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Managerial Autonomy and Tax Compliance: An Empirical Study on International Transfer Pricing

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ABSTRACT: This paper examines the impact of managerial autonomy on tax compliance in an international transfer pricing context. Specifically, we study whether foreign subsidiaries' autonomy in making pricing and sourcing decisions on intrafirm transfers affect their profit shifting through international transfer pricing. We measure transfer pricing noncompliance in terms of tax audit adjustments made by tax authorities. Based on a sample of 163 transfer pricing audits on foreign investment enterprises (FIEs) in China, we find that tax audit adjustments for FIEs that have autonomy in setting transfer prices or sourcing from outsiders are smaller than those that have their transfer transactions dictated by parent companies.

INTRODUCTION

This paper examines the impact of managerial autonomy on tax compliance in an international transfer pricing context. Specifically, we study whether managerial autonomy for foreign subsidiaries of multinational corporations (MNCs) in making pricing and sourcing decisions on intrafirm transfers affects their tax compliance through international transfer pricing. Our sample firms are foreign investment enterprises (FIEs), which include Sino-foreign joint ventures and wholly foreign-owned enterprises in China. We measure tax noncompliance in terms of audit adjustments made by tax authorities.

With the rapid growth of international businesses, the pricing of cross-border intrafirm transactions undertaken by MNCs has become an increasingly important international business issue (Ernst & Young 2003, 2005). Cross-national differences in taxation and business environments induce MNCs to shift profits between jurisdictions to minimize tax payment and business risk through transfer pricing manipulations (Borkowski 1997). Extant studies on income shifting through international transfer pricing mainly focus on the U.S., Japan, and other developed countries (Harris 1993; Klassen et al. 1993; Jacob 1996; Conover and

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Nichols 2000). A few studies on developing countries provide empirical evidence on trading statistics to assess the extent of transfer pricing manipulations by MNCs (Natke 1985; Rahman and Scapens 1986; Chan and Chow 1997a). Chan and Chow (1997b) provide the first empirical study on transfer pricing audits in China in the early 1990s, investigating the likelihood of certain FIEs being selected for audit. However, they do not analyze the *magnitude* of transfer pricing manipulations, nor do they study the effect of managerial autonomy on such manipulations. This is the first empirical study on the magnitude of transfer pricing noncompliance based on tax audit data. We aim to investigate the extent of tax noncompliance through international transfer pricing and the impact of managerial autonomy on such noncompliance by subsidiaries of MNCs in China.

The transfer pricing literature has indicated that transfer prices are affected by the extent to which the responsibility of pricing decisions is delegated to subsidiary managers and the use of transfer prices for the performance evaluation of subsidiary managers (Colbert and Spicer 1995; Ghosh 2000; Spicer 1988). The more autonomy subsidiary managers have over intrafirm transactions, the more they will be held accountable for subsidiary profits; such autonomy generates the self-interest behavior identified by agency theory (Emmanuel and Mehafdi 1994; Ghosh 2000). Notably, these autonomous managers will try to negotiate and set transfer prices that will maximize their subsidiary profits and favor their performance. Erickson et al. (2004) document that many managers even inflate their firm profits for performance evaluation and compensation purposes despite the need for the firms to pay more taxes. Conversely, in a centralized organizational structure, the complementary compensation system for subsidiary managers would normally be based on firm-wide profit performance (Ghosh 2000). This is fairness based on "shared fate." In this case, subsidiary managers of MNCs generally will be willing to shift profits out of their subsidiaries through transfer pricing to achieve corporate-wide objectives. Thus, we expect that, other things being equal, transfer pricing manipulations will vary with the extent of subsidiary managers' autonomy in pricing and sourcing decisions on intrafirm transfers. Specifically, we hypothesize that tax audit adjustments for subsidiaries that have discretion in setting transfer prices or sourcing from the external market will be smaller than those that have their transfer transactions dictated by parent companies, after controlling for other factors that could affect audit adjustments made by tax authorities.

To test our hypotheses, we collected data on a sample of 163 foreign investment enterprises (FIEs) that were audited by Chinese tax authorities on international transfer pricing. As to whether an FIE is allowed to have managerial autonomy in pricing and sourcing decisions is a firm's choice, there is a potential self-selection problem. We used a bivariate probit selection model to deal with these two potentially endogenous choice variables (pricing and sourcing) in our two-step regression analysis (Phillips 2003). The findings are consistent with our hypotheses that the audit adjustments for FIEs having autonomy to negotiate with affiliates to set transfer prices are smaller than those for FIEs having their transfer prices specified by parent companies. Similarly, FIEs that have discretion to trade with outsiders have smaller audit adjustments than those that are not allowed to source from the external market. We performed additional tests to confirm that our results are robust to alternative definitions of regression variables.

The results of this paper allow us to understand better how a management control system can affect income shifting through transfer pricing. To our knowledge, there is no published empirical study examining the effect of managerial autonomy on tax compliance. This is the first study that examines empirically the effects of autonomy in local management's pricing and sourcing decisions on transfer pricing audit adjustments. The findings should have significant implications for tax authorities, public policy makers, and foreign

investors operating in China and other developing economies. The results should help tax authorities to tackle tax audit problems more effectively and confidently, and to set auditing guidelines on related-party transactions. For example, the research results suggest that tax authorities should set audit priority for investigating FIEs whose intrafirm transactions are controlled by foreign affiliates. Public policy makers should design policies that encourage autonomy in FIEs. MNCs should have a better understanding of how a management control system and its associated transfer pricing policies can affect their compliance with tax laws. Finally, although China is unique in terms of its size and history, it is in essence a developing economy according to the International Monetary Fund (IMF 2004). Thus, the research findings that the management control system of a MNC can affect international transfer pricing and tax compliance should provide a useful reference for other developing countries that are eager to attract foreign investments.

The remainder of this paper is organized as follows. The next section explains the significance of international transfer pricing, the transfer pricing legislation, and the tax audit procedures in China. The third section formulates the research hypotheses. The fourth section explains the research design, and the fifth section provides the empirical results. The last section concludes.

INSTITUTIONAL BACKGROUND

Significance of International Transfer Pricing and Transfer Pricing Legislation in China

China has experienced rapid growth in GDP and foreign direct investment (FDI) in the past decade. The average annual GDP growth rate in China is 8.6 percent for 1995–2004, compared with 2.3 percent in the G-7 countries for the same period (IMF 2003, 2004; *South China Morning Post* [*SCMP*] 2005). FDI inflows to China reached U.S.$61 billion in 2004, a new record, reinforcing its position as the largest recipient of FDI inflows in the developing world (*China Daily* 2005). Furthermore, China has become one of the world's top ten trading nations since 1999 (United Nations 2000, 2002; *Shenzhen Daily* 2005).

Foreign investment enterprises (FIEs) in China play an increasingly important role in its foreign trade. In 2004, total imports and exports by FIEs accounted for 58 percent and 57 percent, respectively, of China's total imports and exports (Ministry of Commerce [MOC] 2005). The corresponding percentages for 2003 were 56 percent and 55 percent, respectively (MOC 2004). Related-party transactions—those in which FIEs in China traded with their overseas affiliated companies—account for a large proportion of these transactions. Chan and Chow (1998) find that 88 percent of the export-oriented FIEs in China purchase and sell goods to their affiliated companies for 70 percent or more of their total imports and exports. Fifty-three percent of the domestic-market-oriented FIEs import from their affiliated companies for 50 percent or more of their total imports. Chan and Lo (2004) report that 80 percent of their sample FIEs has inter-affiliate trade accounting for more than 75 percent of their total trade. Therefore, international transfer pricing is an important issue in China for both the Chinese government and the MNCs invested there, and tax evasion through transfer pricing is a major concern for the Chinese government (Mo 2003).

