If applied based on sound economic principles, contribution analyses are powerful tools to address the bulk of most complex transfer pricing issues, explain Sébastien Gonnet & Pim Fris

In transfer pricing, a contribution analysis is ultimately a quantitative analysis of the contribution of each party to a transaction, to derive an arm’s-length split of profit within an integrated multinational group. The OECD Guidelines make explicit reference to a “contribution analysis” as an analysis used in the profit split method under which the combined profits from controlled transactions are divided between the associated enterprises based upon the relative value of the functions performed (taking into account assets used and risks assumed) by each of the associated enterprises participating in those transactions, supplemented as much as possible by external market data that indicate how independent enterprises would have divided profits in similar circumstances.

It is noted that the OECD contribution analysis is directly connected to the profit split method, one of the transactional profit methods. The more the transactions are interrelated and the value created significant, the more an in-depth understanding of the (qualitative) contribution of the parties and corresponding quantification are needed. In cases when the parties are involved in limited and simple functions, bearing limited risks, and certainly not at the origin of any high-value intangible assets, other approaches may be more appropriate, involving the use of more direct evidence, such as external comparable data.

Contribution analyses may apply to various circumstances and different techniques apply to a contribution analysis. All these techniques aim to evaluate quantitatively the contribution of each entity to a relationship or a cooperation. The techniques that could apply include:

- The capital investment approach;
- The compensation approach;
- The bargaining theory approach;
- The survey approach.

If applied based on sound economic principles, contribution analyses are powerful tools to address the bulk of most complex transfer pricing issues. Moreover, with increased sophistication of transfer pricing techniques around the world, expectations from the tax authorities increase, rendering rule-of-thumb approaches (involving for instance a split one-third to two-thirds between licensor and licensee, respectively) outdated.

**Contribution analyses: definitions and scope of application**

Contribution analyses, at least in the OECD sense, are quantitative analyses. Their ultimate goal is to assess quantitatively the contribution of group entities to identify an arm’s-length allocation of profit and ultimately, by applying the appropriate pricing method, derive a transfer price for, for example, the transfer of the goods, for the licence
of an intangible and for a provision of services within a group.

In the first generation of arm’s-length applications for transfer pricing purposes, the emphasis was on the price of transactions (look for comparable uncontrolled prices, CUPs/comparable uncontrolled transactions, CUTs). The second generation focussed on the allocation of profit to one of the parties (the tested party), as a test of the presumed arm’s length character of the transactions involved (Comparable profit method, CPM; transactional net margin method, TNMM). What today can be identified as the third generation of arm’s-length applications, takes the broad pattern of relations between parties into consideration. In that third generation of approaches, it is recognised that hybrid, composite methods generate the most relevant reflections of arm’s-length profit allocation.

As such, contribution analyses are valuable in a wide range of circumstances when the transacting parties are jointly involved in complex transactions, ultimately at the origin of high-value intangibles. With the increasing number of intra-group transactions and the more in-depth cooperation and relationship, interrelated activities, shared risks and responsibilities among different group entities at the level of most multinational groups, these situations are becoming more and more frequent. Therefore, the need for contribution analyses is growing in transfer pricing day-to-day practice. As contribution analyses take into consideration the specific facts of the case and their unique character, they cope with “grey area” situations, where it is not clear that one entity is “routine” and the other one is “entrepreneur”. As such, they can, different from the traditional “functional” analysis, manage any situation, and be a powerful tool, as part of any transfer pricing analysis. The most frequent cases when contribution analyses are performed are in conjunction with profit split analyses, as indicated by the OECD. The following elements highlight the in-depth interaction between profit split and contribution analyses:

- Profit split analyses and contribution analyses are both to be implemented in certain circumstances
- Interrelated, integrated transactions;
- Participation in development of high-value and unique intangible assets from both sides of the transactions;
- Joint value creation process and coalition entered into by transacting parties.
- Profit split analyses necessarily require some perspective about the contribution of the parties involved in the transactions, at some point in time of the analysis, for the two types of profit split approaches indicated by the OECD:
- The overall profit split method: the combined profits (generally, the combined operating profits) are split among the participants in the value chain based on the relative value of the functions performed. In order to justify this split, the OECD Guidelines recommend the use of external market data. In practice, the determination may be based on an analysis of the relative value of each participant’s contribution.
- The residual profit split method (RPSM): this relies on a categorization of functions, risks and assets according to which “routine” functions are distinguished from non routine / entrepreneurial functions. Once arm’s length returns have been attributed to routine functions, residual profits are split between the two affiliates based on an appropriate allocation principle. In this respect, the OECD indicates “Indicators of the parties’ contributions of intangible property and relative bargaining positions could be particularly useful in this context” (para. 3.21).

