

Simulating the Influence of Price Auditing on the Corporate Profit in Business-to-Government Relationships: Experiences from a Case Study in the German Automotive Industry

Radl, Jürgen Markus

Institute of Production Science and Management, Graz University of Technology, Graz, Austria

Kerschenbauer, Jochen Edmund

Institute of Business Economics and Industrial Sociology, Graz University of Technology, Graz, Austria

Kriegl, Verena

Institute of Production Science and Management, Graz University of Technology, Graz, Austria

Grbenic, Stefan

Department of Corporate Finance & Accounting, University of Applied Sciences, Eisenstadt, Austria

Zunk, Bernd Markus

Institute of Business Economics and Industrial Sociology, Graz University of Technology, Graz, Austria

Keywords

Price auditing, German price law, pricing strategies, governmental procurement, pricing scenarios, price forms

Abstract

In business-to-government (B2G) relationships, companies' managers need to consider the national price law when they price products. In Germany, legal regulations on pricing were set to limit the corporate profit. Their compliance is ensured by price audits. Due to the absence of national price regulations in several NATO states, many procuring authorities apply the German regulations to their contracts and request German administrative assistance for auditing prices. In this paper we outline how the German legal framework allows for the application of different strategies and scenarios of how to price automotive industry products. The scenario technique is used to simulate a price audit on a real-life governmental customer project. We report on our experience about whether there is a possibility to simulate price audits on pricing scenarios. The result of the price audit simulation clearly shows the influence of the chosen strategy on the contribution margin as well as on the corporate profit for each price auditing scenario that was tested.

1. Introduction

The economic goals of governmental customers and those of corporate and governmental contractors in business-to-government (B2G) relationships differ from each other. The economic aims of corporate contractors are minimizing costs and thus maximizing profits. Governmental customers must ensure an economic allocation of their budget (Michaelis et al., 2011). Potential contractors must treat governmental customers in the same manner as clients in business-to-consumer (B2C) markets as well as in business-to-business (B2B) markets (Bundesministerium der Justiz Deutschland, 1953b; Ax et al., 2010). The same volume discounts and rebates must be granted (Spitzer, 2009).

The company with the best performance in fulfilling customer needs has to be contracted. This is the only legally correct method to eliminate a competitor in an award procedure (Lindner, 2003). However, the lack of competition might lead to higher prices on the market (Engel, 1983). The market power of public customers can cause price dictation and protectionism for certain industries (Birgel, 1994; Jayaprakash, 2004). Other problem areas that influence prices are the so-called 'white-collar crimes', i.e. price rigging, abuse of authority and usury (Berjasevic, 2012; Punch, 1996). Price regulations were introduced by law to avoid such misuse of power on prices. Governmental officers are authorized to audit the pricing procedures of enterprises to ensure their compliance with legal regulations. Besides, severe penalties shall prevent companies from violating legislation (Müller, 1993; Ebisch et al., 2010; Michaelis et al., 2011).

To avoid such penalties, contractors in international B2G settings apply the German legal framework, which is known and much acclaimed for its thoroughness, and request legal assistance for auditing prices. A goal of price audits is the protection of governmental business from corruption. With the help of price audits, the governmental authorities confirm that public contracts are executed in a proper, legal way. Nevertheless, managers in companies are usually better informed about their costs than price auditors and have little incentive to report this information truthfully (Rey, 2003). This is particularly problematic with regard to the current budget problems of individual European states. Saving money could therefore become the primary governmental objective in price auditing. New European regulations might be created or the national price law might be reformed in order to save costs. Consequently, the truthful report the costs would become increasingly important for companies to win tenders.

In this study, the existing scope in German legislation is outlined and considered in two different pricing scenarios. Each pricing scenario can be applied to various corporate pricing strategies. Our hypothesis is that the ability to apply situationally appropriate pricing scenarios for each strategy can increase the products' profit margin. In an exemplary single case study this hypothesis is tested. The test includes a price audit under practical experiences which were gained in the automotive industry. The comparison of the results shows that an additional benefit and a remarkable competitive advantage can be achieved by choosing the right scenario.

This paper is structured as follows: Section 2 gives a brief literature review on the German procurement system including the price law and price forms of the German framework. In Section 3, the research approach on pricing scenarios and pricing strategies is described. The applied method and the model assumptions are part of Section 4. Section 5 presents the main results. Section 6 discusses the outcome of the study and draws conclusions. Finally, section 7 addresses the limitations of this study and considers implications for further research.