The National People's Congress of China introduced the first national legislation on transfer pricing under Article 13 of the *Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises* (the "FIE Tax Law") in 1991. Apart from the FIE Tax Law, the State Administration of Taxation (SAT) issued a number of rules and regulations, including *Tax Circular No. 237* (SAT 1992) and *Tax Circular No. 59* (SAT 1998), to govern transfer pricing transactions and audits in China. The principle of transfer pricing regulations in China is based on the recommendations of

the Organization for Economic Cooperation and Development (OECD 1979, 1995). For example, the FIE Tax Law stipulates the use of the arm's length principle. In addition, China's transfer pricing regulations in respect to the definition of an associated company and burden of proof are similar to those introduced by China's major trading partners, including the United States.

Transfer Pricing Audits in China

The State Administration of Taxation (SAT) believes that many of the loss-reporting FIEs manipulate their transfer prices to reduce profits reported in China (*China Tax News* 2002; *PRN* 2003; *Wen Wei Po* 2004). According to the records, more than 60 percent of FIEs in China reported losses between 1996 and 2003. Despite this, FDI continued to increase rapidly in China—from U.S.$42 billion in 1996 to U.S.$57 billion in 2003. Also during this time period, China entered the World Trade Organization (2001) and started to significantly reduce tariff rates. The average tariff rate was reduced from 36 percent in 1995 to 12 percent in 2002 and to 10 percent in 2005. As such, the government revenue from tariffs has been decreasing. Now the government wants to increase the efforts on transfer pricing audits to improve tax compliance by FIEs and to collect more tax to partly compensate for the loss of revenue from tariffs. To protect government revenues, the SAT has made anti-tax avoidance work its top priority and transfer pricing audits one of its most important tasks.

According to the tax regulations, all FIEs in China are subject to a routine annual tax audit (Chan and Mo 2000, 2002). FIEs are required to file financial reports and, if they have related-party transactions to declare, details of those transactions including the price and the total amount of all such transactions, the parties, and the jurisdictions involved. FIEs that fail to file the required forms are subject to penalties. Based on the financial reports and other information submitted, Chinese tax authorities will assess if an in-depth transfer pricing audit is warranted. If the tax authorities decide to pursue a transfer pricing audit, they will issue a notice to the targeted FIE and request it to provide further transfer pricing information within 60 days (SAT 1998). The requested information includes the transfer pricing determination process, the role of each party involved in the process, the existence of an external market for the transferred products, the sourcing policy of the multinational company, the operation, and commercial contracts, vouchers, and other relevant documents. After analyzing the information received, the tax bureau will issue a notice to the targeted FIE three to seven days before conducting a field audit to verify the information submitted by the FIE and to obtain further evidence on transfer pricing manipulations. The burden of proof that the transfer prices are arm's length prices is on the FIE being investigated. To prevent corruption, at least two auditors will be on-site to conduct the field audit. After the field audit, the auditors will prepare a tax audit report detailing the amount and the basis of the tax adjustment, as well as other relevant information of the case. Although a taxpayer can appeal the decision of the Chinese tax authorities, few have done so in practice (Chan and Mo 2000; Mo 2003). To avoid litigation that could antagonize the government is part of the traditional culture in Chinese society (Hofstede 2001; Chan and Jiang 2002).

HYPOTHESIS DEVELOPMENT

Subsidiary Autonomy and Performance Evaluation

When a multinational corporation (MNC) establishes a subsidiary in a foreign country, the management must decide how much control it needs to maintain over the subsidiary

managers. This headquarter-foreign subsidiary control relationship is affected by the organization's business strategy, corporate structure and culture, the subsidiary's local context, and the size of the organization (Radebaugh et al. 2006, Chapter 12; Rodrigues 1995). MNCs with interdependent subsidiaries will tend to establish a global strategy and centralize most important decisions, including transfer prices that affect local operations. Because of the interdependencies among subsidiaries, the criteria for the performance evaluation of subsidiary managers will likely rely on firm-wide performance measures (Bushman et al. 1995; Ghosh 2000; Keating 1997). On the other hand, some MNCs establish a multidomestic strategy and allow each foreign subsidiary to tailor its strategy to the local environment, which in turn increases the efficiencies and timeliness of decision making. The need for autonomy arises because subsidiary managers possess private information that the headquarters staff lacks (Emmanuel and Mehafdi 1994). These MNCs often give significant autonomy to subsidiary managers to operate the subsidiary, but hold them responsible for the results (Hout et al. 1982). The more autonomy the subsidiaries have, the more they will be held accountable for their financial reports. In this bottom-up setting, the criteria for performance measurement and evaluation stress comparison of the subsidiary performance with a budget plan and with sibling units (Eccles 1983; Ghosh 2000). This is the basis of responsibility accounting. Interviews with FIE management in China confirm that autonomous FIEs are more aggressive in localization and are more concerned with local performance (Open University of Hong Kong [OUHK] 2004).

In this study, we focus on examining the association between subsidiary managers' autonomy over intrafirm transfers and the magnitude of income shifting through transfer pricing. Figure 1 depicts the relationships and summarizes the hypotheses discussed below.

The Impact of Pricing Decision Autonomy on Transfer Pricing Manipulation

In this study, we classify the role of a subsidiary's local management in setting transfer prices into two broad categories. In the first category, transfer prices are specified by the parent companies even though subsidiaries are sometimes consulted during the price-setting process. Under such a top-down approach, top management centralizes transfer pricing and other decisions involving the interdependencies among affiliates that affect overall corporate objectives. Because of the top-down processes, the interdependence among subsidiaries, and the need to reduce the frictions in coordination (Wilson 1993), the criteria for the performance evaluation of subsidiary managers probably will not rely heavily on a subsidiary's financial reports, but will be based more on firm-wide performance measures (Bushman et al. 1995; Eccles 1983; Ghosh 2000; Keating 1997). While alternative performance evaluation systems including a dual pricing system can be used in this situation,[1] in the main, most companies use the same transfer prices for tax and managerial purposes. As firm-wide performance measures are more likely to be based on after-tax results (Phillips 2003), the subsidiary managers will adopt the centrally determined transfer prices to shift profits in order to lower the tax burden to achieve firm-wide objectives.

In contrast, when a MNC decentralizes important decisions, including transfer prices to subsidiaries, the local management of an FIE has the autonomy to conduct direct negotiations with other subsidiaries or affiliates to set transfer prices. As explained earlier, in

[1] In a dual transfer pricing system, one price is used for tax purposes and one for performance evaluation. However, such a system can increase the risk of tax audits and will also be costly to implement (Baldenius et al. 2004). If a dual transfer pricing system is adopted, then subsidiary managers will not be concerned about the transfer prices used for tax-reporting purposes, as their performance will not be affected by such prices. Therefore, the managers should still shift profits out to achieve corporate-wide objectives.

