



**COPENHAGEN RESEARCH GROUP ON INTERNATIONAL
TAXATION - CORIT
DISCUSSION PAPER No. 3. 2009**

THE INCOME TAX EFFICIENT SUPPLY CHAIN

**Stuart Webber
January 13, 2010**

Abstract

Companies throughout the world are restructuring their supply chains to reduce costs and improve efficiency. As they do this, activities are frequently being transferred to countries imposing lower income tax rates. Recent evidence indicates some firms are linking supply chain decisions with income tax planning, to construct a tax efficient supply chain that aims to maximize net income. While other papers have discussed various elements of a tax efficient supply chain, this paper specifically focuses on the income tax considerations a firm should consider when constructing a tax efficient supply chain. In particular, the tax model of the Multi-National Enterprise (MNE) is analyzed to determine the best opportunities for optimizing net income. The various legal entities a MNE forms to conduct business, including sales companies, distribution centers, manufacturing companies, procurement organizations and shared service providers are analyzed to identify key factors the MNE should consider when restructuring its supply chain. The paper also proposes ways firms can support their position when tax authorities audit their supply chain restructurings.

Introduction

Multinational Enterprises (MNEs) are restructuring supply chains to reduce their cost structures. As trade barriers fall and communications technologies improve, it has become easier and more cost effective to manage business operations across international borders. This has motivated businesses to centralize, reorganize and relocate many business processes to perform them in the most efficient manner. While they do this, many businesses are shifting business activities from high-tax to low-tax jurisdictions. This trend has not escaped tax authorities in high-tax jurisdictions, who are concerned with the lost tax revenue.

Schwarz and Castro (2006) write, “The globalization of markets and products and the development of technology have created an impetus for specialization within multinational groups. The co-existence of low-cost and high-cost jurisdictions drives cost reduction strategies, including transportation costs as well as those associated with labor-intensive activities. They write, “Whether motivated by commercial or tax reasons, some countries have observed a reduction in tax revenues when modern business models are adopted compared with more traditional models” (p. 187). They noted that tax practitioners from France, South Africa, Switzerland, Mexico, Argentina and the United States have all observed this trend. Companies are restructuring their supply chains and simultaneously reducing their income tax obligations.

This paper demonstrates that MNEs should link income tax and supply chain considerations when restructuring their supply chains, and they should aim to maximize net income when doing so. This recommendation differs from the great majority of supply chain papers, which have generally recommended businesses should seek to minimize pre-tax costs. One of the most important activities for both supply chain and tax organizations is determining where to locate business operations, so these organizations should collaborate to make optimal decisions. This paper explains how linking supply chain and income tax analysis can lead to better decisions and improve net

income. It contributes to knowledge of this process by evaluating the MNE's international tax model and specifically evaluating a variety of legal organizations within the MNE to determine the best opportunities for integrated supply chain and income tax planning. This paper also identifies a number of tax issues firms need to consider when making these important decisions.

Literature Review

For the most part, supply chain literature and tax articles have been strictly separated, and little literature has attempted to link the supply chain with tax considerations. Experts in these activities have traditionally focused either on the supply chain or income taxes, and have published their work in their respective journals. But recently there have been some articles that have demonstrated these activities are becoming increasingly linked.

From a supply chain perspective, Beamon (1998) reviewed supply chain literature to identify the best measures of supply chain performance. One of Beamon's conclusions was that firms were frequently encouraged to reduce pre-tax costs, not maximize net income. Skjett-Larsen, Schary, Mikkola and Kotzab (2006) identified six measures of supply chain success, and only one measure employed net income. Most of the recommended measures of supply chain success have not included income taxes, presumably because they are outside a supply chain manager's control.

Cohen and Mallik (1997) explicitly recognized that supply chain restructurings did simultaneously create opportunities to reduce taxes. However they acknowledged at that time that integrating supply chain and tax decisions was a relatively new concept, stating: "Analytical modeling in this field, however, is relatively new" (p. 201).

Irving, Kilponen, Marakaian and Klitgaard (2005) suggested supply chain management decisions should include tax considerations. They proposed that including tax considerations into supply chain decisions could improve net income for many large enterprises. They made the business case for linking supply chain and tax decisions, and provided several examples in which such an approach could improve an organization's net income.

Schwarz and Castro (2006) summarized a discussion held to discuss the tax impact of supply chain restructurings at a tax conference in 2005. Their article demonstrated that supply chain restructurings were eroding the tax base in many high-tax countries. They showed that supply chain restructurings were creating many new issues for tax authorities and businesses, not all of which could be immediately answered. One key concern was how supply chain restructurings were changing the risks and responsibilities of subsidiaries, and whether these changes merited transfer pricing changes. These discussions led the OECD to form a working group to study the issues further (p. 187).

The *International Transfer Pricing Journal* recently featured six articles focusing upon the tax consequences of supply chain restructurings.¹ Authors representing Belgium, France, the Netherlands, Spain, the United Kingdom and the United States each discussed developments in their country. Tax authorities in these high income-tax countries are concerned that supply chain restructurings are reducing their tax revenue. The articles emphasized recent developments in those countries, and what actions tax authorities were contemplating or taking to preserve their tax base. These articles again demonstrated that supply chain restructurings were becoming an important tax issue, and that the topics are becoming linked.

¹ See *International Transfer Pricing Journal*, Comparative Survey: Supply Chain Management, Number 4, July/August 2006

Romalis (2007) analyzed the impact of low income taxes and falling trade costs upon Ireland's economy. He argued that while low income taxes were important, they were not the only factor that contributed to the growth of the Irish economy in the 1990's. He noted that the reduction in income tax rates did not immediately trigger an increase in investments and exports there. He argued "that an important trigger for the rapid growth of international trade and FDI has been a decline in technological and policy barriers to international trade in the 1990s" (p. 460). Romalis argued that Ireland's economic growth was "explained by an interaction of low taxation of capital and declining international trade costs" (p. 468). Romalis's paper provides further support for the position that income taxes and supply chain costs can work together to stimulate investment in countries in low-tax countries.

Anderson, Murphy and Reeve (2002) also focused upon the importance taxes play upon supply chain decisions. Their focus was specifically upon state income, franchise, employment and property taxes within the United States. Lewis (2009) also focused on the impact of supply chain decisions upon taxes, but specifically addressed Value Added Tax (VAT) issues, where such taxes are imposed. Both articles again provided support for the position that tax and supply chain decisions are merging, but they did not address national income tax issues, which is the focus of this paper.

Income Tax Efficient Supply Chain Planning

Income tax rates vary substantially from country to country. While corporate profits are taxed at nearly 40% in high-tax countries, such as Japan,² income tax rates are as low as 2% in other jurisdictions, such as Puerto Rico.³ Low tax jurisdictions are commonly called tax havens. Such countries typically assess low or no income taxes to attract

² OECD Tax Database, 2006; see <http://www.oecd.org/ctp/taxdatabase>; see Table II.1, Combined Corporate Income Tax Rate, 2006

³ 13 L.P.R.A. § 10101, Puerto Rico Tax Laws

investment from MNEs, generating local jobs. MNEs can substantially reduce income taxes by moving business operations to tax havens.

Transferring operations abroad can frequently draw scrutiny from tax authorities, as these business decisions can reduce government tax revenue. Therefore firms must be careful to comply with local and international tax laws. While tax laws differ from one country another, most international tax laws do not discourage firms from pursuing legal means to minimize taxes. The US perspective may be summarized by several well-known statements of the late US Supreme Court Justice Learned Hand. Judge Hand wrote: “Over and over again courts have said there is nothing sinister in so arranging one’s affairs to keep taxes as low as possible. Everybody does so, rich and poor; and all do right, for nobody owes any public duty to pay more than the law allows: taxes are enforced extractions, not voluntary contributions. To demand more in the name of morals is mere cant.”⁴ In another opinion Judge Hand wrote: “Any one may so arrange his affairs that his taxes shall be as low as possible; he is not bound to choose that pattern which will best pay the Treasury; there is not even a patriotic duty to increase one’s taxes...”⁵

As income taxes are often one of a firm’s largest costs, firms engage in tax planning to minimize this expense. Tax planning is the use of legal means to arrange business activities to minimize tax obligations. International tax laws do not prevent MNEs from organizing their operations to reduce taxes, but firms must be careful to use only legal strategies to reduce tax obligations. MNEs need to comply with international tax laws, and not cross the line that distinguishes tax minimization from tax evasion. Tax evasion is generally defined as taking illegal action to reduce tax obligations. Tax evasion penalties differ from country to country, but in some nations they can be substantial, and provide strong incentive to comply with tax laws. For example, in the United States 40%

⁴ *Commissioner v. Newman*, 47-1 USTC ¶9175, 35 AFTR 857, 159 F.2d 848 (CA-2, 1947)

⁵ *Gregory v. Helvering*, 69 F.2d 809, 810-811 (2d Cir. 1934)

transfer pricing penalties can be added to the tax assessment, along with additional interest charges.⁶

Tax laws are frequently considered complex, and international tax laws are even more so, as they frequently differ between countries. However there are certain common principles to which firms must adhere. Two important international tax standards are the arm's-length standard and the business purpose doctrine.

The arm's-length standard governs how related parties value product sales and services between entities. When a MNE operates in more than one country, it typically creates a new legal entity to facilitate legal operations in that jurisdiction. Often that entity needs to buy or sell products from other legal entities within the same worldwide enterprise. US Treasury Regulations state "In determining the true taxable income of a controlled taxpayer, the standard to be applied in every case is that of a taxpayer dealing at arm's length with an uncontrolled taxpayer."⁷ The arm's-length standard is supported in many other countries, and is cited as the key principle in the OECD's Transfer Pricing Guidelines for Multi-National Enterprises and Tax Administrations.⁸

The business purpose doctrine says a business transaction should have some purpose other than tax reduction. Jones (2006) states "a transaction should not be effective for tax purposes unless it has a genuine business purpose other than tax avoidance. The lack of any business purpose by the participants can render a transaction meaningless, at least from the perspective of the IRS, even if the transaction literally complies with the law" (p. 85). This places limitations on Judge Hand's statements. Judge Hand said tax reduction is a legitimate objective, but the business purpose doctrine says tax reduction

⁶ IRC §6662

⁷ Treasury Regulation §1.482(1)(b)(1)

⁸ Transfer Pricing Guidelines for Multi-National Enterprises and Tax Administrations. (June, 2001). OECD Publishing, 254 pages.

cannot be the sole purpose. For this reason, tax practitioners frequently emphasize the operational benefits of restructurings that also reduce tax liabilities. They can argue to tax authorities that a restructuring was done for primarily to achieve operational goals, and that tax reductions were a byproduct of restructurings conducted to achieve other business objectives.