2. Literature Review

The German procurement system is a complex and comprehensive topic. In Germany, the annual process costs of governmental procurement amount to 19 billion EUR in total for potential contractors or 7,870 EUR for participating in a single awarding procedure (Bundesministerium für Wirtschaft und Technologie, 2008). The governmental authorities summarize important contents in guidelines and checklists to simplify the participation of potential contractors in tenders (Submissions Anzeiger, 2006; Bundesamt für Wehrtechnik und Beschaffung, 2010; Finanzbehörde Freie und Hansestadt Hamburg, 2010; Bundesamt für Wehrtechnik und Beschaffung, 2011; Jost et al., 2011).

These facts illustrate the importance that the understanding of the German formal requirements has for contracting partners (Noelle and Rogmans, 2002). Pünder and Schellenberg give a detailed explanation to fully understand the system and how governmental authorities may act when announcing and inviting tenders (Pünder and Schellenberg, 2011). Also Altmann is to be mentioned, who reviews the inadmissibility of price auditing powers under ethical aspects (Altman, 1960).

Due to the lack of a regulation on how to calculate prices, the German government decided to introduce the Price Regulation PR No. 30/53 on Pricing in Public Contracts and Guidelines for Pricing on the Basis of Cost (Bundesministerium der Justiz Deutschland, 1953a and 1953b). Both documents are the basis of German Price Law. However, the theoretical analysis of the price law shows that it cannot solve every practical problem. The so-called discrepancy between the 'law in book' and the 'law in action' is a reason why German governmental price auditors hold transferred powers and have to decide on critical questions on their own (Punch, 1996). Ebisch et al. (2010) and Michaelis et al. (2011) provide practical explanations of the German price law and compare many related court judgments to show and connect the practical relevance with theoretical legal background. Other authors interpret and extend the price law with personal definitions and opinions that are not of legally binding nature (Däumler and Grabe, 1984; Chorus, 1988; Hertel, 1998; Lindner, 2003). Müller (1993), for example, offers a comprehensive perspective, especially concerning contracts with the German Federal Armed Forces. Practical pieces of advice about price forms in detail are presented by Birgel (1994).

Previous research has failed to summarize the complex German legal aspects in simple terms, such as pricing scenarios and pricing strategies. The existing literature lacks the connection between governmental requirements and corporate needs to successfully participate and win a tender. Especially a manual containing an analysis and a summary of all legal elements that are involved is missing. The manual's content should consider the different legal possibilities of how to price products and successfully pass a price audit. An explanation for the missing research in this area could be the diversity of goods and services and the complex legal situation. To consider all aspects would go beyond the scope of the present discussion. As specific 'German-price-law-knowledge' in companies is missing, a profitable business area for consultants opens up. The support of consultants or the introduction of a company-internal price-law department may help to optimize the prices of tender-specific products (Singer, 2011; Keller and Prestel, 2012; Abels, 2010).

3. Research Approach

The conducted study focuses on products from the automotive industry sold to German authorities and government-related entities. Every government-related contract can be price audited by the responsible authorities (Bundesministerium der Justiz Deutschland, 1953b). The contracted price should withstand a price audit without negative consequences for the contractor. In order to find a suitable method to simulate a price audit, the author compared common automotive industry tools for technology valuation such as scenario, portfolio, forecast and simulation method. The comparison showed that the scenario method was the only method that was able to consider all aspects of complex customer projects. The scenario method as described by Reibnitz (1992) as well as by Eggers and Eickhoff (1996) can be used as a technique to consider a range of future possibilities (Spitzer, 2009). Another advantage of the scenario method is that all external factors in relation to the corporation can be considered in extreme scenarios.

Especially the B2G interference factor 'price auditing' can be considered and simulated in extreme scenarios. Thus, strategic decisions for a corporate future can be made (Strolz, 2001; Weber 2005). In the present study, the scenario technique was used to conduct a price audit on an invented customer project. In the simulation, two different pricing strategies with identical product content were tested. The exemplary test was conducted as a single case study. Through the audit simulation, it was possible to compare the economic relative result and the influence of the chosen scenario on the profit margin.

Market Pricing and Cost Pricing Scenario

In a price calculation scheme, different price modules are added to the 'full product price'. Each price module is characterized by the parameters value, quantity and price form. The point is that varying the price form is possible within legislative scope. The use of the legal scope leads to two pricing scenarios that can be introduced. The scenarios are based on the following two price forms: (a) the market price and (b) the cost price. The outcome is a different price for identical product content.

(a) *Market pricing scenario*: Market prices represent common prices on the market and should be mentioned in official corporate price lists. The product price is the sum of market price modules. In an audit the marketability of the market price modules is reviewed. The value of the determined contribution margin and primary costs are not reviewed. This implies that it is the accounting department's responsibility to set the contribution margin percentage. The only prerequisite is that the goods or services can be sold on the market for that price. The value of market prices is not limited by law (Bundesministerium der Justiz Deutschland, 1953a).