FIGURE 1
The Influence of Managerial Autonomy on Tax Compliance

this bottom-up setting, subsidiary managers are compensated mainly based on subsidiary profit, and they will take whatever steps necessary to maximize their subsidiary's profit, even though these steps sometimes have a negative effect on other affiliates or on the MNC as a whole (Ghosh 1994). In addition, shifting profits out of a host country through transfer pricing may increase conflicts with the local government and bureaucrats. According to Chan and Lo (2004, 2005), maintaining good relationships with the host government is an important factor affecting transfer pricing policies adopted by FIEs in China. FIEs that have no autonomy have no choice but to follow the head office's instructions to achieve firm-wide objectives. However, FIEs that have autonomy in negotiating and setting transfer prices have the choice to avoid conflict with the local government, and they will consider the business and political factors very carefully before shifting profits. Therefore, compared to FIEs that have no autonomy in setting transfer prices, autonomous FIEs are more likely to keep profits in China. Thus, we expect that their tax noncompliance from transfer pricing is smaller.

Accordingly, we formulate the following hypothesis:

H1: *Ceteris paribus*, the magnitudes of tax audit adjustments on international transfer pricing for FIEs having autonomy in setting transfer prices are smaller than those for FIEs having transfer prices specified by parent companies.

The Impact of Sourcing Decision Autonomy on Transfer Pricing Manipulation

Another aspect of a management control system on intrafirm transfers that affects profit shifting by FIEs is whether FIE management has autonomy over sourcing from the external market. As explained above, the more autonomy the local managers have over operational decisions, the more the FIE will rely on the subsidiary's financial reports to conduct the managers' performance evaluations. Motivated by self-interest, local managers will choose the best sourcing alternative that favors their performance. Therefore, if the transferred product of an FIE is a standard product that is available in the external market, and the local management of the FIE has the autonomy to trade either inside or outside the MNC, then the decision to trade internally or externally will depend on price, quality of the product, and other terms of the transaction. In other words, the FIE will buy from (or sell to) outsiders if this is the most beneficial alternative for the FIE, even though it is in the best interest of the MNC as a whole to buy from (or sell to) affiliates within the group. Therefore, given FIEs' incentives to maximize subsidiary profit, we expect that FIEs having autonomy over sourcing decisions will be less likely to deliberately shift profits out of the host country through transfer pricing.

On the other hand, if the central management of FIEs controls the sourcing decision and imposes "barriers to entry" to the external market and "barriers to exit" from the internal market, then the FIEs will be compelled to stay in the internal market even if the terms of the transfer are not favorable to them. The situation is similar when no external market exists for the transferred product. In this case, the FIEs have no autonomy on sourcing due to the nature of the product. In addition, other things being equal, the volume of intrafirm transfers will usually be higher when FIEs are under constrained sourcing as opposed to having independent sourcing. A higher volume of intrafirm transfers provides another incentive for transfer pricing manipulations (Jacob 1996).

Based on the above arguments, we formulate the following hypothesis:

H2: *Ceteris paribus*, the magnitudes of tax audit adjustments on international transfer pricing for FIEs that have discretion over sourcing from the external market are smaller than those for FIEs that are restricted to source from the internal market.

In summary, we expect that subsidiary profit performance and maintenance of good relationships with local government will be the dominant considerations for FIEs with autonomy on transfer pricing strategies, and these FIEs are less likely to shift profits out of China. However, different scenarios may exist. For example, certain FIEs may prefer tax savings over a better relationship with the local government. Whether our expectation or an alternative scenario will prevail is an empirical question that we address in our hypotheses. In addition, there are other reasons that centrally determined transfer prices may not lead to more audit adjustments. For example, centrally determined transfer prices are sometimes the result of MNCs' global pricing strategies. Thus, MNCs would argue that since they use the same transfer price globally for the transferred product, they have no specific intention to evade tax in China. If the tax authorities can be convinced by this argument, then centrally determined prices may not result in more tax audit adjustments. Furthermore, negotiated transfer prices used by autonomous subsidiaries can be significantly affected by an individual manager's ability to negotiate. They are not necessarily the same as market prices and they can also lead to large audit adjustments. Thus, it is not certain that managerial autonomy will result in better tax compliance, and empirical tests are required to help settle the issue.

RESEARCH METHOD

Data Collection

We collected our data from tax bureaus in coastal China where FIEs are concentrated. We requested each tax bureau to provide us 30 to 50 cases for FIEs that were field-audited for transfer pricing manipulations. The field audits are in-depth transfer pricing audits as explained in the earlier section of this paper. In collecting data from the tax audit reports, the tax officials systematically selected the cases at random from their tax audit database, based on the company tax file number. As there was no indication that they intentionally included or excluded particular cases in the sample, the sample FIEs should be reasonably representative of the FIEs in China that were subject to transfer pricing audits.

The tax bureaus provided a total of 163 cases for audits conducted in 2002, which represented about 13 percent of the transfer pricing audits in China in that year. Some of these audits were extended and completed in 2003 due to special complexities. The tax officials extracted information related to transfer pricing adjustments, such as the amount of audit adjustments, the basis for tax adjustments, the amount of related-party transactions, and management's role in price-setting and sourcing decisions. We consider these data from the tax audit reports reliable and instructive because tax auditors verify the data submitted by FIEs as part of the field audit procedures, and a very high penalty can be imposed on FIEs found to have deliberately provided false information.[2] Furthermore, given the special attention by tax bureaus in recent years on recovering lost revenues, tax officials have to closely follow the audit guidelines in conducting tax audits. Consistent with the findings of Chan and Chow (1997b), only a few audits (i.e., 7 cases) resulted in no adjustment. This

[2] According to the tax collection law in China, if a taxpayer commits tax evasion, then the tax authorities shall demand the payment of underpaid tax and concurrently impose a fine of 50 percent to five times the amount of underpaid tax, depending on the seriousness of the violations (National People's Congress, PRC 2001). Thus, FIEs found to provide false or misleading information to tax authorities can be subject to a 500 percent penalty.

is mainly because of the groundwork done in the annual audits to identify targets for transfer pricing audits. Elaborated reports were not required for cases that had no adjustment; however, we asked the tax bureaus to make a special effort to extract the relevant data from the audit working papers for us.

The tax bureaus also extracted FIE demographic data from their corporate background files. Firm characteristics of the sample FIEs include the form of investment, activity orientation, tax status, nationality of investors, the amount of capital, reported profit, sales, industry, and the nature of business. As the current policy on transfer pricing audits emphasizes FIEs' track record of profit performance, FIEs subject to an in-depth transfer pricing audit are mostly in their post-tax-holiday period and are subject to a general tax rate of 33 percent (flat rate).

We should note that while empirical corporate tax compliance studies are limited due to scarcity of data, there are a number of significant studies that use confidential data.[3] Shackelford and Shevlin (2001) encourage research based on data of this nature. Our access to data on transfer pricing audits not only allows us to have a direct measure of income shifting through transfer pricing, but also enables us to examine the impact of managerial autonomy on tax noncompliance, which could not be addressed with publicly available data.