Selecting a business location involves many considerations, so MNEs can generally find a legitimate business purpose for transferring operations elsewhere. Business objectives might include proximity to customers, risk diversification, low wage rates, or easy access to materials suppliers. However not all businesses transfer operations to low tax countries, as there are other considerations. There are many factors firms evaluate when determining where to locate operations, such as employee skills and availability, political stability, and an adequate local infrastructure, among other factors. Supply chain costs are an important consideration. Companies seeking to maximize profits need to balance income tax savings against these other factors. Income taxes may be reduced by operating in a low-tax jurisdiction, but transferring operations to another location will impact supply chain costs. A firm will ideally identify an alternative that will reduce both income taxes and supply chain costs. But in many cases it may not be possible to minimize both income taxes and supply chain costs. One alternative might reduce income taxes, but simultaneously increase supply chain costs. Another might reduce supply chain costs but at the same time increase income taxes. Since income tax and supply chain costs may simultaneously change when business activities are moved from one country to another, they should be analyzed jointly.

The Income Tax Efficient Supply Chain

International tax and supply chain planning are frequently viewed as unrelated activities. Supply chain managers and tax directors have different proficiencies and their reporting relationships differ. Supply chain management is a line activity, the department generally reports to manufacturing or operations managers, and it is staffed by supply chain and manufacturing analysts. In contrast, tax is a staff activity, the department typically

reports to the Chief Financial Officer, and tax departments employ tax attorneys and tax accountants. As a result, these departments may not collaborate, at least historically. Thus supply chain and income tax decisions were often made by different organizations operating independently.

In addition, tax and supply chain organizations often attempt to achieve different objectives. Beamon (1998) showed that the most popular performance metric for supply chain managers is pre-tax cost minimization (p. 289). In contrast, tax departments seek to maximize net income, while complying with tax laws. Differing objectives also discourage collaboration.

Despite this separation, one of the most important activities for both supply chain organizations and tax departments is recommending where to locate business processes. Supply chain departments determine where to procure materials, manufacture products, and distribute finished goods. These location decisions can have a substantial impact on income tax obligations, as tax rates vary substantially from country to country. The evidence suggests that in many cases these impacts were analyzed independently, but in recent years it has become more common to link supply chain and income tax planning.

This is because decisions made to reduce income taxes can also have a major impact upon supply chain costs. If a MNE decides to manufacture or distribute goods in one country for tax purposes, it will have an impact upon supply chain costs, including duties, tariffs and distribution costs. For this reason, supply chain organizations and tax departments should collaborate to achieve a common goal of maximizing net income. When supply chain organizations aim to minimize pre-tax supply chain costs, they ignore income tax impact. Tax departments limit their potential to increase net income when they do not contribute to supply chain decisions. It appears this has become clearer to many firms in recent years, and that many are beginning to link these activities.

Describing the situation in the United States, Wright (2006) comments: “Supply chain management structures are increasingly used by multinational enterprises (MNEs)” (p. 202). Wright says “Such business activities give rise to transfer pricing opportunities that, many times, result in a reduction of taxable income in high-tax jurisdictions. The tax authorities in high-tax jurisdictions have, as a result of the changes in taxable income in their jurisdictions, become very interested in auditing these structures” (p. 202).

Tax authorities in France are also concerned with lost tax revenue. According to Douvier (2006), “For a number of years, supply chain management (SCM) structures have been implemented in Europe in order to respond to the demand of clients, to reduce costs and to allow efficiency to the benefit of both the clients and the companies themselves. Additionally, the implementation of such structures may permit tax reductions” (p. 178).

Tax authorities in the Netherlands believe this is one of their most important issues. Kuppens and Oosterhoff (2006) write, “Cross-border restructuring of multinational enterprises (MNEs) is an issue that is high on the agenda of the Dutch tax authorities. In fact, the trend towards outsourcing; transferring production and other activities to countries with low labor costs; and moving leadership and risk-taking functions to low-tax countries are all elements that may trigger loss of employment and a reduction of the taxable base in the Netherlands. The relevant tax aspects of such changes are closely monitored by the tax authorities” (p. 183).

Some authors argue supply chain restructurings are driven primarily by operational objectives, rather than tax considerations. Casley, Pope and Hohtoulas (2006) focused upon developments in the United Kingdom. They write, “The impact of the supply chain model on tax is probably not always at the forefront of the managers’ minds” (p. 194). However they acknowledge tax considerations are equally important. They write, “Whether the decisions made increase or decrease the MNE’s effective tax rate is often a

secondary consideration, but no less important” (p. 194). Whether motivated primarily or secondarily by tax considerations, some MNEs are simultaneously restructuring their supply chain and reducing their income tax obligations.

Romalis (2007) took a very different approach from the other articles cited. Romalis focused specifically on the growth of Ireland’s economy in the 1990’s, and tried to determine what triggered its rapid economic growth. Romalis writes that “an economy that is characterized by low taxation of capital (and that has no other flaws that implicitly tax capital) becomes an ideal location for export-based capital intensive industries when trade costs are low” (p. 460). Citing reductions in worldwide duties, EU tariffs, the Single Market Program, and technological improvements that reduced trade costs, Romalis argued that reduction in trade costs have contributed significantly to Ireland’s growth in export-oriented trade (p. 460). “Different rates of capital taxation, when combined with different capital intensities in production, are a powerful force generating international trade. The model can be used to analyze the effects of declining trade costs on a small economy that levies low taxes on capital. Its international trade begins to expand greatly” (p. 461). Romalis showed that much of Ireland’s growth is in export-oriented, capital intensive manufacturing industries.

Romalis argued that low income tax rates were not solely responsible for the growth of the Irish economy. He writes, “Because the Irish tax rate on foreign capital has been low for decades it alone cannot explain why the most impressive growth performance occurred in the mid- to late 1990s. This was a period where measured international trade costs for so many goods and services became very small” (p. 465-466). Romalis notes that a variety of trade policy and technology improvements contributed to Ireland’s growth. These include worldwide reductions in tariffs, the Single Market Program, and improved computer and communications technologies that made it easier to manage business processes cost-effectively across international borders. However Romalis’s observations were not limited to Ireland. Romalis writes, “The tax advantage is enough

to attract capital from large countries, and as a result per-capita GDP in small countries rises. But large trade costs still result in large countries preserving most of their capital intensive-industries. As trade costs fall the advantage of locating in large markets diminishes, so the location of capital is mostly driven by favorable taxation” (p. 464).

Romalis’s conclusions have been supported by several studies that have focused upon the Puerto Rico economy. In particular, they have sought to explain the growth of the pharmaceutical industry there. Bram, Martinez and Steindel (2008) argued that the growth of that industry in Puerto Rico was the result of both low tax rates, enacted in section 936 of the US tax code, and low supply chain costs. Referring to the low tax rates they write “In practice, the provision appeared to encourage siting in Puerto Rico of plants producing high-profit, easily transportable items such as pharmaceuticals and electronic components” (p. 3). Scherer (1997) reached the same conclusion, writing “Because drug manufacturing and transportation costs are modest in relation to product prices and because the geographic locus of patent rights ownership is easily transferred, the pharmaceutical companies have been particularly aggressive in obtaining U.S. federal income tax credits by locating their production operations in Puerto Rico” (p. 107). To summarize, low tax rates become particularly attractive when products are very profitable and the tax savings are not offset by high distribution and other supply chain costs.

Restructuring the Supply Chain

According to Beamon (1998), the supply chain is an integrated process in which a number of business entities, including materials suppliers, manufacturers, distributors and retailers work together to acquire raw materials, convert materials into finished goods, and deliver products to customers (p. 281). Skjett-Larsen, Schary, Mikkola and Kotzab (2006) write, “It is propelled by the realization that no organization can be good at all things, and by the expanding reach and ease of access to information and communication technology” (p. 17). In recent years optimizing the supply chain has received considerable attention in business and academia, driven by the desire to reduce cost structures, improve customer satisfaction and increase operating efficiency.

The supply chain includes two sub-processes. The first, production planning and inventory control, includes manufacturing and inventory storage policies. The second, distribution and logistics, delivers finished goods to customers. Distribution costs include can include shipping costs, tariffs, and all other costs related to delivering finished goods to customers. An overview follows:

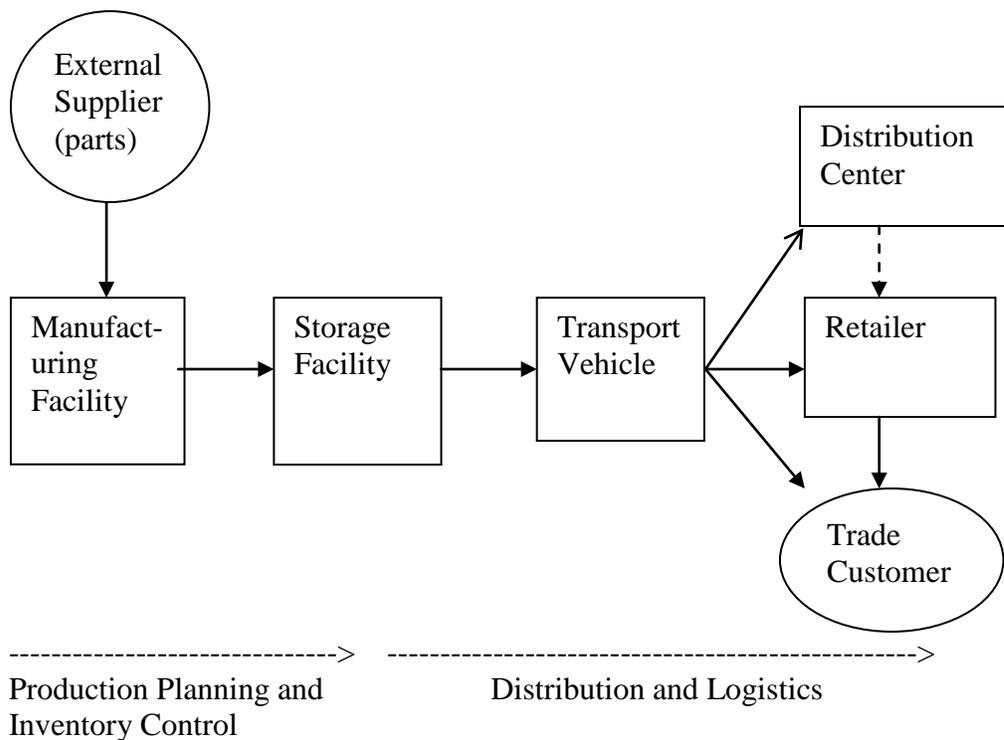


Figure 1: The Supply Chain Process

As mentioned, MNEs are changing the way they manage the supply chain. Reduced barriers to trade, agreements to reduce tariffs and duties, outsourcing alternatives and increased focus on core competencies have all generated interest in supply chain management. Reducing trade barriers has driven trade costs down, and lower trade costs have enabled companies to locate business operations where they can be performed most efficiently. Kuppens and Oosterhoff (2006) write: “The competitive environment in a global economy has accelerated change among MNEs. Companies are increasingly focused on product specialization and optimization of their entire value chain. Business restructuring is often geared towards centralizing key functions and decision making, and this is enabled by more transparency and availability of data through information

technology. Such changes typically entail a transfer of functions and risks from a local-country level to one central location” (p. 183). Improved communications technologies have also enabled supply chain process improvements. According to Verlinden and Costermans, (2006) “The transaction costs are further nose-diving due to cheaper telecommunications and the emergence of the Internet” (p. 173). Cost-effective communications technologies, such as the Internet and Enterprise Resource Planning (ERP) information systems, make it easier to manage business processes across international boundaries. Both enable rapid and cost-effective information flows across national borders, enabling centralized management and removing redundant processes.

