

# Transfer Pricing

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## **Transfer Pricing**

**Carsten Rohde & Christian Plesner Rossing**

### **Introduction**

#### *Management issues*

When an enterprise is divided into smaller organizational units, each with its own results accountability, the question arises how to manage and measure the efficiency and profitability of such units. A task which is complicated when organizational units in the same enterprise or enterprise group trade internally as the units have to decide what prices should be paid for such inter-unit transfers. One important challenge is to uncover the consequences that different transfer prices have on the willingness in the organizational units to coordinate activities and trade internally. At the same time the determination of transfer price will affect the size of the profit or loss in the organizational units and thus have an impact on the evaluation of managers' performance. In some instances the determination of transfer prices may lead to a disagreement between coordination of the organizational units and overall profitability of the enterprise on the one hand and measurement of profitability and managers' performance in the units on the other. This chapter addresses these issues.

In cases where trading takes place across national borders there will be the added factor that the unit's choice of transfer prices can be influenced by or directly subject to both countries' tax rules. As inter-company cross-border trading within multinationals has increased continuously over the last decades and currently accounts for 60% of global trading<sup>1</sup>, the possibility to grow firm-wide after tax performance through the use of international transfer pricing mechanisms has increased. As a result, tax authorities globally have increased their focus on whether international transfer prices are used to shift income between corporate entities through exploitation of tax rate differentials. This said, recent studies<sup>2</sup> indicate that multinationals are eager to comply with current regulations while this is by far no easy task in practice.

This chapter focuses on the strengths and weaknesses of using different transfer prices for coordination, resource allocation, and performance measurement and management. In addition it will focus on the strengths and weaknesses of the different principles that can be used when companies trade across borders and thus need to be in compliance with tax rules.

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<sup>1</sup> UNCTAD, 2003.

<sup>2</sup> Borkowski (2001, 2008, 2010); Cools et al. (2008); Cools & Slagmülder (2009); Ernst & Young (2007); Deloitte (2007); Plesner Rossing & Rohde (2010).

### Transfer Pricing

#### *What is transfer pricing?*

The concept of transfer pricing covers prices (monetary value) of goods, services, and intangibles transferred between internally related organizational units in the same organization. McAulay & Tomkins (1992) list four sets of arguments for why transfer pricing in an organization is necessary:

- Functional necessity arguments
- Economic arguments
- Organizational arguments
- Strategic arguments

The *functional necessity argument* consists of two elements. The first element is a consequence of the divisionalization of companies. In cases where internal trade between divisions takes place and there is a wish to measure the profitability of each division, there is a need for establishing transfer prices. Secondly when goods and services are traded across borders between divisions in different countries, transfer prices must be in compliance with tax rules and other regulations.

The *economic arguments* focus on how transfer prices affect efficient resource allocation among divisions. It is a known fact that poorly designed transfer pricing systems may lead to sub-optimal allocation of resources. If for example transfer prices are set too low in a selling division it may lead to overconsumption of resources in the buying division. In such a case it may improve the profitability of the buying division and lower the profitability of the selling division. However, it is not only a matter of how profitability is shared between divisions. Sometimes the choice of transfer prices can lead to economic sub-optimization for the organization at large.

The *organizational arguments* involve finding the balance between organizational differentiation on the one hand and integration of the different organizational units on the other<sup>3</sup>. Organizational differentiation is partly about how the organization is segmented into smaller organizational units. But at the same time it has to do with the autonomy of organizations to develop their own values and attitudes as well as their freedom to independently make decisions. In both cases the differentiation stems from the assumption that it will increase motivation and efficiency. Conversely, integration and coordination of the differentiated unit activities are important in cases where they are interdependent in the achievement of particular goals and objectives. In such contexts transfer prices are important in that they provide opportunities for economic measurement of organizational unit performance but also affect how the organizational units are measured economically. Furthermore, the choice of transfer pricing method affects the willingness to coordinate and integrate various departments' activities in cases where it could benefit the achievement of the overall targets and goals of the organization.

*Strategic arguments* are related to how strategy and transfer pricing mutually affect each other. Fundamentally, transfer pricing is considered to be a result of a business strategy that requires a decentralized organizational structure, e.g. a profit center structure<sup>4</sup>. An alternative to this one-directional perspective is to consider strategy and transfer pricing as a reciprocal relation in which transfer pricing is used as a mechanism for conveying strategy, but also a mechanism to indicate to central management the

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<sup>3</sup> See also Watson & Baumler, 1975.

<sup>4</sup> See also Chandler 1962

need for strategic re-appraisal or change<sup>5</sup>. In the following section on different transfer prices we will discuss the linkage between the four arguments and different transfer pricing methods.

### The Economics of Transfer Pricing

#### *Perfect and imperfect information*

Any evaluation of the ability of different transfer prices to ensure integration, and hence their ability to allocate resources efficiently between organizational units in the same company, must obviously take into account the knowledge the company possesses. This applies to knowledge about the market including the intensity of competition with the products and services that it supplies. But it also applies to knowledge of the resource markets which the company uses in terms of suppliers, employees and funding sources. Finally, government rules and regulations play a role in relation to how transfer prices can ensure optimal resource allocation and economic coordination.

Let us start from the situation where the company has full knowledge of the above conditions. This occurs in principle only in the case of a market form that is characterized by perfect competition. This market form requires full transparency both in the supply market and resource market, which will only happen where products and resources are characterized by high homogeneity and where there appears to be no preferences between different customers. Furthermore, it is assumed that products and services can effectively be switched between companies without transaction costs. In this case, the market price of a product will be the same for all products, and the company will, in principle, act as a volume adjuster. There is therefore no coordination problem between organizational units as the market mechanism will ensure coordination through the market price.

It also means that in principle it makes no difference to the company whether it acts as one organizational unit or divided into smaller organizational units since neither economic measurement problems nor integration problems will occur when all transactions are conducted at transparent market prices. Perfect competition will never occur in practice in its pure form. In contrast, variations may occur that are characterized by varying degrees of transparency in resource markets, as there may be asymmetric information flows between organizational units in the same company. Let us illustrate this by an example.

**Example:** Let us assume that our manufacturing company from the outset is organized as one organizational unit. As can be seen in the first two columns in table 1, it possesses knowledge about the quantity of products that customers are willing to buy at different prices. At the same time the company knows the variable costs to be 4 EUR per unit at any level of activity and that the capacity costs to run the company are 16,000,000 EUR. Finally we know that the company does not have any capacity constraints at the moment. Based on this information, the company would be able to set the price in the market that would optimize the contribution margin and thus also the company's profit. In the example it would be the price of 8 EUR per unit that would maximize the contribution margin at 20,000,000 EUR and generate a profit of 4,000,000 EUR.

Let us then assume that the board of directors decides to divide the company up into two divisions, a production division P, which produces and sells products to a selling division S, which sells the product in the market. Let us also assume that division P has the freedom to set the transfer price and that division S is able to estimate the demand for the product at different prices.

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<sup>5</sup> See also Perera et al., 2003.

If the transfer price for division P is set to 8 EUR per unit, and that represents the knowledge that division S has of the cost function in P (asymmetric information), then S would set the price at 18 or 20 EUR as that is the price that maximizes the profitability in S at 12,000,000 EUR. It would leave a profit of either 4,800,000 or 4,000,000 EUR in division P, and the total contribution margin for the company would be 16,800,000 or 16,000,000 EUR. Setting the two divisions up as profit centers in this situation would lead to a sub-optimization of the company's profit.

Let us now assume that division P opens its books, which means that division S now knows that P has a variable cost function of 4 EUR per unit and that the additional 4 EUR is an internal profit per unit that they charge to cover their capacity costs. In this situation division S would be able to maximize the profitability for the company, which would be a market price at 8 EUR, which would maximize the company contribution margin of 20.000.000 EUR. However, that would leave all the profit in division P while there would be 0 in division S. If the two divisions are measured and rewarded separately on their ability to generate profit division, S would probably not be willing to set the price at 8 EUR which is the optimal price for the company. However, any other selected price in the market would lead to sub-optimization for the company.

**Table 1: Consequences of Different Transfer Prices on Profitability Management in Divisions**

	A	B	C	D	E	F	G	H
			Company		Sales division		Production division	
			CM on VC at 4 EUR/unit	CM on VC at 8 EUR/unit	CM on VC at 8 EUR/unit	CM on VC at 4 EUR/unit	CM on VC at 4 EUR/unit	CM on VC at 4 EUR/unit
	Unit price	Units (in 1000)	per unit	total (in 1000)	per unit	total (in 1000)	per unit	total (in 1000)
4	20	1000	16	16000	12	12000	4	4000
5	18	1200	14	16800	10	12000	4	4800
6	15	1600	11	17600	7	11200	4	6400
7	12	2100	8	16800	4	8400	4	8400
8	10	3000	6	18000	2	6000	4	12000
9	8	5000	4	20000	0	0	4	20000
10	<b>Capacity Costs</b>			<b>16000</b>		<b>6000</b>		<b>10000</b>

The example also shows that organizational design and performance measurement in some instances conflict with optimal resource allocation and usage. In this example the major problems seem to be that the manufacturing division is treated as a profit center even if it does not sell to its external market. But even in the case where the manufacturing division is treated as a cost center there would be a need for

coordination of the sales activity and the production and procurement activity in the company as if it was one organizational unit. Let us take a closer look at different transfer prices.

### *Opportunity costs and marginal costs*

Opportunity costs are the economic value forgone by not selecting the best economic alternative for the company. Seen from a theoretical point of view there is no doubt that the use of opportunity costs is the transfer pricing method that leads to the best resource allocation between different divisions and thus maximize the company's overall profit. However, we need to determine the opportunity costs in different circumstances and the informational prerequisites for using the method. The following example shows how opportunity costs work.

**Example:** As shown in figure 1 the company is organized into two profit centers A and B, which both produce and sell their product to the market. Division A manufactures 3 products, Q, R and P, which it sells to the market at different prices. The 3 products have the same marginal costs of 1,200, and they also apply equal loads on the production capacity. Q can also be sold to division B, which uses Q in combination with an X to make a QX, which it sells to the market. Division B can also buy Q from an external vendor at market price.

Let us first assume that division A has idle capacity. In that case it can produce and sell all the products it wants to both external and internal customers. The opportunity costs in that situation are the marginal costs of Q at 1,200 in division S, which in combination with the costs of X in division B makes the total marginal costs at 1,300. At a market price of 2,000, division B should sell as much as it can to the market (see also Table 2).

Let us then assume that division A has capacity constraints. In that case it would prioritize its use of capacity according to the product's profitability per capacity unit of the scarce capacity. The order would then be to select P, then R, and finally Q. The transfer price to division B would then be the market price of 1,500, which is the price that makes A indifferent whether it sells to external or internal customers. If the capacity constraints of division A concern product R, then the alternative to sell product Q internally would be to sell product R in the market at 1,600. In that case the transfer price would be 1,600, while it would be better for division B to buy its Qs from an external vendor at 1,500. In case of a change in the market price of R from 1,600 to for example 1,400, the opportunity cost of selling internally rather than externally would be 1,400, which is the value forgone by not selling the least profitable product alternative in the market.