Statistical Model

For testing our hypotheses, we use an OLS regression model as follows:

$$\begin{aligned} Log(ADJ/RPT) = {} & \alpha_0 + \alpha_1 PRICING + \alpha_2 SOURCING + \alpha_3 JV + \alpha_4 EXPORT \\ & + \alpha_5 HIGH\_TECH + \alpha_6 ROC + \alpha_7 Log(SALE) \\ & + \alpha_8 TAX\_DIFF + \alpha_9 TAX\_SYSTEM + \alpha_{10} TAIWAN \\ & + \alpha_{11} CORRUPT + \varepsilon \end{aligned} \quad (1)$$

where:

Dependent variable:

$Log(ADJ/RPT)$ = natural logarithm of transfer pricing audit adjustments over the amount of the related-party transactions.

Variables of interest:

$PRICING$ = 1 if the local management of an FIE sets the transfer prices, 0 otherwise; and

$SOURCING$ = 1 if the local management of an FIE has discretion over sourcing from the external market, 0 otherwise.

Control variables:

JV = 1 if an FIE is a joint venture, 0 otherwise;

$EXPORT$ = 1 if an FIE is an export-oriented enterprise, 0 otherwise;

[3] Studies that use confidential data include Mills (1996, 1998), Mills and Newberry (2001), Collins et al. (1995), Chan and Mo (2000, 2002), and Chan and Chow (1997b). However, there are no empirical studies specifically investigating the *magnitude* of transfer pricing noncompliance using tax audit data.

HIGH_TECH = 1 if an FIE is in a high-tech industry, 0 otherwise;
ROC = return on capital (reported profit before tax over total capital);
Log(SALE) = natural logarithm of sales;
TAX_DIFF = tax rate differential between an FIE and its related-parties (i.e., the tax rate of an FIE minus the weighted average of the tax rates of its related-parties);
TAX_SYSTEM = 1 if an FIE's home country imposes taxes on locally sourced income only, 0 otherwise;
TAIWAN = 1 if an FIE is sourced from Taiwan, 0 otherwise; and
CORRUPT = corruption perception index (ranges between 10, highly clean, and 0, highly corrupt).

The dependent variable, *Log(ADJ/RPT)*, is the natural logarithm of the amount of audit adjustments made by tax authorities on profit, scaled by the amount of related-party transactions. The purpose of scaling the audit adjustments by related-party transactions is to capture the potential magnitude of the audit adjustments for transactions subject to tax audits, while the logarithmic transformation is to reduce the heteroscedasticity problem (Gujarati 1999). For the few sample firms with zero adjustments, we assigned a value of $1.00 (one dollar) before taking the logarithm.

PRICING is the variable used to differentiate management's autonomy in setting transfer prices. If the local management of an FIE has autonomy to negotiate with affiliates to set transfer prices, then *PRICING* is coded 1. Similarly, *SOURCING* is used to measure the local management's discretion on trading with outsiders. If management of an FIE has discretionary power in deciding whether to purchase from or sell goods to a third party, then *SOURCING* is coded 1. According to Chinese tax authorities, they determine whether an FIE has autonomy in pricing and sourcing decisions based on the FIE's tax filing submitted for transfer pricing audits. The filing requires disclosure on the FIE's transfer pricing determination process, the role of each party involved in the process, and whether the FIE can source from independent parties.[4] They also review company policies and evidence of negotiations such as contracts and meeting minutes to confirm the FIE's autonomy.

Control Variables

We include several control variables in the regression model to control for the effects of firm characteristics on tax noncompliance behavior. First, Chan and Mo (2000, 2002) found that the form of investment (i.e., joint venture versus wholly foreign-owned) has an effect on the magnitude of audit adjustments related to non-transfer pricing audits. In particular, joint ventures are more likely to have a larger book-tax-conforming noncompliance such as overstatement of cost of sales, because Chinese managers have incentives to collaborate with foreign managers to avoid tax so as to increase their bonus (Chan and Mo 2000). However, while shifting profit out of China through transfer pricing benefits the foreign partner, it reduces the profit shared by the local partner. Therefore, in a transfer pricing context, Chinese managers are expected to play a monitoring role to protect the

[4] In submitting tax filing, among other inquiries by tax authorities, FIEs are required to answer the following questions: "In setting transfer prices, does the local management in China have the autonomy to negotiate the prices with other related parties? If not, is the price imposed by parent company? Is the local management in China consulted when the parent company sets transfer prices and what is the nature of the consultation? For the trading with related-parties, is the local management in China allowed to conduct the same trading with independent parties?"

interests of the Chinese partner instead of collaborating with the foreign partner to manipulate transfer prices (Chan and Chow 1997b). In addition, income taxes paid by FIEs belong to the local government based on the current revenue-sharing agreement between the central and the local governments in China. Therefore, local partners in joint ventures provide a monitoring effect for the local government. Accordingly, *JV* is used to control for this monitoring effect. Furthermore, local partners may have influence over local tax authorities or they can communicate better with the tax authorities to reduce audit adjustments. Thus, we expect that joint ventures have smaller audit adjustments.

Second, we use *EXPORT* to control for the difference in activity orientation of FIEs. In China, export-oriented FIEs (i.e., exports being more than 70 percent of total sales) are exempted from import duties for materials or parts imported for producing export products. Hence, they can overprice imports to shift profits out of China without the trade-off of paying more import tariffs in China. However, if domestic-market-oriented FIEs overprice import materials or parts for production of domestic sales, then they will pay more in tariffs. As such, the tariff costs associated with transfer pricing manipulations by domestic-market-oriented FIEs are higher than those of export-oriented FIEs. Thus, we expect that export-oriented FIEs are more likely to shift profits out of China through transfer pricing.

Third, we include *HIGH_TECH* to control for any potential industry effect on transfer pricing manipulations. We define companies in a high-tech industry according to the American Electronics Association's (AeA) classification, which includes mainly companies in high-tech manufacturing such as computers and office equipment, consumer electronics, communication equipment, electronic components, and accessories (AeA 2005). It is well known that FIEs in technologically advanced industries have more opportunities to manipulate their transfer prices. Besides, these firms may be unwilling to argue too vigorously with Chinese tax authorities for fear of yielding valuable trade secrets to China. Therefore, we predict that an FIE in a high-tech industry is more likely to have larger audit adjustments.

Fourth, we include a control variable, *ROC*, defined as reported profits before tax and audit adjustment over total capital, to control for the effect of the profitability of FIEs on the magnitude of profit shifting. FIEs with low profitability are more likely to have financial distress and, hence, be the ones that shift profit. Alternatively, the low profitability or losses could be the result of profit shifting. Fifth, we include a control variable, *Log*(*SALE*), to control for the effect of firm size on the magnitude of profit shifting.

Sixth, we incorporate two tax variables to control for the tax effect on transfer pricing manipulations. *TAX_DIFF* is included to account for the impact of the tax rate differential between an FIE and its related parties. If FIEs use transfer pricing to shift profits to another tax jurisdiction, then the lower the tax rate of the related tax jurisdiction, the higher the incentives for such manipulations. *TAX_DIFF* is computed as the tax rate of an FIE minus the weighted average of the tax rates of its related parties. We use the maximum statutory tax rates of the countries (KPMG 2004) in which the related parties are domiciled to calculate the tax rate differential. The weighting variable is the dollar amount of the related-party transactions. *TAX_SYSTEM* is used to control for the difference in the home country's tax system. *TAX_SYSTEM* equals 1 if the home country of an FIE charges taxes on locally sourced income only, such as Hong Kong and Singapore. Other things being equal, MNCs that are taxed on global income have a greater incentive to shift income to the home country than MNCs that are taxed on locally sourced income only. If globally taxed MNCs keep the FIEs' profits in China, though they can normally claim tax credit on the taxes paid in China, they often have some double taxation problems because there are limitations that

restrict the amount of tax credits that can be claimed in the home country. FIEs need to take into account both the tax rate differential and the tax system in their profit-shifting decisions.