Cohen and Mallik (1997) write there has been “a movement away from the classic multinational style of operating relatively autonomous domestic firms in each country of operation. The global supply chain is characterized by the linkage of decision making at all levels of the firm’s supply chain, i.e., across regional, functional and even interfirm boundaries” (p. 193). For example, IBM’s CEO recently told *The Economist* (April 7, 2007) IBM is dramatically altering the roles and responsibilities of its subsidiaries:

“Sam Palmisano, IBM’s boss, foresees nothing less than the redesign of the multinational company. In his scheme, multinationals began when 19th-century firms set up sales offices abroad for goods shipped from factories at home. Firms later created smaller ‘Mini Me’ versions of the parent company across the world. Now Mr. Palmisano wants to piece together worldwide operations, putting together different activities wherever they are done best, paying no heed to arbitrary geographic boundaries. That is why, for example, IBM now has over 50,000 employees in India, and ambitious plans for further expansion there. Even as India has become the company’s second-biggest operation outside America, it has moved the head of procurement from New York to Shenzhen in China” (p. 11).

In short, supply chain management has become a key business process. Corporations are centralizing business processes to perform activities where they can be done most efficiently, frequently ignoring national boundaries. Improved information systems, trade agreements and tariff reductions have reduced trade costs and enabled supply chain

restructurings. Casley, Pope and Hohtoulas (2006) write, “When geographic markets were more distinct, transport was more expensive, communication harder and information less widespread, supply chains were easier to understand and national businesses within an MNE more likely to operate on a stand-alone basis. This is no longer true; reductions in trade barriers coupled with the increasing need to capture increased value or greater cost effectiveness, has caused many MNEs to rethink their supply chains to cater for these changes in the global economy” (p. 194).

At the same time, tax issues permeate supply chain decisions. Supply chain decisions determine in what location a business operates, which determines both the types of taxes levied, and the tax rates. These operational decisions can also change the roles and responsibilities of a subsidiary, which may also have transfer pricing implications. Supply chain decisions can impact income taxes, property taxes, value-added taxes, and sales taxes. While this paper’s focus is directed towards income taxes, these other taxes can also be important considerations and should not be ignored.

Measuring the Supply Chain

An effective supply chain must achieve many objectives. To satisfy customers, the supply chain must deliver products to customers where and when they want them. Minimizing inventory levels and obsolescence are important operating efficiency objectives. Firms also want to minimize supply chain risks, such as unreliable suppliers and operating in unstable locations. And cost containment is generally a key business objective. Effective supply chains must balance these goals, improve profits, and ultimately add shareholder value.

Beamon (1998) surveyed significant supply chain management literature (p. 281-294). The article reviewed 29 supply chain management articles, and identified ten supply chain performance measures, shown below:

<u>Objective</u>	<u>Performance Measure</u>	<u># Articles</u>
Financial Goals	Minimize Cost	13
	Maximize Net Profit	1
Inventory Management	Minimize Average Inventory	2
	Minimize Obsolete Inventory	1
Customer Satisfaction	Minimize product demand variance	4
	Maximize on time delivery	3
	Minimize stockout probability	2
	Maximize available system capacity	1
Multiple Goals	Maximize buyer-supplier benefits	1
	Minimize activity days and total cost	1
Total		29

Only one of the 29 articles recommended supply chain managers should aim to maximize net income. Similarly, Skjett-Larsen, Schary, Mikkola and Kotzab (2006) identified six frameworks to evaluate the supply chain (p. 322). Four emphasize cost management, and two stress business process success. Only one of the six measures, Return on Assets, employs net income, which is impacted by income taxes. And while that measure uses net income to measure supply chain efficiency, their work does not discuss the trade-offs that may exist between income tax and supply chain objectives, or explain how focusing on net income can change traditional supply chain management.

However net income is a primary driver of shareholder value. In recent years many have debated whether net income or cash flow is a better measure of shareholder value. But proponents of both measures agree the figures should be calculated net of income taxes. A study by Bartov, Goldberg and Kim (2001) analyzed the value of net income versus free cash flow in a number of countries, with different financial reporting rules. They believed prior studies had demonstrated that in the United States “the explanatory power of earnings is superior to cash flows” (p. 108). They attempted to determine if this result could be extended to other countries. Bartov, Goldberg and Kim concluded “Our findings provide support for earnings having greater relative explanatory power over cash

flows in the Anglo-Saxon countries, but not in Germany and Japan” (p. 129). In the latter countries net income was not necessarily superior to cash flow; cash flow was determined to be equally good in many situations. Given that net income is considered the best measure of firm performance in many countries, and of equivalent value with free cash flow in other countries, this paper will emphasize measuring and improving net income.

The other supply chain measures proposed generally support maximizing net income. These metrics focus on activities controllable by supply chain managers and are justifiable when they contribute to profit maximization. At first glance, all of these measures appear to support maximizing net income. But in some instances the most popular metric, pre-tax cost minimization, may actually conflict with net income maximization. And cost minimization, while an important business metric, is not the most important driver of shareholder value.

Cost Minimization and Profit Maximization

To illustrate this, consider the following example. A supply chain manager must decide between two manufacturing locations. The first option minimizes supply chain costs, and is closer to suppliers and customers. The second location is further from suppliers and customers, and wages are higher. Per unit manufacturing costs are shown below:

Cost per unit	Option One: Lower Supply Chain Costs	Option Two: Higher Supply Chain Costs
Inbound Logistics	\$2	\$4
Materials	\$30	\$30
Labor	\$10	\$20
Shipping/Outbound Logistics	\$2	\$4
Total Supply Chain Costs	\$44	\$58

Table 1: Supply Chain Costs

If a supply chain manager’s goal is to minimize supply chain costs the first option is superior. Inbound logistics, wages and outbound logistics costs are lower. But reducing supply chain cost does not necessarily maximize net income. The income tax impact may outweigh supply chain savings. If income taxes are considered, the second option

may be superior. Suppose a transfer price of \$200 from both locations, and a lower income tax rate in the second location.

	Option One: Lower Supply Chain Costs	Option Two: Higher Supply Chain Costs	Difference (1-2)
Transfer Price	\$200	\$200	--
Total Supply Chain Costs	\$44	\$58	(\$14)
Operating Profit	\$156	\$142	\$14
Tax Rate	35%	25%	10%
Taxes	\$54.60	\$35.50	\$19.10
Net Profit	\$101.40	\$106.50	(\$5.10)

Table 2: Net Profit Comparison

While option one minimizes supply chain costs, option two maximizes net income.

This is not merely a theoretical concern; it has very practical consequences. Businesses regularly reshape their supply chains, looking for ways to reduce their cost structure, and improve inventory management and customer satisfaction. MNEs now regularly transfer business operations from one country to another. Supply chain decisions that ignore tax impact may actually reduce net income and shareholder value. Businesses should consider tax consequences to make optimal supply chain decisions, and the evidence indicates many have begun to do so. Tax authorities in a variety of countries have observed this activity and are concerned with the implications on their revenue.

The previous example assumes the same \$200 transfer price from either location. IRS §482 regulations identify five acceptable transfer pricing methodologies for transfers of tangible products. Three of the five methods specified in US transfer pricing law should generate the same transfer price. The “comparable uncontrolled price method,” “resale price method,” and the “comparable profits” method should each achieve this result. IRS regulations state: “The comparable uncontrolled price method evaluates whether the amount charged in a controlled transaction is arm’s length by reference to the amount charged in comparable uncontrolled transaction.”⁹ In this approach, transfer prices

⁹ IRS Regulation §1.482-3(b)(1)

should be determined by evaluating external prices for comparable sales, which serve as the same reference point for transfer price calculation. Concerning the second method the regulations state: “The resale price method measures the value of functions performed, and is ordinarily used in cases involving the purchase and resale of tangible goods in which the reseller has not added substantial value to the tangible goods by physically altering the goods before resale.”¹⁰ Treasury regulations say: “If an applicable resale price (in the uncontrolled transaction) of the property involved in the controlled transaction is \$100 and the appropriate gross margin is 20%, then an arms-length result of the controlled sale is \$80 (\$100 minus (20% x \$100)).¹¹ This would be the appropriate transfer price from all internal suppliers. The third approach, the comparable profits method, is very similar to the resale price method, but the organization’s operating profit is evaluated instead of gross profit. “Under the comparable profits method, the determination of an arms-length result is based on the amount of operating profit that the tested party would have earned on related party transactions if its profit level indicator were equal to that of an uncontrolled comparable, and applying the profit level indicator to the financial data related to the tested party’s most narrowly identifiable business activity for which data incorporating the controlled transaction is available...”¹²

Under each of these three methods, the purchaser’s transfer price should be the same, without regard to which internal supplier provided the product. Furthermore, IRS regulations do not permit taxpayers to pick and choose from the five methods when determining transfer pricing policies. The firm is bound by the best method rule, which says: “The arm’s length result of a controlled transaction must be determined under the method that, under the facts and circumstances, provides the most reliable measure of an arm’s length result.”¹³ The IRS directs taxpayers to select the method that best supports the arm’s-length principle, not the most advantageous method. If one of the three methods above is the most reliable basis for determining arm’s-length results, it must be

¹⁰ Ibid

¹¹ Ibid

¹² IRS Regulation §1.482-5(b)

¹³ IRS Regulation §1.482-1(c)(1)

used. As Gresik (2001) writes “The ‘best method’ provisions legally obligate the transnational to prove its method best approximates an arms-length price” (p. 810).

Within the United States, the IRS imposes substantial penalties for not complying with transfer pricing laws. First, the IRS can adjust transfer prices to bring them in compliance with the arm’s-length standard.¹⁴ In addition, the IRS can impose substantial penalties on top of the adjustment. These penalties not tax deductible.¹⁵ Many believe these penalties have motivated US-based firms to comply more carefully with transfer pricing laws. Skinner (2005) writes, “Procedural changes have made it less attractive to litigate transfer pricing disputes. First, Congress provided for transfer pricing penalties equal to 20% and 40% of the ultimate §482 adjustment. The trigger for penalties is \$5 million of aggregate misstatements. For a multinational corporation with billions of dollars of inter-company transactions, this threshold is easily reached” (p. 186). The 20% penalty is for “accuracy-related” issues, and the 40% penalty is assessed for “gross misstatement.”¹⁶ And on top of the transfer pricing adjustment and the non-deductible penalty, firms must also pay accrued interest.¹⁷ In one well known transfer pricing case, in 2006 the IRS reached a \$3.4 billion transfer pricing settlement with GlaxoSmithKline.

International Tax Planning

When businesses expand across international boundaries, they frequently create foreign branches or subsidiaries to facilitate doing business. MNEs form these organizations to comply with legal requirements and determine tax obligations. When they form organizations in another country the local tax laws govern business activities conducted there.

