.0116 (0.0356)	0.1699 (0.1269)	0.0286 (0.0357)	0.1704 (0.1355)
Compet Home			0.0681 (0.2040)		0.0560 (0.2050)
Compet EU			-0.3168 (0.2140)		-0.3107 (0.2115)
Compet outs EU			0.0391 (0.1535)		0.0188 (0.1521)
CPI perc y/y				0.3063*** (0.1033)	0.2864 (0.6056)
PPI perc y/y				-0.1509* (0.0879)	-0.3110 (0.4863)
D(Oil)				-0.0002 (0.0027)	0.0039 (0.0072)
D(Metals)				-0.0064 (0.0042)	0.0235 (0.0260)
Real time GDP y/y				-0.2385*** (0.0494)	-0.6647** (0.2739)
Exchange Rate				-1.3399** (0.6609)	4.748 (2.5663)
Observations	27660	15100	1762	15100	1762
Pseudo R-squared	0.311	0.449	0.352	0.454	0.361
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 10: Conditional Logit–Dependent Variable: Unexpected Change in Selling Price

Dependent Variable	Unexpected Price Change				
Taylor1	1.1526*** (0.0428)	2.4224*** (0.0650)	2.1630*** (0.1443)	2.4236*** (0.0652)	2.1680*** (0.1446)
Taylor4	1.4783*** (0.0647)	2.2842*** (0.0897)	2.6573*** (0.2950)	2.3272*** (0.0908)	2.6490*** (0.2934)
Taylor8	2.0526*** (0.1296)	2.7202*** (0.1872)	2.6551*** (0.5784)	2.7394*** (0.1893)	2.6951*** (0.5812)
Winter	0.1225*** (0.0315)	-0.1298** (0.0525)	-0.3226** (0.1587)	-0.1112** (0.0533)	-0.4002** (0.1895)
Summer	-0.0745** (0.0312)	-0.0140 (0.0521)	0.0326 (0.1387)	-0.0296 (0.0610)	0.0559 (0.1756)
Fall	-0.2014*** (0.0319)	-0.1856*** (0.0545)	-0.1130 (0.1582)	-0.2206*** (0.0600)	-0.0109 (0.2011)
Expected Change Costs		-0.5157*** (0.0641)		-0.4970*** (0.0640)	
Unexpected Change Costs		0.7191*** (0.0566)		0.7227*** (0.0568)	
Capacity Utilisation		0.0004 (0.0022)	0.0010 (0.0069)	-0.0004 (0.0023)	0.0008 (0.0070)
Ln(size)		0.2270 (0.1493)	0.6933* (0.3568)	0.2275 (0.1496)	0.6900* (0.3565)
D(Capacity Utilisation)		-0.0003 (0.0018)	-0.0040 (0.0057)	-0.0008 (0.0017)	-0.0033 (0.0059)
Technical Capacities		0.0524 (0.0561)		0.0468 (0.0562)	
Employment		0.0797 (0.0503)		0.0705 (0.0505)	
Turnover		-0.2081*** (0.0360)	-0.2911*** (0.1019)	-0.2005*** (0.0362)	-0.2923*** (0.1018)
Stocks Primary Products		-0.0081 (0.0352)		-0.0046 (0.0352)	
Cumulated Inflation		0.0071 (0.0060)	-0.1074 (0.0968)	0.0068 (0.0061)	-0.1250 (0.1026)
Last Incr * Duration		0.0238 (0.0203)	0.2145** (0.1010)	0.0254 (0.0207)	0.2314** (0.1052)
Last Decr * Duration		0.0931*** (0.0184)	0.3310*** (0.0939)	0.0942*** (0.0187)	0.3482*** (0.0981)
Compet Home			-0.1663 (0.1239)		-0.1628 (0.1233)
Compet EU			-0.0640 (0.1452)		-0.0622 (0.1461)
Compet outs EU			0.0178 (0.1186)		0.0085 (0.1191)
CPI perc y/y				-0.0658 (0.0586)	-0.1085 (0.3716)
PPI perc y/y				0.1276*** (0.0479)	-0.0333 (0.3454)
D(Oil)				-0.0015 (0.0016)	0.0033 (0.0046)
D(Metals)				0.0012 (0.0022)	-0.0088 (0.0157)
Real time GDP y/y				-0.1045*** (0.0312)	-0.0337 (0.1246)
Exchange Rate				0.0069 (0.4083)	1.7357 (1.4365)
Observations	54534	27792	3112	27792	3112
Pseudo R-squared	0.0690	0.215	0.203	0.216	0.203
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 11: Conditional Logit–Dependent Variable: Unexpected Increase in Selling Price

