Intangible Transactions and Profit Allocation in the Semiconductor Industry

Intangible assets are the core value of the semiconductor industry. Complexity arises in the profit allocation among related parties because the arm’s length principle is hard to apply due to the unique nature of intangible transactions. This article explores the commercial activities of the semiconductor business and analyses possible solutions from some BAPA cases in local practice.

1. Transfer Pricing Issues of Intangible Transactions in the Semiconductor Industry

The manufacture of semiconductors is recognized internationally as Taiwan’s most critical industry. The supply chain around semiconductors on this small island has evolved into a very complex and comprehensive level operation, covering the installation, maintenance, repair and refurbishment of equipment and key components, as well as integrated circuit design, chemicals, wafer foundries, assembly, testing, etc. The rapid increase in “stay-at-home” economic activities as a result of the COVID-19 pandemic has increased global demand from industries requiring chips, including automobile, personal computing and telecommunications. The sudden increase in demand for chips caused disruptions to the supply chain and logistical efficiency of the semiconductor industry. The origin of the pandemic’s impact on the shortage of chips lies in an overdependence on Asia, and especially Taiwan, as the primary manufacturing source of semiconductors.

Chips are difficult to produce because significant capital expenditure needs to be put into manufacturing capabilities and the engineering works take a very long time, delaying the point at which production efficiency can be affected. “Intangible assets” mean that it is highly capital-intensive to accumulate the value of engineering contribution during the production process. When transfer pricing (TP) issues occur during the intangible transactions carried out in the semiconductor industry, big challenges arise in relation to the arm’s length principle, including the selection of TP methodology, finding comparable entities and the valuation of intangible assets.

The profit allocation of intangible transactions between related parties is a difficult and challenging issue for those multinational enterprises operating semiconductor businesses in Taiwan. Most of the bilateral advanced pricing agreements (BAPAs) that have been filed with local competent authorities are related to semiconductor businesses seeking certainty with regards to profit allocation for foreign and domestic affiliates. There have been very lengthy negotiations between the competent authorities of tax treaty partners, e.g. the Netherlands1 and Japan2, with respect to where intangibles are created, what TP method should be selected and how to attribute profits for foreign and domestic affiliates. Intangible-related tax laws and regulations are not amended quickly enough to keep pace with the trends of the digital economy. When local tax authorities are reviewing or investigating a TP case, there is no sufficient resource to facilitate and support the audit procedure. Some new concepts of intangibles adopted in the OECD Transfer Pricing Guidelines have not yet been introduced into the local TP regulations, Enterprises Income Tax Transfer Pricing Audit Guidelines (TPAG). This means that the approach to the negotiation of BAPAs by the local competent authorities is inconsistent with that of the competent authorities of its tax treaty partners and causes serious delays to the conclusion and signing off of BAPAs.

2. Amendments to TPAG and DEMPE Analysis of Semiconductor Business

On 28 December 2020, the Minister of Finance enacted the Amendments to TPAG in order to revise intangible-related articles by referring to OECD BEPS Actions 8-10 (published in 2015) and the OECD Transfer Pricing Guidelines (updated in 2017). Based on the amendment, local transfer pricing filing and auditing can comply with international standards. All transfer pricing documentation prepared for fiscal year 2020 shall apply the new regulations. Local tax authorities will begin to receive the newly updated TP documentation later in 2021. It is expected that many questions and arguments will be raised by taxpayers or tax officials when it comes to adopting the amendments in their TP documentation.

The most relevant article to be introduced in the amendments is the DEMPE analysis: “[w]hen enterprises and tax authorities review intangible transactions to see whether the profits allocation is within arm-length, it should analyze the degree of comparability for the con-

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2. Agreement between the Association of East Asian Relations and the Interchange Association for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to Taxes on Incomes.
tribution levels of functions executed, assets employed, risks assumed by considering the following 5 activities: Development, Enhancement, Maintenance, Protection, and Exploration (DEMPEx).

Taking the semiconductor equipment industry as an example, the value creation functions of intangibles are performed cooperatively between foreign and domestic affiliates. In most situations, the related-party transactions are carried out between foreign affiliates which are parent companies in Japan, Netherlands or the United States, and the domestic affiliates which are subsidiaries.