It is noted that, with the increasing volumes and complexity of intra-group transactions, economic approaches to applying the arm’s-length principle are becoming more sophisticated. For instance, as shown in some other articles in this publication, approaching the valuation of a piece of intellectual property (IP), such as a brand or know-how, from alternative economic angles can be sensible. In these circumstances as well, when a piece of IP is evaluated, contribution analyses are required to quantitatively assess the share attributable to the IP owner (in most cases, the licensor of the IP) and the share attributable to the IP user and/or developer (the licensee of the IP).

In total, contribution analyses are particularly useful in conjunction with profit split analyses, as the two techniques are complementary and may be used under similar circumstances. Contribution analyses are also useful in all contexts when two (or more) related parties are jointly involved in value creation and when “what each brings on the table” cannot be easily benchmarked by external sources.

The capital investment approach

The capital investment approach consists of assessing the relative contribution of the transaction parties using the capital invested in the intangibles by both parties.

This approach relies on the underlying economic relationship between capital investment, including investment in intangible capital, and operating profit, as the basis for determining profit split proportions. This investment-return paradigm is consistent with the guidance provided by the Internal Revenue Service (IRS) regulations to estimate the value of intangible contributions “by the capitalized cost of developing intangibles and all related improvements and updates less an appropriate amount of amortization based on the useful life of each intangible”. Actual expenditures on intangibles are deemed appropriate “if the intangible development expenditure of the parties are relatively constant over time and the useful life of the intangible property of all parties is approximately the same”.

This approach is also consistent with the OECD Guidelines:

- It can be difficult to determine the relative value of the contribution that each of the related participants makes...
to the controlled transactions, and the approach will often depend on the facts and circumstances of each case. The determination might be made by comparing the nature and degree of each party’s contribution of differing types (for example, provision of services, development expenses incurred, capital invested) and assigning a percentage based upon the relative comparison and external market data (para 3.18).

It is noted that the OECD Guidelines also refer to the expenditures in the intangibles, for the purpose of contribution analyses.

Even though this approach seems the most obvious one for assessing the relative contribution of the parties to a transaction, it is applicable only under certain circumstances:

- The application of capital-based approaches requires that intangibles be well defined, as well as the parties that are the economic owners of such capital, involving an in-depth understanding of the circumstances of the transactions.
- A capital-based contribution approach is relevant only to the extent that expenditures building up capital can provide a realistic picture of the contribution of the parties. It is therefore more applicable in industries, involving the need for competitively determined, repetitive, continuing investment in critical intangibles (such as automotive R&D) as a comparison to highly uncertain, low probability investments such as pharmaceutical R&D, where the nexus between historical cost incurred and value is often tenuous and unreliable.
- If capital and/or expenditures are used as a proxy for the contribution of the parties, it is easier to apply the analysis if both parties contribute to the same type of capital and/or expenditures. If the analysis of the circumstances of the transaction have demonstrated that two types of intangibles can be considered as high-value intangibles in a certain industry, then a capital-based contribution is more difficult due to the different nature of capital and/or expenditures involved.
- In most cases, the invested capital to be used as a proxy for the contribution of the parties, will not be visible on the balance sheet of the transaction party. If the capital invested has not been accounted as such by the transacting party, the contribution analysis will involve building up an economic capital, with, for example, appropriate amortisation rates, gestation lags and decays, decorrelated from the accounting. Even when the capital invested is accounted for and thus visible, adjustments may be performed to obtain an economic value for this capital invested. As such, it is essential to stress that the capital investment approach does not rely on a comparison of the costs incurred on a yearly basis by the parties but on a comparison of the capital invested by the parties, the entrepreneurial capital, necessitating a special attention to the building up of an economic (entrepreneurial) capital on both sides of the transaction. Finally, the capital-investment approach is not recommended in situations where this approach does not provide a realistic picture of the contribution of the parties.

