Valuing know-how and knowledge through bottom-up approaches

Top-down and bottom-up approaches represent the two types of valuation logic that exist for the quantification of arm’s-length royalties for know-how and knowledge in intercompany transactions. Top-down approaches typically take the overall profits generated in the combined operations as a starting point and then carve functional routine profits and other profit elements out thus deriving a residual value for the transferred intangibles and provided entrepreneurial services. In contrast to that, bottom-up approaches start with analysing and valuing the specific activities and single know-how and knowledge elements involved in the transaction. Such bottom-up approaches can be applied for the calculation of the contribution of know-how and knowledge in the context of overall profit splits and residual profit splits. In certain cases, bottom-up approaches can also be applied on a stand-alone basis for the calculation of arm’s length royalties regarding intercompany transactions involving know-how and knowledge.

Know-how and knowledge

Know-how and knowledge represent important drivers for business success. However, the distinction between those two elements is difficult. One approach for differentiating between the two is to test whether the components can be transferred on a stand-alone basis (know-how/intellectual property) or if the elements are closely connected to a person and can therefore only be provided through entrepreneurial services (knowledge/entrepreneurial services).

The value elements developed centrally by large multinational companies (MNCs) typically consist of two different types: (1) “tacit” knowledge that cannot be externalised into explicit know-how. Such knowledge is usually transferred in the heads of the employees via entrepreneurial services. (2) explicit know-how (for example, concrete instructions, standards, policies, manuals, and directives) which can be transferred on a stand-alone basis and represents classical intellectual property (IP). Both elements, know-how (IP) and knowledge (entrepreneurial services) have to be rewarded at arm’s-length when made available in intercompany transactions.

Despite the differences between IP and entrepreneurial services, the valuation principles for both elements are similar. The reward is typically calculated based on the contribution of the involved parties irrespective of whether this contribution stems from transferred IP or provided entrepreneurial services. Comparable to the application of the profit split method for joint venture arrangements, an advantage of analysing the parties’ contribution lies in the fact that the quantification can include external data but still offers enough flexibility by taking into account specific, possibly unique, facts and circumstances of the associated enterprises, while still constituting an arm’s length approach to the extent that it reflects what independent enterprises would reasonably have done if faced with the same circumstances (OECD...
Valuation of know-how and knowledge


Defining routine intercompany services and differentiating such transactions from entrepreneurial services as well as from the transfer of know-how and IP elements represents a major task in any MNC’s transfer pricing strategy. Guidance is provided by the 2006 US service fee regulations, which state that services are considered as routine if they do not contribute significantly to the fundamental business success of the taxpayer. The US service fee regulations underline that the arm’s-length character of intercompany remuneration systems depends strongly on the actual benefits that the recipient receives from a related party. Put differently, arm’s-length charges have to be analysed in the context of what an independent third party would have been willing to pay for a service, know-how or any other form of IP.

A sharp distinction has to be made about whether the transaction consists of routine services or non-routine elements. Routine services are usually charged at full cost plus an arm’s-length mark-up. The appropriateness of such mark-ups can often be verified by benchmark analyses. In contrast to that, non-routine or entrepreneurial services and IP are typically more difficult to value. Reliable benchmark data cannot exist due to the uniqueness of the services and the embedded intangible elements.

**Intercompany value-adding elements and services**

The head offices of MNCs are frequently engaged in unique operations that are valuable and rarely available elsewhere on the market. Know-how and access to valuable IP elements is provided to affiliated entities within the corporate network. In this context, the development of a business model and its constant enhancement, as well as strategic guidance by senior executives and experts, must be understood as key value creating know-how and entrepreneurial activities.

The packages of IP and entrepreneurial activities provided by MNC’s head offices regularly show a high degree of similarity to franchise arrangements. In such arrangements, a global brand name is made available to the franchisee in combination with valuable know-how and entrepreneurial support activities. An important characteristic of these elements lies in the fact that they are of a non-routine nature. Considered on a stand-alone basis, particular activities may be considered as routine, but put into the context of the transfer of a unique business model, a cost-based routine payment may not be adequate to reward the head office for its entrepreneurial role. In an uncontrolled arrangement between third parties, a corporate head office would demand remuneration for the transferred know-how and the performed entrepreneurial activities. Such arm’s-length remuneration may be based on the revenues of the affiliated entity and should be in line with the commensurate-with-income principle. The higher the gross benefit for the recipient (excess income), the higher the reward of the head office that renders the services and the IP should be.