Figure 1: Illustration of the Use of Opportunity Costs

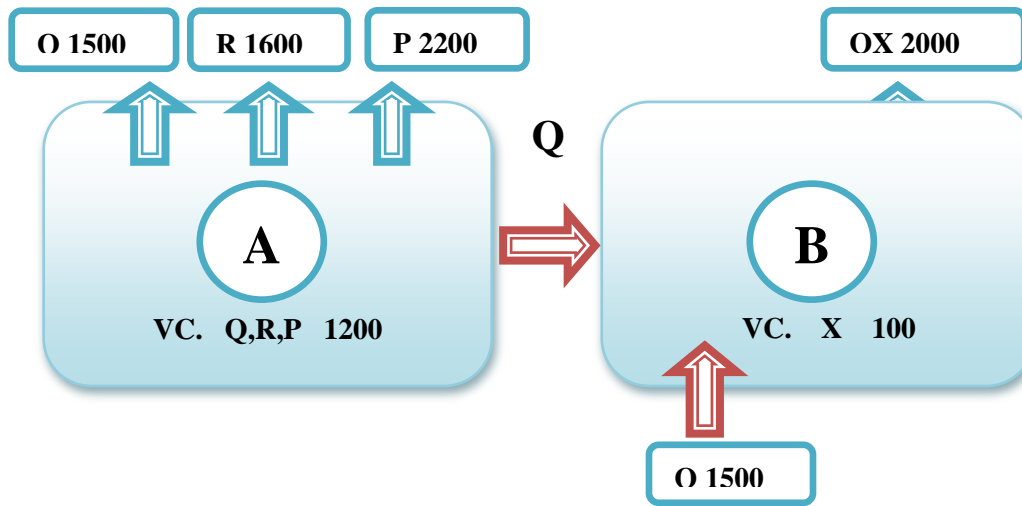


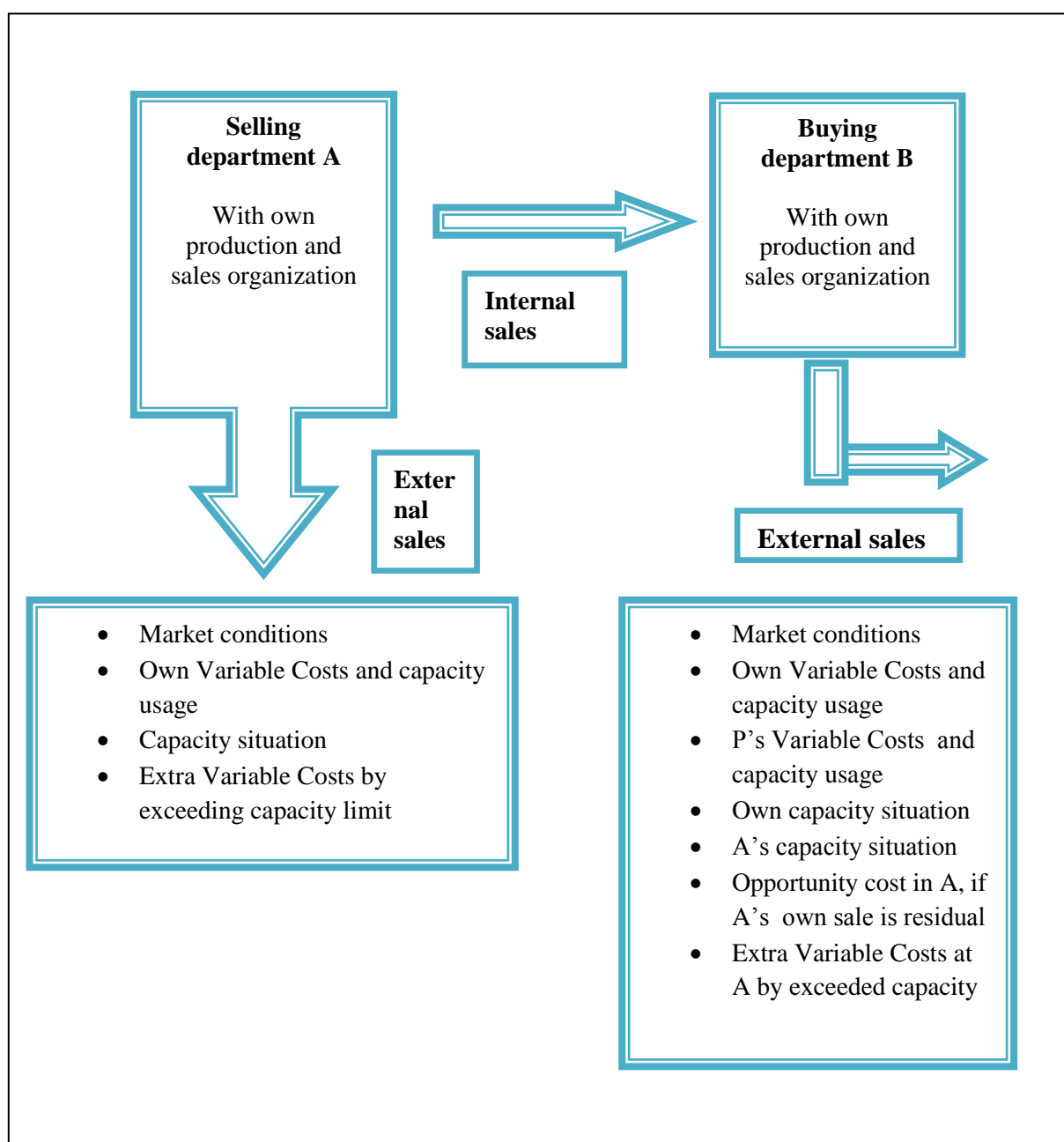
Table 2 Transfer pricing under idle and scarce capacity

Example 10-2.xlsx - Microsoft Excel												
Filer Startside Indsæt Sidelayout Formler Data Gennemse Vis												
A1												
	A	B	C	D	E	F	G	H	I	J	K	
1												
2					Company A	Transfer Price			Company B		Total Costs	
3												
4					Idle Capacity in A:	Item Q			Item X		Item QX	
5					Variable Costs (Opportunity Costs)	1.200	1.200		100		1.300	
6												
7					Scarce Capacity in A:							
8					Variable Costs Q	1.200						
9					Lost Contribution margin for Q *	300	1.500		100		1.600	
10					Lost Contribution margin for R**	400	1.600		100		1.700	
11					Lost Contribution margin for R***	200	1.400		100		1.500	
12												
13					*If Q sold to the external market is the least profitable use of the scarce capacity							
14					**If R sold to the market is the least profitable use of the scarce capacity							
15					*** If the market price on R changes to 1400 then the opportunity cost changes							
16												
17												
18												
19												
20												



One challenge in practical settings is that the requirements for information available are quite demanding and often unrealistic. As illustrated in Figure 2, the internal selling division S and the internal buying division B need to know a) their market conditions, b) their marginal cost (variable costs) at idle capacity as well as in situations where they exceed capacity constraints, c) and their own capacity situation. In addition, both divisions need to know the capacity situation of the other division. Finally division B needs to know the opportunity costs of S. In cases where these requirements are fulfilled to a certain extent, the method would at the same time ensure optimal integration and profitability in the company. In cases where the information requirements are fulfilled, it is obvious that opportunity costs are the transfer pricing method that best ensures optimal resource allocation among divisions and maximizes the company's profit. It is therefore important for companies that use other methods to evaluate how close the method in use is to being a good approximation of opportunity cost reasoning.

**Figure 2: Information Needed in Divisions to Avoid Sub Optimization**



### *Competitive market prices for transferred products and services*

As noted earlier, the use of market prices would ensure optimal resource allocation between divisions inside as well as outside the company in cases where the market is characterized by perfect competition. In that case the selling division can sell as much as it wants to the market at market price, and the buying division can buy as much as it wants at market price. The market price would then represent the opportunity cost for the selling and the buying divisions. In that case the divisions can work independently of each other as the market mechanism ensures optimal resource allocation.

The challenge arises especially in cases where the characteristics of the product sold internally make it substantially different from other products in the market. In such cases the possibility of establishing a market price depends on how large a quantity of the internally selling division's products is sold to the external market. If most of the products are sold to the external market, it would be realistic to establish a market price and use that as the transfer price for the internal sale. Conversely, if the external sales are residual, then it would be more difficult or even impossible to establish a market price for the products. In that case the market price would often not be a good approximation of the opportunity costs and thus not a good mechanism for coordinating and managing profitability.

In practice, variations of market prices can occur. This can be the situation where extra features in the form of functionality, quality, timely delivery or service have been added to the product. In such cases the extra features could be priced to reflect a market price of these features. But it could also be a discount related to the fact that for example transaction cost and/or risk has been reduced as a consequence of selling internally instead of externally. However, it is important to note that market prices only ensures integrated economic management of divisions in cases where they are a good approximation of opportunity costs.

### *No market for transferred products and services*

There are a number of situations where there is no external market for the intermediate product or service which means it is not possible to establish a market price. One consequence of that is that the internal selling division must be treated as a cost center, which in turn means that the transfer price needs to be a cost based transfer price. One of the costing methods that can be considered as a transfer price is *variable cost* which was defined in chapter 3 as the cost of the resources consumed by producing an additional unit of the product or service. Referring to the example in table 1 above it is obvious that the use of variable cost as the transfer price would not lead to full recovery of the costs of the internal selling department as there will still be remaining, unrecovered capacity costs in that division, in the example 10,000,000 EUR. However, one of the advantages of using a properly designed variable costing system is that at least in the short term, variable costs would be a good proxy for the opportunity costs of producing the product. It would then be left to the internal buying department to decide which price/amount combination maximizes the contribution margin in the market.

However, there are some design choices to be made when designing the transfer pricing system. First of all it should be decided if the system should be designed as a standard variable costing system ex ante, or it should be based on a measurement of actual, consumed resources ex post. The advantage of using a standard costing system is that the cost calculation is fixed for a defined period of time. This means that deviations in amounts and/or prices for material and salaries would be accounted for in the internal selling division as deviations from the expected efficiency defined in the standard calculation. The internal buying company would, on the other hand, only be charged for the expected costs, whereas the focus here would be on their ability to create profit on the part of the value chain that they are responsible for. Using actual variable costs as an alternative would pass inefficiency on to the internal buying division. This would normally lead to fluctuating transfer prices over time, while price-setting in the market would not

be an easy task in the buying division. Another consequence of using actual variable costs could be that it would be more difficult to measure efficiency in both the internal selling division and the internal buying division.

Another design criterion relates to which costs to regard as variable costs and which to regard as capacity costs. Usually, this would present no problems with respect to direct material and salary costs, as in most cases they would be proportional to the number of produced units. However, the discussion whether or to what extent waste, idle capacity, cost of overtime, batch cost and indirect production costs (IPOs) should be considered variable costs needs to be taken into account when designing the costing system. Seen from an organizational point of view, the internal selling division could have an interest in passing as many costs as possible on to the buying division, as fewer costs will remain uncovered in the selling division. On the other hand, the internal buying division would at the same time have an interest in getting the products and services at low variable costs as that would leave room for increasing their own profitability. However, the most important factor is that the method used is transparent as a prerequisite for informed decision-making and performance control.

Rather than using variable costs, some companies would prefer to use a full costing system for transfer pricing. Looking back on the example in Table 1, the internal selling division could have an interest in getting the capacity costs recovered. This is no problem if the system is based on actual costs, as it is very easy to divide the total capacity costs by the actual number produced. If, for example, in a certain period we have transferred 1,000,000 units, and the amount of capacity costs are 10,000,000 EUR, the average capacity costs per unit would be 10 EUR. Added to the actual variable cost per unit at e.g. 4 EUR per unit, this would give an average full cost of 14 EUR per unit. This would leave the internal selling division with a total profit of 0 EUR. However, this situation is characterized by full knowledge as it is carried out ex post, and therefore it is less relevant as a basis for decision-making. The interesting focus here would be on the relationship between sales prices and amounts on the one side and the cost function on the other that should be uncovered as the basis for decision-making ex ante. One of the challenges would be to express the capacity costs as a function of the number of units produced and sold, as it does not vary in proportion to that. In the simple example shown in 1, the capacity costs could vary between 2 EUR and 10 EUR per unit depending on the amount of products it has been decided to produce and sell. In that situation the average cost function is not a good approximation of opportunity costs and thus of limited or no relevance to decision-making.

In situations where companies are able to define their practical capacity, this can be used as a basis for calculating the estimated capacity costs per capacity unit. By doing so, the average cost per product per period could be calculated as a basis for comparing changes in the average costs over time. However, used as a basis for transfer pricing it would still, in situations where deviations occur in the expected amounts and/or expected capacity costs, leave the costs in the internal selling division either under- or over-covered.

### *Negotiated prices*

In the absence of perfect competitive markets, negotiation can be a solution to setting the prices of internal transfers. One prerequisite for the use of negotiation is of course that the internal buying and selling divisions have the freedom to buy and sell internally as well as to set the prices for the transfers.

In situations similar products exist in the market, the market will set a range for how much the price can vary subject to negotiation. In many cases this leads to prices that may be a good proxy for the opportunity costs. On the other hand, in situations where the product differs substantially from products in the market, negotiation skills and power relations between the negotiators and their divisions will play a more important role for the outcome of the negotiations. That will sometimes lead to transfer prices that are not in accordance with the opportunity costs and thus to sub-optimization of the overall profitability of

the company. At the same time this may cause noise in cases where divisional profit is used as a measure of efficiency. However, this problem may to some extent be solved by distinguishing between the profitability of internal sales and the profitability of sales to external customers.

One advantage of using negotiation is that it gives managers the freedom to make decisions and act the way they find is the best way to manage the company. At the same time it trains managers in how to negotiate and serves as an indication to top management of who are the most skilled negotiators. One of the disadvantages of using negotiated prices is of course that in many situations it leads to disputes and conflicts among the negotiators on what the transfer prices should be. It is therefore in many cases considered as a very time consuming method.

### *Choice of transfer pricing method*

It is important to note that from a financial management point of view the aim should be to use a method that serves as a good proxy for opportunity costs. However, organizational events may sometimes play a more important role in the organization, which means that other methods such as e.g. negotiated prices will be preferred as transfer pricing methods. Table 3 contains a summary of some of the advantages and disadvantages of using different transfer pricing methods.

**Table 3: Advantages and Disadvantages of Transfer Pricing Methods**

Transfer Prices	Advantages	Disadvantages
Opportunity costs	<ul style="list-style-type: none"><li>- Theoretically correct</li><li>- No suboptimization</li></ul>	<ul style="list-style-type: none"><li>- Difficult to use in practice</li><li>- Vary over time</li></ul>
Market prices	<ul style="list-style-type: none"><li>- Objective in perfect markets</li></ul>	<ul style="list-style-type: none"><li>- Difficult to use for differentiated products</li></ul>
Variable costs	<ul style="list-style-type: none"><li>- The buying division gets the opportunity to maximize profitability</li></ul>	<ul style="list-style-type: none"><li>- No coverage of capacity costs in the internal selling division</li></ul>
Full costs	<ul style="list-style-type: none"><li>- All costs covered with the use of actual full costs</li></ul>	<ul style="list-style-type: none"><li>- Possible export of inefficiencies to the internal buying division</li><li>- Average costs per unit vary with the number produced</li></ul>
Negotiated	<ul style="list-style-type: none"><li>- Full autonomy to buy and sell</li><li>- Training of managers' negotiation skills</li><li>- Information to top management about which business unit managers are the most skilled negotiators</li></ul>	<ul style="list-style-type: none"><li>- Disputes and conflicts on transfer prices between divisions</li><li>- Bargaining power affects the transfer price and hence the performance evaluation of business managers</li><li>- Time consuming</li><li>- Risk for disharmony with opportunity costs</li></ul>

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## International Transfer Pricing<sup>6</sup>

### Introduction

In order to prevent multinationals from using international transfer prices to allocate profits to low-tax jurisdictions as well as to guide tax-compliant multinationals towards acceptable behavior, most countries worldwide have established rules and guidelines on how international transfer prices can be determined. Specifically, these rules and guidelines explicate a variety of factors and contextual circumstances that should be taken into consideration when a multinational determines international transfer prices for its inter-company transfers. Some differences in national transfer pricing regulations remain<sup>7</sup>. However, in general most transfer pricing tax regulation follows a number of fundamental requirements and principles, including the so called arm's-length principle (see below), which must be respected by a multinational.

### The arm's-length principle

The basic idea in global transfer pricing regulation is that the pricing of cross-border inter-company transfers should respect the arm's-length principle. The arm's-length principle entails that when multinationals price inter-company cross-border transfers, they should set a price that equals the price that independent companies would have reached *for a similar transfer under similar conditions*. Hence, the arm's-length principle entails that business units of a multinational should be treated as separate independent entities operating on market terms instead of inseparable entities of a unified enterprise. One of the significant implications of this is that when evaluating transfer prices of a multinationals' business units, tax authorities will tend to consider all business units as profit centers that are expected to earn a market equivalent profit. The argument is that when transactions take place between independent parties, none of the parties will accept a price that makes the transfer non-profitable.

The arm's-length principle and its underlying assumptions are crucial to understanding the fundamentals of how to determine and document tax-compliant international transfer prices. The application of the arm's-length principle is generally based on *a comparison of the conditions in an inter-company transaction with the conditions of a transaction between independent parties*. Specifically, as a guide for applying the arm's-length principle on inter-company transfers, normally *five different comparability factors* need to be examined before tax-compliant transfer prices (and profits) can be determined:

- Characteristics of the product being transferred
- Examination of the functions, assets and risks of the parties involved in the transfer
- The contractual terms of the transfer
- The economic circumstances of the transfer
- The business strategy of the multinational

These factors will all be described and examined further in the following sections.