¹⁴ IRC §482

¹⁵ IRC §6662(e), §6662(h)

¹⁶ IRC §6662

¹⁷ Ibid

International businesses frequently transfer inventory and fixed assets from one country to another. MNEs might invent products in one country, manufacture them in a second, store them in a third, and sell them to customers in a fourth location. Since these activities cross international boundaries, MNEs need to calculate income in each locale to comply with local tax laws. Transfer prices for inventory, assets and services need to be calculated based on the arm's-length standard.

Determining an arm's-length transfer price is not always easy to do. Comparable trade prices are usually the starting point to determine a transfer price, but it may be challenging to find such prices. Gresik (2001) writes, "If a well-functioning for intermediate goods exists, the appropriate value to place on the transfer is rather easy for tax authorities to determine. However, with transnationals the transferred assets are specialized enough that comparable products produced by firms not related to the transnational do not exist or they are intangible in nature" (p. 808). In addition, this is particularly true when the MNE is vertically integrated, and it transfers work-in-process inventory between business entities. Firms may not sell similar, partially-completed goods to external customers, making external price comparisons difficult to obtain. Centralized supply chain planning may increase work-in-process inventory transfers, as businesses shift different manufacturing processes to the most efficient location.

Transfer prices determine the revenue and income earned, as thus the taxes owed, in various jurisdictions. They are important both to tax authorities and MNEs. Income tax rates can vary substantially between countries. As previously mentioned, income tax rates can range from 2% in Puerto Rico to nearly 40% in Japan. Due to substantial tax rate differences, businesses have an incentive to seek locations that minimize their worldwide tax expense, while complying with international tax laws.

MNEs frequently form subsidiaries to perform a specific business purpose. These objectives may include inventing products, manufacturing products, distributing them, or selling goods and services. Forming subsidiaries to perform specific activities facilitates

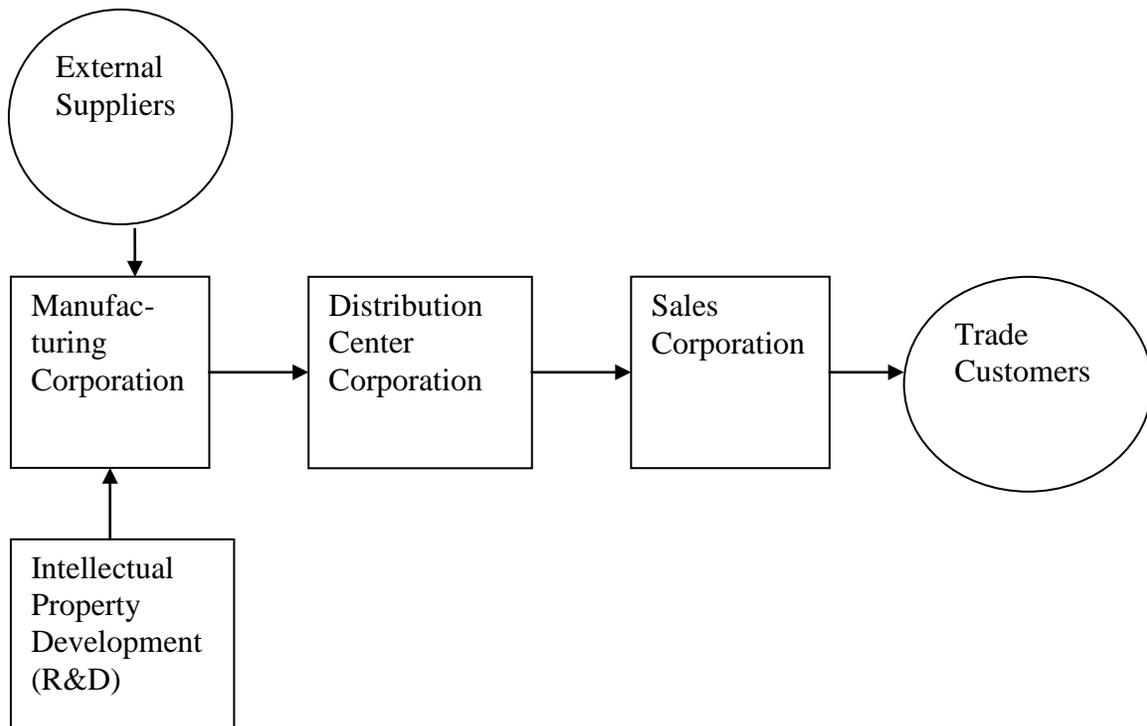
functional-based tax planning. According to Irving, Kilponen, Markarian and Klitgaard (2005), this approach supports a:

“principle that underlies many of the world’s taxing regimes: The income on which a company is taxed should reflect the functions the company performs, the risks the company takes on, and the assets the company has at its disposal. More specifically, companies earn separately identifiable economic returns on the functions they perform, the risks they take, and the assets they own or have developed. These distinctions are muted when an enterprise operates worldwide on a vertically integrated basis. However, they become significant once a company begins to isolate functions, risk, or assets in specific entities within the corporate group and ultimately deploys them in certain jurisdictions” (p. 59).

Creating entities for specific purposes facilitates transfer price determination. If external price comparisons are not available, one alternative is to determine an arm’s-length return for a specific business activity. For example, suppose a US-based business decides to sell products in Canada. It plans to continue inventing and manufacturing products in the United States, and to sell them in the United States and Canada. It forms a Canadian sales subsidiary to sell products there. Its products are unique, and comparable trade prices are difficult to establish. However it can determine profit margins for comparable sales companies. Transfer prices could be calculated so the Canadian subsidiary could achieve a gross margin or return on sales figure comparable to similar trade businesses.

To facilitate these profit comparisons, MNEs may create several entities in the same country, if they are formed for different business purposes. If a firm conducted manufacturing, and sales in the same country, they might be organized into separate organizations to support transfer pricing analysis. At a minimum, they need to calculate financial results for these activities separately. Combining manufacturing and sales activities into one financial statement would make it very difficult to determine if the firm’s profits were appropriate for the activities performed or risks borne there.

Larger MNEs may have elaborate value chains. These activities might include research and development, manufacturing, distribution, and sales. In the following graphical depiction, the MNE's arms-length transfer pricing policies must apportion profit between legal entities.



Note: Intellectual Property Development, the Manufacturing Corporation, the Distribution Center, and the Sales Corporation are all part of the same Multi-National Enterprise (MNE), and transfer prices need to be determined to apportion profits (or losses) between them..

Figure 2: Income Tax Planning

In this model, the intellectual property owner invents products and transfers the right to build them to the manufacturing corporation. After production is complete, the manufacturing corporation ships products to the distribution center, which stores them until they are sold. The sales corporation makes the trade customer sale. As the MNE operates in four different countries, it must pay income taxes in each. Tax rates may differ, so the MNE will want to structure its operations to minimize tax obligations, while complying with tax laws and the arm's-length standard.

As Irving, Kilponen, Markarian and Klitgaard (2005) write, “Because income, and therefore income taxation, typically follows functions performed, risks assumed and assets deployed, companies often achieve tax savings by locating various aspects of their business processes in tax favored jurisdictions” (p. 58). For example, the firms could assign certain risks, such as warranty obligations, to the legal corporation that has the highest profit potential, located in a low-tax jurisdiction. Because it absorbs the most risk, it should earn the highest profit. At the same time, organizations that accept less risk, often in high-tax jurisdictions, merit less profit.

This approach increases total business risk. If profitable, the MNE lowers its tax rate. But if the MNE records losses, they are absorbed in the low-tax jurisdiction, and its worldwide tax rate increases. But this is the risk the firm knowingly takes to reduce its worldwide tax rate. If a firm believes it can consistently earn high profit margins, it is a risk worth taking.

Tax Law: Exemption versus Tax Credits

As discussed, companies operating abroad form subsidiaries to conduct business. They do this to comply with local laws and determine tax obligations. However, tax laws differ substantially from country to country. In general, parent countries tax business earnings using one of two methodologies. The majority tax only domestic earnings, while several countries tax worldwide earnings.

Taxing only domestic earnings is the simplest and most popular approach. In other words, the parent-country levies income taxes only on the domestic entity, and ignores income earned by foreign subsidiaries. Overseas subsidiary profits are taxed by those jurisdictions. The following example illustrates that approach. For simplicity, all figures will be presented in dollars.

Suppose a German-based corporation owns a Mexican subsidiary. The company earns \$200,000 in Germany, and \$100,000 in Mexico. If the German tax rate is 39% and the Mexican tax rate is 50%, it would owe \$78,000 German income tax, and \$50,000 in Mexico. Income earned in Mexico would have no impact on taxes owed in Germany, and the company's worldwide tax rate would be 42.7%.

German-based Firm	German Parent	Mexican Sub.	Worldwide Results
Earnings	\$200,000	\$100,000	\$300,000
Tax Expense	\$78,000	\$50,000	\$128,000
Tax Rate	39%	50%	42.7%

Table 3: International Tax Exemption System

In contrast to the exemption system, several countries tax the worldwide earnings of businesses headquartered there. Gresik (2001) notes Italy, Japan, Norway, the United Kingdom the United States all currently use this approach (p. 802), though the United Kingdom may move to an exemption system (Weiner, 2007, p. 214). Since taxing profits twice would put its firms at a competitive disadvantage, these countries allow companies to take a credit for taxes paid abroad.¹⁸ The following examples show both how tax credits work in the United States, and it illustrates certain problems the US Congress decided to rectify.

Suppose a US-based company earned \$200,000 in the United States and \$100,000 in Mexico. The US tax rate is 35%. The firm owes \$105,000 in worldwide taxes on its \$300,000 pre-tax earnings. If the company paid \$50,000 Mexican taxes, it could take a credit for that amount on its US tax return. This would reduce its US tax obligation to \$55,000.