(b) *Cost pricing scenario*: The cost prices represent special prices for customized or newly developed products. They are used when customers demand special product abilities or when the market for certain goods is restricted. Under legal aspects, the cost price includes primary costs and a defined profit margin (Reibnitz, 1992). The calculation of a product price on the basis of cost price modules is called cost price scenario. In a price audit, the primary costs are reviewed in terms of adequacy of each calculation position as shown in Table 1. The contribution margin percentage or profit is limited by law and added on the primary costs.

+ Production material costs
+ Production costs
+ Development and design costs
+ Administration costs
+ Distribution costs
= Primary costs
+ Calculated profit
= Cost price

Table 1. Legal definition of a cost price in German law (Bundesministerium der Justiz Deutschland, 1953a)

Pricing Strategies

The examination of the legal framework shows characteristics that make different ways of product pricing possible. These corporate product pricing possibilities mainly create three relevant

types of price audit results. Accordingly, the intended price audit result from the contractor's perspective leads to three different pricing strategies.

For each of the three pricing strategies explained below, the market or the cost price scenario can be applied to calculate a product price.

i) Strategy of price confirmation: The strategy of price confirmation represents a standard product price calculation. The price modules used are only common market prices. In a price audit the aim is to have the offered product price fully confirmed.

ii) Strategy of refunding extra revenues: The strategy of refunding extra revenues implies that prices are calculated with a higher value than legally acceptable. This may happen when risk positions are part of a new price (especially for customized products). In a price audit it is likely that the price is not fully confirmed and any extra revenue gained has to be paid back to the customer. In an audit, this strategy covers the chance that a part of the extra revenue is confirmed.

iii) Strategy of primary costs paid: The strategy of primary costs paid is a corporate approach to get the primary costs fully paid when developing a new product. In other words, this corporate strategy aims at gaining know-how instead of maximizing monetary profit. Cost prices should be stipulated as fixed cost prices calculated by forward costing (Glinder, 2006). In a price audit, only the adequacy of primary costs and profit are reviewed.

4. Applied Method and Model Assumptions

In this research a single case study approach was applied to study the influence of scenarios on the pricing of customized vehicles in the automotive industry when using the strategy of price confirmation. In practice it is common to price an individually equipped vehicle in two ways, namely in a market-based or a cost-based scenario. Figure 1 and Figure 2 show each scenario in detail. The sum of costs per vehicle is identical in both figures. However, the prices are different. In Figure 1, each product category represents a sum of market price modules and the related costs. Under legal aspects, the corporate accountant has different options of allocating single price modules to product categories. That is the reason for the different values of product categories in Figure 1 and 2.