**Activities within a MNC’s network**

Practical experience shows that the following activities are frequently provided for the benefit of the international entities within an MNC’s operative network: information technology (IT), legal, accounting, procurement, and human resources. In addition, various industry-specific know-how and support is rendered to the entities abroad. Examples include regulatory assistance for companies operating in the energy sector, supply chain management support in the automotive industry or network assistance in telecommunications. Whereas the non-industry specific activities such as IT and legal, can be considered as routine services on a stand-alone basis, they may be deemed entrepreneurial when analysed as part of the overall business concept that is transferred to the different entities. Local business units with access to a superior IT infrastructure, a well-qualified workforce and industry-specific global know-how are often able to achieve a higher profitability level compared to entities without such access.

This know-how is typically generated through long-lasting and continual processes. Experts at head office level built up strategic and operational know-how with respect to the unique business model of an MNC. This know-how enables each MNC’s unique footprint and helps the local entities to be more successful than their local competitors that do not have access to IP, entrepreneurial support and a global brand name (for a detailed description of specific microeconomic valuation principles for the valuation of brands, refer to Willingness to pay: the microeconomic toolbox applies to how brand valuation by Alexander Vögele and Richard Sedlmayr on page 3 of this publication). The general principles of the entrepreneurial benefits provided by the head offices of MNCs have been extensively discussed in literature. However, few publications provide concrete examples regarding the quantification of such benefits and the calculation of arm’s-length royalty rates. Whereas top-down approaches such as the residual profit split analysis are frequently employed for the quantification of IP and entrepreneurial support, less attention has been put on bottom-up valuation approaches. However, bottom-up approaches that take the concrete head office activities as a starting point can be well-suited for quantifying reliable licence fees.

**Bottom-up quantification approaches**

Two main steps have to be conducted when establishing arm’s-length licence fees for various transactions between affiliated entities.

- The benefit that is provided to the recipient has to be quantified.
- An appropriate arm’s-length share of this benefit needs to be calculated that is channelled back to the provider of services and IP for its arm’s-length reward.

Transactions between an MNC’s head office and its international affiliated business units serve as a good example for
Valuation of know-how and knowledge

demonstrating the application of bottom-up valuation approaches.

The starting point for the bottom-up quantification is an analysis of the various activities performed by the head office. A thorough review of the profile of the head office helps to identify the activities and IP elements that are performed for the benefit of the local business units. Then, relevant experts that possess in-depth knowledge about the identified activities and IP elements have to be identified.

**Expert surveys as bottom-up valuation tool**

Expert surveys are an important tool that are often used for calculating the value of intangible assets in a wide range of cases, including product liability, royalties for IP and antitrust. During legal proceedings, survey evidence is frequently used in trade mark litigation cases. The US Federal Judicial Centre’s Reference Guide on Survey Research describes the use of surveys in trade mark infringement cases as routine. However, the admissibility of expert survey results depends on various elements such as for example:

- the qualifications of the survey experts;
- the helpfulness of the testimony to the facts; and
- the reliability and fitness of the testimony.

Regarding the selection of experts it has to be ensured that their expertise provides a trustworthy and authoritative information source for reliably assessing the value of the entrepreneurial activities performed and intangible elements provided by the head office. It also has to be ensured that the interviewed experts represent both sides of the transaction: the head office and the relevant local business unit. Asking a similar number of experts from both sides of the transaction guarantees that all circumstances and conditions that have an impact on the valuation are adequately respected.

The following figure illustrates the selection process that is typically carried out to identify representative experts for a bottom-up quantification survey:

The experts at head office level should be surveyed independently from the experts at the local business unit for various reasons. Reliable answers regarding the benefits generated can only be ensured if both sides of the transaction independently assess the value creation from their individual perspective. Having another expert’s opinion as point of reference might influence the personal judgement of the specific expert. This is especially true in cases where the experts know each other and cooperate on a daily basis.

**Survey questions for bottom-up quantification**

Having identified the precise activities and IP elements and after having selected trustworthy and knowledgeable experts, the next step of every bottom-up analysis requires the development of survey questions designed to capture the specific value for each activity and transferred value element.