¹⁸ US IRC §901(a) explains Foreign Tax Credits, and §901(b) explains eligibility requirements

US-based Firm	Worldwide Earnings	Mexican Subsidiary	Foreign Tax Credit	U.S. Tax Obligation
Pre-Tax Earnings	\$300,000	\$100,000	--	\$200,000
Tax Expense/(Credit)	\$105,000	\$50,000	(\$50,000)	\$55,000
Tax Rate	35%	50%	--	27.5%

Table 4: Foreign Tax Credits

In the above example, Mexico's high tax rates reduced the firm's US tax obligations and domestic tax rate. This potential caused the US Congress to place limitations on foreign tax credits. One law limits foreign tax credits to the percentage of foreign-sourced income.¹⁹ Using the example above, a US-based corporation would first calculate a pre-credit tax obligation of \$105,000, or 35% of its \$300,000 in worldwide earnings. Its foreign tax credit is limited to \$35,000, which is one-third of its worldwide earnings, reflecting its foreign-sourced income share of the total. Its US tax obligation is determined by subtracting the foreign tax credit of \$35,000 from the \$105,000 figure. It owes \$70,000 US income tax, and its worldwide tax expense would be \$120,000, shown below:

US-based Firm	Pre-credit obligation (1)	Mexican Subsidiary (2)	Foreign Tax Credit (3)	U.S. Tax Obligation (4)	Consolidated. Taxes (2) + (4)
Earnings	\$300,000	\$100,000	--	\$200,000	\$300,000
Tax Expense/(Credit)	\$105,000*	\$50,000	(\$35,000)**	\$70,000***	\$120,000****
Tax Rate	35%	50%	--	35%	40%

Table 5: Foreign Tax Credits Limited by share of Foreign Sourced Income

* 35% of \$300,000 is the pre-credit tax obligation

** As foreign-sourced earnings are one-third of total earnings, the tax credit is limited to one-third of \$105,000

*** The \$105,000 in pre-credit worldwide tax obligation in column 1, less the \$35,000 tax credit in column 3

**** \$50,000 in Mexican income taxes in column 2 plus \$70,000 in US taxes in column 4

¹⁹ For an explanation of foreign sourced income, see IRC §904(a)

This limitation created an incentive to earn foreign-sourced income and increase the foreign tax credit. Creative tax departments have found ways to do this, such as transferring cash offshore to earn interest income abroad. To limit this, a second US tax credit law requires MNEs to separate earnings into several “baskets of income.”²⁰ Foreign tax credits earned in one basket cannot offset tax obligations from another basket. This prevents the company from increasing foreign tax credits by shifting passive income overseas. The passive interest income may not be used to generate a tax credit for the active income, which is earned from the sale of products or services.

Thus foreign tax credits are valuable, and need to be earned in the correct basket. In the absence of sufficient foreign tax credits, a company’s worldwide tax rate can increase. US-based firms need to monitor foreign tax credits to determine if they can defer all income taxes on foreign earnings. Tax credit policies in Italy, Japan, Norway and the United Kingdom should be investigated separately.

MNEs headquartered in tax credit countries do not permanently reduce taxes by operating in tax havens, at least in theory. As Gresik (2001) writes, “The main advantage of deferral to transnationals is the ability to avoid paying home taxes that are reinvested in the foreign operations” (p. 803). Firms defer tax US tax obligations until the subsidiary repatriates cash to the parent company. Nonetheless, due to the time value of money, deferring taxes is valuable. In addition, tax authorities sometimes temporarily reduce income tax rates on repatriated funds. This encourages cash transfers and generates tax revenue, though at a reduced rate. Knowing this, many companies defer repatriation until tax rates are temporarily reduced. For example, the American Jobs Creation Act of 2004 reduced the tax rate on repatriated funds to 5.25% for that year, which motivated MNEs to transfer funds to their US-based parents.²¹ Thus, in many cases firms do not merely defer tax obligations. They permanently reduce their worldwide tax rate. For these

²⁰ IRC §904(d)

²¹ H.R. 4520, “The American Jobs Creation Act of 2004,” United States Congress Ways and Means Committee, June 4, 2004

reasons MNEs frequently organize their business activities to defer tax obligations, even if the parent country taxes worldwide earnings.

Opportunities to Create an Income Tax Efficient Supply Chain

While tax efficient supply chain management has received some attention in academic journal, pre-tax cost minimization has been analyzed in much more detail. Cohen and Mallik (1997) write, “Finally, the global supply chain can take advantage of diversity in the international environment by recognizing and exploiting regional differences, i.e., in the level of product and process technology expertise, labor force capabilities, input factor costs, local tax rates, and the capabilities of off-shore vendors” (p. 194). However the article did not explain how firms can pursue these opportunities. The authors said: “Effective management of the activities dispersed throughout the global supply chain can result in lower production and distribution costs via the allocation of value-adding activities to facilities, tax minimization via transfer pricing between entities operating in different tax jurisdictions, financial arbitrage via international cash flow management...” (p. 201). As mentioned, they stated in 1997 that modeling of these opportunities was just beginning. By 2006 a number of articles cited in this paper demonstrated that tax authorities in many high-tax jurisdictions had noticed supply chain restructurings were reducing their tax revenue.

As discussed, some businesses today say they prefer to ignore geographic boundaries when restructuring supply chains. While these boundaries may appear arbitrary, they can have a material impact on income tax obligations. Thus it is a mistake to ignore taxes. For many companies it is their largest single expense. Supply chain analysis should explicitly consider international boundaries when they impact income tax obligations, and net income should be a key measure of supply chain success.

To determine where the best tax and supply chain planning opportunities exist, the MNE's functional and legal model will be analyzed. The sales corporation, the distribution center, the manufacturing corporation, procurement organizations and shared service providers will be analyzed in turn to determine the optimal alternatives for income tax efficient supply chain planning.

Sales Corporations and Permanent Establishment

When international sales are minimal, businesses frequently sell their products to trade customers through other firms. The firm can sell products to a locally-based business that imports the goods and resells them to trade customers. In this situation, the MNE has no legal presence in that nation, earns no money within its borders, and thus pays no income taxes there.

As sales increase abroad, MNEs frequently hire their own employees. Salaried staff becomes more cost effective than selling through a third party. Businesses can also achieve greater business process control managing their own employees, so they may choose to establish a foreign branch or subsidiary to achieve this goal.

Crossing international boundaries requires firms to address international tax complexities. Tax treaties simplify this process. Tax treaties are agreements between two countries that define tax requirements for parties covered by those treaties, and they normally supersede more general tax laws. Jones (2006) writes a tax treaty "is a bilateral agreement between the governments of two countries defining and limiting each country's respective tax jurisdiction. The treaty provisions pertain only to individuals and corporations that are residents of either country and override the countries' general jurisdictional rules. Under a typical treaty, a firm's income is taxable only by the country of residence (the home country) unless the firm maintains a permanent establishment in the other country (the host country)" (p. 324).

Tax treaties may resolve potential international tax law disputes. For example, two countries may use different rules to define residency, and both may determine the same taxpayer resides in their country. Residing in two jurisdictions could significantly increase the taxpayer's obligations. Treaties help resolve such issues. Businesses find treaties clarify tax obligations and may reduce taxes. Not only do they help the taxpayer, countries support tax agreements to stimulate investment, jobs and economic growth.

The United States, United Nations, and OECD have created model treaties countries use to negotiate agreements. Each has merits, but some believe the OECD Treaty is becoming the most influential. According to Strengh (2009), "Because the OECD Model is under regular review this model treaty has become the real "yardstick" for constructing and revising bilateral income tax treaties around the world. The OECD Model significantly influences any current and prospective treaty partners when dealing with the United States on tax treaty matters. Consequently, even the U.S. Treasury Department representatives are often influenced by the OECD Model, more than their traditional perspective of starting negotiations from the U.S. Model Treaty" (p. 13-14). For this reason, this paper will focus on the OECD Model Treaty.

That treaty is frequently used to define the term "permanent establishment." According to it, permanent establishment refers to "a fixed place of business through which the business of an enterprise is wholly or partly carried on."²² A fixed place of business specifically includes a place of management, a branch, and office, a factory, a workshop or any site developed to extract natural resources.²³ The OECD Model Treaty provides a number of exceptions, in general permitting organizations to conduct limited support and auxiliary activities without triggering permanent establishment and local income tax obligations. Examples cited include permitting "the use of facilities for the purpose of

²² "OECD Articles of the Model Convention With Respect to Taxes on Income and on Capital," Article 5, Section 1

²³ Ibid, Article 5, Section 2

storage, display or delivery of goods or merchandise,”²⁴ or “solely for the processing by another enterprise,”²⁵ or “any other activity of a preparatory or auxiliary character.”²⁶ The treaty identifies a number of similar support examples that do not constitute permanent establishment.²⁷

Permanent establishment can also be created when significant business activities are conducted locally. For example, negotiating contracts triggers permanent establishment. Specifically, the OECD Model Treaty states when a person “in a Contracting State (has) an authority to conclude contracts in the name of the enterprise, that enterprise shall be deemed to have permanent establishment in that State with respect of any activities which that person undertakes for the enterprise.”²⁸ This does not apply to contracts negotiated for the support and auxiliary activities cited in the previous paragraph.

Permanent establishment definitions can differ from country to country. Verlinden and Costermans (2006) write that when conflicts arise “The treaty definition (based upon the OECD Model Treaty) prevails over the definition under domestic law” (p. 175), at least according to Belgium law. However permanent establishment rules are being reviewed in some countries, in large part due to supply chain restructurings. To illustrate this, developments in one country, the United Kingdom, will be reviewed.

Within the United Kingdom two key issues are examined. According to Casley, Pope and Hohtoulas (2006) the first is “if the principal is carrying on a business through a fixed base in the United Kingdom” (p. 200). The second is “if the UK Company is a dependent agent of the principal” (p. 200). The second issue is drawing more scrutiny within the United Kingdom. If the UK Company “habitually exercises an authority to

²⁴ Ibid, Article 5, Section 4(a)

²⁵ Ibid, Article 5, Section 4(c)

²⁶ Ibid, Article 5, Section 4(e)

²⁷ Ibid, Article 5, Section 4(a-f)

²⁸ Ibid, Article 5, Section 5

conclude contracts in the name of the principal” (p. 200) then it can be viewed as a dependent agent, and permanent establishment may be alleged. A number of issues need to be examined closely to determine the outcome. If customer credit decisions are made in the UK, this suggests permanent establishment. Companies sometimes employ a non-contracting disclosed arrangement to avoid permanent establishment, but tax authorities may go beyond legal agreements and examine how business is actually conducted. “In practice, drawing the dividing line between contracting and non-contracting is not always simple. HMRC is likely to argue that having the principal actually ‘sign’ the contracts with customers may not be sufficient if all they do in reality is rubber stamp the terms and conditions including price, discounts etc. that have already been ostensibly agreed to by the local agent” (p. 200). Ultimately the key issues are whether the UK organization is accepting risk and making key business decisions, not only contractually, but in practice. When risk is assumed or business decisions are made within the United Kingdom, it is more likely that UK tax authorities will assert permanent establishment. But all of the facts and circumstances are evaluated by tax authorities, and judgment is applied, especially in light of supply chain restructurings that test the law’s limits. In short, a number of factors are considered. Developments in other countries should be investigated separately.

Tax impact is more difficult to determine when bilateral tax treaties do not exist. Jones (2006) says, “If a U.S. firm conducts any business in a country that does not have an income tax treaty with the United States, the host country’s jurisdiction depends on its unique tax laws” (p. 324). In the absence of a tax treaty, the firm needs to research the local tax laws. Jones says “This determination is often subjective and results in considerable uncertainty for the firm. Moreover, the requisite level of business activity in non-treaty countries is often much less than the maintenance of a permanent establishment in the country” (p. 324). For these reasons firms find it is easier to expand into countries in which bilateral tax treaties exist.

Whether or not the MNE forms an overseas branch or sales corporation, MNEs frequently expand into new markets to increase sales and profits. For technologically-advanced products, demand is strongest in the most industrialized countries. Developed countries also impose relatively high corporate income tax rates. As a result, sales corporations are poor opportunities to improve profits through an income tax efficient supply chain. There are no simple ways expand into large, prosperous markets and keep taxes low.