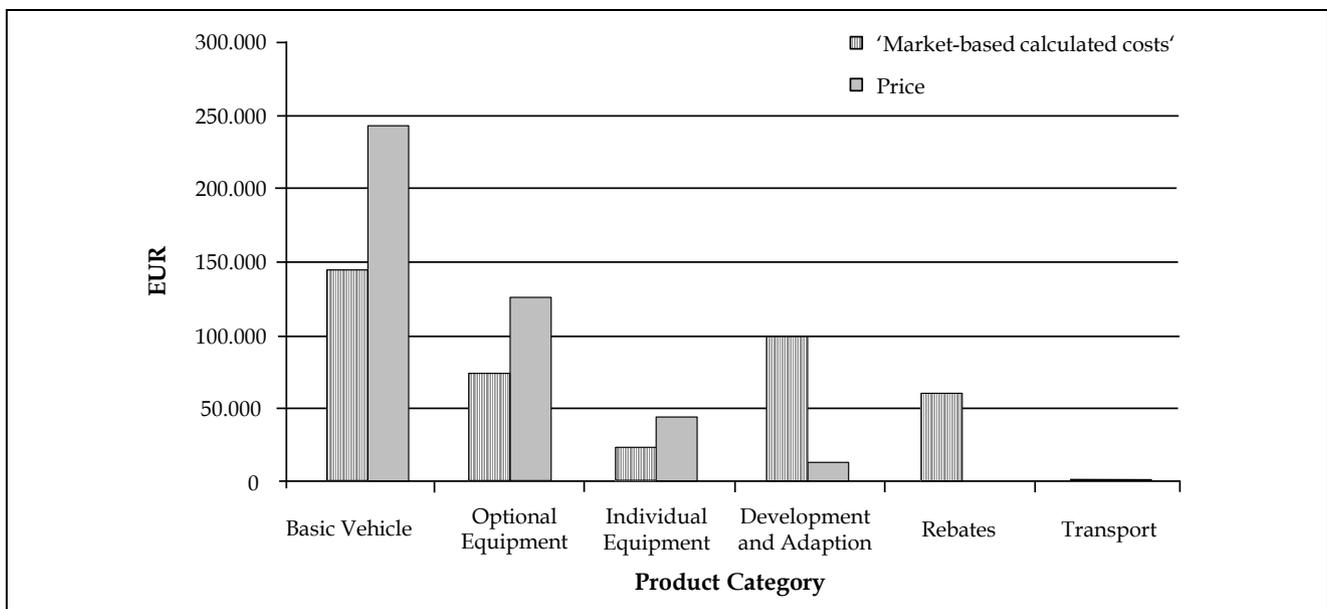


Figure 1. Scenario 1 - 'Market-based product calculation'

Figure 2 shows the cost price based product calculation. Each product category represents a sum of cost price modules and the related costs. In a cost price based product calculation, for instance, the majority of price modules is cost prices and can be declared as individual (special) equipment. But in a market price based product calculation only a minority of price modules can be declared as individual equipment. The reason is that market prices are commonly available. The price auditing simulation was conducted under legal aspects. Market prices, for example, were audited according to §4 of price regulation PR No. 30/53 (Bundesministerium der Justiz Deutschland, 1953a). The audit focuses on the marketability and commercial practicability of prices.

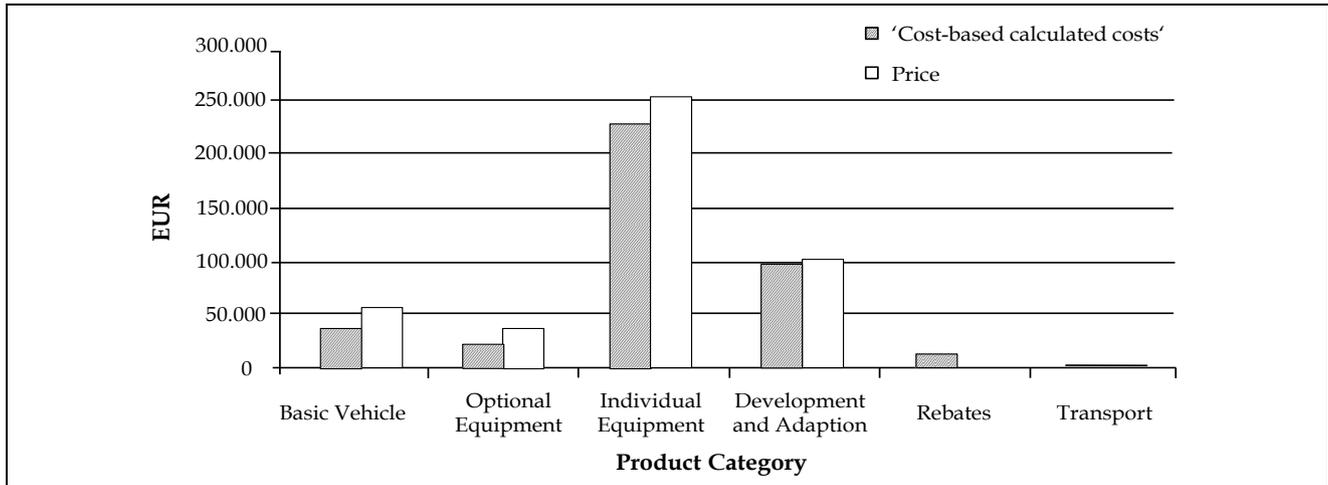


Figure 2. Scenario 2 - 'Cost-based product calculation'

Model assumptions

In a corporate business case, the customer’s needs must be satisfied and the contractor’s economic aims achieved (Lundberg, 1957; Hitt et al. 2010). In B2G, the relevant business processes to reach these goals are procurement, pricing and price auditing. These processes and their interactions can be embedded in a pricing strategy as shown in Figure 3.