The compensation approach

As part of the different approaches to quantify the parties’ contribution, labour cost data for each transacting party can be used as well. Labour costs of one transacting party are then capitalised to capture the total amount of time necessary to build the corresponding intangible asset. Labour costs may include salary, fringe and bonuses. The rationale for using full compensation data is that it enables taking into account both
The performance and the labour market value of the individual. The use of such labour cost data is based on the assumption that labour costs are representative of the economic value to the company that is created by an individual employee. Most of the time, the labour costs which can be used are that of executive people. This approach seems in line with the concept recently developed by the OECD, and presented as part of the report on the Attribution of Profits to Permanent Establishments Part I (December 2006), the “Significant People Functions” concept. Under this concept, ...to supplement the functional analysis of Article 9...the authorised OECD approach attributes to the PE those risks for which the significant functions relevant to the assumption and/or management ..... of risks are performed by people in the PE and also attributes to the PE economic ownership of assets for which the significant functions relevant to the economic ownership of assets are performed by people in the PE. (para 18)

This approach is particularly useful, in situations where labour resources are the critical entrepreneurial success drivers.

However, this approach requires specific care, as it should be based on an in-depth understanding of the market, the group’s value chain and success drivers, the nature of the functions and the roles and responsibilities of the persons, the costs of which are the basis for the assessment of the contribution. Moreover, like in the capital investment approach, the challenge here is to use economic techniques to assess the entrepreneurial capital of each entity, based on labour costs, in combination with, for example, appropriate amortisation rates, decay and lags.

The bargaining theory approach

Game theory can provide additional insight into the contribution of the different group entities, as well. The OECD indicates that relative bargaining positions can be used as “indicators of the parties’ contributions of intangible property” (para. 3.21).

Bargaining theory can be a powerful tool for assessing the contribution of the entities, as it allows the evaluation of the role and so the contribution, of each actor collaborating and creating a gain or an added value.

Bargaining theory was formalised by Lloyd Shapley and derived from the game theory, further developed (and popularised) by John Nash. Game theory proposes a modelling of strategic interactions between agents trying to maximise their return by cooperating or not.

Following the work based on game theory, Shapley developed a theory providing an assessment of the bargaining power of each agent playing in a game. Shapley theory aims at evaluating the role of each player and at defining a quantitative tool to measure this role. It describes one approach to the fair allocation of gains obtained by cooperation among several actors. The assumptions of the theory are simple: a coalition of actors cooperates and obtains a certain overall gain from that cooperation. The basic question raised by Shapley is: How to attribute the gain to each actor?

Shapley Value is based on a “marginality principle”. The “marginality principle” states that the share of joint output attributable to any single factor of production should depend only on that factor’s own contribution to output. Indeed, Shapley Value measures the participation of each agent to the total gain in determining its marginal contribution.

Consequently, Shapley Value is a way to simulate the distribution of the total gain to the players, assuming that they all collaborate.

Shapley Value has been applied in several fields, from political science to finance.

Based on practical experience, it is the opinion of the authors that Shapley Value finds a sensible application field in transfer pricing for several reasons:

- The starting point for Shapley Value is a long-term cooperative relationship between a number of players who

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**Biography**

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Pim Fris is a special consultant in NERA’s global transfer pricing practice. He is a leader of the firm’s European transfer pricing services, operating from Paris and London. He is one of the most experienced and recognised transfer pricing experts in Europe.

Fris retired from Ernst & Young (E&Y) at the end of 2002, having been a partner in the tax practice for 23 years. He established E&Y’s transfer pricing practice in Amsterdam, which grew to be the largest dedicated transfer pricing practice in continental Europe.

He was also the leader of E&Y’s European transfer pricing network and a member of the global leadership team. His responsibilities covered the handling of transfer pricing controversies, as well as the design, implementation and documentation of transfer pricing policies. He has worked across most commercial and industrial sectors, including the automotive, pharmaceutical, retail, and consumer products industries. Before becoming a partner at E&Y, Fris worked for the Netherlands Ministry of Finance, where he served as a tax inspector.