To demonstrate this, consider the population, GDP and income tax rate of G-7 countries, which are some of the world's largest economies. While these are some of the world's largest markets, the tax rates are substantially higher than in many tax havens, to be shown subsequently. The following table shows these figures for each G-7 country:

Country	Population (000 omitted)	GDP (in million \$)	Per Capita GDP	Max. Corporate Tax Rate—2007
U.S.A.	301,110	\$10,320.6	\$34,275	39.3% ^{29*}
United Kingdom	60,776	\$1,530.27	\$25,179	30.0%
Canada	33,390	\$767.14	\$22,975	36.1%
France	63,713	\$1,382.76	\$21,703	34.4%
Germany	82,401	\$1,925.87	\$23,272	38.9%
Italy	58,148	\$1,100.71	\$18,929	33.0%
Japan	127,433 ³⁰	\$4,803.20 ³¹	\$37,692	39.54 ³²

Table 6: G-7 Population, GDP and Corporate Income Tax Rates

* The United States tax rate includes both the Federal tax rate of 35.0% and an average State income tax rate.

High tax rates rarely discourage companies from selling products in these populous and wealthy countries. For example, if strong Japanese demand exists for a company's products, a 40% tax rate is unlikely to prevent market entry. As long as marginal revenue exceeds marginal cost the sales are profitable, despite the relatively high share due the

²⁹ OECD Tax Database, 2007; see <http://www.oecd.org/ctp/taxdatabase>; see Table II.1, Combined Corporate Income Tax Rate, 2007. Note that the U.S. rate includes both Federal taxes (35.0%) and an average State tax rate.

³⁰ "World Population Statistics"; <http://www.geohive.com/default.aspx>; July 1, 2007

³¹ "Historical Gross Domestic Product," World Bank Development Indicators, 12/19/2006

³² OECD Tax Database, 2007; see <http://www.oecd.org/ctp/taxdatabase>; see Table II.1, Combined Corporate Income Tax Rate, 2007

Japanese government. Avoiding the large Japanese market or selling through Japanese companies may be financially unattractive alternatives.

A few companies have successfully bypassed local sales corporations and sold products from another jurisdiction. They need to avoid permanent establishment to do this. In most industries this is not possible, as it is essential to have local sales and service organizations there to provide customer support. But other business models are possible. Simpson (2005) writes, “Microsoft and others are now going further. Microsoft delivers its Windows products to European customers straight from Ireland, and the profits go straight back to Ireland. Since most of the profits from Microsoft programs are in the form of copyright licensing fees, ‘it is likely that low or nil taxes are payable in the other EU states,’ says John Ward, a tax professor at the University of Ulster in Belfast, Northern Ireland” (p. 1).

To keep its tax rate low, Microsoft needs to avoid permanent establishment issues associated with these sales. Microsoft has structured its tax model to locate revenue recognition and risk with its Irish subsidiary. In some cases software firms can distribute products and provide support over the Internet, creating opportunities not available in other industries. To achieve its tax objectives, the sales into Europe need to be conducted from Ireland.

Organizations within an MNE must collaborate to make this work successfully. Software firms may be able to do this more successfully than others, in large part due to the ease of Internet distribution and overseas product support. But if the selling agent can avoid permanent establishment, it should be considered. To accomplish this, product marketing needs to determine whether they can sell and support products successfully without a local presence. Legal departments need to do an in-depth examination of permanent establishment laws. The tax department can analyze the tax impact. And supply chain organizations can quantify manufacturing and distribution costs.

Distribution Centers

Distribution centers receive finished goods from manufacturing corporations, and later deliver products to sales corporations. They add value by reducing the number of delivery nodes between manufacturing organizations and retail customers, by consolidating storage, and by efficiently and promptly delivering customer goods.

Companies do not need distribution centers in each country the firm sells products. The enterprise can thus determine how many are needed by focusing upon customer requirements and cost management. Companies frequently centralize distribution activities to achieve economies of scale. Many MNEs create regional distribution centers to service several countries. For example, Skjett-Larsen, Schary, Mikkola and Kotzab (2006) write, “Many firms in Europe rely on one or a few distribution centers servicing all customers within a time window of 24-72 hours, depending upon the location of customers” (p. 134). Centralization strategies may create an opportunity to create an income tax efficient supply chain.

If the parent-country exempts foreign earnings from domestic taxation distribution centers may be good opportunities to create a tax efficient supply chain. MNEs can permanently avoid domestic income taxes, and parent-country tax laws do not restrict distribution centers. Economic efficiency can determine the number of distribution centers, not legal requirements. To analyze the opportunity, the supply chain organization can calculate operational and distribution costs. The tax department can project transfer prices and calculate tax benefits. Together they can project distribution center net income in various locations, and recommend the best location.

However when the parent-country taxes worldwide earnings, tax laws should be reviewed closely. For example, US tax laws limit distribution center opportunities. As mentioned, the US taxes worldwide earnings, permits tax credits, and defers domestic taxation until

the subsidiary repatriates funds to the parent. However tax laws deny deferral in certain situations. US tax code “Subpart F” requires immediate taxation of overseas entities in certain situations.³³ As Jones (2006) writes::

“Not all foreign source income earned by a CFC must be constructively repatriated to its U.S. shareholders. Only narrowly defined categories of income (labeled Subpart F income in the Internal Revenue Code) are treated as constructive dividends. Conceptually, Subpart F income is artificial income because it has no commercial or economic connection to the CFC’s home country. Subpart F has many complex components, one of the more important of which is income derived from the sale of goods if (1) the CFC either buys the goods from or sells the goods to a related party and (2) the goods are neither manufactured nor sold for use within the CFC’s home country” (p. 334-335).

Subpart F applies to distribution centers in certain situations. Suppose a MNE formed a distribution center in a low-tax jurisdiction in which it neither manufactured nor sold goods. The income earned by this distribution center would be subject to Subpart F and would be immediately taxable in the United States.³⁴ If the US tax rate is higher than the local tax rate the difference between the two cannot be deferred, and is owed to the US treasury. According to Lemein, McDonald and Lipeles (2007) when Subpart F applies “Shareholders have to recognize the income *regardless* whether the U.S. Shareholders receive an actual dividend from the CFC or not” (p. 5). Thus a US-headquartered firm would not be able to defer US tax obligations in this situation.

However not all distribution centers are subject to Subpart F. It does not apply when a distribution center is located in the same country the company either builds or sells products. As an example, suppose a firm manufactures products in Singapore, and needs to form a Southeast Asia distribution center. Subpart F would not apply to a Singapore-based distribution center, as the company manufactures goods there. The low Singapore tax rate would apply. Locating the distribution center in a third country could increase the tax rate from 18% (Singapore’s rate) to 35% (the US Federal rate). In this case the

³³ Subpart F is found in IRC §951-§964

³⁴ IRC §941

MNE would reduce income taxes if it located the distribution center in Singapore. The MNE should weigh these savings against supply chain costs and other business objectives.

Similar laws in other tax credit countries (Italy, Japan, Norway, and the United Kingdom) should be investigated separately. However the issues posed by US tax law demonstrate that to maximize net income, supply chain and tax organizations should collaborate.

Manufacturing Corporations

As demonstrated, sales companies show limited potential to create a tax efficient supply chain. Most businesses need a local presence to sell their goods and services, which triggers permanent establishment and local income tax obligations. Tax rates are comparatively high in the developed countries. While Microsoft's Irish sales strategy has been very successful, few businesses can sell and support products without a local presence.

Distribution centers can be attractive opportunities to integrate supply chain and tax planning, particularly if the parent country exempts earnings from domestic taxation. However in some tax credit countries, such as the United States, tax laws do not permit deferral in many situations. Close attention to international tax laws is required when the parent-country taxes worldwide earnings.

Manufacturing corporations may be the best opportunity to integrate supply chain and tax planning. To achieve economies of scale, most businesses prefer to concentrate manufacturing resources and limit the number of manufacturing sites. This makes manufacturing site selection very important. Many factors motivate manufacturing site location, including local wage rates, employee skill sets, inbound and outbound logistics

costs, access to materials and parts, proximity to customers, transportation services, the local regulatory environment, political stability, and income tax rates. From a tax perspective, manufacturing corporations do not face the Subpart F tax laws facing distribution centers. Manufacturing products requires technology, skills and fixed assets, thus creating business substance that international tax laws generally support. As a result, MNEs frequently designate the manufacturing corporation the profit center for residual or superior earnings. It may also be assigned certain risks, such as the cost of product failure or warranty costs. One organization often takes the most risk in a MNE, and earns superior rates of return when the business does well. It absorbs losses when the business performs poorly. Other entities frequently accept less risk, and earn modest but consistent returns for services performed, whether the entire business succeeds or struggles.

To illustrate this, suppose a MNE manufactures products in one country, distributes them in a second, and sells products in a third. Furthermore, this business consistently earns superior rates of return, akin to the high earnings earned by Microsoft's operating system business. The business must establish transfer prices to achieve arm's-length results. The MNE can structure its transfer pricing so the sales corporation and distribution centers earn adequate profits. The earnings must be sufficient to satisfy tax authorities, who compare results with many trade businesses performing similar functions, few of which are so successful. The income need not be above average, simply because the entire business is very profitable. At the same time, many business risks are borne by the manufacturing organization. The manufacturing corporation realizes the superior profits and also accepts the risk of loss, should the business perform poorly.

Describing a similar structure, Irving, Kilponen, Markarian and Klitgaard (2005) commented:

“Similarly, a foreign affiliate engaged in manufacturing often will earn returns not only for the underlying manufacturing activity—which is essentially a service—but also for the risks associated with owning raw

materials, work-in-process, and other inventory. It will also earn returns for its manufacturing know-how in the form of proprietary processes. Here again, the economic returns ascribed to the assumption of risks and ownership of assets and intangibles can result in the foreign affiliate earning a significant level of income” (p. 60).

Some countries seek to attract manufacturing, and offer low tax rates to attract businesses there. Often these countries are relatively small, and low tax rates attract jobs that spillover into the local economy. Singapore, Ireland and Puerto Rico are all small jurisdictions offering low income tax rates to attract manufacturing activities. Lowering tax rates can actually increase government revenue, as the additional taxes paid by a few major employers can offset broad tax reductions. Moreover, lower tax rates generate jobs with a multiplier effect, as support activities increase to supply necessary services. The following table shows the population, GDP, and tax rates in those popular tax havens:

Location	Population (000 omitted)	Gross Domestic Product (in billion dollars)	Per Capita GDP	Corporate Tax Rate
Ireland	4,109	\$110.74	\$26,951	12.5% ³⁵
Puerto Rico	3,944	\$67.71	\$17,168	2-7% ³⁶
Singapore	4,533 ³⁷	\$94.51 ³⁸	\$20,849	18% ³⁹

Table 7: Population, GDP and tax rates in selected tax havens

While these are the published income tax rates there, some countries also negotiate even lower tax rates when they want to attract desirable businesses. Businesses with excellent growth prospects and that contribute to an educated workforce can sometimes obtain lower tax rates.