From a functions review, the major functions performed by foreign affiliates are research and development, programming application software and the manufacturing and sales of brand new or refurbished semiconductor equipment. The supplementary functions performed by foreign affiliates are the material management, quality control, procurement, maintenance and protection of intellectual properties such as patent, trademark and copyright. The major functions performed by domestic affiliates are equipment installation and modification to enhance the efficiency of operating equipment, maintaining client relationships to collect data from the exploitation of equipment and improving the operation of hardware and software. The supplementary functions performed by domestic affiliates are: sales support for the distribution of equipment, warranty services, testing and monitoring the operation of equipment and the purchase of key components and spare parts for repair, refurbishment and replacement.

From a risk review perspective, although foreign affiliates are mainly responsible for the risks of design, development and the production of equipment, domestic affiliates also assume technical risks for the maintenance and operation of equipment. The local employees with professional skills can provide rapid and precise services to foundry clients that produce chips. The employees of domestic affiliates not only help maintain relations with clients but also promote business opportunities for foreign affiliates to sell equipment to local foundry clients. Summarizing the DEMPE analysis, foreign affiliates take on the main responsibilities for “development and protection”, while domestic affiliates are accountable for “enhancement and maintenance”. Both parties are collaborating in terms of “exploitation” by involving advanced technology and precision engineering processes through the use of equipment. Therefore, both parties are jointly contributing value added to trade and marketing intangibles.

3. Comparable Search and Risk Analysis for the Semiconductor Industry

The semiconductor business has the characteristics of particularity and rarity. Some semiconductor companies even sell products or provide services whose technology is so unique that they are without competitors. Considering the difficulties of searching for comparable uncontrolled transactions or entities in a public database, the MOF introduced a new way to accept a single comparable uncontrolled transaction as the most reliable result of arm’s length for a controlled transaction if there is no significant price variance in an open market between a controlled transaction and a comparable uncontrolled transaction, or between the related party engaging in a controlled transaction and a non-related party engaging in a comparable uncontrolled transaction. When a significant variance exists, the single comparable is still acceptable if the variance can be removed by reasonable adjustment. In practice, when searching for comparable entities, it is easier to find some companies performing similar functions, but they may assume quite different risks in the semiconductor industry. Therefore, the variance of comparable entities that have been screened out usually exists in the risks undertaken.

In order to make the risk analysis framework for transfer pricing documentation and the audit procedure more complete, the MOF introduced a whole new article to assess the risks by the following steps: (i) identify the significant risks from an economic perspective; (ii) clarify the allocation of risks on the concluded contracts from an economic perspective; (iii) through functions analysis, verify whether the participants engaging in economic activities of controlled transactions do have the real functions of risk taking and risk management; (iv) assess whether the participants involved in the controlled transaction comply with the conditions of the contract and have the financial capability to bear and control the risks effectively in order to ensure that there is consistency between the contract conditions and the actual behaviour of related parties; (v) in the event that any inconsistency is found, the risks should be reallocated to the party that effectively controls and bears risks with financial capability; and (vi) according to the result from the reallocation of risk, make appropriate adjustments to compensate the party in accordance with the levels of risks being undertaken and managed.

From a review of some related-party contracts in the semiconductor business, it is often found that domestic affiliates are designated as a limited risk or risk-free party. However, domestic affiliates are accountable for the quality control of the installation of equipment and monitoring the efficiency when the equipment is operating in the foundry’s factory. In addition, domestic affiliates have to maintain a close relationship with local customers to ensure the data of the equipment is being collected accurately from the customers and provide fast advisory services to customers whenever they have any questions or difficulties in relation to the operation of the equipment. Domestic affiliates also have a critical responsibility to work with customers’ engineers and obtain their opinions on improvement based on the exploitation of equip-

4. The top three foundries are Taiwan Semiconductor Manufacturing Co., Ltd. (TSMC), United Microelectronics Corporation (UMC) and Vanguard International Semiconductor Corporation (VIS). In 2020, TSMC had more than a 50% market share of chip production in the world.
5. Amendment to art. 7, para. 5, items 4.1 and 4.2 TPAG.
6. Art. 8-1 TPAG.
ment, before in turn feeding back to foreign affiliates who can improve the manufacturing process or even design a brand new generation of equipment. Therefore, domestic affiliates also undertake certain risks and carry out risk control management to reduce the operational risks for foreign affiliates with respect to the designing and manufacturing of equipment. Consequently, the actual risks taken by domestic affiliates may not be consistent with the contract conditions concluded by both related parties. The reality in commercial activities is that the risks are more likely to be shared between foreign and domestic affiliates.