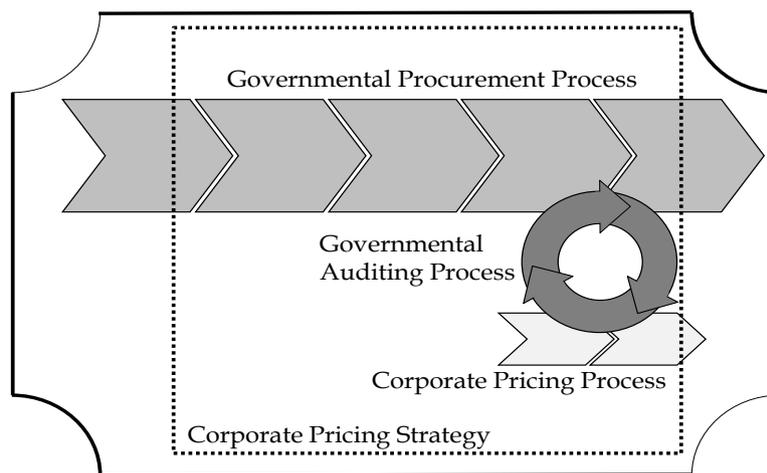


Figure 3. Business processes and their interactions in B2G

The German price law and the procurement system represent a fixed frame on how to price products and audit prices when a contract is awarded. The legislative frame cannot be modified by the contractor.

Figure 4 shows the fixed legal frame as a basis for the corporate product pricing process. When the legal scope is considered in the corporate product pricing process, the result is an optimized, legally compliant product price. Moreover, it should be possible to gain an even better economic result than competitors usually do. The legal scope is interpreted and separated by the author in pricing scenarios and pricing strategies. Each pricing scenario can be applied to different pricing strategies. By simulating a price audit, every pricing scenario can be tested on its legal compliance. The comparison of the audit results shows which scenario and its related price achieves the better economic result.

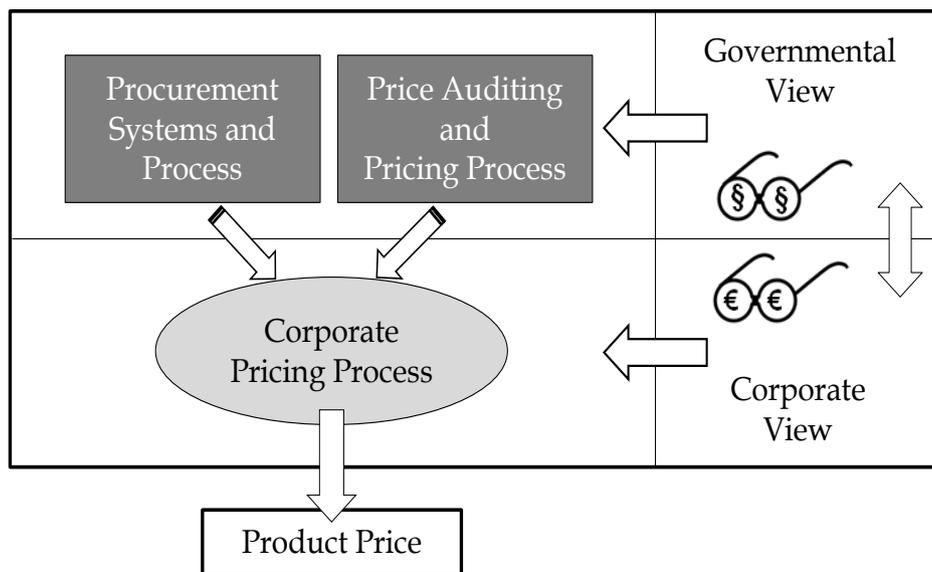


Figure 4. Product price as an output of corporate pricing strategies

5. Results

The result of the audit simulation clearly shows an influence of the scenario on the contribution margin. The contribution margin for each product category is calculated by subtracting the primary costs from the prices (Figure 1 and 2). It was assumed that no price cuts happened.

Figure 5 shows two accumulated contribution margin curves. Each curve represents the sum of contribution margins of all product categories. The market price scenario shows a high contribution margin for the categories 'basic vehicle' and 'optional equipment'. Rebates and costs for development and adaption lower the cumulated contribution margin (considered as negative contribution margin). The cost price scenario shows a low contribution margin for each product category. The total amount is higher than the cumulated margin of the market price scenario because of the proportionally high value of development and adaption efforts. In a cost price scenario the development costs can be considered as a 'price module'. In a market price scenario, this would not be justifiable.