Seventh, we include a dummy variable, *TAIWAN*, in the regression to control for institutional politics between Taiwan and China. As Chinese tax authorities may have political incentive to audit some Taiwan-sourced FIEs, more stringent standards may be applied and thus result in larger tax audit adjustments. On the other hand, they may also give special favors for certain Taiwan-sourced FIEs for political reasons. Finally, we also include a corruption-perception index (Lambsdorff 2005), *CORRUPT*, to control for the effect of the likelihood of an FIE paying bribes to Chinese tax authorities on tax audit adjustments. Although China does try to prevent corruption in tax audits, the possibility that FIEs from certain countries may pay bribes cannot be completely eliminated. *CORRUPT* measures how likely it is that the FIEs will pay bribes by using the corruption index of their home country.

Endogenous Variables

As to whether an FIE is allowed to be autonomous in pricing and sourcing is a managerial decision, these firm choice variables can be endogenous (Guenther et al. 1997; Phillips 2003). Ignoring the factors that cause firms to allow pricing and sourcing autonomy in the first place may lead to inaccurate results (Harris and Sansing 1998). To address this potential self-selection problem, we used a two-step approach in which *PRICING* and *SOURCING* selection equations are first estimated using the maximum likelihood bivariate probit as follows (Phillips 2003; Tunali 1986):

$$PRICING = \beta_0 + \beta_1 JV + \beta_2 EXPORT + \beta_3 HIGH\_TECH + \beta_4 Log(SALE) + \beta_5 POWER\_DIST + \mu, \quad (2)$$

$$SOURCING = \gamma_0 + \gamma_1 JV + \gamma_2 EXPORT + \gamma_3 HIGH\_TECH + \gamma_4 Log(SALE) + \gamma_5 POWER\_DIST + \gamma_6 INTERMEDI + \xi, \quad (3)$$

where:

POWER_DIST = 1 if an FIE is sourced from a country with a large power distance index as explained below, 0 otherwise; and
INTERMEDI = 1 if an FIE's transferred products include intermediate products, 0 otherwise.

Other variables are the same as those defined in Equation (1).

In estimating the *PRICING* and *SOURCING* equations, we include exogenous variables that are expected to affect managerial autonomy in pricing and sourcing decisions. In addition to the firm characteristics, *JV*, *EXPORT*, *HIGH_TECH*, and *Log*(*SALE*) as defined in the main regression, we include a corporate culture variable, *POWER_DIST*, in both the pricing and the sourcing equations. According to Hofstede (2001), the smaller the power distance in an organization, the less the concentration of authority and the more likely that the subordinates will be allowed to make significant decisions. Therefore, an FIE sourced from a jurisdiction with a small power distance is more likely to have autonomy in making pricing and sourcing decisions than an FIE sourced from a jurisdiction with a large power distance. On the other hand, small power distance jurisdictions are mainly developed nations such as the U.S. and most Western European countries. Enterprises from these countries

generally are more established and experienced in management than enterprises from less developed nations. These established enterprises often have elaborate management policies and control systems to govern their operations. Since China is a large power distance country, Chinese employees generally like to follow formal rules (Hofstede 2001). Established MNCs may simply impose their parent company control systems and pricing decisions on their FIEs in China, resulting in a lack of autonomy for the FIEs. Therefore, the net impact of power distance on FIE autonomy is to be verified empirically. We classify an FIE with either a large or a small power distance with reference to Hofstede's (2001) mean power distance index for the countries in his study. Similarly, for the *SOURCING* equation, we include *INTERMEDI* to assess the impact of the nature of the transferred products on an FIE's autonomy in sourcing. Intermediate products are not final consumer products. They may not have an external market, but some of them can be sold to certain industrial users. When the transferred products include intermediate products, the granting of sourcing autonomy to this type of FIE is contingent on the existence of an external market for the intermediate products, and whether the transferred product represents the major activity of the related-party transactions.

The bivariate probit jointly estimates the *PRICING* and *SOURCING* models utilizing the correlation in error terms and produces the selectivity correction variables, $\lambda_{pricing}$ and $\lambda_{sourcing}$, which represent the double-selection model analogs to the Heckman (1976) single-equation inverse Mill's ratio (Phillips 2003). In the second step, we perform an OLS regression based on Equation (1) by regressing the *Log*(*ADJ*/RPT) on *PRICING*, *SOURCING*, and other control variables, as well as $\lambda_{pricing}$ and $\lambda_{sourcing}$.

EMPIRICAL RESULTS

Descriptive Statistics and Univariate Tests

This section describes the firm characteristics of the 163 FIEs in our sample and the results of the univariate tests for the hypotheses. Table 1, Panel A provides descriptive statistics for the variables in our regression, and Panel B shows the statistics on country (jurisdiction)-based variables. Panel A shows that 46 percent of the FIEs in the sample are joint ventures, 91 percent are export-oriented enterprises, 14 percent are in high-tech industries, 58 percent of the FIEs' home countries tax on local income only, and 22 percent are Taiwan-sourced companies. The mean audit adjustment over the amount of the related-party transactions is 13.6 percent, the mean return on capital is 13.3 percent, the mean sales revenue is U.S.$26.8 million, the average tax rate differential with the related parties is 13.7 percent (i.e., on average, the related parties have a lower tax rate), and the average corruption perception index is 7.3 (where 10 represents highly clean and 0 represents highly corrupt). All of the sample firms are in their post-tax-holiday period. Finally, from Panel B, Hong Kong-sourced FIEs have the largest tax differential, whereas Japanese FIEs have the smallest differential. Overall, Taiwan FIEs have the smallest audit adjustments.

Table 1, Panel C reports the distribution of firms having different management controls on pricing and sourcing decisions. Only 28 percent (46 out of 163) of the FIEs have discretion to determine their transfer prices. This is consistent with the findings in Chan and Lo's (2004) survey study. The great majority of the FIEs had to adopt transfer prices that were specified by their parent companies, with or without some consultations. Regarding the sourcing decision, about one-third (58 out of 163) of the FIEs have autonomy to purchase from or sell to unrelated companies. The univariate tests in Panel C show that FIEs having discretion over pricing and sourcing decisions have smaller audit adjustments.

Table 2 presents the correlations among the independent variables. The correlations are all below 0.50, except for the correlations between *TAX_SYSTEM* and *TAIWAN* (correlation

= −0.621, p < 0.01), between *CORRUPT* and *TAX_SYSTEM* (correlation = 0.758, p < 0.01), and between *CORRUPT* and *TAIWAN* (correlation = −0.744, p < 0.01). The generally modest correlations suggest that multicollinearity is unlikely to be a problem in our regression analysis.