The MNE and tax haven may both benefit. The business can substantially reduce its tax obligations by shifting operations to a country with low tax rates. The tax haven attracts

³⁵ OECD Tax Database, 2006; see <http://www.oecd.org/ctp/taxdatabase>; see Table II.1, Combined Corporate Income Tax Rate, 2006

³⁶ 13 L.P.R.A. § 10101, Puerto Rico Tax Laws

³⁷ “World Population Statistics”; <http://www.geohive.com/default.aspx>; July 1, 2007

³⁸ “Historical Gross Domestic Product,” World Bank Development Indicators, 12/19/2006

³⁹ Singapore Income Tax Act, (CAP 134) Part XI, Section 43

jobs, develops the local economy, and may actually increase tax revenue. When the country's population is small, the tax revenue can be significant. Simpson (2005) reported that Microsoft's taxes paid one year in Ireland amounted to \$77 for each citizen (p. 1).

Thus MNEs frequently organize their business to locate their most profitable organization in tax havens, such as Singapore, Ireland and Puerto Rico. The manufacturing corporation and/or intellectual property owner is frequently that activity. To align risk and reward and support their tax strategy, the more profitable legal organization accepts the most business risk.

This structure creates an opportunity to earn superior rates of return in low-tax locations. The high returns earned by the manufacturing corporation or intellectual property owner are not visible to tax authorities in other jurisdictions. Furthermore, their governments have no legal claim to profits recognized by the risk-taking organization. Tax authorities in the residual profit center enjoy the earnings recognized and taxes paid there.

In summary, for many MNEs manufacturing corporations may be the best opportunity to develop an income tax efficient supply chain. The MNE can determine the number of manufacturing sites by economic necessity, and may want to achieve economies of scale by limiting the number of manufacturing sites. Manufacturing products creates business substance international tax laws support, so these organizations are not encumbered by limitations such as Subpart F. From a tax perspective, manufacturing organizations can be structured as the designated risk-taker within the enterprise, eligible to earn high rates of return if the business succeeds. A number of tax havens offer low tax rates and offer incentives to attract manufacturing activities, particularly in high-technology industries. For these reasons manufacturing site selection offers many firms an excellent opportunity to create an income tax efficient supply chain.

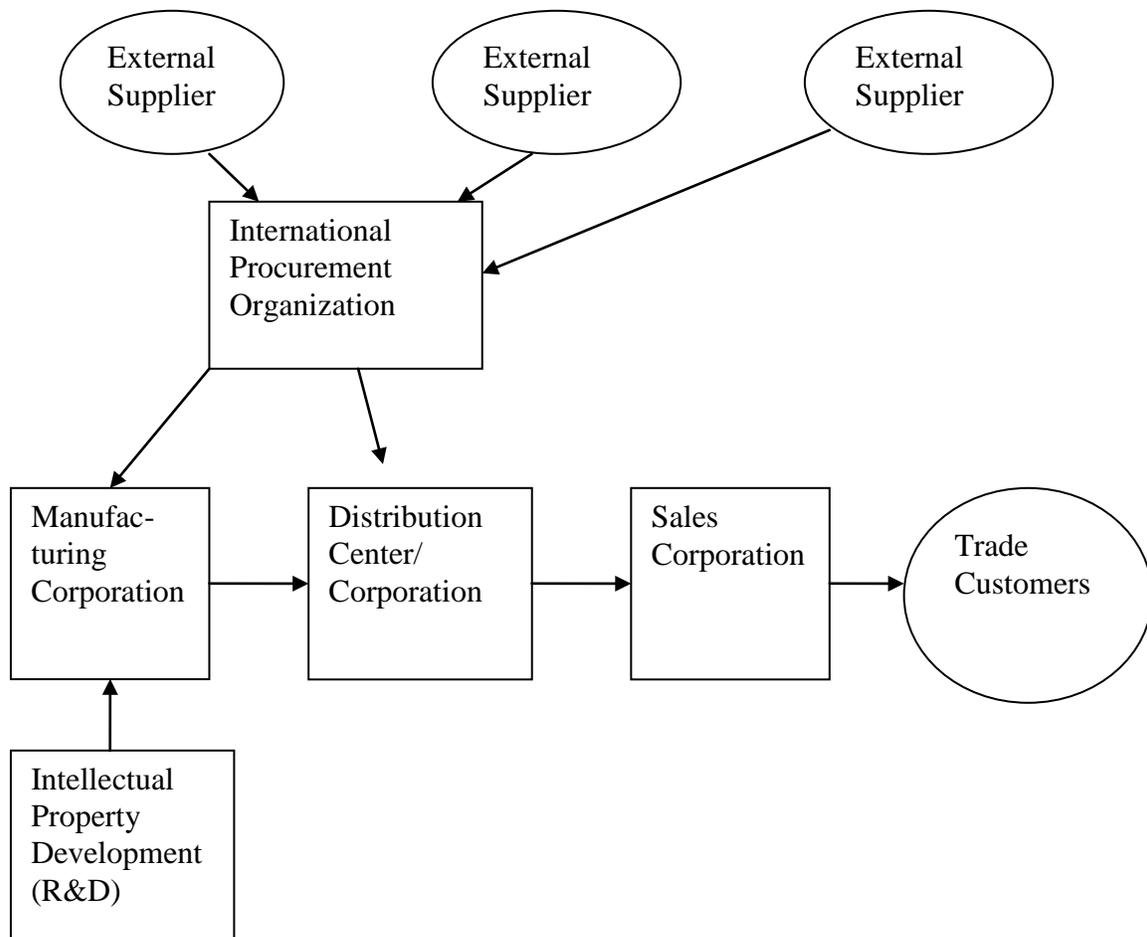
Procurement Organizations

As previously discussed, historically MNEs created autonomous overseas subsidiaries, responsible many business processes. More recently MNEs have restructured supply chains to centralize business processes where they can be performed most efficiently. Trent and Moncza (2003) found that MNEs are shifting from purchasing materials domestically to sourcing materials globally, and that the purchasing function increasingly crosses international borders (p. 26). According to Casley, Pope and Hohtoulas (2006) in the United Kingdom “There has been an increased tendency for groups to centralize their purchasing activity and pool a group’s purchasing power. Potential procurement savings often quoted can range from 5% to 20%, depending on industries and a group’s starting point” (p. 196). They write cost savings are achieved through “better negotiations, volume, improved relationships with suppliers and well coordinated logistics from better order and delivery processes” (p. 196). According to Verlinden and Costermans (2006) Belgium has also attracted international procurement organizations (p. 173).

Centralization strategies differ from company to company, depending upon unique business needs. But frequently procurement organizations manage this activity for several international sites. As an example, a company could have one procurement organization for the US, another for Europe, and a third in Southeast Asia. The procurement organization can produce cost savings while supporting local needs.

Procurement organizations are an opportunity to link supply chain and tax planning. They need to recover their costs and operate profitably, so they sell goods and services to related parties at arm’s-length prices. Firms should consider tax ramifications when locating that activity. Irving, Kilponen, Markarian and Klitgaard (2005) noted, “Linking these two concepts, it is possible for companies to centralize their procurement functions, proprietary procurement processes, and know-how into specific corporate entities in low-tax jurisdictions. These ‘procurement companies,’ are entitled, from a tax perspective, to

charge other corporate entities an arm's length amount for the value-added procurement activities undertaken on their behalf" (p. 59). A graphical depiction follows:



The IPO leverage its purchasing power to reduce costs of parts and materials from external suppliers.
Figure 3: International Procurement Organizations

Once again, MNEs need to investigate the parent country's relevant tax laws. If the parent country exempts foreign subsidiaries from domestic taxation, the procurement offices can reduce the enterprise's worldwide tax rate. But this may not be possible if the parent country taxes worldwide earnings. Within the United States, Subpart F governs IPO tax obligations in certain situations. If the IPO is located in the same country it purchases goods or sells goods, the local income tax rate applies.⁴⁰ But if the IPO is located in a third country, in which the firm neither buys nor sell goods, the US rate

⁴⁰ Subpart F is found in IRC §951-§964

applies. This is relevant if the MNE operates in a tax haven. For example, if a US-parent company manufactured goods in Ireland, and formed an IPO there, the local 12.5% income tax rate would apply. Locating the IPO in a country where it had no operations could trigger Subpart F and the 35% US federal tax rate. The 22.5% difference between the worldwide and local tax rate would be owed to the US Treasury.

Compensation for centralized purchasing is likely to be a cost-plus markup. It may be difficult to obtain comparable prices for such procurement services. While independent parties procure goods for clients, they frequently assume more risk than internal purchasing organizations. Verlinden and Costermans (2006) write, “Group central purchasers, will, however, often not perform functions or assume risks that are similar to many independent parties, as for example, commercial risks may differ” (p. 173). OECD Guidelines suggest cost-plus compensation is most appropriate when comparable transactions cannot be identified. Verlinden and Costermans (2006) write “In the absence of uncontrolled comparables and assuming that the central purchaser’s involvement is that of order centralization without an entrepreneurial role, it is likely to receive remuneration based on a cost-plus methodology” (p. 173).

Shared Service Providers

In addition to IPOs, MNEs have centralized other activities to provide support across international boundaries. Wright (2006) states “This occurs for a variety of reasons, e.g. cost reduction strategies that result in centralization of regional support functions...” (p. 202). Wright says centralized business processes include “various regional support functions such as finance, marketing, information technology (IT) and human resources (HR)” (p. 202). Verlinden and Costermans (2006) have also observed the growth of shared service providers in Belgium (p. 172).

For example, MNE might centralize certain accounting functions, such as payroll, accounts receivable collections, or accounts payable. Or it might create a regional

information technology center, to meet the IT needs in a number of countries. These organizations should also consider local tax rates when making location decisions. In addition, since they are not involved in the buying and selling of goods, they do not face Subpart F restrictions. According to Wright,” a cost-plus markup is ordinarily used to bill both manufacturing and reselling affiliates for the services they have received” (p. 202). It can be difficult to find comparable organizations providing similar services and assuming comparable business risks.

Defending the Income Tax Efficient Supply Chain

As explained earlier, tax authorities are becoming concerned with the tax impact of supply chain restructurings. High income tax jurisdictions, such as the United States, the United Kingdom, France, the Netherlands, Spain and Belgium, believe supply chain restructurings are reducing their tax revenue, so they are paying more attention to this activity. According to Casley, Pope and Hohtoulas (2006), “In the United Kingdom, the level of attention from the tax authorities has increased to match the greater flexibility with which MNEs approach their supply chain” (p. 194). As tax practitioners frequently have to defend these restructurings to tax auditors, what actions can they take to support their position?

First, tax practitioners need to explain the business rationale for the supply chain restructuring, to satisfy the business purpose doctrine. They should be able to identify clearly how the restructuring improves the supply chain, customer satisfaction, or the pre-tax cost structure. Reduced trade barriers and improved communication technologies have created many opportunities to restructure and improve supply chains, and to eliminate overhead by centralizing many processes, so in most cases this should not be difficult to do. Restructuring the supply chain once, considering both operational and tax consequences, helps to satisfy the business purpose doctrine. Reengineering the business process first, and later moving an activity solely for tax purposes, increases audit risk. Tax authorities can argue the latter action was done solely to reduce taxes and the business purpose doctrine may not be satisfied. This is one more reason why tax

departments and supply chain organizations should collaborate when making location decisions.