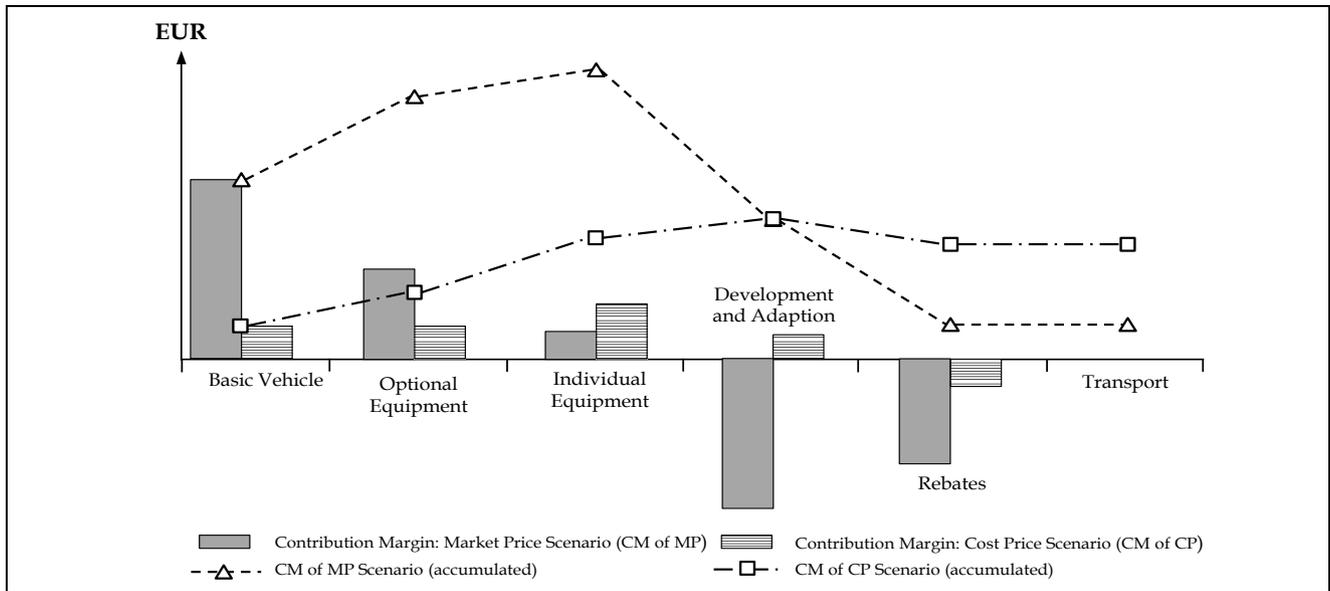


Figure 5. Comparison: contribution margin of the cost price and the market price scenario

Figure 6 shows another possible simulation result. The same scenarios as compared in Figure 5 are now compared in Figure 6 without considering the development and adaption costs. The result is that the market price scenario now shows the higher sum of contribution margin.

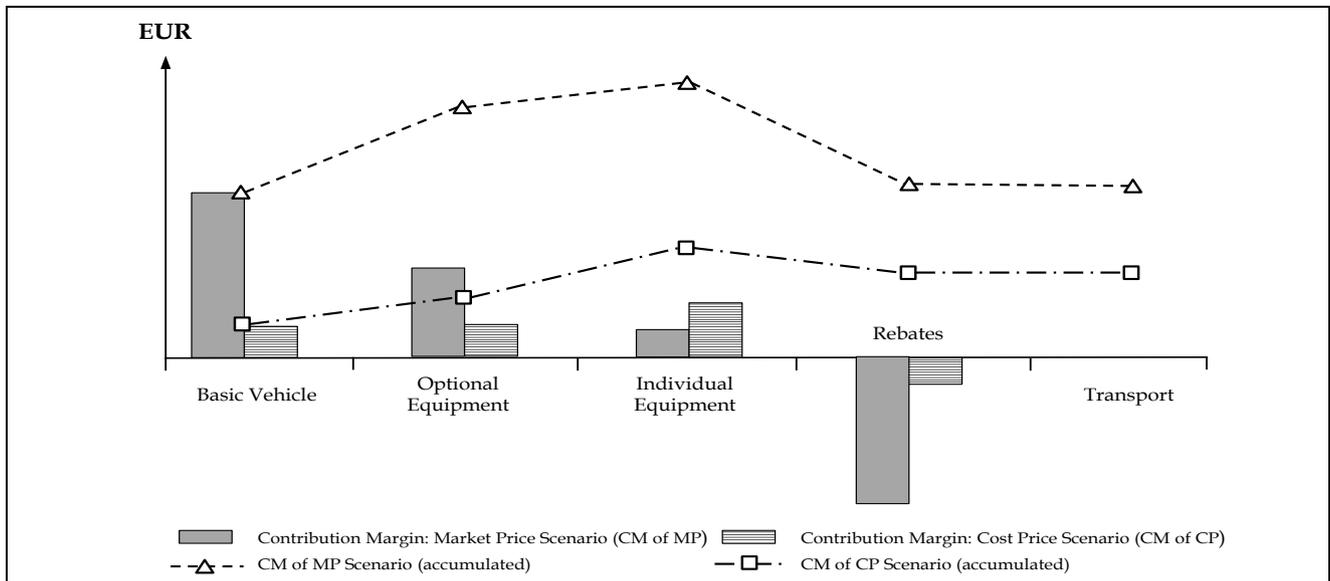


Figure 6. Comparison: contribution margin of the cost price and the market price scenario without development and adaption costs