In the amended TPAG, the following risks should especially be considered in the evaluation of intangible transactions: (i) development risks; (ii) product obsolescence risk; (iii) infringement risk; (iv) product liability risk; and (v) use risk. It is obvious that foreign affiliates that design and produce semiconductor equipment are fully responsible for the five kinds of risks. Therefore, domestic affiliates that provide sale support functions to help foreign affiliates sell the products to foundries should be allocated routine profits. However, domestic affiliates are accountable for the major risks of selling the key components and providing the repair or refurbishment services to foundry clients. Foreign affiliates become the suppliers of the key components to be remunerated with routine profits for carrying out the functions of manufacturing key components or procuring spare parts.

4. Selection of the Best TP Method and the Introduction of the Income-Based Method

When selecting the best TP method and tested party for semiconductor business, the approaches are quite different for equipment and key components. For example, with respect to profits to be allocated for equipment, the tested party should be a domestic affiliate, by applying the comparable profit method (CPM). The most frequent use of a profit-level indicator is in the case of return on sale if domestic affiliates are involved in certain sale functions, e.g., taking purchase orders and collecting receivables; alternatively, the Berry ratio is used when domestic affiliates simply provide logistic functions without any sale activities. This approach will leave all residual profits to foreign affiliates. Regarding the profits to be allocated for key components, it is more appropriate to select foreign affiliates as the tested parties by applying the CPM. The most frequent use of a profit-level indicator is the full cost markup if foreign affiliates produce the key components for domestic affiliates, or the Berry ratio if foreign affiliates simply purchase spare parts then resell to domestic affiliates. In the event that the risks have been shared between foreign and domestic affiliates and both parties make certain contributions to the value creation of trade and market intangibles, the CPM may not be appropriate as the best method. The profit split method (PSM) is becoming more and more commonly adopted by local tax authorities when doing the TP audit or negotiating a BAPA with other competent authorities. However, the main argument centres on how to decide the allocation key and the percentage of contribution for the sharing of residual profits between foreign and domestic affiliates. This argument between taxpayers and tax officials in TP audit cases, or between two competent authorities under BAPA negotiation, always takes a very long time to achieve its conclusion, while in some cases no conclusion is reached. In practice, the PSM is usually used by local tax authorities for reviewing and negotiating the cases during the process. When it comes to closing TP audit cases or concluding BAPAs, the CPM is still the most commonly applied method.

There are three basic methods for the transfer and use of intangibles in the TPAG: the comparable uncontrolled price method, the CPM and the PSM. If none of the three methods are adequate and another best method should be adopted, it requires advanced approval from the MOF. Cross-border activity related to the transfer of intangibles between two related parties or between non-related parties in the semiconductor business has increased very much recently. In order to justify a fair market price for the transfer of intangibles, a valuation report is usually the most relevant document, and the frequent use of the valuation method is “discounted cash flow” (DCF). Since DCF is not an allowed method for the transfer and use of intangibles, the MOF received many requests to grant permission for the adoption of DCF when taxpayers were preparing TP documentation or tax authorities were executing TP audits. In order to minimize the use of such an advanced approval procedure and facilitate the frequent request in practice, the MOF introduced the “income-based method” as the fourth method for the transfer and use of intangibles.

A new paragraph in the amendments also introduces the relevant factors of “economic substance” when evaluating the comparable situation and transactions actually incurred. Any fake or sham transactions should be “look-through” or disregarded, after which the economic benefits should be attributed to the related party that performs the functions and undertakes the risks. When the controlled transaction to be reviewed and tested concerns an intangible, the new paragraph adds the following factors to be considered: conditions of transfer, level of development, whether the ownership of the rights has been updated or changed, and the period to maintain this feature, remaining years of economic benefits and the expected interest to use the intangibles in accordance with the nature of transactions, e.g., a licence for the use of intangibles or to transfer the ownership of intangibles.

In addition to these factors to be considered, when adopting an income-based method, the following conditions and assumptions for the transfer or use of intangibles shall be evaluated in order to assess the fair market value of controlled transactions: (i) the accuracy and reliability of

7. Art. 9-2, para. 2 TPAG.
8. The Taiwan TPAG adopts the comparable profit method (CPM), not the transactional net margin method (TNMM).
9. Art. 11, para. 1, item 4 TPAG.
10. Art. 8, para. 1, item 1.2 TPAG.

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financial forecasting; (ii) growth rate; (iii) discount rate; (iv) remaining years of economic benefits; (v) assumption of tax effect; and (vi) other assumptions implicating the evaluation of intangibles. However, a valuation report needs a third-party professional appraiser to prepare and certify it. The selection of an appropriate third-party appraiser is sometimes a topic of debate between taxpayers and tax officials. From the tax officials’ perspective, the third-party appraiser engaged by taxpayers may not maintain complete independence in its certification of a valuation report for taxpayers.