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<sup>6</sup> This section on international transfer pricing is based on the Danish Tax Authorities' documentation guideline for transfer pricing which follows the principles of the OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations.

<sup>7</sup> See for example Cools and Emmanuel (2007) for a comparative study.

### ***Characteristics of the product being transferred***

An obvious approach to setting the transfer price of a product would be to look for the price of a similar product being transferred between independent companies in the open market, i.e. a market price. This could be a transfer of a similar product either between the multinational and an external (independent) company or between two independent companies. In an open market, differences in product characteristics are often a significant reason for price differentials. In order to test if the price of a product transferred between independent companies can be used as a proxy for the transfer price for the product transferred within the multinational, *product characteristics* must be evaluated. In practice such an evaluation will often include:

- the quality of the product
- the physical features of the product
- the reliability of the product
- the availability of the product
- whether the product is a branded good

**Example:** Take the smart phone market as a practical example: market prices of smart phones differ significantly – why? One reason is that some smart phones have very unique functions such as voice call, MP3, camera/video functions, and application services. These product characteristics add to the value of the product from the consumer perspective and hence the market price of the product compared to a basic smart or cell phone. Another reason has to do with the fact that certain smart phones entail enhanced product quality as well as product reliability, which is an additional factor for why its market price is higher compared to more unstable smart phones. Furthermore, some smart phones have significant brands attached to them (e.g. the iPhone 4), adding to the smart phone's overall value and hence its market price compared to a standard unbranded smart or cell phone. With regards to brand products, it is generally difficult to separate the brand value from the price of the actual product. Consequently, product and price comparables for brand products are seldom available.

Based on the above, the fundamental question to be asked with regards to this comparability factor is whether the characteristics of the product being transferred within the multinational are comparable to the characteristics of the product being transferred between independent parties. Clearly this will be based on a subjective evaluation by the multinational, and hence no exact rule applies to this task. The important exercise in this connection is to ensure that a thorough analysis is carried out with regards to whether potential similar products entail the product characteristics that make the products' price in the open market suitable for comparability when determining the price of the inter-company transfer. As a general rule, the larger the number of differences in product characteristics, the more unlikely that the market price of the product can be used as a proxy for determining the price of the inter-company transfer.

### ***Examination of the function, assets and risks of the parties involved in the transfer***

The second comparability factor that must be performed is a so-called “functional analysis”. A functional analysis is a description of the functions carried out by the parties involved in the inter-company transaction, the assets used by these parties, and the risk assumed by each party. Hence, the functional analysis can be seen as a *value chain analysis* that determines how each of the parties contributes to the value creation of a product or service and hence how profit should be allocated between the parties through transfer pricing. The underlying reasoning for why a functional analysis is required by tax authorities is that the more functions, risks, and assets that are placed with one of the parties in the transaction, the more value is created by that party. This value creation should therefore be reflected in



the way income is allocated between the inter-company parties and thus the way the transfer price is determined between them. Hence, when independent parties engage in transfers of a similar product, potential differences in the functions, risks and assets undertaken by both parties need to be examined before deciding if the price of the independent transaction can serve as a proxy for an arm's-length-based transfer price.

In the following, we look more closely at the important drivers of a value chain analysis, i.e. functions, assets, and risks.

### *Functions*

The price of a product or service will normally reflect the functions carried out by each of the parties in the transfer. Therefore, when determining if transfers between independent parties can be compared to an inter-company transfer, the functions of the parties involved must be analyzed. Examples of functions that it would be relevant to include are for example production, product assembly and testing, installation, research and development, design, product service, purchase, distribution, marketing, transportation, logistics, finance, and management.

**Example:** IKEA is a world-wide distributor of home furnishing products. Some IKEA products are delivered in multiple parts that require that the customer assembles these parts into the final product, i.e. chair, couch, cupboard units. So the seller, IKEA, has transferred functions, i.e. assembly, to the customer. Alternatively, the customer could buy a similar chair with similar product characteristics that is delivered fully assembled from a different private furniture supplier. However, the price of this chair will most likely be higher since all functions, including assembly, is carried out by the supplier, adding to the total costs of the product and hence its market price.

The same argument from the example above would apply for when a production business unit carries out the majority of functions related to a product (purchase of raw material, manufacturing, marketing, R&D, product service, customer payments and credits etc.), and the sales business unit that the product is transferred to is only responsible for customer deliveries. The opposite is the case if the sales business unit is responsible for several functions, e.g. marketing, product service, customer payment and credits etc. This will change the way each of the parties contributes to the value of the product and hence the way they would expect to be remunerated if the transfer was taking place in the open market. Put another way, the way functions are divided between the parties of a transfer is relevant when considering the transfer price and thus the way profit should be allocated between them. Consequently, comparability in functions is necessary when using transfers between independent parties to determine the inter-company transfer price.

### *Assets*

It is also relevant to perform an analysis of the assets used by the parties in an inter-company transaction. The underlying reasoning is that production plants and machinery, development of intangible assets etc. often require significant capital investments financed either by parent companies or through external loans. Normally, an independent company would expect long-term compensation for the investments and the business risks surrounding these investments. In general, the more capital is required to enter a certain market or business, the greater the entry barriers to that particular market and the greater the business risks attached to the ownership of these assets. Evaluation of the assets used for the inter-company transfer is therefore relevant to determine the allocation of profits between the parties and to what extent transactions between independent parties can be used for this purpose. The assets can take the form of both *tangible* assets, e.g. production plants and machinery, and *intangible* assets, e.g. patents, knowhow, software, brands etc. In practice, intangibles are in fact often the most significant value driver in a



multinational's value chain compared to tangible assets. Pharmaceuticals and high-tech multinationals are examples of companies with production lines where intangibles are a significant value driver of the final product. Hence, these types of companies should pay explicit attention to the presence of intangibles and how they impact on the value of inter-company transfers. A number of factors should be taken into consideration when performing an analysis of the assets contributing to the value creation of the product. These are for example; the type of the assets used, the conditions of the assets, the age of the assets, the market value of the assets, the asset location, and the ability to protect the ownership of the assets.

### *Risks*

In transactions that take place between independent parties, an increased risk related to those transactions will normally be compensated for in the form of an increase in expected return. Similarly, parties in an inter-company transfer should be compensated for taking risks. Therefore, identification of risks in inter-company transfers is an essential part of a complete functional analysis. It is important to take note of the word 'expected' since the actual profit of a business unit will depend on whether a specific risk relating to its business activities has led to economic loss or not. Therefore, the risk analysis serves as a key input when multinationals engage in disputes with tax authorities over why a certain business unit has reported a lower taxable income than expected due to the realization of risks.

**Example:** A U.S. business unit (A) manufactures different car models that are distributed by a foreign business unit (B) located in Argentina. B can choose between a number of different car models it wants to buy from A at a fixed transfer price (standard cost) of 10,000 USD. Receivables between A and B are set at a fixed interest rate of 8%. Cars are delivered by B in fixed quantities and are placed in A's warehouse until sold to external customers. B is responsible for all sales functions, while A provides full warranty for any major product manufacturing errors such as withdrawal of entire product lines and matters of product liability.

The following risks can be taken into consideration as part of a risk analysis for A and B: The market risk relating to changes in production costs has been allocated to A since B can buy the cars at a fixed price, while B carries the risk relating to changes in sales prices in case of potential changes in customer demand. Furthermore, B carries the risk of the cars being damaged or becoming unmarketable, given that the latter is not caused by major product manufacturing errors as this risk is placed at A. A will in practice often also bear the stock risk on components etc. A and B will both carry the risks relating to the fixed assets used in manufacturing and sales activities, e.g. production machines, production buildings, sales offices etc. Since B is not obligated to buy a certain quantity from A, A obviously bears the risks that the developed and produced cars are eventually demanded by external customers. B carries the risks relating to currency fluctuations of the foreign currency, i.e. Argentinean pesos, as well as customer payment risks, whereas A bears the risk of interest fluctuations since receivables from A are set at a fixed interest. Warranty risks are divided between the parties since A carries the risks of major product manufacturing errors and product warranties while B is responsible for standing warranties.

**Example:** Imagine now that A and B agree that A's receivables from B should follow the fluctuations in market interest. Furthermore, assume that B agrees to pay 50 percent of the costs incurred from warranty claims due to major product manufacturing errors. Finally, suppose A and B agree that B is obliged to buy a certain quantity of cars from A each year. The allocation of risks between the parties obviously differs from the above example, since B now carries relatively more risks. Hence, B will expect to be compensated by A for accepting a larger proportion of risks and this should obviously materialize in a downward adjustment of the previous transfer price of 10,000 USD to the price that an independent party would accept under similar circumstances.

A and B should therefore be aware of how risks are distributed between them when searching for similar transactions between independent parties to determine the transfer price on cars.

### *The contractual terms of the transfer*

When transactions take place in the open market, written contracts normally regulate the responsibilities, risks and benefits of the parties involved. However, it is not uncommon that the legal terms of a transaction are established through less formal communication, in particular for transfers taking place between entities of a multinational. Such terms – both formal and informal – must be examined when determining transfer prices and testing whether an independent market transfer is a potentially useful comparable. Obviously, the contractual circumstances will to some extent be examined through a functional analysis (see above). Yet, a distinct analysis of contractual terms is often explicitly required by tax authorities. In cases where no written contracts or formal agreements exist, the contractual circumstances of the inter-company transfer must be derived from their actual conduct. In practice, it is not uncommon that certain practices evolving over time differ from what was agreed in more formal written contracts between inter-company parties. In general, when transactions take place between *independent* parties, the divergence of interest normally ensures that the parties will only deviate from the contract when it is in their mutual interest to do so. Conversely, for a number of reasons, parties within a multinational do not always have the same incentive to respect formal agreements or contracts. Hence, even when written contracts exist between business units of a multinational, it is necessary to examine whether the conduct of the parties respects the terms of the contract.

**Example:** In multinational A, company B transfers goods to company C. B and C have signed a written contract stating that C should be responsible for product liabilities but in fact these liabilities are borne by B when they occur. In this case, it is the *actual conduct* of B and C and not the written contract between them that should be taken into consideration in a comparability analysis.

### *The economic circumstances of the transfer*

Another comparability factor that regulation requires must be examined is the economic circumstances of the inter-company transaction. When transactions take place between independent parties, the price of the goods or services transferred will normally depend on the specific economic circumstances, e.g. market conditions. Hence, the price of goods or services that entail the exact same product characteristics often differ in practice. Therefore the economic circumstances must be examined to test for comparability between a transfer between independent parties and an inter-company transfer. In practice, tax authorities usually require that it is the economic circumstances of those transfers that can be classified as the multinationals' primary business which must be examined. The economic circumstances that could impact on a price are almost infinite, but some important areas of attention include:

- Geographic location of the market
- Size of the markets
- Level of market competition
- Negotiation power between buyer and seller
- Risks derived from availability of substitute goods and services
- Nature of government regulation of the market
- Market purchasing power
- Costs of production facilities, e.g. costs of land, machinery, labour, capital etc.
- Market type (retail, whole sale)

- Date and time of the transaction

**Example:** Within multinational A, company B transfers the ownership of a real estate property to company C. Company B bought the property from an independent real estate agent in 2006 at a price of \$3 million dollars. Since the real estate market has dropped during the period 2006 – 2009, the price of \$3 million dollars cannot be used as transfer price, since it is likely to be too high. Instead, B and C must carry out an examination of the current market price on similar properties traded in the same market/area to identify an appropriate proxy for the transfer price. It could also be useful data input to have an independent real estate agent evaluate the current market value of the transferred property.

### *The business strategy of the multinational*

Business strategies should also be examined when testing if external transactions can be used for comparison with regards to inter-company transfer pricing. It is necessary to analyze a multinational's strategic initiatives and subsequently evaluate to what extent these initiatives should result in transfer prices and profit levels that deviate from otherwise comparable transactions and profit levels reported by independent companies. For example, a multinational can choose to compete on price to increase its market share (price differentiation strategy) or choose to introduce e.g. extra services or warranties in the attempt to differentiate their product from similar products (product differentiation strategy).

**Example:** A European-based multinational in the clothing industry decides to launch a one-year market penetration strategy to enter the U.S. market. Its U.S. business unit buys clothes from the European parent company at what can be considered a market price on arm's-length terms. Currently, similar clothing companies in the U.S. report a net margin of 5 percent and do not have a similar strategic initiative in progress. The European multinational's U.S. business unit bears the risks of the market penetration strategy and hence bears potential economic losses or gains depending on whether the strategic initiative becomes a success or not. Specifically, in order to penetrate the market and attract new customers, the U.S. business unit incurs major start-up and marketing costs and additionally offers its clothing to costumers at reduced market prices for the first year. Consequently, the U.S. business unit reports a net margin of 2 percent in the first year. The reported income before tax for the U.S. business unit for the first year represents market conditions, i.e. an arm's-length net margin, under the specific strategic circumstances. In the second year, the U.S. business unit reports the same net margin as existing clothing companies in the U.S. (5 percent) since start-up costs and clothing discounts to customers are no longer present. Note that this example focuses on whether the *reported profits* (net margin) of the U.S. business unit can be considered at market terms. Reported profits can often be considered a useful proxy for whether transfer prices are on arm's-length terms. In fact, if the U.S. business unit had reported a 5 percent net margin for the first year, similar to existing operators, despite the strategic initiatives, this would have indicated that transfer prices between the European parent company and the U.S. business were too low.

Assume now that the headquarters in Europe, i.e. the parent company of the U.S. business unit, had lowered its transfer prices to the U.S. business unit in order to implement the market penetration strategy. In this case, the decrease in profits stemming from the strategic initiative must be allocated to the parent company. The reason is that the parent company in this case would be the party carrying the risk of the strategic initiative and hence should also incur the decrease in profits as well as potential increases in future profits. Therefore, it is also necessary to determine which part of a multinational that carries the *risk of a strategic initiative* and not only whether the business strategy as such is comparable to otherwise similar independent companies when determining how a business strategy should impact on transfer prices and reported profits of the multinational's business units.