Regression Results

Table 3 reports the results of the main regression analysis. The overall regression model is significant at the 0.01 level. The management control variables, *PRICING* and *SOURCING*, are negatively significant at the 0.01 or 0.05 level with and without correcting for

TABLE 1
Descriptive Statistics and Univariate Tests of Managerial Autonomy on Tax Audit Adjustments

Panel A: Corporate Characteristics of Sample Firms

Variable	Value in the Regression	Category	No. of Firms	Percentage of the Sample
JV	1	Joint venture	75	46.0
	0	Wholly foreign-owned enterprise	88	54.0
EXPORT	1	Export-oriented enterprise	149	91.4
	0	Domestic-market-oriented enterprise	14	8.6
HIGH_TECH	1	High-tech industry	22	13.5
	0	Others	141	86.5
TAX_SYSTEM	1	FIE's home country imposes taxes on locally sourced income only	94	57.7
	0	FIE's home country taxes on worldwide income	69	42.3
TAIWAN	1	Taiwan-sourced FIE	36	22.1
	0	Others	127	77.9

				Mean	Std. Deviation
ADJ/RPT	Continuous	Transfer pricing audit adjustments over the amount of related-party transactions	163	0.136	0.146
ROC	Continuous	Return on capital (i.e., reported profit before tax over total capital)	163	0.133	0.823
SALE	Continuous	Sales of FIE (U.S.$ million)	163	26.821	54.256
TAX_DIFF	Continuous	Tax rate differential between an FIE and its related parties	163	0.137	0.067
CORRUPT	Continuous	Corruption perception index (ranges between 10, highly clean, and 0, highly corrupt)	163	7.300	1.052

(*continued on next page*)

TABLE 1 (continued)

Panel B: Descriptive Statistics on Country- (Jurisdiction-) Based Variables

Source of Investment	No. of FIEs	Tax System	Mean Tax Rate Differential[a]	Corruption Index	Power Distance	Mean ADJ/RPT
Hong Kong	92	Tax on locally sourced income only	0.158	8.0	Large	0.153
Taiwan	36	Tax on world-wide income	0.146	5.6	Large	0.095
Japan	24	Tax on world-wide income	0.052	6.9	Small	0.102
Others	11	Tax on world-wide income except Singapore	0.105	7.9 (average)	Varies from country to country	0.206

Panel C: Univariate Tests of Managerial Autonomy on Tax Audit Adjustments

Managerial Autonomy	Category	No. of Firms	Log(*ADJ/RPT*) Mean	Log(*ADJ/RPT*) Std. Dev.
Pricing decision	An FIE sets the transfer prices (*PRICING* = 1)	46	−4.3063	2.7809
	An FIE does not set the transfer prices	117	−2.4379	1.3198
	t-test of the difference in means: t-statistic = 5.809 (p-value = 0.000)***			
Sourcing decision	An FIE has discretion over sourcing from external market (*SOURCING* = 1)	58	−3.4871	2.3612
	An FIE is restricted to trade with related companies only	105	−2.6766	1.7624
	t-test of the difference in means: t-statistic = 2.483 (p-value = 0.001)***			

*** Indicates significance at 1 percent level.
[a] An FIE in China from a given jurisdiction may trade with related parties in more than one jurisdictions.

potential endogeneity bias (Column (1) and Column (2)).[5] Specifically, the results suggest that FIEs having autonomy over sourcing from external markets have smaller audit adjustments than FIEs that are restricted to intrafirm transfers, while FIEs with discretion in pricing decision have smaller audit adjustments than FIEs with no such discretion. Consistent with the univariate tests, the regression results support our hypotheses that autonomous FIEs have more incentives to maximize subsidiary profit and are less likely to deliberately shift profits out of the host country through transfer pricing than FIEs that have no autonomy. Wilson (1993) suggests that some firms are able to compensate related parties based on pre-transfer-price profits and, thus, subsidiary autonomy may not result in better tax compliance. This will bias the results against our findings. In other words, if such firms exist and are excluded from our sample, then the relationship between compliance and autonomy would be even stronger.

One of the selectivity correction variables ($\lambda_{pricing}$) is significant at the 0.01 level, which means that *PRICING* is endogenous to the model. The inclusion of the selectivity correction

[5] We reran the regression using White's procedure to correct any heteroscedasticity problem (Gujarati 1999). The significance of the test variables remains the same as the original regression.

TABLE 2
Correlations among Managerial Autonomy Variables and Control Variables

	PRICING	*SOURCING*	*JV*	*EXPORT*	*HIGH_TECH*	*ROC*	*Log(SALE)*	*TAX_DIFF*	*TAX_SYSTEM*	*TAIWAN*	*CORRUPT*
PRICING	1.000										
SOURCING	0.075	1.000									
JV	−0.032	0.162**	1.000								
EXPORT	−0.246***	−0.001	0.019	1.000							
HIGH_TECH	0.151	−0.031	−0.185**	−0.007	1.000						
ROC	0.346***	0.018	0.085	−0.054	0.121	1.000					
Log(SALE)	0.335***	−0.041	−0.170***	−0.066	0.207***	0.376***	1.000				
TAX_DIFF	−0.161**	0.018	0.152**	0.109	−0.224***	0.021	−0.161***	1.000			
TAX_SYSTEM	−0.125	−0.012	0.293***	0.092	−0.207***	−0.109	−0.286***	0.359***	1.000		
TAIWAN	0.093	0.160**	−0.254***	−0.153	0.006	−0.106	0.028	−0.014	−0.621***	1.000	
CORRUPT	−0.117	−0.078	0.242***	0.056	−0.134	−0.036	−0.177**	0.159**	0.758***	−0.744***	1.000

***, ** Indicate significance at the 1 percent and 5 percent levels, respectively, using Kendall's tau-b correlation tests.
Variable Definitions:
PRICING = 1 if the local management of an FIE sets the transfer prices, 0 otherwise;
SOURCING = 1 if the local management of an FIE has discretion over sourcing from external markets, 0 otherwise;
JV = 1 if an FIE is a joint venture, 0 otherwise;
EXPORT = 1 if an FIE is an export-oriented enterprise, 0 otherwise;
HIGH_TECH = 1 if an FIE is in a high-tech industry, 0 otherwise;
ROC = return on capital (i.e., reported profit before tax over total capital);
Log(SALE) = natural logarithm of sales;
TAX_DIFF = tax rate differential between an FIE and its related-parties (i.e., the tax rate of an FIE minus the weighted average of the tax rates of its related-parties);
TAX_SYSTEM = 1 if an FIE's home country taxes on locally sourced income only, 0 otherwise;
TAIWAN = 1 if an FIE is sourced from Taiwan, 0 otherwise; and
CORRUPT = corruption perception index (ranges between 10, highly clean, and 0, highly corrupt).