6. Discussion and Conclusion

In order to develop a standard pricing scheme that optimizes the profit for every product case, the audit simulation results show that it is not possible to create a generally optimized standard price calculation. In fact, the economic result depends on the situational project content and the chosen pricing scenario. The main influence factor that causes different contribution

margins in the market and the cost pricing scenario reported in section 5 is the development and adaptation effort. Other important influence factors could be tooling costs, certification costs and especially the number of sold products. The economic success of a pricing strategy depends on the applied scenario.

	'Market Pricing Scenario'	'Cost Pricing Scenario'
Strategy of price confirmation	+/-	+/-
Strategy of refunding extra revenues	++	-
Strategy of primary costs paid	-	+
From '++ ... strong influence' to '-- ... no influence'		

Table 2. Tendency of profit influence on pricing strategies

Table 2 shows the influence of the profit margin on each pricing strategy in relation to a pricing scenario. It thus displays the preferable pricing scenario for a pricing strategy. The optimum price module combination for a specific customer project can be investigated by comparing scenarios. In Figure 5 the exemplary scenario comparison clearly shows that the price module classification for development costs significantly influences the project profit. Consequently, the corporate focus should be drawn on the most profit-influencing product categories. The scenario comparison opens up the possibility to re-classify certain price modules. This procedure can help to influence and optimize the corporate profit.

As the legislative scope of the German price law allows for different pricing possibilities for enterprises, this study developed three different pricing strategies in order to identify the best option in different market situations. For each strategy, two pricing scenarios have been applied and tested. The study shows that by estimating price audit consequences, unexpected penalties can be avoided and the corporate financial planning reliability becomes more stable. Finally, an 'economically optimized' pricing scenario can be chosen for pricing a real customer project.

7. Limitations and Further Research

This study has several limitations. Firstly, the study focuses on the German price law which is not considered in every international tender. Other internationally relevant price regulations may differ from the German regulations. Secondly, it is to mention that if companies use market price modules only, the 'refunding of extra revenues' strategy could be an option to raise corporate profit margins. It was not part of this study to address this issue as this plan of action could be illegal. But, unquestionably, it is critical and unethical to conduct an obviously wrong price module classification.

The focus of future research should be on a fair business process for both parties, i.e. the contractor and the customer. In that case, corporate responsibility should include economic, political and social aspects (Vogel, 2005; Blowfield and Murray, 2008). One way to implement these ideas could be a further pricing strategy, i.e. the strategy of 'cooperation': All involved entities work together and discuss their intentions. This would mean that the focus lies on consensus-based contract contents under ethical aspects to reach a win-win situation in business relationships.