The local net benefit of any head office activity or provided intangible either becomes manifest in reduced costs, in increased revenues or a combination of both. Together with key experts, the impact of each individual benefit category needs to be assessed. For example, strategic procurement support may lead to reduced cost of sales (COS) and global support regarding the management of the supply chain may reduce operating expenses (OpEx) for local business units in the automotive industry. Simply put, the effect of the activities and intangibles needs to be analysed for each individual profit and loss (P&L) line. The experts are asked to provide their best estimates regarding the cost saving benefits for

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**Diagram 1: Selection of survey experts**

<table>
<thead>
<tr>
<th>Identify head office experts (in cooperation with global head)</th>
<th>Conduct interviews with head office experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct interviews with local experts</td>
<td>Contact CEO &amp; HR of local business units</td>
</tr>
<tr>
<td>Contact global head of function</td>
<td></td>
</tr>
</tbody>
</table>

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**Biography**

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Alexander Voegele is chairman of the advisory board of NERA Economic Consulting. For more than 25 years he has specialised in the development of innovative economic structures for transfer pricing strategies, and in defending major international transfer pricing cases.

Voegele and his NERA colleagues provide economic transfer pricing strategy and planning to clients facing M&As, dealing with organisational structuring and incentive management issues, and in need of market pricing evaluations. Having negotiated numerous bilateral and multilateral agreements involving Germany, France, the US, Japan, Canada, Mexico, and Australia, they have particular expertise structuring European arbitration and advance pricing agreements (APAs). They specialise in worldwide documentation, and valuing business and intellectual property.

Voegele publishes articles and books on transfer pricing, including the leading German commentary, Handbook of Transfer Pricing. He speaks at conferences in Europe, the US and Asia.
every head office activity. They are also asked to estimate the impact on revenue in case an activity or intangible does not lead to cost reductions but influences the revenue stream of the local business unit.

Aggregation of survey results

The expert's estimates are then grouped to calculate a hypothetical P&L that would occur without the entrepreneurial head office activities and the transferred IP elements. Diagram 2 summarises the aggregated results for an exemplary expert survey. The diagram illustrates how the total gross benefit for an exemplary local business unit can be directly quantified based on the expert survey results. As demonstrated in the diagram, expert A estimates that the revenue of the local operations would have been 5% lower without the valuable IP provided by the head office. The expert further estimates that COS and OpEx as well as financial expenses would have been 2% higher each without the involvement of the head office. Applying the average of all estimates provided by the local as well as head office experts (column g) to the actual P&L leads to an estimated (hypothetical) P&L that would have resulted without the elements provided to the local business unit. Comparing the actual with the estimated P&L yields the total benefit as estimated by the experts and expressed as earnings before taxes (EBT), here $4.2 million (column i).

The exemplary results show the aggregated outcome for all value elements provided by the head office. The total benefit must therefore be understood as an overall gross benefit comprising various elements and activities. When analysing benefits provided by a specific head office activity, for example, procurement support, only those answers provided by the interviewed procurement experts should be grouped and analysed. Assuming that procurement support mainly leads to reduced COS, the sample of "procurement experts only" will most likely show zero benefits regarding OpEx and financial expenses. The grouping of the expert's estimates according to their area of expertise allows calculating activity- or element-specific values.

Splitting the quantified gross benefits

The final step of every bottom-up quantification process regarding arm's-length licence fees consists of splitting the calculated total gross benefit between the provider of the services and IP (licensor) and the recipient of the benefits.

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**Diagram 2: Exemplary expert-survey results**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
<td>(f)</td>
<td>(g) + (h) + (i)</td>
<td>(j) + (k)</td>
</tr>
<tr>
<td>EARNINGS</td>
<td>100</td>
<td>-5%</td>
<td>0%</td>
<td>+5%</td>
<td>-5%</td>
<td>+4%</td>
<td>-2.5%</td>
<td>107.1</td>
</tr>
<tr>
<td>- Cost of sales</td>
<td>20</td>
<td>+2%</td>
<td>+3%</td>
<td>+12%</td>
<td>0%</td>
<td>+5%</td>
<td>+5%</td>
<td>21.1</td>
</tr>
<tr>
<td>- OpEx</td>
<td>20</td>
<td>+2%</td>
<td>0%</td>
<td>-1%</td>
<td>+2%</td>
<td>0%</td>
<td>+0.6%</td>
<td>20.6</td>
</tr>
<tr>
<td>= Operating Profit</td>
<td>60</td>
<td>12%</td>
<td>3%</td>
<td>1%</td>
<td>9%</td>
<td>1%</td>
<td>3%</td>
<td>63</td>
</tr>
<tr>
<td>- Financial Expenses</td>
<td>20</td>
<td>+2%</td>
<td>+3%</td>
<td>0%</td>
<td>+1%</td>
<td>0%</td>
<td>+1.2%</td>
<td>22.2</td>
</tr>
<tr>
<td>= EBT</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26.3</td>
</tr>
</tbody>
</table>