Dependent Variable	Unexpected Price Increases				
Taylor1	1.8976*** (0.0674)	2.8453*** (0.1113)	2.6042*** (0.2896)	2.8549*** (0.1115)	2.5875*** (0.2863)
Taylor4	1.7245*** (0.0976)	2.3554*** (0.1340)	2.4732*** (0.4904)	2.3769*** (0.1340)	2.4279*** (0.5190)
Taylor8	2.2227*** (0.1798)	2.5636*** (0.2718)	3.2332*** (0.9686)	2.5633*** (0.2717)	3.7841*** (1.0304)
Winter	0.0269 (0.0591)	-0.0229 (0.0966)	-0.3311 (0.2857)	-0.0137 (0.1033)	-0.2648 (0.3946)
Summer	-0.2281*** (0.0589)	-0.0792 (0.0969)	0.0228 (0.2369)	-0.0814 (0.1096)	0.2053 (0.3125)
Fall	-0.3857*** (0.0614)	-0.3279*** (0.1025)	-0.4476 (0.2762)	-0.3610*** (0.1153)	-0.2806 (0.4583)
Expected Increase Costs		0.1655 (0.1064)		0.1956* (0.1073)	
Unexpected Increase Costs		1.8799*** (0.1049)		1.8847*** (0.1057)	
Capacity Utilisation		0.0098** (0.0041)	0.0355** (0.0152)	0.0100** (0.0042)	0.0348** (0.0156)
Ln(size)		-0.0069 (0.2192)	0.3105 (0.5874)	-0.0026 (0.2198)	0.3392 (0.6467)
D(Capacity Utilisation)		-0.0030 (0.0019)	-0.0055 (0.0111)	-0.0029 (0.0019)	-0.0049 (0.0112)
Technical Capacities		-0.0452 (0.1010)		-0.0497 (0.1014)	
Employment		-0.0521 (0.0865)		-0.0707 (0.0866)	
Turnover		0.7087*** (0.0648)	0.6635*** (0.1592)	0.7151*** (0.0647)	0.7060*** (0.1653)
Stocks Primary Products		0.0840 (0.0611)		0.0830 (0.0613)	
Cumulated Inflation		0.0120 (0.0091)	-0.3098* (0.1725)	0.0109 (0.0094)	-0.3564* (0.1875)
Last Incr * Duration		0.0300 (0.0286)	0.3246** (0.1618)	0.0338 (0.0294)	0.3765** (0.1750)
Last Decr * Duration		0.1092*** (0.0347)	0.5461*** (0.1655)	0.1126*** (0.0349)	0.6059*** (0.1716)
Compet Home			-0.1369 (0.2139)		-0.1208 (0.2103)
Compet EU			0.0535 (0.2297)		0.0568 (0.2460)
Compet outs EU			0.1464 (0.2525)		0.1452 (0.2472)
CPI perc y/y				0.0465*** (0.0101)	0.0966** (0.0633)
PPI perc y/y				0.0701 (0.0914)	0.3017 (0.8805)
D(Oil)				-0.0000 (0.0027)	-0.0003 (0.0089)
D(Metals)				0.0047 (0.0034)	-0.0235 (0.0364)
Real time GDP y/y				0.1344** (0.0532)	-0.3708 (0.2620)
Exchange Rate				0.2930 (0.6713)	0.65241*** (2.4819)
Observations	32717	17700	1386	17700	1386
Pseudo R-squared	0.145	0.337	0.282	0.338	0.302
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1