TABLE 3
Regression Results for the Impact of Managerial Autonomy on Transfer Pricing Tax Audit Adjustments

Regression equation:

$$Log(ADJ/RPT) = \alpha_0 + \alpha_1 PRICING + \alpha_2 SOURCING + \alpha_3 JV + \alpha_4 EXPORT + \alpha_5 HIGH\_TECH + \alpha_6 ROC + \alpha_7 Log(SALE) + \alpha_8 TAX\_DIFF + \alpha_9 TAX\_SYSTEM + \alpha_{10} TAIWAN + \alpha_{11} CORRUPT + \alpha_{12} PRICING + \alpha_{13} SOURCING + \varepsilon$$

		(1)[a]		(2)[b]	
Independent Variable	**Predicted Sign**	**Regression Coefficient**	**t-statistic**	**Regression Coefficient**	**t-statistic**
Intercept		−2.980	−1.150	−3.284	−1.269
PRICING	−	−0.996	−3.023***	−7.178	−3.219***
SOURCING	−	−0.691	−2.435***	−3.071	−1.667**
JV	−	−0.212	−0.730	0.572	1.341
EXPORT	+	2.319	4.743***	0.076	0.082
HIGH_TECH	+	0.597	1.458	1.291	2.798***
ROC	−	0.052	0.303	0.039	0.231
Log(SALE)	?	−0.248	−3.230***	0.326	1.564
TAX_DIFF	+	6.253	2.636***	7.458	3.124***
TAX_SYSTEM	+	−0.467	−0.903	0.405	0.685
TAIWAN	?	−0.230	−0.323	0.421	0.580
CORRUPT	+	0.004	0.013	−0.168	−0.517
$\lambda_{pricing}$	?	NA		3.829	2.917***
$\lambda_{sourcing}$	?	NA		1.391	1.243
F-statistic			8.369***		8.184***
Adjusted R^2			0.334		0.366

***, ** Indicate significance at the 1 percent and 5 percent levels, respectively.
[a] Column (1) presents the results from estimating the model using OLS with all variables assumed exogenous and excluding $\lambda_{pricing}$ and $\lambda_{sourcing}$ from the model.
[b] Column (2) presents the results from estimating the model with the selectivity correction variables, $\lambda_{pricing}$ and $\lambda_{sourcing}$.

Variable Definitions:
Log(*ADJ/RPT*) = natural logarithm of transfer pricing audit adjustments over the amount of related-party transactions;
PRICING = 1 if the local management of an FIE sets the transfer prices, 0 otherwise;
SOURCING = 1 if the local management of an FIE has discretion over sourcing from external markets, 0 otherwise;
JV = 1 if an FIE is a joint venture, 0 otherwise;
EXPORT = 1 if an FIE is an export-oriented enterprise, 0 otherwise;
HIGH_TECH = 1 if an FIE is in a high-tech industry, 0 otherwise;
ROC = return on capital (reported profit before tax over total capital);
Log(SALE) = natural logarithm of sales;
TAX_DIFF = tax rate differential between an FIE and its related-parties (i.e., the tax rate of an FIE minus the weighted average of the tax rates of its related-parties);
TAX_SYSTEM = 1 if an FIE's home country taxes on locally sourced income only, 0 otherwise;
TAIWAN = 1 if an FIE is sourced from Taiwan, 0 otherwise;
CORRUPT = corruption perception index (ranges between 10, highly clean, and 0, highly corrupt);
$\lambda_{pricing}$ = the selectivity correction variable from the *PRICING* equation resulting from the bivariate probit estimation of *PRICING*; and
$\lambda_{sourcing}$ = the selectivity correction variable from the *SOURCING* equation resulting from the bivariate probit estimation of *SOURCING*.

variables helps correct for the possible bias in all coefficient estimates of the regression model, including the coefficient estimates of *PRICING* and *SOURCING*. As shown in Table 3, before the inclusion of the selectivity correction variables, three control variables, *EXPORT*, *Log*(*SALE*), and *TAX_DIFF*, are significant. After the correction of endogeneity bias, only *HIGH_TECH* and *TAX_DIFF* are significant, and the coefficient estimates of *PRICING* and *SOURCING* increase significantly, reflecting the corrected effect on compliance. Similar to the autonomy variables, *TAX_DIFF* remains positively significant after the inclusion of the correction variables, suggesting that tax differential is also an important factor motivating FIEs to engage in transfer pricing manipulation. Specifically, FIEs that traded mainly with associates in lower tax jurisdictions have larger audit adjustments. Finally, FIEs in high-tech industries have larger audit adjustments.

Pricing and Sourcing Equations

Table 4 shows the bivariate probit estimation of pricing and sourcing equations. As shown in Panel A, large and domestic market-oriented FIEs are more likely to have autonomy in pricing decisions. The results are consistent with prior studies that large MNCs tend to decentralize decision making to foreign subsidiaries (Radebaugh et al. 2006). More pricing autonomy is given to domestic market-oriented FIEs to tailor their pricing strategy to the local environment. The probit equation for sourcing in Panel B indicates that joint ventures are more likely to have autonomy in sourcing from outsiders, probably due to the influence of the local partners in the joint ventures.

Sensitivity Tests

We conducted additional tests to check the robustness of the regression results. First, we replaced *ROC* with a discrete dummy variable representing whether the FIEs report losses or profits in their accounts. The results of the regressions (for both excluding and including the selectivity correction variables, $\lambda_{pricing}$ and $\lambda_{sourcing}$) using this alternative specification of *ROC* are the same as those reported in Table 3, with *ROC* becoming significant at the 0.05 level. Second, we further broke down the category of FIEs with transfer prices specified by parents into two categories: one with consultation of subsidiary and one without. In other words, while most FIEs have their transfer prices imposed by their parent company, some of them are being consulted when the parent sets the transfer prices. The regression results using this three-level pricing variable remain qualitatively unchanged. Both the univariate tests and the regression results show that there is no significant difference in the magnitude of tax audit adjustments for FIEs adopting transfer prices specified by their parents with or without consultation. Third, we censored the sample firms with zero audit adjustment by using a Tobit analysis (*Eviews 3 User's Guide* 1998). The *SOURCING* variable became marginally significant (at the 0.10 level) if we did not correct for endogeneity bias, while both *PRICING* and *SOURCING* are significant at the 0.05 level when we included the selectivity correction variables, $\lambda_{pricing}$ and $\lambda_{sourcing}$, in the regression. The significance of other control variables is basically unchanged. Finally, we included two, two-way interaction terms between the managerial autonomy variables and the tax differential variable (*PRICING*TAX_DIFF* and *SOURCING*TAX_DIFF*) and a three-way interaction term (*PRICING*SOURCING*TAX_DIFF*) in the regression. The results are similar to our original regression, with *PRICING* and *SOURCING* becoming slightly more significant, while the interaction variables are not significant and thus have no incremental effect on tax adjustments.