1 Estimated P&L without intangible and global intellectual property (hypothetical).

2 "+" means that the expert estimates this line in the P&L sheet to be higher (in percent) without head office support, know-how and entrepreneurial services.

3 "-" means that the expert estimates the respective line to be lower (in percent) without head office support, know-how and entrepreneurial services.
Valuation of know-how and knowledge

(licensee). If all of the quantified benefit was to be paid to the licensor, the licensee would be indifferent to receiving and not receiving the head office support and IP elements. This price would not be the likely outcome of a bargaining process between independent parties. Instead, the licensee would bargain for a lower price. This means that the total benefit needs to be split between the involved entities. Various approaches exist to model the most likely negotiation outcome between independent third parties. These approaches are based on the contribution of the partners to the combined operations and their relative importance for the business success. Modern applications of profit splits also apply game theory as an analytical framework for modelling the arm’s-length allocation of profits between the different parties. More traditional methods advocate splitting the combined (residual) profits based on the contribution, for example, the capitalised investments of each party. To gain reliable results it is always necessary to respect differences regarding the parties’ assumed risks. Gestation lags of the investments need to be respected as well (for an overview of different methods for splitting the benefit between the parties involved, refer to Contribution Analyses under the Profit Split Method by Sébastien Gonnet and Pim Fris on page 8 of this guide).

Expert surveys for the split

Similar to a survey for the determination of the benefits provided to the recipient, expert surveys can also provide appropriate results regarding the split of the quantified gross benefits. In this context, the experts are asked to provide their best estimate regarding a reasonable reward that the head office should receive for the created gross benefits (for example, a share of the $4.2 million calculated in the preceding example). It is important that the experts consider factors such as bargaining power, assumed risks, replacement costs and other facts that are deemed important for the split.

To reasonably assume that the experts are able to determine the arm’s-length split of the benefits, they need to have an in-depth knowledge of the specific industry and understand the value contribution of the different participants engaged in the combined operations. Furthermore, they need to possess detailed expertise regarding the value adding activities and IP elements involved in the transaction. Specific split factors should be developed for the specific value elements. This means that, for example, procurement experts should be asked to provide their estimate regarding the split of the benefits provided through procurement know-how and entrepreneurial head office services. In a last step, the quantified shares that are attributable to the licensor (the head office) are aggregated to an overall share of the total benefit, the total license fee.

If the licensor’s aggregated shares of various value elements in the example above would amount to $2.1 million, this would mean that 50% of the gross benefits are split between the head office and the local business unit. The arm’s-length licence fee in this example would therefore be $2.1 million.

Bottom-up vs top-down

Bottom-up approaches for analysing know-how, IP and entrepreneurial services provide a valuable alternative compared to more traditional top-down methodologies. A key advantage consists of the fact that the valuation is close to the actual benefit elements involved in the transaction. By this, it can be ensured that the calculated licence fees are in line with the underlying activities and value elements. In contrast to that, residual profit split analyses often fail to establish the necessary link between the provided elements and the quantified benefits. Deducting functional profits for routine activities from the actual profits leads to a residual value but it is often difficult to prove that this residual value is actually created by the activities and intangibles received by the local entity. The link between quantified benefits and received services and intangibles is often unclear. Here, a bottom-up valuation can create additional value.

Bottom-up methodologies may either be applied on a stand-alone basis or for the calculation of the contribution of the participating parties in the context of contribution profit splits and residual profit splits. The involvement of experts from both sides of the transaction ensures a smooth buy-in of the different parties and guarantees that the calculations respect the relevant valuation perspectives. In case qualified representative experts can be identified for a trustworthy application of the bottom-up survey-based quantification, the analyses will provide reliable results regarding arm’s-length licence fees.
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