References

- Abels, M. (2010). Oppenhoff & Partner: *Neue Formen der Zusammenarbeit*. <http://www.oppenhoff.eu>, 17.02.2012.
- Altmann, C. (1960). *Das Preisprüferecht (Feststellungsrecht) des öffentlichen Auftraggebers*. 1st ed., Anton Hain KG Verlag, Meisenheim.
- Ax, T., Schneider, M., and Siewert, J. (2010). *Auftragsvergabe*. 2nd ed. Erich Schmidt Verlag, Berlin.
- Berjasevic, N. (2012). *Wucherähnliche Rechtsgeschäfte*. 1st ed., Lit. Verlag, Münster.
- Birgel, K. J. (1994). *Öffentliches Auftragswesen und Preisrecht*. 1st ed., Rudolf Haufe Verlag, Freiburg.
- Blowfield, M., Murray, A. (2008). *Corporate Responsibility - A Critical Introduction*. 1st ed., University Press, Oxford.
- Bundesministerium der Justiz Deutschland (1953a). *Leitsätze für die Preisermittlung auf Grund von Selbstkosten (LSP)*. <http://www.gesetze-im-internet.de/preisls/>, 10.02.2012.
- Bundesministerium der Justiz Deutschland (1953b). *Verordnung PR Nr 30/53 über die Preise bei öffentlichen Aufträgen*. http://www.gesetze-im-internet.de/preisv_30_53/, 10.02.2012.
- Bundesamt für Wehrtechnik und Beschaffung (2010). *The Bundeswehr as a Customer*. <http://www.bwb.org>, 24.02.2012.
- Bundesamt für Wehrtechnik und Beschaffung (2011). *Basics of Procurement*. <http://www.bwb.org>, 20.02.2012.
- Bundesministerium für Wirtschaft und Technologie (2008). *Kostenmessung der Prozesse*. <http://www.bmwi.de>, 20.02.2012.
- Chorus, M. (1988). *Die Preisrechtlichen Vorschriften für Öffentliche Aufträge*. Diploma thesis, Trier.
- Däumler, K. D., Grabe, J. (1984). *Kalkulationsvorschriften bei öffentlichen Aufträgen*. 1st ed., Neue Wirtschafts-Briefe Verlag, Herne.
- Ebisch, H., Gottschalk, J., and Hoffjan, A. (2010). *Preise und Preisprüfungen bei öffentlichen Aufträgen*. 8th ed., Franz Vahlen Verlag, München.
- Eggers, B., Eickhoff, M. (1992). *Instrumente des Strategischen Controlling*. 1st ed., Gabler Verlag, Wiesbaden.
- Engel, C. (1983). *Möglichkeiten und Grenzen der Organisation von Preisprüfungen bei Öffentlichen Aufträgen*. Doctoral dissertation, Kiel.
- Finanzbehörde Freie und Hansestadt Hamburg (2010). *Leitfaden für die Vergabe von Lieferungen und Leistungen*. Eigenverlag.
- Glinger, P. (2006). *Grundschemata der Kalkulation von Selbstkostenpreisen*. *Controller Magazin*, 31(1), pp. 30-39.
- Hertel, K. A. (1998). *Die Preisbildung und das Preisprüferecht, Schriften zum öffentlichen Auftragswesen (Vol. 6)*, 2nd ed., Jank Verlag, Hamburg.
- Hitt, M., Ireland, D., and Hoskisson R. (2010). *Strategic Management: Competitiveness and Globalization*. 1st ed., Cengage Learning, Mason.
- Jayaprakash, R. (2004). *Cost Accounting & Control Systems*. 1st ed., S.B. Nangia, New Delhi.
- Jost, D., Knörle, K., and Mayerhoffer, S. (2011). *Die Öffentliche Hand als Kunde*. 2nd ed., Eigenverlag Industrie und Handelskammer, Stuttgart.
- Keller, E., Prestel, P. (2010). *IT-Recht-Kanzlei 2010. Kleiner Exkurs: über das öffentliche Preisrecht*. <http://www.it-recht-kanzlei.de>, 17.02.2012.
- Lindner, A. (2003). *Die Grenzen der Preisgestaltungsfreiheit marktbeherrschender Unternehmen*. Diploma thesis, Salzburg.
- Lundberg, E. (1957). *Business Cycles and Economic Policy*. 1st ed., University Press, Harvard.

- Michaelis, H., Rhösa C., and Greiffenhagen H. (2011). Preisbildung bei öffentlichen Aufträgen. (Vol. 97), R.v.Decker Verlag, Stuttgart.
- Müller, R. (1993). Preisgestaltung bei öffentlichen Aufträgen. 3rd ed., Neue Darmstädter Verlagsanstalt, Rhein-Breitbach.
- Noelle, T., Rogmans, J. (2002). Öffentliches Auftragswesen. 3rd ed., Erich Schmidt Verlag, Berlin.
- Punch, M. (1996). Dirty Business - Exploring corporate Misconduct, Analysis and Cases. 1st ed., Sage Publications, London.
- Pünder, H., Schellenberg, M. (2011). Vergaberecht. 1st ed. Nomos Verlag, Baden-Baden.
- Reibnitz, U. (1992). Szenario-Technik. 2nd ed., Gabler Verlag, Wiesbaden.
- Rey, P. (2003). Toward a Theory of Competition Policy. Economic Society Monographs, (Vol. I/3). Eight World Congress, Cambridge.
- Singer, M. (2011). Neue Regeln - neues Glück: Was es bei der Bewerbung für öffentliche Aufträge zu beachten gilt. Research & Results, Issue 1, p. 40.
- Spitzer, J. (2009). Allgemeine Energiewirtschaftslehre. 4th ed., Graz University of Technology, Graz.
- Strolz, R. (2001). Die Szenario-Technik für organisatorische Entscheidungen. Diploma thesis, Dornbirn.
- Submissions Anzeiger (2006). Checkliste für die Angebotsabgabe bei öffentlichen Ausschreibungen. <http://www.submission.de>, 23.02.2012.
- Vogel, D. (2005). The Market for Virtue - The Potential and Limits of Corporate Social Responsibility. 1st ed., Brookings, Washington.
- Weber, J. (2005). Unternehmenssteuerung mit Szenarien und Simulationen. 1st ed., Wiley-VCH Verlag, Weinheim.
-