### Transfer pricing methods

The transfer pricing methods accepted by OECD and most world-wide regulation for applying the arm's-length principle can be classified into two groups:

#### *The traditional transaction methods*

- Comparable uncontrolled price method
- Resale price method
- Cost-plus method

#### *The transactional profit methods*

- Profit-split method
- Transactional net margin method

### Traditional transaction methods

#### *Comparable uncontrolled price method*

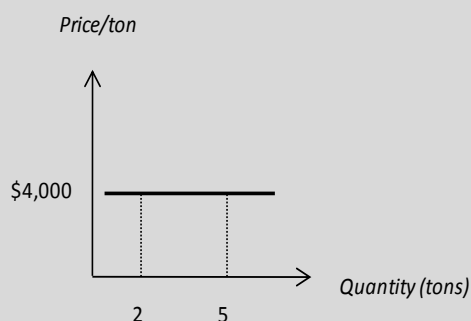
The comparable uncontrolled price method (CUP) compares the transfer price charged for goods or services in a controlled transaction to the price charged for goods or services transferred in a comparable uncontrolled transaction in comparable circumstances. For an uncontrolled transaction to be comparable, any potential differences to the inter-company transaction must not affect the market price unless accurate adjustments can be made to eliminate the price effect of such differences. Obviously, the larger the number of differences between the transactions being compared, the less reliable is the CUP as a transfer pricing method. In practice these differences are not always easy to identify since not only product comparability but also differences in function and risk between the transactions will normally impact on the price. Hence, even though the CUP method is considered the preferred transfer pricing method by tax authorities due to its direct application of the arm's-length principle, it can be challenging to identify potential differences and thereby apply the CUP method.

**Example:** A is an independent enterprise that sells unbranded Chinese tea of a type, quality, and quantity similar to tea sold between two business units, B and C, in "Tea Multinational". Suppose that the transactions occur at the same time, at the same stage in the distribution chain, and under similar conditions and circumstances. The price charged by A can be used as a CUP when determining the transfer price between A and B.

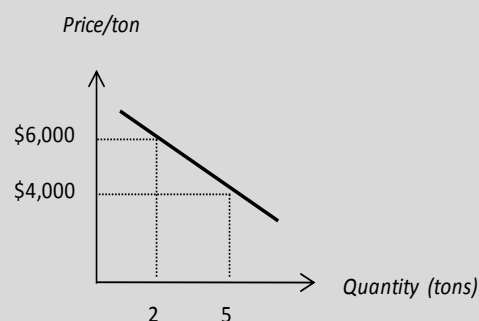
**Example:** Suppose now that A sells unbranded Indian tea. Can the transaction between A and independent buyers be used as a CUP for determining the transfer price between B and C in "Tea Multinational"? To answer this question, it should be investigated if the difference in Chinese tea blades and Indian tea blades has a material impact on price. Put another way: are buyers willing to pay more for Chinese tea than for Indian tea? This information may be obtained from the "World Tea and Coffee Exchange". The answer will ultimately depend on whether a potential impact on price and hence the necessary adjustments can be accurately identified.

**Example:** Suppose that A sells 5 tons of unbranded Chinese tea to an independent buyer at a price of \$20,000, which equals a price of \$4,000/ton for this specific transaction. If business unit B transfers 2 tons of the same tea to business unit C in "Tea Multinational", can the price in the independent

transaction (\$4,000 per ton) then be used as a CUP? Put another way, should B charge C \$8,000 for 2 tons of Chinese tea? In order to answer that question, one thing to check for is the impact of potential quantity discounts. If the price of Chinese tea is represented by the curve in graph X, then no quantity discounts apply, and the independent price can be used as a CUP (given that all other relevant factors are comparable). Conversely, if graph Y represents the link between price/ton of Chinese tea and specific quantities bought, then “Tea Multinational” must adjust its transfer price upwards to ensure that it represents the quantity discount function for the Chinese tea market, before considering using the independent transaction as a CUP. Assuming that all other relevant factors are comparable, the transfer price between B and C equals \$12,000 (2 tons \* \$6,000)



(X)



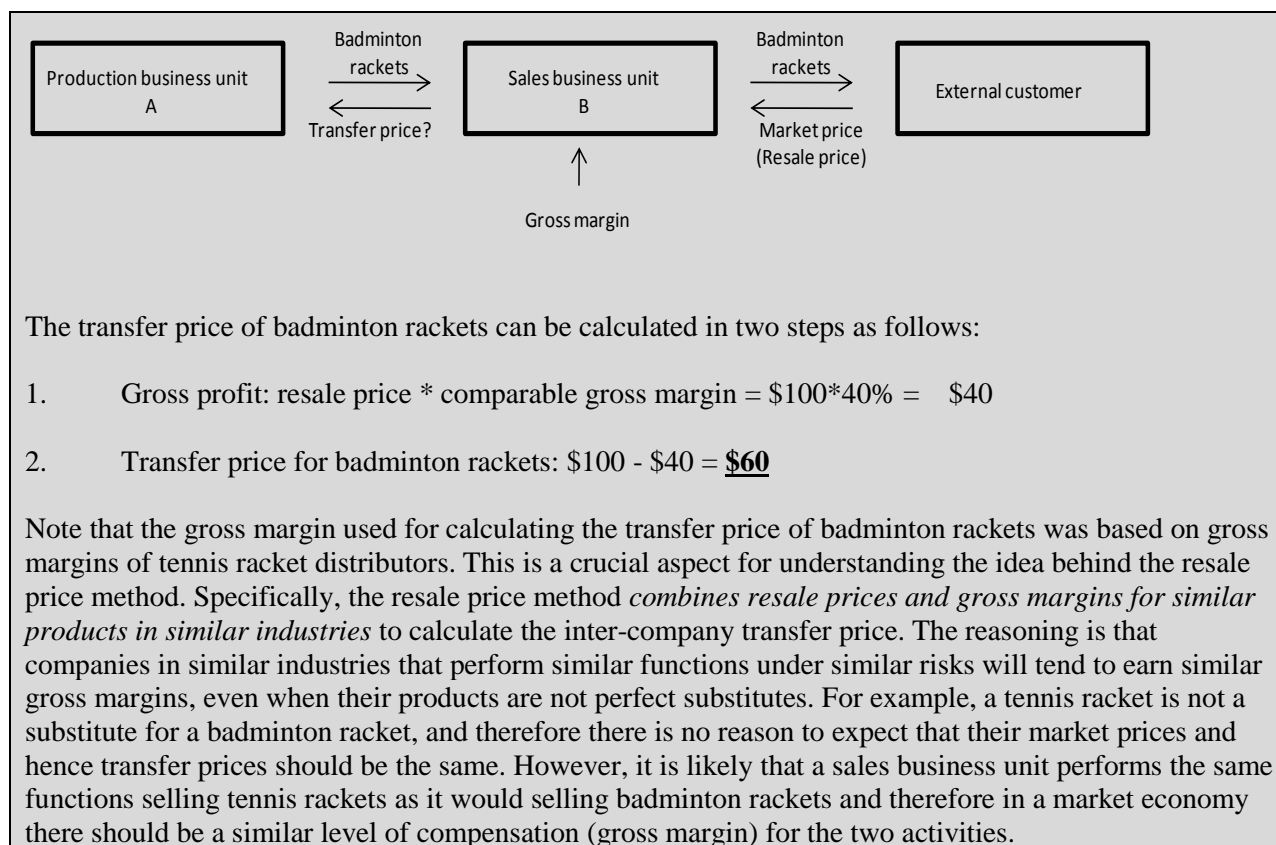
(Y)

### *Resale price method*

The resale price method is based on the price used for resale to an external party, e.g. the price charged by a sales business unit to an external customer. The idea is to calculate backwards by subtracting an appropriate gross margin from the external market price (resale price). The gross margin is identified by collecting data on gross margins of independent distributors or sales agents performing similar functions under similar risks *and* distributing a product or product group similar to that distributed by the sales business unit in the inter-company transfer.

**Example:** “Sport Equipment” is a multinational that produces and sells unbranded badminton rackets to independent retail shops at a price of \$100/unit. Production unit A of “Sport Equipment” is responsible for all functions related to the manufacturing of rackets, whereas the sales & marketing function is carried out by sales business unit B.

From a market analysis, “Sport Equipment” learns that independent distributors in the unbranded tennis racket industry, performing similar functions under similar risks as B, earn a gross margin of 40%. Sport Equipment now wants to calculate the transfer price for badminton rackets, sold to external customers at \$100/unit, using the resale price method, see illustration below.



While the resale minus method allows for calculation of transfer prices even when the transferred products are not substitutes, the closer comparability of products the better the results seen from a tax compliance point of view. Also, it is recommended that when using gross margins from independent sales companies, no industry differences should be accepted, as gross margins tend to vary significantly from one industry to another.

Finally, in practice the resale price method is often applied at the *net margin level*. In cases where the sales business unit performs multiple functions that contribute to the value of the final product, the resale price method should be applied with caution. If for example a sales business unit carries out parts of the production process, such as adjusting the product to meet specific national standards or customer requirements, and this extra function is not considered when applying the 'comparable' gross margin of an independent distributor, this will potentially lead to the sales business unit only being reimbursed its costs or even incurring a net loss. In this case, it is important to ensure that differences in functions are compensated for since no independent party would accept to be compensated only for its costs or to incur a loss (in the long run).

### *Cost-plus method*

The cost-plus method comprises certain costs of production incurred by the supplier of the good or service, added a mark-up that should reflect the supplier's functions and risk. The mark-up should approximate the mark-up added to costs incurred when the supplier engages in similar transactions with external buyers, or alternatively the mark-up should equal the mark-up used when independent parties engage in a similar transfer under similar circumstances.



The cost-plus method is intended to be applied at the gross profit level. Due to differences in accounting standards, it can be difficult to determine the cost types to be included in the cost base under the cost plus method. Normally, costs can be divided into three broad categories: a) direct costs of production, e.g. raw material and labor costs in those cases where these production costs can be traced to the relevant cost objects, e.g. products or services, b) indirect cost of production, which are the production costs that cannot be traced to the relevant cost objects, and c) operating expenses which are costs incurred from supervisory and administrative activities. The cost base under the plus method normally includes the direct and indirect costs of production<sup>8</sup> whereas operating expenses are not to be included. In practice, however, the cost-plus method is often used in a way where the cost base includes some or all operating expenses. In that case, the cost plus method can be seen as a net profit rather than a gross profit method. Regardless of whether the cost plus method is applied to perform a gross or net profit analysis, it is important to ensure that a comparable mark up is applied to a comparable cost base. This means that as a general rule, it is necessary to ensure accounting consistency when comparing cost bases and mark-ups between inter-company transfers and transactions between independent companies. This means that the *cost of resources* (cost types) as well as the *level of costs* included in the cost base should be comparable when applying the cost-plus method.

**Example:** In multinational A, company B produces the semi-finished good C that is transferred to company D at a cost-plus transfer price based on actual costs of production. Company B's production process is inefficient compared to otherwise comparable independent manufacturing companies, and therefore B incurs a relatively higher *level of costs*. Consequently, there is no consistency between the level of costs included in the inter-company cost base and the level of costs included in the cost base of independent manufacturing companies. The margin of independent manufacturing companies is therefore too high to be directly applied by B. If the necessary adjustments cannot be made, the margin of the independent manufacturing companies cannot be used to apply the cost-plus method on the inter-company transfer between B and D.

In general, one possible approach to avoid that the internal supplier transports potential production inefficiencies through the transfer price is to use standard costs instead of actual costs when setting transfer prices. Using standard costs also means that if the supplier can produce more efficiently than an external party (at lower costs), the supplier will earn an extra profit that equals the difference between the standard cost and the actual costs. These consequences are in line with the conditions that can be expected between independent parties.

**Example:** Recall the above example. Assume instead that company B operates at the same level of efficiency as independent manufacturing companies, and that the levels of costs in general are comparable. Furthermore, assume that B includes depreciation on production machines in its net margin cost base whereas otherwise comparable independent manufacturing companies do not include depreciation on production machines in their net margin cost base. Since there is no consistency between the *cost of resources* (cost types) included in B's net margin and that of the independent manufacturing companies, the cost bases and net margins are not comparable unless the necessary adjustments can be made.

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<sup>8</sup> Often, direct and indirect costs are used interchangeably to variable respectively fixed costs. It is important to be aware that the classification of direct and indirect costs has to do with if costs that are related to cost objects are traced to the relevant cost objects, i.e. whether the joint costs that relates to more than one cost object are separated in relation to the individual cost objects. Conversely, the distinction between variable and fixed costs has to do with if the cost varies in relation to production activity. Hence, indirect and direct costs deals with *cost tracing* whereas variable and fixed costs deals with *cost behavior*. This means that a production cost can in fact be variable and indirect at the same time, for example labor cost of production that cannot be traced to particular individual products or services. Similar, operating costs can be fixed and direct simultaneously, for example a manager that only performs tasks in relation to a single product or service.

Finally, it should be noted that marginal costs can in fact serve as a tax-compliant transfer price under specific circumstances, for example in those cases where marginal production capacity is utilized, i.e. where the inter-company transfer represents a disposal of marginal production. Specifically, if the supplier in an inter-company transfer can document through for example marketing analyses that the goods could not be sold at a price above marginal costs in that particular market, then it can serve as the transfer price. Obviously, the higher the proportion of marginal production to total production, the more likely that the supplier's tax jurisdiction will challenge this claim, and hence the stronger the necessity for thorough market analyses that can support the use of marginal costs as a transfer price.

### Transactional profit methods

#### *Profit-split method*

In some cases when transactions are closely interrelated it is not always possible to price them on an individual basis. In such cases, it can be relevant to aggregate transactions and instead focus on the profit created from those transactions and how each of the parties contributes to profit creation, which is the idea behind the profit-split method. Specifically, the profit-split method splits the total net profit of the parties involved in inter-company transactions in a way that could be expected if the transfer had taken place between independent parties. However, this particular method does not have any direct comparability factors. The reason is that the profit-split method contrary to the other methods presented is not focused on identifying a price or profit of a controlled transaction based on the price or profit of a comparable transaction between independent parties. Instead it focuses in an isolated manner on the relative value of the contribution that each of the parties delivers to the controlled transaction. With regards to the latter, the functions and risks are the primary value drivers to be investigated. Yet, when external data are available they can be useful in support of why a particular split of profit has been agreed upon between the relevant parties.