5. Types of Intangible Assets for Taxable Incomes and Tax-Deductible Costs

When reviewing valuation reports in the semiconductor industry for the transfer of intangibles by adopting the income-based method, the types of income being identified from the transfer of intangibles are not often those with regard to patents, trademarks and copyrights. It is more common to see that the types of intangible being transferred are about secret formulas, industrial experience and technology (know-how), customer data and relationships, distribution rights and workforce. The article amended to the definition of “intangibles” is also critical for the identification of the controlled transactions that should be disclosed in TP documentation. In the original article 4, the definition of intangibles listed in the TPAG covered a very comprehensive scope: “copyright, patent, trademark, corporate name, brand name, design or model, plan, secret formula, trade secret, information or know-how concerning industrial, commercial or scientific experience, various franchise rights, market channel or website, client data and other rights with property value.” In the amended article 4, the following sentence is added: “any property not being tangible assets can be owned or controlled for using in commercial activities and be remunerated for the use or transfer of such properties between non-related parties.”

In the event that a semiconductor company transfers an intangible to an affiliate company, the transferee should compensate the transferor with an arm’s length price proved by a valuation report and report the taxable capital gains from selling intangibles are taxable but the transferee’s costs from buying intangibles are non-tax deductible. This double taxation issue cannot be resolved, even where a tax treaty applies. The scope of article 60 of the ITA should be amended to align the scope of intangibles more consistently with the scope of article 4 of the TPAG.

6. New Penalty Regimes for Non-Disclosure of Intangible Transactions

The last part of the amendment to the TPAG involves enforcing the penalty regimes on TP audited cases for the purposes of avoiding taxation base erosion and strengthening the obligation of mandatory disclosure for all controlled transactions in the tax returns and TP documentation by enterprises. It is quite common for tax authorities to discover some undisclosed controlled transactions related to the use or transfer of intangibles after carrying out a TP audit procedure. For example, a related party did not charge a royalty fee for licensing the use of intangibles to the other related party, or did not charge an adequate selling price for transferring the ownership of intangibles to the other related party. In the past, there was no penalty for undisclosed and under-reported controlled transactions, but rather tax liability was imposed with a certain interest charge upon TP adjustment. According to the amendment, a penalty of no more than 200% (volun-
tary disclosure and filing but under-reporting incomes) or less than 300% (no voluntary disclosure and filing any income) will be imposed in addition to tax liability being assessed by the tax authorities.

7. **TP Challenges in a Future World Full of Uncertainty**

The Amendments to the TPAG represent a very important step for TP documentation and auditing for intangible-intensive industries, especially the semiconductor industry. However, in practice, the TP documentation, TP audit and even BAPA negotiation processes for the semiconductor industry are still very challenging and time-consuming to conclude at a time when the world economy is full of uncertainties with regards to the future. Since early 2018 when the trade war started, the economic activities visions of this Act, any omission or under-reporting of income taxable hereunder shall be subject to a fine of no more than twice the amount of the tax evaded.”

18. Art. 110, para. 2 Income Tax Act: “[i]n the case of a taxpayer who fails to file an annual income tax return, current final report on total business income or income earned from liquidation in accordance with the provisions of this Act and who is found by the collection authority to have income taxable hereunder, the collection authority shall, in addition to determining the tax payable in accordance with this Act, impose a fine of no more than three times the amount of tax determined as payable.”

of semiconductor companies have changed significantly due to the disruption of the chip supply chain. The most critical international trade between the US and Taiwan markets nowadays involves huge amount of intangible transactions. Unfortunately, no tax treaty has been concluded between the US and Taiwan governments, and the double taxation issue is becoming more and more severe. For example, TP adjustments initiated by either the US Internal Revenue Service or the local tax authorities unilaterally always cause double taxation to semiconductor companies with significant operations in the US and Taiwan markets, and there is no mutual agreement procedure to eliminate such double taxation. Therefore, in order to mitigate the double taxation impact, establishing a well-managed TP report by following the newly amended TPAG and complying with the OECD Guidelines could be the most pertinent course of action for companies involved in the semiconductor industry. Regarding the acquisition costs of intangibles without statutory rights purchased by a domestic company from related or non-related parties that cannot claim a tax deduction, amendment of the relevant articles of the ITA is required to help resident companies avoid double taxation issues. Otherwise, such a problem will affect the development of the semiconductor industry in the long run.

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