Second, it is essential to comply with the arm's length transfer pricing principle. As Casley, Pope and Hohtoulas (2006) write, "A primary requirement for tax purposes is to price the transactions arising from the supply chain model on an arm's length basis" (p. 194). This may seem obvious, but when an MNE restructures its supply chain, and changes responsibilities and risk within the enterprise, it may neglect to review its transfer pricing policies. When the supply chain is restructured, the risks and responsibilities of a subsidiary may materially change, and transfer pricing policies should be evaluated. If the tax department does not participate in the restructuring, it may incorrectly assume their transfer pricing policies need no modification. Schwarz and Castro (2006) write, "In the context of multinational enterprises, these changes lead to changes in the risk profile of the entities within the group and consequently in the profitability of operations in countries where activities take place. The changes may result in overall changes in the group's profitability or a shift in the jurisdiction where profits arise—away from the place where activities are undertaken to the place where risks are assumed or functions are moved" (p. 187). Restructuring the international supply chain necessitates reviewing transfer pricing policies, and this may not happen if the tax department is not at least aware of a supply chain restructuring.

Third, it is important to ensure documentation is current, legal agreements between business entities are still valid, and the impact on transfer pricing policies documented. As Casley, Pope and Hohtoulas (2006) write, "As ever, the answer is also to ensure that the transfer pricing model adopted is solidly and competently implemented, namely that legal contracts reflect functional reality; that intercompany transactions are properly priced; that appropriate documentation and controls are in place; and that PE risks have been addressed" (p. 201). Concerning the French perspective, Douvier (2006) writes, "However, if (1) the taxpayer has prepared adequate documentation in anticipation of a tax audit and if that documentation supports the new methodology, (2) comparables have

been gathered and (3) the functions have been modified and the risks shifted out of France, the risk that the tax authorities will be successful in their challenge is technically remote” (p. 182).

Tax authorities in Europe and the United States may use different approaches to challenge restructurings. In Europe tax authorities frequently first question whether permanent establishment laws have been breached. In the 2006 issue of International Transfer Pricing Journal five articles written from a European perspective (United Kingdom, Belgium, France, Spain and the Netherlands) said local tax authorities looked closely at this issue. Referring to a meeting of the OECD’s Center for Tax Policy Administration (CTPA), one article said: “One of the key questions of the CTPA Roundtable pertained to the notion of a deemed PE created by activities of a limited function for the foreign related parties for which a local entity is acting.”⁴¹ Therefore it is important for tax practitioners in Europe to be aware of the permanent establishment rules and developments in these countries.

Within the United States, tax authorities do not focus often on permanent establishment. According to Wright (2006), “In many countries, the permanent establishment (PE) rules are used to attack these structures. Such is not the case in the United States, however, as the Internal Revenue Service (IRS) typically uses the transfer pricing rules to evaluate whether the supply chain restructuring is acceptable...In virtually all cases, the IRS moves immediately to the transfer pricing question, without alleging the existence of a PE” (p. 202). According to that author, the IRS prefers to use other code sections or regulations to attack the tax consequences of the restructuring. The IRS lost a permanent establishment case, *Tasei Fire & Machine Insurance Co., Ltd. Et al v. Commissioner* (1995), which may make it reluctant to litigate permanent establishment.⁴² Wright (2006) says “Thus it is important, from a U.S. perspective, to obtain professional international tax assistance when planning a supply chain restructuring” (p. 202).

⁴¹ See International Transfer Pricing Journal, July/August, 2006, page 189

⁴² *Tasei Fire & Machine Insurance Co., Ltd. Et al v. Commissioner*, (Tax Ct. 1995).

Some believe tax authorities need to provide more guidance on these issues. Describing the situation in Spain, Carreno and Oliete (2006) write, “There is an urgent need for clear guidance” (p. 193). However business process changes frequently proceed more rapidly than tax law, so it is likely tax practitioners will need to defend restructurings without the benefit of detailed regulations.

Conclusion

MNEs around the world are restructuring their supply chains to achieve operational objectives. These restructurings may also shift business operations to low-tax jurisdictions. Tax authorities in many high income tax countries are very aware of these restructurings, and are concerned with lost tax revenue. For this reason alone, tax departments need to understand supply chain developments. They need to document these activities and defend the firm’s actions to tax authorities.

While historically supply chain papers have emphasized pre-tax cost minimization, there is evidence in recent years that firms are explicitly considering income taxes when they make supply chain decisions. For many firms it is one of their largest expenses, and ignoring its impact is a mistake. Most studies suggest net income is the single best measure of firm performance, so emphasizing pre-tax cost minimization is a mistake.

Encouraging supply organizations and tax departments to collaborate has many advantages. Through collaboration firms can make better supply chain decisions that aim to improve net income, the key driver of shareholder value. Beyond this tax departments need to be informed about supply chain restructurings to satisfy tax authorities. Tax departments need to document these changes. Legal agreements between business entities may need to be rewritten, and transfer pricing policies may need to be altered, to reflect changes in risk and responsibility. Tax departments will need to prepare documentation for tax authorities demonstrating the restructuring satisfies the business purpose doctrine. Ignoring these responsibilities increases the risk of an unsatisfactory tax audit and related penalties.

The corporation's functional and legal model has also been analyzed to determine where the best opportunities exist to link supply chain and tax planning and improve a firm's net income. In most situations the sales company is not a good opportunity, due to high tax rates in developed countries, and the need to provide local sales and service support. In some cases it may be possible to make sales from a third country located in a low tax location. However this may not be possible for most businesses to do. The seller needs to be very careful not to create a permanent establishment in the local country it is trying to bypass, and most businesses may not be able to sell and support products without a local presence.

Manufacturing companies may present the best opportunity for many firms.

Manufacturing products creates business substance international tax laws support.

Employees must be hired and trained, manufacturing know-how must be transferred, and assets must be purchased, installed and used. The manufacturing organization often assumes the most business risk, and earns superior profits when the business is successful. Since tax havens often seek to attract manufacturing activities, income tax rates are frequently low in these locations.

Distribution centers and procurement offices have potential, but applicable tax laws should be examined, to determine if parent-country tax laws limit this opportunity, as Subpart F does in the United States.

Shared service providers are another good opportunity. As mentioned, many MNEs are forming centralized IT services, accounting functions, or Human Resource organizations that support a number of countries. In many cases these activities are funded through cost-plus markups upon services provided. It makes sense to consider income tax rates when determining where to locate these activities.

References

- Anderson, K., Murphy, D., and Reeve, J. (November/December, 2002). Smart tax planning for supply chain facilities. *Supply Chain Management Review*. Volume 6, 2002. Retrieved from <http://www.scmr.com/archive/2002/20021101.php> January 7, 2010.
- Bartov, E., Goldberg, S. and Kim, M. (2001). The valuation-relevance of earnings and cash flows: an international perspective. *Journal of International Financial Management and Accounting*, 12(2), 104-132.
- Beamon, B. (1998). Supply chain design and analysis: models and methods. *International Journal of Production Economics*, 55, 281-294.
- Bram, J., Martinez, F., and Steindel, C. (March, 2008). *Trends and development in the Economy of Puerto Rico*. Federal Reserve Bank of New York, 14(2), 1-7.
- Carreno, F. and Oliete, G. (July/August 2006). Spain: Supply Chain Management. *International Transfer Pricing Journal*, 13(4), 189-193.
- Casley, A., Pope, S., and Hohtoulas, P. (July/August 2006). Supply chain models: United Kingdom. *International Transfer Pricing Journal*, 13(4), 194-201.
- Cohen, M. and Mallik, S. (1997). Global supply chains: research and applications. *Production and Operations Management*, 6(3), 193-210.
- Douvier, P. (July/August 2006). France: supply chain management. *International Transfer Pricing Journal*, 13(4), 178-182.
- Gresik, T. (2001). The taxing task of taxing transnationals. *Journal of Economic Literature*, 39(3), 810-838.
- Irving, D., Kilponen, G., Markarian, R., and Klitgaard, M. (April, 2005). A tax-aligned approach to SCM. *Supply Chain Management Review*, 57-61. Retrieved April 2, 2008 from <http://www.scmr.com>
- Jones, S. (2006). *Principles of Taxation for Business and Investment Planning*. New York: McGraw-Hill Irwin.
- Kuppens, J. and Oosterhoff, D. (July/August 2006). Netherlands: business restructuring and permanent establishments. *International Transfer Pricing Journal*, 13(4), 183-188.
- Lemein, G., McDonald, J., and Lipeles, S. (July, 2007). Subpart F's New Previously Taxed Income Regulations Provide Additional Clarity in Complex Situations—Part I. *Taxes: The Tax Magazine*. 85(7), 5-16.

- Lewis, A. (September, 2009). *Road map to VAT effective tax rate profiling*. *International Tax Review*, 20(7), 19-22.
- Romalis, J. (April/May 2007). Capital taxes, trade costs, and the Irish miracle. *Journal of the European Economic Association*, 52(3), 459-469.
- Scherer, F. (1993). Pricing, profits and technological progress in the pharmaceutical industry. *Journal of Economic Perspectives*, 7(3), 97-115.
- Schwarz, J. and Castro, E. (May, 2006). Re-engineering Multinational Supply Chains. *Bulletin for International Taxation*, 60(5), 187-193. .
- Simpson, G. (2005, November 7). Wearing of the green: Irish subsidiary lets Microsoft slash taxes in U.S. and Europe. *The Wall Street Journal*, p.1.
- Skjett-Larsen, T., Schary, P., Mikkola, J., and Kotzab, H. (2006). *Managing the Global Supply Chain* (3rd ed.). Copenhagen: Copenhagen Business School Press.
- Skinner, W. (October, 2005)). The future of I.R.C. §482 as a substance over form provision. *Stanford Journal of Law, Business and Finance*, Vol. 11:174, 174-200.
- Streng, William P., “U.S. Tax Treaties: Trends, Issues and Policies,” Presentation at Houston International Tax Forum, April 2, 2009. University of Houston Law Center, 1-75. Retrieved January 7, 2010 from <http://www.law.uh.edu/faculty/wstreng/HoustonInternationalTaxForum.pdf>
- The Economist* (April 7, 2007). Globalisation’s offspring: how the new multinationals are remaking the old, p. 11.
- Trent, R. and Monczka, R. (Fall, 2003). International purchasing and global sourcing—what are the differences? *The Journal of Supply Chain Management*, 26-37.
- Verlinden, I. and Costermans, C. (July/August 2006). Belgium: supply chain management. *International Transfer Pricing Journal*, 13(4), 172-177.
- Weiner, J. (July 16, 2007). News analysis: exempting foreign profits from taxation in the U.K. *Tax Notes International*, 47(3), 214-220.
- Wright, D. (July/August 2006). United States: supply chain management. *International Transfer Pricing Journal*, 13(4), 202-207.