Table 12: Conditional Logit–Dependent Variable: Unexpected Decrease in Selling Price

Dependent Variable	Unexpected Price Decreases				
Taylor1	0.6559*** (0.0430)	1.7507*** (0.0675)	1.7744*** (0.1480)	1.7542*** (0.0679)	1.7694*** (0.1483)
Taylor4	1.1614*** (0.0783)	1.8816*** (0.1102)	2.3945*** (0.3108)	1.9624*** (0.1118)	2.3993*** (0.3160)
Taylor8	1.7008*** (0.1579)	2.2529*** (0.2343)	2.5299*** (0.6873)	2.3052*** (0.2344)	2.4904*** (0.6738)
Winter	0.1704*** (0.0345)	-0.1958*** (0.0614)	-0.2558 (0.1664)	-0.1869*** (0.0614)	-0.3470* (0.2024)
Summer	0.0019 (0.0344)	0.0714 (0.0606)	0.0731 (0.1546)	-0.0187 (0.0701)	-0.0183 (0.1961)
Fall	-0.1051*** (0.0354)	-0.0617 (0.0650)	0.0192 (0.1702)	-0.1407** (0.0689)	0.0047 (0.2251)
Expected Decrease Costs		-0.7040*** (0.1470)		-0.7418*** (0.1473)	
Unexpected Decrease Costs		1.2673*** (0.0862)		1.2438*** (0.0865)	
Capacity Utilisation		-0.0031 (0.0029)	-0.0094 (0.0082)	-0.0048 (0.0030)	-0.0092 (0.0082)
Ln(size)		0.3358 (0.2274)	0.6137 (0.4338)	0.3389 (0.2285)	0.5854 (0.4283)
D(Capacity Utilisation)		0.0037 (0.0027)	-0.0026 (0.0065)	0.0024 (0.0027)	-0.0031 (0.0066)
Technical Capacities		0.1063* (0.0628)		0.0956 (0.0630)	
Employment		0.1620*** (0.0601)		0.1460** (0.0605)	
Turnover		-0.6833*** (0.0462)	-0.6570*** (0.1217)	-0.6688*** (0.0466)	-0.6641*** (0.1221)
Stocks Primary Products		-0.0469 (0.0424)		-0.0392 (0.0425)	
Cumulated Inflation		0.0054 (0.0076)	-0.0354 (0.1035)	0.0041 (0.0076)	-0.0080 (0.1085)
Last Incr * Duration		0.0557* (0.0285)	0.1997* (0.1061)	0.0619** (0.0287)	0.1742 (0.1071)
Last Decr * Duration		0.0852*** (0.0210)	0.2653** (0.1052)	0.0893*** (0.0212)	0.2400** (0.1076)
Compet Home			-0.1475 (0.1388)		-0.1345 (0.1398)
Compet EU			-0.0806 (0.1628)		-0.0840 (0.1641)
Compet outs EU			0.0208 (0.1291)		0.0239 (0.1292)
CPI perc y/y				-0.0456* (0.0678)	-0.5452 (0.4231)
PPI perc y/y				0.1876*** (0.0598)	-0.0363 (0.3766)
D(Oil)				-0.0013 (0.0020)	0.0051 (0.0053)
D(Metals)				-0.0023 (0.0029)	-0.0069 (0.0172)
Real time GDP y/y				-0.1345*** (0.0381)	0.0958 (0.1377)
Exchange Rate				-0.9579* (0.5034)	-0.3403 (1.6938)
		36			
Observations	45964	21225	2484	21225	2484
Pseudo R-squared	0.0670	0.224	0.190	0.226	0.192
Prob>Chi2	0.00	0.00	0.00	0.00	0.00

Robust standard errors in parentheses *** p<0.01 ** p<0.05 * p<0.1