Fris is a frequent lecturer and has published extensively in the area of transfer pricing, tax and economics. He completed his degree in economics at Groningen University in the Netherlands, specialising in tax and transfer pricing for multinational enterprises.
will only join a coalition if they expect to gain from it. Within a multinational group, in most cases, parties are engaged in a long-term, cooperative relationship, with the shared intention of consistently realised success.

- Shapley Value allows the economic assessment of each player’s power based on its contribution to the joint cooperation. In transfer pricing, at arm’s length, parties should be remunerated in line with each party’s value contribution.

- And most importantly, Shapley Value represents a theoretically sound link to the central question in transfer pricing: what is arm’s length? What would third-parties have negotiated?

The application of Shapley Value is not a straightforward exercise and involves in-depth analyses and documentation, as much (or even more) as the other traditional transfer pricing methods. One of the major challenges in using Shapley Value is to derive a gain for coalitions that are not involving all parties to a transaction. Although gains from subcoalitions can be benchmarked, the only gain which, in transfer pricing, is known is that of the coalition that all group entities jointly form. The gain can be expressed in different ways, presumably expressed in relation to some profit or performance indicators, but at least the gain from this cooperation can be observed, as the coalition within group companies has been actually formed and a profit has actually resulted from it. In applying Shapley Value, not only the gain from the coalition involving all players should be identified; there is a need to identify the gain derived from any possible coalitions. If we take the example of three group entities, each involved in the development of significant intangibles, with interrelated operations critical for the success of the whole group, the application of Shapley Value involves identifying the gain resulting from any possible coalitions, including coalitions of two entities only, and even the gain from stand-alone entities; in other words, Shapley Value implies to be in a position to answer the following questions: if you miss one partner in the coalition, what would you be in a position to gain? This is a very difficult question to answer, for several reasons:

- The situations being looked at are hypothetical situations, as stated above. For many of these however, we can use comparable profit analyses as benchmarks.

- Operations within a group can be so much integrated that it is difficult to imagine one party without the others. This is exactly the situation for which Shapley Value can suggest solutions, where traditional benchmarks fail to do so.

Despite the inherent difficulties, the application of Shapley requires the identification of such gain of coalitions not containing all members. What is at stake is to identify what are the second-best options available to group entities if one or several parties do not cooperate and the extent to which one partner would have performed without the cooperation of the other partners. This measurement should rely on sound economic principles, with an in-depth understanding of the industry environment and market structure, the nature of the intangibles developed by cooperating group entities and the market pricing process. Ultimately, external market evidence can be used as reliable information to assess these potential gains.

Shapley Value finds a natural application in the context of business change often leading to “migration” and valuation discussions. In these contexts, the gain resulting from a (new) cooperation can be assessed by the difference in gains before and after the change. As an illustration, after a large reorganisation within a multinational group, with a new definition of roles and responsibilities and more intense cooperation between certain parties, Shapley Value can be used as a tool for splitting the additional profit generated by this cooperation between group entities, in line with the new roles and responsibilities and contribution.

**The survey approach**

Survey approaches can be applied in certain circumstances where it is not possible to identify external or internal data to be used as the basis for the contribution analyses. One of the main advantages of applying a survey approach is to avoid (or substantially) rule-of-thumb approaches for assessing the respective contributions of the parties. The survey approach identifies observers both inside and outside the company who can provide expert opinions regarding the assumptions for the split. With this approach, the reliability of valuing IP can be increased. A representative (that is, statistically significant) panel of industry experts provides information for the assessment of valuation assumptions. In general, personal interviews provide the most reliable results. The main challenge lies in identifying internal and external experts (although not necessarily used in the same context) and compiling relevant questions. Statistical tools are applied to convert the aggregated expertise into quantitative measures that can be used for numerical valuation. The survey approaches also necessitate excellent documentation of the options retained, the survey design and the survey answers.

**Combination of ways**

In applying contribution analyses that form the heart of profit split methods, all these techniques can be used as appropriate tools for quantifying the contribution of group entities. In most cases, it is a conjunction of these techniques that will allow to approach the correct, arm’s-length answer. Such an answer would serve applications for testing purposes, as well as for purposes of identifying ex ante terms and conditions for related transactions. As the quantification may require significant resources, it is recommended that these approaches be applied in contexts where the complexity of transactions, the interrelation of the roles, and responsibilities and the value of intangibles at stake justify and necessitate the in-depth economic analyses involved.
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