The profit-split method (and the CUP method) differs from the cost-plus and resale minus method in that it does not only investigate one part of the transaction but instead looks at *both parties* involved in the transaction, i.e. carries out a two-sided analysis. Conversely, the cost-plus method, the resale minus method, and the transactional net margin method (TNMM, see below) only consider one part of the transaction and determine the arms-length price/profit through a one-sided analysis.

Two approaches can be used to apply the profit-split method: a) the *contribution analysis*, or b) the *residual analysis*. The contribution analysis allocates the total net profit for one or more specific inter-company transactions to the relevant parties depending on how each party through its functions, risks and assets (value drivers) has contributed to creating the profit.

**Example:** Subsidiary A carries out the majority of functions, bears the majority of risks, and contributes with the majority of assets for producing cell phones that are promoted and sold by subsidiary B. The total budgeted net profit from this activity for a given year is \$100 million. Based on a market analysis on how external parties would have agreed to allocate profit under similar circumstances, subsidiary A and B agree that A should receive \$80 million of the expected total profit, and B should receive \$20 million, if profit is realized.

In contrast to the one-step contribution analysis, the residual analysis can be seen as a two-step analysis. The first step is to provide the parties with what can be considered as a basic return (profit) on their contribution to the inter-company transaction. In the second step, a potential residual profit (or loss) will be allocated based on an evaluation of the actual circumstances. If for example one of the parties



contributes with a significant high-value intangible asset not considered in the first step, since this only consists of *basic* functions, risks, and assets, then this party should receive the residual profit. In general, in those situations where the total net profit is greater than the total basic return (profit) of the relevant parties this indicates the presence of intangible assets that should be taken into consideration.

**Example:** Subsidiary A and B engage in inter-company transactions with an expected total profit for the accounting period of \$100 million. Based on an analysis of both parties' basic contribution to the transactions, A and B agree that A should receive \$40 million of expected profits and B should receive \$25 million. The residual expected profit of \$35 million can be attributed to a unique manufacturing intangible developed and owned by A. Therefore A and B also agree that the residual profit of \$35 million should be attributed to A. Hence, A will receive \$75 million ( $40 + 35$ ) and B will receive \$25 million if expected profits are realized.

In practice, in cases where several business units of a multinational contribute to the creation of profits for inter-company transactions it is often difficult to determine the aggregated revenues and costs of all the business units participating in the transactions. One reason is that in many cases there is no consistency in the way books, records, and general ledgers are designed between different companies, divisions etc. of a multinational. Also, in practice it is often the case that multinationals and their business units are involved in several different activities and that the same capacity (production machines, employees etc.) is used to carry out those activities. Since the profit-split method is normally applied at net profit level and thus includes capacity costs, it is necessary to measure and isolate the capacity costs incurred from carrying out the inter-company transactions from the capacity costs relating to the business unit's other activities. If this measurement problem is not solved, there is a risk that the estimation of aggregated net profits from the inter-company transactions will include capacity costs that relate to other activities.

### *Transactional net margin method*

The transactional net margin method examines the net margin relative to an appropriate base such as costs, sales, or assets that a group company makes from participating in a controlled transaction. Therefore, the TNMM-method is in many ways similar to the resale minus and the cost-plus method. Recall, however, that resale minus and cost-plus are gross margin methods, whereas the TNMM method focuses on net margins. The TNMM method is simpler to apply compared to for example the profit-split method, as the TNMM method only requires that *one* of the parties in the inter-company transaction is examined. Furthermore, since it is easier to identify net margins than gross margins of independent companies performing similar activities, the TNMM method is often applied in practice.

**Example:** The headquarters of a multinational provides standard service functions (e.g. IT, legal, finance, human resources etc.) to its foreign business units. According to an examination of net margins of independent companies that provide similar functions (services) as does headquarters under similar conditions, headquarters should have a net margin of 10% with regards to those service costs that are allocable to foreign business units. Allocable service costs amount to \$100 million/year. Therefore, headquarters applies a 10% mark-up on the service costs allocated to foreign business units.

A number of important aspects need to be considered when applying the TNMM method. One aspect concerns the fact that it is necessary to ensure that the independent company used for identification of a net margin does not at the same time engage in inter-company transactions. If so, the net margin does not reflect a net margin from a party that strictly operates on market conditions with independent companies, and hence the margin can more easily be challenged by tax authorities. Another practical problem is that the TNMM method requires a segmentation of the accounting data relating to the inter-company

transactions and other transactions. More specifically, all costs and revenues stemming from other transactions than the inter-company transactions should be eliminated. In particular the separation of the costs can be complicated when for example the same capacity is used to generate revenue from inter-company as well as other activities. Yet, this measurement problem must be solved before the TNMM method can be applied.

Moreover, similar to what applies to the cost-plus and resale minus method, it is necessary to ensure accounting consistency, i.e. to ensure that the net margin identified from independent parties is comparable to the net margin level where it is used for tax compliance purposes. If there is a difference in the cost of resources included in the independent net margin and the inter-company net margin, it is generally not suitable for comparability purposes unless an appropriate adjustment can be made. For example, in practice some companies include depreciation when estimating net margins whereas others exclude it.

Also, since the TNMM method is a one-sided method that only examines one party in the inter-company transfer it is important to ensure that the net margins applied to the party under investigation do not leave the other party in the inter-company transfer with an economic result different from what an independent party would accept under similar circumstances. Therefore, while it cannot serve as a guarantee that the net margin is on market terms, it can be useful to do a counter-check of how the other party's net margin is affected by the applied net margin.

**Example:** The headquarters perform service activities for its foreign business units and applies a 15 percent mark-up on the inter-company service costs allocated to foreign business units. The cost allocations from headquarters to its foreign business units have the result that the foreign business unit's net margin changes from 5 percent to -1 percent. This may indicate that the 10% markup does not reflect market levels since its impact on foreign business units would not be accepted had the foreign business units been independent companies. Hence, the net margin should be further examined. Another possibility is that the *volume of costs* allocated by headquarters is too high, for example in the case where headquarter service centers do not operate efficiently. In this case, the cost base (volume of costs) should be further examined for the purpose of tax compliance. It could also be the case that the external net margin of 15 percent does not include certain costs of resources that traditionally are included in a net margin calculation, and therefore the external 'net' margin is in fact something in between traditional gross- and net margins. This would obviously make it a less useful net margin proxy.

### Special consideration for services

In most cases, MNEs have a number of centralized service centers that provide certain standard services to foreign business units. With respect to inter-company service flows within MNEs, the costs arising in headquarter service centers from business unit consumption of shared resources (salaries, office expenses, rent etc.) can rarely be directly attributed to the relevant business units, i.e. cost objects. Thus, overhead cost allocation systems generally present measurement problems, and a certain level of arbitrary cost allocation is an inevitable consequence of this. Therefore, MNE overhead cost allocations attract much attention from tax authorities.

Specifically for inter-company services, tax regulation and OECD guidelines address two main issues that need to be determined, namely a) whether an inter-company service has been rendered, and b) whether the size of the charge is in accordance with the arm's-length principle. In addition, most national tax regulations stress that a direct charge method<sup>9</sup> for transfer pricing of services is preferable. However, an

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<sup>9</sup> Direct charge is when each individual service performed is subsequently charged by a service center to the relevant business unit.

indirect charge method<sup>10</sup> can be accepted when cost allocations are sufficiently documented. In order to ascertain if *an inter*-company service has been rendered, a so-called ‘benefit test’ must be carried out. The benefit test normally depends on whether the service activity provides a group company division/business unit etc.) with economic or commercial value to enhance its commercial position. This can be determined by considering whether an independent enterprise in comparable circumstances would have been willing to pay for the activity if it had been performed by an independent enterprise or if it had performed the activity in-house for itself. If the activity is not one for which the independent enterprise would have been willing to pay or perform for itself, the activity ordinarily should not be considered as an intra-group service under the arm’s-length principle. Hence, the critical element of the benefit test is the existence of an intended benefit for the recipient of the service. In cases where the intended benefit of a service, offered by a service provider to a group company, is so indirect that an unrelated party would be unwilling to pay for the service, the costs of that specific service are not allocable to the group company or companies according to the benefit test criterion. Conversely, when an unrelated party would be willing to pay for the service, the service provider’s costs of that specific service are allocable to the group company or companies that benefit from it. Notably, the cost allocation cannot include costs arising from inefficiencies, as such costs generally are not considered to reflect transactions at market terms.

### Accounting databases

In the sections above, we discussed a number of comparability factors when determining whether external market transactions and profits can be used for determining inter-company transfer prices and profit levels. We also described international transfer pricing methods and their most significant strengths and weaknesses when applied in practice. In this section, we seek to illustrate how the comparability analysis of inter-company transfers (comparability factors) can be quantified in order to support the actual transfer prices and profits that a multinational can choose to apply. Specifically, this quantification can be done by extracting data from so-called ‘commercial accounting databases’ that can be processed through statistical methods in order to arrive at arm’s-length-based transfer prices or profit levels for the multinational inter-company transactions.

#### *Introduction to accounting databases*

Commercial accounting databases are databases that compile publicly available accounting data filed by companies operating in specific markets and industries for a multiple-year period. The data in these databases are structured in an electronic format suitable for searches and statistical analyses of independent companies and their accounting data – so-called ‘comparables’. Therefore, these databases are a useful tool for collecting relevant accounting data for international transfer pricing purposes based on specific quantifiable selection criteria.

A database search can generally be separated into three sequential activities:

1. Identification of the transaction to be examined and transfer pricing method to be used
2. Description and explanation of the data extracted from the database
3. Explanation of adjustments and ranges.

#### *1. Identification of the transaction to be examined and transfer pricing method to be used*

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<sup>10</sup> Indirect charge is when a service center accumulates costs incurred to perform services to multiple business units over a certain period of time and applies allocation keys as proxies of activity in order to allocate those costs that are allocable under the benefit test criterion. In practice, the indirect method is often applied due to the lack of ability to trace and separate costs for individual services to the relevant cost objects (business units, divisions etc.).

First, the specific transaction to be examined should be identified, e.g. service transfer, goods transfer, asset transfer, including what inter-company parties (e.g. headquarters, divisions, business units etc.) are involved in the transaction. Based on this, it should be determined which transfer pricing method is to be used. In practice, financial databases seldom comprise data that allow for the use of gross margin methods. Therefore, transfer pricing methods based on net margins (e.g. TNMM) are often applied since they allow for a quantification of the qualitative comparability analysis through a database search. In this way, the available data from financial databases become an important determinant for the transfer pricing method applied in practice by a multinational.

### *2. Description and explanation of selection criteria and selected data*

The next step is then to describe and explain the data that have been extracted from the database, based on the comparability analysis. The data extracted and the selection criteria on which they are based should be described and explained. Put another way, it should be made explicit what are the boundaries that have determined whether a company and its financial data are considered an appropriate comparable. For example, it should be explicated what particular industries or sectors have been selected for comparability and to what extent the collected data cover a multiple-year period (e.g. to check for market volatility). It should also be stated for example what geographical market has been chosen in the search selection process since this can vary significantly (recall the section on ‘economic circumstances’ stated above). Furthermore, selection criteria such as the presence of high-value intangible assets or the proportion of capacity costs in relation to total costs can in some cases be useful to identify useful comparables.

Since the selection process and the underlying criteria that shape its results tend to vary significantly in practice, no standardized procedure can be applied. Instead, it should be considered a time-consuming process that involves considering both quantitative and qualitative selection criteria. Initially, the multinational should search for potentially comparable transactions based on a number of available quantitative selection options available in the financial database. Subsequently, the returned results should be subjected to a more qualitative and individual evaluation of the account data extracted in terms of whether they can actually be used for comparability. Hence, the final selection of the comparables to be used should be based on a qualitative individual examination of the gross list that was derived from the initial database search.

**Example:** A multinational wishes to determine the net margin of its German business unit that manufactures cars. A financial database search is performed based on a number of appropriate quantifiable selection criteria, and the data from the resulting 120 companies show a net margin range of between 2 and 10 percent with a median of 5.5 percent. However, the subsequent financial analysis reveals that 5 of the companies included in the database search have applied business strategies that make them inappropriate as comparables. Moreover, 10 of the companies are involved in *both* the car and motorcycle manufacturing sector where significantly different net margins apply. Since it is not possible to do appropriate adjustments to isolate the net margin of car manufacturing, these 10 companies are excluded as well. A statistical analysis of the net margins of the remaining 105 companies leads to the result that a 5 percent net margin is applied. (See the next example and cases for illustrations of how statistical analysis can be applied to determine arm’s length transfer prices and profit margins, based on commercial databases)

### *3. Explanation of adjustments and ranges*

In general, the choice of transfer pricing method will determine what type of data, i.e. price or profit margins, is to be used. In practice, however, multinationals’ choice of transfer pricing method(s) is

closely correlated to the data available in the financial databases. If multinationals would choose to apply a transfer pricing method for which no comparables could be identified from accounting databases or other relevant data sources, the multinational would have to rely on more subjective and often superficial data when determining transfer prices and profit levels for inter-company units. The resulting absence of quantitative measures to support the prices or profit levels applied in practice would make the multinational more exposed to transfer price and profit adjustments in case of a transfer pricing audit. Since market prices and gross margins from independent companies are seldom available, the majority of multinationals tend to apply transfer pricing methods based on net margins that are more easily accessible from accounting databases. However, while accounting databases can provide substantial information for transfer pricing purposes, the accounting data extracted have limitations that limit the ability to perform a complete test of comparability relative to the inter-company transaction. Put another way, since full information about the relevant circumstances that surrounds the potential comparables is unavailable, it is necessary to use a statistical method to limit the risk of including comparables that should be excluded from the sample.

#### *Calculation of inter-quartile range and median*

The identified transactions or companies can be considered a set of comparables. The application of the arm's-length principle can now be calculated based on the price or profit margin data that this set of comparables represent. Specifically, this can be done by using the range between the 1<sup>st</sup> and 3<sup>rd</sup> quartile of prices or margins that have been extracted from an accounting database search. In statistical terms, this range is called the 'inter-quartile range' and equals the difference between the 3<sup>rd</sup> and 1<sup>st</sup> quartile. This means that the 25 percent highest and the 25 percent lowest observations (comparables) are excluded, even though they passed the selection criteria that were initially defined for the accounting database search. The inter-quartile range thus comprises the middle 50 percent of the observations (comparables).

Basically, all the observations in the inter-quartile range can be considered comparables for which prices or margins represent arm's-length terms. The question is now which observation to apply on the inter-company transfer? In practice, multinationals choose to apply the *median* of the inter-quartile range. The median equals the average of the 1<sup>st</sup> and 3<sup>rd</sup> quartile. The advantage of the inter-quartile range and the calculation of the median (see below) is that these two measures in general are not sensitive to a small number of deviating/skewed observations (comparables). It is therefore useful for the purpose of eliminating inappropriate comparables without distorting the ability to use the median as a proxy for an arm's-length price or margin. Conversely, using for example the mean of the observed net margins would generally not be a useful proxy since this measure is relatively more sensitive to a few extreme observations.

**Example:** Subsidiary A manufactures cell phones in China that are transferred to Subsidiary B in the U.S. Subsidiary A wishes to determine the appropriate net margin to be applied under the TNMM method. After the qualitative and quantitative selection process, the comparability basis comprises 16 companies. Table 4 shows the net margins for each company.

Table 4. Independent company net margins

Company	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net margin in %	0.2	1	1.1	1.4	1.6	2.3	2.4	2.8	3	3.6	4.2	4.4	4.9	6.2	9.4	12.6

We begin by calculating the 1<sup>st</sup> and 3<sup>rd</sup> quartile in order to determine the inter-quartile range:

**Step 1** 1<sup>st</sup> quartile and  $n = 16$ :  $(\text{quartile number}/4) * (n+1) = (1/4) * (16+1) = 4.25$

Since the value of the 1<sup>st</sup> quartile does not equal an  $n$ -value, the 1<sup>st</sup> quartile is calculated as a weighted average of the net margins of company 4 and 5, using the value in step 1 (4.25) as weight:

$$1^{\text{st}} \text{ quartile: } (0.75 * 1.4) + (0.25 * 1.6) = \underline{1.45\%}$$

The 3<sup>rd</sup> quartile and median are calculated in a similar manner:

**Step 1** 3<sup>rd</sup> quartile and  $n = 16$ :  $(3/4) * (16+1) = 12.75$

Since the value of the 3<sup>rd</sup> quartile does not equal an  $n$ -value, the 3<sup>rd</sup> quartile is calculated as a weighted average of the net profit margins of company 12 and 13, using the value in step 1 (12.75) as weight:

$$3^{\text{rd}} \text{ quartile} = (0.25 * 4.4) + (0.75 * 4.9) = \underline{4.78\%}$$

Similar, the median (2<sup>nd</sup> quartile) is calculated as follows:

**Step 1** 2<sup>nd</sup> quartile and  $n = 16$ :  $(2/4) * (16+1) = 8.5$

Since the value of the 2<sup>nd</sup> quartile does not equal an  $n$ -value, the 2<sup>nd</sup> quartile is calculated as a weighted average of the net profit margins of company 8 and 9, using the value in step 1 (8.5) as weight:

$$2^{\text{nd}} \text{ quartile (median)} = (0.5 * 2.8) + (0.5 * 3) = \underline{2.9\%}$$

Hence, in the example above (table 4) the inter-quartile range equals the range between 1.45 percent and 4.78 percent. The median equals 2.9 percent, which can be applied as a proxy for the arm's-length-based net margin under the TNMM-method.

For comparison, note that due to a few extreme observations in the 3<sup>rd</sup> quartile, a simple average of the net margins in table 4 is higher than the median at 2.9 percent. The mean net margin in percent equals the sum of net margins for all observations divided by the number of observations:

$$61.1\% / 16 = \underline{3.82\%}$$



### *Calculation of inter-quartile range and median for a multiple-year period:*

When carrying out a database search it can often be useful to extract multiple-year data for a number of reasons. For example, a multiple year analysis can reveal information about a specific comparable that leads to its rejection. For example, a multiple-year analysis might reveal that a comparable's net margin has been continuously negative over a 5-year period. If the other comparables have reported positive net margins for the same period, this could indicate that the aforementioned comparable is not operating at market efficient terms and hence should be excluded from the sample. Furthermore, multiple-year data can be useful when seeking to evaluate the relevant business or product life cycle of the comparable. If the product traded by a multinational is at a high-profit point in its life cycle whereas a comparable's accounting data indicate that its product is at a less-profitable stage in the life cycle, then the multinational should reconsider whether the comparable should be included. Conversely, when a comparable has a profit margin record (multiple years) that is similar to the multinational, this indicates that the comparable can be used for transfer pricing purposes.

Multiple-year data can also be used to examine volatility of comparables. For example, if the subsidiary has limited functions and risks, this suggests that it should have stability in its profit margin. If a comparable has high volatility in its profit margin over a multiple-year period, this indicates that its function and risk profile differ, and hence it should be reconsidered whether the comparable should be excluded from the sample. In addition, multiple-year data can be used to detect anomalies in the accounting data of comparables. For example, if a comparable in a highly stable business has one year of extreme profit or loss this should be further examined. It might be that the comparable has also engaged in highly risky business activities in this particular year which has caused a significant deviation from the profit level in that particular industry. In this case, the comparable can be excluded from the total sample. Another solution could be to include the comparable but exclude the particular year where the anomaly occurred, due to the potential difference in risks between the multinational and the comparable for that particular year.

While the number of years to be covered by a multiple-year analysis cannot be generalized as this depends on the nature of the business and the function, asset and risk profile of the multinational, a period of 3-5 years is often used in practice. Below is shown an example of how to calculate inter-quartile range and median for a multiple-year period.

**Example:** Table 5 illustrates the accounting data extracted from a database in a random form. The weighted net margins of the individual independent companies are calculated as the periodical sum of the net profit divided by the periodic sum of the revenue.

Table 5 Accounting data from a database

Company	Revenue, million dollars				Net profit, million dollars				Net margin (weighted average)
	Year 1	Year 2	Year 3	Σ	Year 1	Year 2	Year 3	Σ	
1	\$ 120	\$ 125	\$ 140	\$ 385	\$ 10	\$ 10	\$ 12	\$ 32	8.31 %
2	\$ 50	\$ 55	\$ 65	\$ 170	\$ 5	\$ 4	\$ 6	\$ 15	8.82 %
3	\$ 40	\$ 35	\$ 45	\$ 120	\$ 5	\$ 5	\$ 5	\$ 15	12.50 %
4	\$ 25	\$ 25	\$ 30	\$ 80	\$ 3	\$ 4	\$ 3	\$ 10	12.50 %
5	\$ 140	\$ 160	\$ 155	\$ 455	\$ 11	\$ 12	\$ 12	\$ 35	7.69 %
6	\$ 100	\$ 105	\$ 105	\$ 310	\$ 5	\$ 6	\$ 5	\$ 16	5.16 %
7	\$ 240	\$ 260	\$ 260	\$ 760	\$ 15	\$ 17	\$ 20	\$ 52	6.84 %
8	\$ 130	\$ 130	\$ 130	\$ 390	\$ 9	\$ 8	\$ 10	\$ 27	6.92 %
9	\$ 270	\$ 280	\$ 290	\$ 840	\$ 20	\$ 21	\$ 25	\$ 66	7.86 %
10	\$ 330	\$ 330	\$ 335	\$ 995	\$ 25	\$ 29	\$ 31	\$ 85	8.54 %
11	\$ 15	\$ 15	\$ 20	\$ 50	\$ 1	\$ 3	\$ 3	\$ 7	14.00 %
12	\$ 50	\$ 60	\$ 70	\$ 180	\$ 6	\$ 8	\$ 8	\$ 22	12.22 %
13	\$ 180	\$ 190	\$ 180	\$ 550	\$ 12	\$ 12	\$ 10	\$ 34	6.18 %
14	\$ 220	\$ 210	\$ 225	\$ 655	\$ 11	\$ 14	\$ 14	\$ 39	5.95 %
15	\$ 155	\$ 150	\$ 170	\$ 475	\$ 12	\$ 18	\$ 18	\$ 48	10.11 %
16	\$ 40	\$ 40	\$ 50	\$ 130	\$ 2	\$ 4	\$ 4	\$ 10	7.69 %
17	\$ 120	\$ 130	\$ 140	\$ 390	\$ -50	\$ -40	\$ -40	\$ -130	-33.33 %
18	\$ 200	\$ 220	\$ 250	\$ 670	\$ 45	\$ 55	\$ 60	\$ 160	23.88 %

The analysis of the extracted data in Table 5 illustrates that company 17 and 18 have reported significantly different net profit margins compared to company 1-16. A further data extraction from the database (not shown here) reveals that company 17 is at the beginning of the product life cycle where large marketing costs and investments in manufacturing equipments cause a negative net margin at -33.33%. In addition, a further examination of company 18 reveals that it engages in *multiple* businesses and industries besides the one under examination, and relatively higher net margins apply to these other businesses and industries. Therefore, company 17 and 18 are excluded as comparables.

Table 6 illustrates the final sample of companies that will be used to calculate the inter-quartile range and median. The companies are listed according to their net profit margin (weighted average).



**Table 6** Sample of companies that will be used to calculate the inter-quartile range and median

Figure 10-6. Revenues and net profits of independent companies (loss-making excluded)										
Company	Revenue, million dollars				Net profit, million dollars				Net margin (weighted average)	
	Year 1	Year 2	Year 3	Σ	Year 1	Year 2	Year 3	Σ		
1	\$ 100	\$ 105	\$ 105	\$ 310	\$ 5	\$ 6	\$ 5	\$ 16	5.16 %	
2	\$ 220	\$ 210	\$ 225	\$ 655	\$ 11	\$ 14	\$ 14	\$ 39	5.95 %	
3	\$ 180	\$ 190	\$ 180	\$ 550	\$ 12	\$ 12	\$ 10	\$ 34	6.18 %	
4	\$ 240	\$ 260	\$ 260	\$ 760	\$ 15	\$ 17	\$ 20	\$ 52	6.84 %	
5	\$ 130	\$ 130	\$ 130	\$ 390	\$ 9	\$ 8	\$ 10	\$ 27	6.92 %	
6	\$ 40	\$ 40	\$ 50	\$ 130	\$ 2	\$ 4	\$ 4	\$ 10	7.69 %	
7	\$ 270	\$ 280	\$ 290	\$ 840	\$ 20	\$ 21	\$ 25	\$ 66	7.86 %	
8	\$ 140	\$ 150	\$ 155	\$ 445	\$ 11	\$ 12	\$ 12	\$ 35	7.87 %	
9	\$ 120	\$ 125	\$ 140	\$ 385	\$ 10	\$ 10	\$ 12	\$ 32	8.31 %	
10	\$ 330	\$ 330	\$ 335	\$ 995	\$ 25	\$ 29	\$ 31	\$ 85	8.54 %	
11	\$ 50	\$ 55	\$ 65	\$ 170	\$ 5	\$ 4	\$ 6	\$ 15	8.82 %	
12	\$ 155	\$ 150	\$ 170	\$ 475	\$ 12	\$ 18	\$ 18	\$ 48	10.11 %	
13	\$ 50	\$ 60	\$ 70	\$ 180	\$ 6	\$ 8	\$ 8	\$ 22	12.22 %	
14	\$ 40	\$ 35	\$ 45	\$ 120	\$ 5	\$ 5	\$ 5	\$ 15	12.50 %	
15	\$ 25	\$ 25	\$ 30	\$ 80	\$ 3	\$ 4	\$ 3	\$ 10	12.50 %	
16	\$ 15	\$ 15	\$ 20	\$ 50	\$ 1	\$ 3	\$ 3	\$ 7	14.00 %	

Below is shown how to calculate the inter-quartile range and the median, based on the weighted net margins.

**Step 1** 1<sup>st</sup> quartile and n = 16:  $(\text{quartile number}/4) * (n+1) = (1/4) * (16+1) = 4.25$

Since the value of the 1<sup>st</sup> quartile does not equal an n-value, the 1<sup>st</sup> quartile is calculated as a weighted average of the net margins (the weighted averages) of companies 4 and 5, using the value in step 1 (4.25) as weight:

1<sup>st</sup> quartile:  $(0.75 * 6.84) + (0.25 * 6.92) = \underline{6.86\%}$

The 3<sup>rd</sup> quartile and median is calculated in a similar manner:

**Step 1** 3<sup>rd</sup> quartile and n = 16:  $(3/4) * (16+1) = 12.75$

Since the value of the 3<sup>rd</sup> quartile does not equal an n-value, the 3<sup>rd</sup> quartile is calculated as a weighted average of the net margins (the weighted averages) of companies 12 and 13, using the value in step 1 (12.75) as weight:

3<sup>rd</sup> quartile =  $(0.25 * 10.11) + (0.75 * 12.22) = \underline{11.69\%}$

Similar, the median (2<sup>nd</sup> quartile) is calculated as follows:

**Step 1** 2<sup>nd</sup> quartile and n = 16:  $(2/4) * (16+1) = 8.5$

Since the value of the 3<sup>rd</sup> quartile does not equal an n-value, the 2<sup>nd</sup> quartile is calculated as a weighted average of the net margins (the weighted averages) of companies 8 and 9, using the value in step 1 (8.5) as weight:

$$2^{\text{nd}} \text{ quartile (median)} = (0.5 * 7.87) + (0.5 * 8.31) = 8.09\%$$

Hence, in the example above (table 3) the inter-quartile range equals the range between 6.86 percent and 11.69 percent. The median equals 8.09 percent which can be applied as a proxy for the arm's-length-based net margin under the TNMM-method.

## **Summary**

In the first sections of this chapter we have described the different types of transfer prices that can be used when divisions trade internally. In addition we have explained the consequences of using the different transfer prices on resource allocation and profitability. We have also explained the fundamental concepts in international transfer pricing and provided examples of their application in practice. We have presented the comparability factors when evaluating to what extent market transactions can be used as comparables for the inter-company transfer in multinational enterprises. We have also described three widely accepted transaction methods and two profit methods, and the strengths and weaknesses of these methods. Finally, we have illustrated the use of accounting databases and shown examples of how publicly available accounting data can be used to determine transfer prices and profit margins through statistical analysis. However, it is important to recognize that international transfer pricing is not an exact science, and as was illustrated above, a number of subjective evaluations are necessary<sup>11</sup>. The important task is to ensure a thorough understanding of how and to what extent each corporate unit contributes to the multinational's value-creating activities.

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<sup>11</sup> See Cools et al. (2008), Cools and Slagmülder (2009), and Plesner Rossing & Rohde (2010) for practical examples of how international transfer pricing and tax compliance are managed in a multinational setting.

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### Index terms

**Arm's-length principle** – entails that when multinationals price inter-company cross-border transfers, they should set a price that equals the price that independent companies would have reached *for a similar transfer under similar conditions*.

**Arm's-length range** – is a range of figures (e.g. net profit margins reported by independent comparable companies) that if applied to the tested party (e.g. a business unit) in an inter-company transaction, is considered to represent arm's length behavior.

**Benefit test** – is a test of whether an independent party would have been willing to either pay for the activity (e.g. a service) if performed for it by an independent party or would have performed the service in-house for itself.

**Comparability factors** – are the factors to be examined in order to evaluate if an uncontrolled transaction can be compared to a controlled transaction in order to determine its transfer price.

**Comparable uncontrolled transaction (CUT)** – is a transaction between two independent parties that is comparable to a transaction between related parties (e.g. two companies that are members of the same MNE group). This can be either a comparable transaction between two parties where neither are part of the MNE group (an external CUT) or it can be in the situation where the group company sells product to an independent party as well as a related party (an internal CUT).

**Corresponding adjustment** – is the adjustment made in a tax jurisdiction that corresponds to the adjustment made in another tax jurisdiction to ensure that the allocation of profits between the two jurisdictions is consistent.

**Inter-company transfer** – is a transfer that takes place between two associated companies, e.g. two business units that are part of the same multinational enterprise.

**Inter-quartile range** – is the range between the third and first quartile.

**Market price** – represents the price paid by the buyer of a good, service, asset, or any other tangible or intangible object that represents economic or commercial value, given that the buyer and seller can be considered as independent parties.

**Markup** – is the part of a cost-plus transfer price that exceeds the cost incurred by the supplier of a good or service.

**Multinational enterprise** – is a group of associated companies that performs business operations in multiple countries.

**Uncontrolled transaction** – is a transaction that takes place between independent companies.

**Opportunity costs** - are the economic value forgone by not selecting the best economic alternative for the company

**Perfect Competition** - a market form that requires full transparency both in the supply market and resource market, which will only happen where products and resources are characterized by high homogeneity and where there appears to be no preferences between different customers

**Transfer pricing** - are prices (monetary value) of goods, services, and intangibles transferred between internally related organizational units in the same organization.

**Exercises<sup>12</sup>:**

1-1

**CARDEALER (Part 1)**

Cardealer is a large car company in Copenhagen. It is structured into the following departments:

Sales Department for new and used cars (Sales Manager T. Hoegh)

Garage (Garage Manager H. Wessel)

Parts and Accessories Department (Procurement Manager M. Andersen)

Accounting Department (Chief Accountant C. Petersen)

HR Department (HR Manager P. Richardsson)

The owner P. Hansen is an experienced businessman who has seen it as its duty to employ competent department managers who manage tasks independently, which is why Cardealer is a highly decentralized organization. Department heads prepare their budgets entirely on their own, and then the Chief Accountant undertakes the consolidation of the total budget. Control of each department's performance budgets takes place at quarterly budget meetings where deviations between budget and accounts are discussed. Any coordination problems between departments are often handled by the department heads themselves. Only in those relatively rare instances where agreement cannot be reached with Mr. Hansen, a meeting between the involved parties is held, and the meeting usually succeeds in reaching a solution which everyone agrees on. In general, the departments are treated as independent companies. The department heads have almost unlimited authority, but in return the full responsibility for the profitability of their business.

At the latest budget meeting with H. Wessel, the Garage Manager, it was noted with regret that despite many efforts the workshop's results had not improved. 5 years ago the company inaugurated a new building where all departments could fit under one roof. The move from the old premises, which were in another part of town, mainly affected the garage, which lost a lot of old, loyal customers. This combined with the transition to new and expensive technology that has not quite lived up to expectations meant that the garage initially suffered considerable financial losses which it has now managed to reduce. However, the expected profit has failed to materialize. The results of the latest quarter are shown in Figure 1.

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<sup>12</sup> The cases on international transfer pricing have been developed together with Peder Reuther, KPMG Denmark.

## Transfer Pricing

Table 1. Profit and loss statement for Cardealer.xlsx - Microsoft Excel																		
P13																		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Garage:					Sales Department:												
2																		
3	Sold labour					10.486.370			Cars sold					100.727.930				
4	Paid labour					4.558.600			Cost of cars sold					85.193.390				
5	Contribution margin 1					5.927.770			Contribution margin 1					15.534.540				
6																		
7	Fringe benefits			263.190					Sales commision			5.757.380						
8	Salery unproductive time			497930		761.120			Preperation			881.410						
9	Contribution margin 2					5.166.650			Warranty work			648.480						
10									Service work			816.000		8.103.270				
11	Tools			243.480					Contribution margin 2:					7.431.270				
12	Foreman salery			220.000														
13	Other saleries			1.983.120					Saleries			2.621.000						
14	Guarantee on repairs (x)			239.920					Marketing cost			1.527.500						
15	Rent			546.480					Demo cars			480.000						
16	Administration costs			2.000.000					Rent			403.190						
17	Depreciation			200.000		5.433.000			Administration costs			2.000.000		7.031.690				
18	Loss					-266.350			Profit					399.580				
19																		
20																		
21	(X) This account represents a balancing item "Sold																	
22	Labor."Repairs that may be redone at no charge is credited as																	
23	"sold labour". Any spareparts used is credited as revenue in																	
24	the spare parts department, but also debited the amount																	
25	invoiced on the account " Guarantee on repairs".																	
26																		
27																		
28																		
29																		
30																		

### Required:

1. What conditions must be met if the profit or loss statement of a department is to be used as a measure of the department's performance?
2. Have these conditions been met in Cardealer?

1-2

### CARDEALER (Part 2)

In his efforts to improve the financial performance in the garage, H. Wessel, the Garage Manager, has examined the transfer pricing system and found that an adjustment is required. He has therefore asked for a meeting with the Director and all department managers with the subject of transfer pricing as the only item on the agenda.

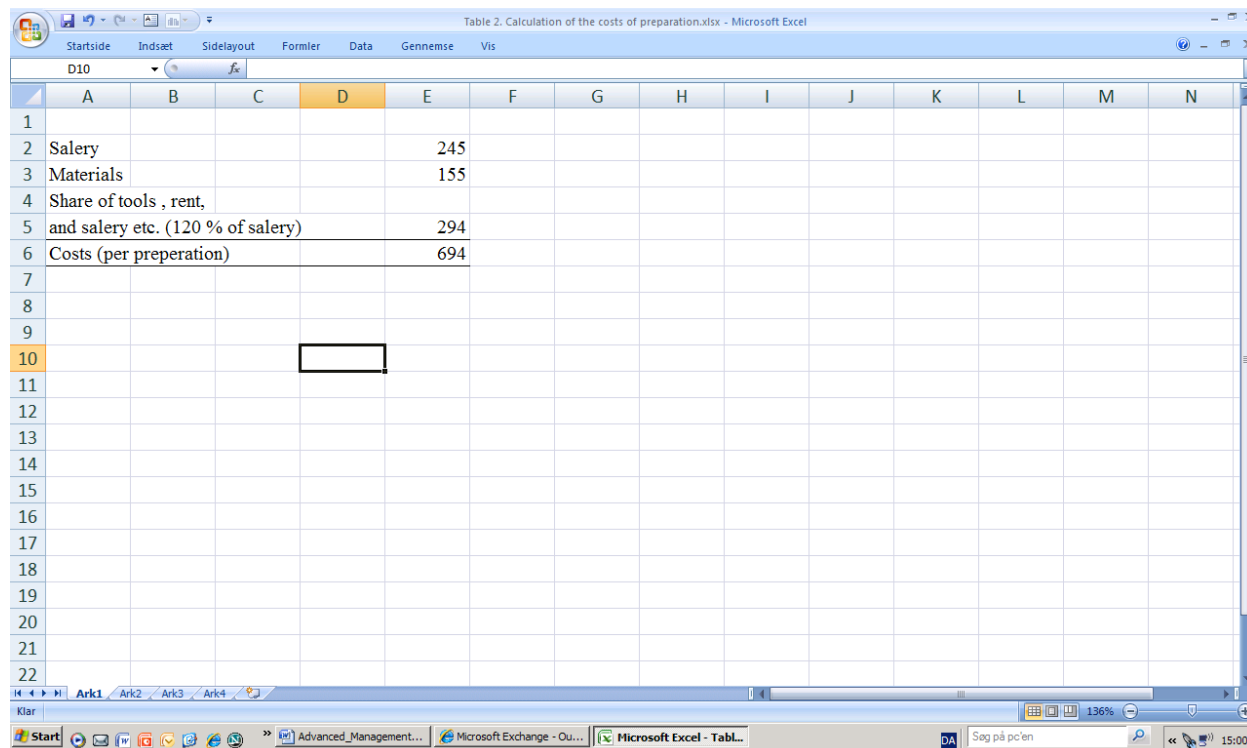
The following discussion took place at the meeting:

Garage Manager Wessel: "As you all know, I have recently studied the prices we use in the company when we buy and sell internally. I will briefly explain the facts as they stand, seen from the garage point of view. We earn our money by selling repairs. In addition, we use parts and labor. The spare parts which we get from Mr. Andersen's department we bill at sales prices, but they are recorded in the parts and accessories department's accounts, since you have said that the cost of those of Mr. Andersen's staff who are engaged in providing us with spare parts must be covered by the sale that takes place through the Garage.

At the end of a year bonus from the spare parts department at 5% of sales of spare parts that go through the garage. But it does no more than 750.000 DKK. Of the revenue that we create in the garage, we must deduct parts sales and consider sales of labor. The major part of our revenue obviously comes from selling directly to customers, but we still spend a significant portion of our work hours to help the sales department. We can divide our internal sales into:

- a) Preparation of new cars (checking, cleaning, polishing)
- b) Warranty repairs
- c) Maintenance and preparation of used cars
- d) Warranty repairs of used cars
- e) Other tasks (polishing and preparation of display cars, etc.)

With regard to the preparation of new cars, the situation is that we lose money every time we prepare a car. As an example, which pretty well illustrates the current situation, I may mention that we get 400 DKK for polishing a new car. This price has not been adjusted in the last 4 years. According to table 2 our costs of polishing are around 700 DKK:



The screenshot shows a Microsoft Excel spreadsheet titled "Table 2: Calculation of the costs of preparation.xlsx". The spreadsheet has columns A through N and rows 1 through 22. The data is as follows:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2	Salary				245									
3	Materials				155									
4	Share of tools , rent,													
5	and salary etc. (120 % of salary)				294									
6	Costs (per preparation)				694									
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														

The same polishing job can be sold to a customer for 1300 DKK. Every time we polish a car for the sales division, we lose approximately 900 DKK.

With respect to warranty repairs for new cars, we charge the sales department for the full sales price. The sales department is later credited with the reimbursement we receive from the importer via the complaints system.

The price of maintenance and preparation of used cars is often negotiated, which means that our foremen often agree to perform work at a price below our normal selling prices. In my opinion, it is not without problems to introduce such a concept. It weakens the respect of selling prices to the effect that the foremen might be tempted to refuse customers. A settlement at market prices must be the correct way to do it.

Warranty repairs for used cars are charged to the customer for the portion of the invoice amount that the customer is to pay. The remaining invoice amount is charged to the sales department. Again, as a principle we use selling prices.



Lastly, regarding the cleaning of display cars, for that type of small tasks we usually also use the selling price, which is 2.5 times the hourly rate.

I think we should be consistent and move on to apply sales prices everywhere in our internal billing. That means that I have to ask to have prices for the preparation of both new and used cars adjusted to current prices, which would imply an increase for the garage of approximately 25% of this revenue item. It is much easier to work with and we train the foremen to not deviate from the prices. If we can't get approval of a price adjustment, we are in a situation where we must refuse to prepare cars for the sales department, because it is more worthwhile to sell hours to clients. Finally, I believe that the issue of transfer pricing is a formal matter. It stays in the family as they say. We're all together in the same boat and must help each other."

**Required:**

What are your comments on:

1. The transfer pricing of spare parts to the spare parts department?
2. The transfer pricing from the sales department for preparation of new cars?
3. The transfer pricing from the sales department for warranty repairs?
4. The transfer pricing from the sales department for repair and preparation of used cars?
5. The transfer pricing from the sales department for cleaning of display cars?

1-3

**CARDEALER (Part 3)**

Sales Manager T. Hoegh:

"I don't think it can be correct that we are to pay sales prices for getting cars prepared. I am very happy with the old system. It seems odd that the garage can talk about making money from polishing our cars. As far as I can see, no money is earned before the car is sold to a customer. We should remember that the transfer prices are the basis of our decision-making when we calculate a trade-in offer for a customer. If we really are going to regulate prices, I think we should go in the opposite direction and introduce cost-based transfer prices throughout the company. In this context I would like to mention that last year we had to pay 100,000 DKK to the garage for the maintenance of our display cars, a job that takes no more than a few hours a day. We have considered hiring a part time employee and do the work ourselves. We can almost pay the person with the amount we save in garage bills. I strongly feel that we have to consider using cost-based transfer prices. Furthermore, the workshop had 17% idle capacity during the last quarter. It may be better if you let the mechanics work on our own cars instead of letting them walk around with their hands in their pockets. "

**Required:**

Are there any arguments in the sales manager's reply that cause you to change your answers to Cardealer Part 2?

1-4

**CARDEALER (Part 4)**

Garage Manager Wessel: "What is meant by the "cost-based transfer prices" that Mr. Hoegh now mentions. Should they be perceived as materials and wages? Items such as wages to foremen, depreciation, tools, and warranty repairs constitute about 20% of the productive wages, and other labor costs and rents amount to roughly the same as the amount of remuneration paid. I can't see the reason in applying any cost-based transfer prices as long as we are expected to generate a profit."

Sales Manager Hoegh: "I am okay with selling prices, on condition that we are free to get our cars repaired and prepared elsewhere. I know many small garages that we could use to our benefit."

Procurement Manager Andersen: "I prefer to use selling prices everywhere in the company, and in this context I argue that we should eliminate the commission of 5% which is awarded to the workshop."

Chief Accountant Hansen:

"Maybe the correct principle lies somewhere in between the ones suggested by my colleagues. It is true that we do not earn any money by "shaving each other." On the other hand, we can't expect departments to work for each other for free. Perhaps part of the challenge is that we place too much emphasis on the concept of profitability of departments. We have always found it valuable to inform department heads about all items in their accounts. On the other hand, we have also seen significant items being rejected on the grounds that the department heads didn't have the autonomy to effect them. I think we should try to reach a compromise, perhaps in the form of a discount between departments. "

**Required:**

1. Based on your answers in Cardealer part 2 and 3, how will you comment on the 4 comments above?  
Give your suggestions to how the departments should coordinate their activities?
2. How do you suggest that the control of department efficiency be organized?

1-5

## **The Soft Drink Group**

Soft Drink Limited is a UK based multinational enterprise that manufactures and sells soft drinks world-wide. Soft Drinks Limited has a number of production and sales business units placed at strategic locations around the world. Competition is tough in the U.S. and Chinese market whereas the European market is heavily dominated by the Soft Drink Group. Soft Drink Limited is the principal company in the Soft Drink Group. It holds the Headquarters, carries out the strategic management of the Group and owns the intellectual property used by the Group such as technological know-how and trademarks.

Production business units are separate legal entities fully owned by Soft Drink Limited. They operate as contract manufactures, and sell the finished goods to headquarters according to a predetermined production schedule given to them by headquarters. The goods are legally owned by Soft Drink Limited the moment they are manufactured and placed at the inventory, which is administered by the production unit but owned by Soft Drink Limited. The goods are shipped to whatever destination Soft Drink Limited instructs. The production business units do not own the technology know-how put to use in the production process, but have ownership of the physical production equipment. They source the raw materials, performs standard quality control, pack and label and ships the finished goods to a destination given them to them by Headquarters. All other functions and risks of manufacturing, including currency risks, inventory risks, shipment costs, etc., are borne by Headquarters.

After purchasing the finished goods from the production business units, Headquarters re-sell the goods to the sales business units who distribute them to food chains, restaurants, drugstores, and other soft drink retailers in the countries subject to the sales business units' geographic responsibility areas. As it is the case for the production, sales business units are separate legal entities fully owned by Soft Drink Limited. They operate as limited risk distributors. Headquarters also performs a number of corporate group services, e.g. IT, Legal, and Accounting to all the production and sales business units.

Due to the increasing volume of inter-company trade, Soft Drink Limited has decided to hire you as a transfer pricing manager to handle the increasing number of transfer pricing tax compliance issues facing the Soft Drink Group. In relation to this, the CFO has asked you to provide him with a memo that contains inputs to the following issues:

### **Required:**

1. What inter-company transactions are taking place in the Soft Drink Group?
2. What transfer pricing methods would you consider recommendable and why? In addition, consider the balance between reliability and availability of the comparable data needed for the different methods. Finally, consider what data is actually available for you as a transfer pricing manager at Soft Drink Limited; what departments in Soft Drink Limited would you have to rely on to do your job and how could they help you?
3. Depending on the method(s) you have chosen, what comparability factors are relevant? Would the characteristics of a given soft drink be relevant for the application of e.g. the TNMM?
4. Imagine that a production unit by a mistake in the production process actually mixes a soft drink into a flavor that proves to be quite good. The formula of the new flavor is sent to Headquarters who approves of it and sets it in production for sale worldwide. What transfer pricing implications should be considered? Who owns the new formula and why is this relevant? Remember, that whilst multinational enterprises in a globalized world care little about local country borders and legal entities, the opposite is the case for tax administrations.

1-6

## The Mobile Phone Group

Mobile Phone Limited is a multinational enterprise that manufactures and sells cell phones world-wide. It has a number of production and sales business units placed at strategic locations around the world.

Mobile Phone Limited is the principal company in the Mobile Phone Group, holding the Headquarters, carrying out the strategic management of the Group and owning the intellectual property used by the Group such as patents and trademarks. The production business units operate as contract manufacturers and the sales business units operate as limited risk distributors. Mobile Phone Limited buys the manufactured cell phones from its contract manufacturers and then sells them to its limited risk distributors for resale in their geographic responsibility areas.

It has been decided to apply the Transactional Net Margin Method to the contract manufacturers as well as limited risk distributors in the Group, using a net cost plus as the Profit Level Indicator for contract manufacturers and the EBIT margin for the limited risk distributors.

The accounting department has emailed you a benchmark study from a commercial database of 16 independent companies' net margins for producers and distributors of cell phones. See figure 1a and 1b.

Case 10-7 Mobile Phone Group - Figure 1a & 1b.xlsx - Microsoft Excel

### Required:

Based on this, the CFO has asked you to:

1. Calculate the inter-quartile range and the median of the listed net margins, after having excluded loss-making companies from the search, and come up with recommendations for target earnings.

2. Present an implementation strategy for the contract manufacturers and the limited risk distributors to realize target earnings. Consider if reaching target is necessary or if earnings within the inter-quartile range is sufficient.
3. In the calculations above, loss-making companies were excluded. The CFO has asked for your opinion on whether this makes sense, or if loss-making companies should be included in light of the financial crisis' impact on company earnings in part of 2008 and all of 2009 This could be very helpful to the CFO, who would like to minimize earnings abroad and bring more cash to Headquarters.
4. In practice, distributors in some countries are in fact reporting relatively low margins due to unfavorable market conditions. With this in mind, imagine that in country A the Mobile Group is faced with the competitive challenge that local producers of mobile phones are state subsidized. However, the marketing department has estimated that presence in the market is a necessity due to a global branding strategy, and management agrees even though this will likely entail zero profits or maybe even losses in a given period of time. Consider if zero profits in country A from a transfer pricing perspective can be accepted for a company with the exact same function and risk profile as a profit making company in another country.

1-7

### **High-Tech Ltd.**

High-Tech Ltd. manufactures and distributes laptops.

The company is the principal company in the High-Tech Group, holding the Headquarters, carrying out the strategic management of the Group and owning the intellectual property used by the Group such as patents, technological know-how and trademarks. It has a number of production business units (PBUs) and sales business units (SBUs) placed at strategic locations in Europe and Asia. All business units are separate legal entities, fully owned by High-Tech Ltd.

High-Tech Ltd. (Headquarters) provides Group Services to its PBUs and SBUs. More specifically, it provides IT Services, Legal Services, HR Services, Finance, and Investor Relations to all subsidiaries. The provisions of these services – all are standard services -- are governed by a Group Services Agreement, providing the terms and conditions for the provision of the Services, including the transfer pricing methodology applied. Total costs incurred at specific service centers in 2010 are described below.

<b>Service</b>	<b>Costs</b>
Legal	\$600,000
IT	\$375,000
Finance	\$870,000
HR (50% general HR, 50% training of PBU engineers)	\$870,000
Investor relations	\$540,000

Moreover, an external benchmark search of independent service providers is presented in the spreadsheet below.

Figure 2. Revenues and net profits of independent service providers

Company	Revenue, million dollars			Net profit, million dollars		
	2008	2009	2010	2008	2009	2010
1	\$ 83	\$ 84	\$ 91	\$ 8	\$ 8	\$ 8
2	\$ 33	\$ 41	\$ 46	\$ 3	\$ 3	\$ 3
3	\$ 29	\$ 27	\$ 27	\$ 4	\$ 4	\$ 6
4	\$ 18	\$ 18	\$ 24	\$ 1	\$ 1	\$ 3
5	\$ 106	\$ 122	\$ 109	\$ 7	\$ 7	\$ 6
6	\$ 67	\$ 80	\$ 70	\$ 3	\$ 3	\$ 4
7	\$ 154	\$ 179	\$ 175	\$ 11	\$ 11	\$ 15
8	\$ 88	\$ 92	\$ 91	\$ 7	\$ 6	\$ 4
9	\$ 186	\$ 197	\$ 201	\$ 15	\$ 15	\$ 15
10	\$ 235	\$ 234	\$ 231	\$ 18	\$ 21	\$ 22
11	\$ 8	\$ 8	\$ 15	\$ 1	\$ 1	\$ 1
12	\$ 36	\$ 39	\$ 50	\$ 4	\$ 4	\$ 4
13	\$ 123	\$ 130	\$ 133	\$ 6	\$ 6	\$ 7
14	\$ 151	\$ 150	\$ 154	\$ 8	\$ 10	\$ 8
15	\$ 104	\$ 109	\$ 123	\$ 10	\$ 10	\$ 11
16	\$ 24	\$ 33	\$ 28	\$ 1	\$ 2	\$ 1
17	\$ 77	\$ 92	\$ 84	\$ -28	\$ -21	\$ -18
18	\$ 133	\$ 148	\$ 179	\$ -63	\$ -56	\$ -7

The transfer pricing manager has asked for your opinion on the following issues with regards to cost allocations

## Required:

1. What transfer pricing methodology would you expect to see applied in the Group Services Agreement and why?
2. Assume that the TNMM is applied with a net cost plus as the profit level indicator. Calculate the inter-quartile range and median for 2008-2010. Loss-making companies are to be excluded.
3. Discuss what allocation keys could be relevant for allocation of each service centers' costs.
4. The functional analysis indicates that 85% of HR, 75% of IT, 45% of Legal, and 60% of Finance costs are allocable to business units, as these proportions of costs passes the benefit test. Conversely, none of the costs incurred at the 'Investor relations' service center passes the benefit tests.

Determine the total cost allocation to production and sales business units, given that the median is applied as the mark-up.

(Note that the functional analysis has illustrated that when costs are allocable to both PBUs and SBUs, the proportion of costs should be equally divided between PBUs and SBUs, i.e. PBUs and SBUs each receives 30% of total finance costs, since 60% of these costs are allocable).

5. In U.S. based regulation, standard services for which the median comparable arm's length net cost plus markup is less than or equal to 7% can be carried out without a markup, the so-called 'service cost method' (SCM). How does it affect your answer in question 4?

1-8

**Sunglasses Ltd.**

The Sunglasses Group is a world-wide design, manufactures and distributes sunglasses. One of the companies in the group – a company that both manufactures designs and distributes – has incurred the following costs for the production of 5,000 units:

Cost types	Costs
Direct materials	\$11,240,000
Direct manufacturing labour costs	\$5,500,400
Direct machining costs	\$1,310,000
Manufacturing overhead costs	\$425,000
R&D costs	\$1,480,000
Design of products and processes costs	\$535,000
Marketing costs	\$645,000
Distribution costs	\$349,000
Customer service costs	\$395,000

**Required:**

1. If the company decides to use the cost plus method, what cost types would you include in the cost base?
2. If the company decides to use the TNMM, what cost types would you include in the cost base?
3. Given the TNMM is applied, using the net cost plus as profit level indicator, and a mark-up of 5% is added to the cost base, i.e. the sum of CoGS and OPEX, what is the transfer price pr. unit to sales business units if 5,000 units are produced?

**1-9 Office Ltd.**

Office Ltd. manufactures and distributes different types of office supplies to retailers in more than 50 countries world-wide. Different products, e.g. pens, papers, envelopes etc. are manufactured in countries where tax rates are relatively low. For example, in one of its manufacturing business units in country A, the corporate tax rate is 10%. One of the distributors in Office Ltd. is located in country B with a corporate tax rate of 32%. It has been decided to apply the TNMM method, using net cost plus as the profit level indicator, to all manufacturing business units in Office Ltd. Below is a benchmark study that the chief controller has withdrawn from an accounting database.



**Figure 3. Revenues and net profits of Independent manufactures**

Company	Revenue, million dollars			Net profit, million dollars		
	2008	2009	2010	2008	2009	2010
1	\$ 100	\$ 110	\$ 120	\$ 10	\$ 11	\$ 12
2	\$ 40	\$ 42	\$ 45	\$ 4	\$ 4	\$ 4
3	\$ 30	\$ 27	\$ 28	\$ 5	\$ 5	\$ 6
4	\$ 20	\$ 22	\$ 20	\$ 2	\$ 1	\$ 1
5	\$ 110	\$ 112	\$ 110	\$ 5	\$ 5	\$ 6
6	\$ 60	\$ 80	\$ 70	\$ 2	\$ 6	\$ 5
7	\$ 155	\$ 180	\$ 170	\$ 10	\$ 12	\$ 15
8	\$ 90	\$ 95	\$ 100	\$ 7	\$ 8	\$ 9
9	\$ 190	\$ 200	\$ 215	\$ 15	\$ 16	\$ 17
10	\$ 220	\$ 221	\$ 225	\$ 17	\$ 19	\$ 20
11	\$ 15	\$ 14	\$ 12	\$ 1	\$ 1	\$ 1
12	\$ 37	\$ 45	\$ 50	\$ 3	\$ 3	\$ 4
13	\$ 120	\$ 145	\$ 200	\$ 6	\$ 7	\$ 11
14	\$ 150	\$ 160	\$ 160	\$ 9	\$ 9	\$ 10
15	\$ 103	\$ 111	\$ 120	\$ 9	\$ 9	\$ 10
16	\$ 30	\$ 33	\$ 28	\$ 2	\$ 2	\$ 1
17	\$ 70	\$ 90	\$ 95	\$ -5	\$ -2	\$ -1
18	\$ 110	\$ 150	\$ 174	\$ -52	\$ -35	\$ -6

Moreover the chief controller has informed you that cost incurred in the manufacturing business unit in country A for the relevant accounting period are as follows:

Cost types	Costs
Direct materials	\$16,240,000
Direct manufacturing labour costs	\$8,500,400
Direct machining costs	\$1,620,000
Manufacturing overhead costs	\$789,000
R&D costs	\$2,480,000
Design of products and processes costs	\$945,000
Marketing costs	\$118,000
Distribution costs	\$353,000
Customer service costs	\$202,000

Assume that all expenses are to be included in the cost base under the TNMM-method and tax authorities in country A and B will accept any net profit margin as long as the markup applied to the cost base is within the inter-quartile range. The CFO has asked you to provide him with the following information.

## Required:

1. What is the most tax effective net margin to apply? In your answer, assume that loss-making companies are excluded from the benchmark study (figure 3).
2. What is the monetary after tax difference between applying the most and least tax effective net margin? (Both margins must be within the inter-quartile range)
3. What would your answer be to question 1 if the corporate tax rates were reversed?