TABLE 4
Bivariate Probit Estimation of Pricing and Sourcing

Panel A:

$$PRICING = \beta_0 + \beta_1 JV + \beta_2 EXPORT + \beta_3 HIGH\_TECH + \beta_4 Log(SALE) + \beta_5 POWER\_DIST + \mu$$

Variable	Predicted Sign	Regression Coefficient	p-value
Intercept		−3.477	0.006
JV	+	0.310	0.154
EXPORT	−	−1.109	0.010***
HIGH_TECH	−	0.316	0.211
Log(SALE)	+	0.367	0.001***
POWER_DIST	?	0.503	0.162

Panel B:

$$SOURCING = \gamma_0 + \gamma_1 JV + \gamma_2 EXPORT + \gamma_3 HIGH\_TECH + \gamma_4 Log(SALE) + \gamma_5 POWER\_DIST + \gamma_6 INTERMEDI + \xi$$

Variable	Predicted Sign	Regression Coefficient	p-value
Intercept		−1.434	0.058
JV	+	0.479	0.014**
EXPORT	−	0.192	0.311
HIGH_TECH	−	−0.089	0.397
Log(SALE)	+	0.024	0.344
POWER_DIST	?	0.419	0.196
INTERMEDI	?	0.555	0.144

***, ** Indicate significance at the 1 percent and 5 percent levels, respectively.
p-values are based on a one- (two-) tailed test where the coefficient sign is (not) predicted.
Variable Definitions:
PRICING = 1 if the local management of an FIE sets the transfer prices, 0 otherwise;
SOURCING = 1 if the local management of an FIE has discretion over sourcing from the external market, 0 otherwise;
JV = 1 if an FIE is a joint venture, 0 otherwise;
EXPORT = 1 if an FIE is an export-oriented enterprise, 0 otherwise;
HIGH_TECH = 1 if an FIE is in a high-tech industry, 0 otherwise;
Log(SALE) = natural logarithm of sales;
POWER_DIST = 1 if an FIE's parent company is in a country with a large power distance index, 0 otherwise; and
INTERMEDI = 1 if an FIE's transferred products include intermediate products, 0 otherwise.

CONCLUDING REMARKS

This paper investigates empirically the relations between subsidiary managerial autonomy and tax compliance in an international transfer pricing context. We examine two aspects of a management control system that are most relevant for transfer pricing, i.e., managerial autonomy in pricing and sourcing decisions for intrafirm transfers. The results indicate that local management autonomy in transfer pricing decisions has a significant

impact on a company's profit shifting. Specifically, FIEs having autonomy to set transfer prices or sourcing from outsiders have smaller audit adjustments than those FIEs whose transfer prices are imposed by parent companies or that are restricted to source only from the internal market.

Shackelford and Shevlin (2001) suggest that tax research should better incorporate knowledge from other areas. One recent example is an analytical model that integrates managerial and tax objectives in transfer pricing by Baldenius et al. (2004). Our paper provides the first empirical evidence on the effect of managerial autonomy on tax-compliance behavior. The findings are useful for tax authorities in designing tailor-made tax audit guidelines and in the selection of transfer pricing audit targets. Traditionally, tax authorities emphasize the analysis of financial accounting information such as profit patterns and sales trends for audit selection. Less attention has been paid to identifying company attributes like organizational structures and management control systems. This research provides empirical support for tax authorities to take into consideration the management control and incentive system of an FIE when selecting targets for transfer pricing audits. The results should also be useful for MNCs in formulating their transfer pricing policies. MNCs should be aware that if they do not grant subsidiaries autonomy on transfer pricing, they may have a more serious tax-compliance problem and may incur a higher risk of being selected for tax audits. Finally, our results have important implications for public policy makers. As management autonomy will enhance tax compliance, public policy makers should provide incentives to encourage MNCs to establish autonomous FIEs such as giving them priority in the approval process, based on the FIEs' feasibility reports.

REFERENCES

American Electronics Association (AeA). 2005. AeA's definition of the high-tech industry. Available at: http://www.aeanet.org.

Baldenius, T., N. D. Melumad, and S. Reichelstein. 2004. Integrating managerial and tax objectives in transfer pricing. *The Accounting Review* 79 (3): 591–615.

Borkowski, S. C. 1997. The transfer pricing concerns of developed and developing countries. *The International Journal of Accounting* 32 (3): 321–336.

Bushman, R. M., R. J. Indjejikian, and A. Smith. 1995. Aggregate performance measures in business unit manager compensation: The role of intrafirm interdependencies. *Journal of Accounting Research* 33 (Supplement): 101–128.

Chan, K. H., and L. Chow. 1997a. International transfer pricing for business operations in China: Inducements, regulation and practice. *Journal of Business Finance and Accounting* 24 (October and December): 1269–1289.

———, and ———. 1997b. An empirical study of tax audits in China on international transfer pricing. *Journal of Accounting and Economics* (May): 83–112.

———, and ———. 1998. *International Transfer Pricing in China.* Hong Kong, PRC: Sweet & Maxwell Asia.

———, and P. Mo. 2000. Tax holidays and tax noncompliance: An empirical study of corporate tax audits in China's developing economy. *The Accounting Review* 75 (October): 469–484.

———, and ———. 2002. The impact of firm characteristics on book-tax-conforming and book-tax-difference audit adjustments. *The Journal of the American Taxation Association* 24 (Fall): 18–34.

———, and Z. Jiang. 2002. Tax dispute resolution methods in China. *The Hong Kong Accountants* (December): 62–64.

———, and A. Lo. 2004. The influence of management perception of environmental variables on the choice of international transfer pricing methods. *The International Journal of Accounting* 39: 93–110.

———, and ———. 2005. *International Transfer Pricing in China: Post WTO*. 2nd edition. Hong Kong, PRC: Sweet & Maxwell Asia.

China Daily. 2005. FDI increase shows confidence in economy. (January 14).

China Tax News. 2002. The work of anti-tax avoidance. In Chinese. (May 8).

Colbert, G. J., and B. H. Spicer. 1995. A multi-case investigation of a theory of the transfer pricing process. *Accounting, Organization and Society* 20: 423–456.

Collins, J., D. Kemsley, and D. Shackelford. 1995. Tax reform and foreign acquisitions: A micro-analysis. *National Tax Journal* 48 (1): 1–21.

Conover, T. L., and N. B. Nichols. 2000. A further examination of income shifting through transfer pricing considering firm size and/or distress. *The International Journal of Accounting* 35 (2): 189–211.

Eccles, R. G. 1983. Control with fairness in transfer pricing. *Harvard Business Review* (November/December): 149–161.

Emmanuel, C., and M. Mehafdi. 1994. *Transfer Pricing*. London, U.K.: Academic Press Ltd.

Erickson, M., M. Hanlon, and E. L. Maydew. 2004. How much will firms pay for earnings that do not exist? Evidence of taxes paid on allegedly fraudulent earnings. *The Accounting Review* 79 (April): 387–408.

Ernst & Young. 2003. *Transfer Pricing 2003 Global Survey*. New York, NY: Ernst & Young International Limited.

———. 2005. *2005–6 Global Transfer Pricing Surveys*. New York, NY: Ernst & Young International Limited.

Eviews 3 User's Guide. 1998. Irvine, CA: Quantitative Micro Software.

Ghosh, D. 1994. Intrafirm pricing: Experimental evaluation of alternative mechanisms. *Journal of Management Accounting Research* 6: 78–92.

———. 2000. Organizational design and manipulative behavior: Evidence from a negotiated transfer pricing experiment. *Behavioral Research in Accounting* 12: 1–30.

Guenther, D. A., E. L. Maydew, and S. E. Nutter. 1997. Financial reporting, tax costs, and book-tax conformity. *Journal of Accounting and Economics* 23: 225–248.

Gujarati, D. 1999. *Essentials of Econometrics*. 2nd edition. New York, NY: McGraw-Hill.

Harris, D. 1993. The impact of US tax law revision on multinational corporations: Capital location and income-shifting decisions. *Journal of Accounting Research* 31 (Supplement): 111–140.

———, and R. Sansing. 1998. Distortions caused by the use of arm's-length transfer prices. *The Journal of the American Taxation Association* 20 (Supplement): 40–50.

Heckman, J. 1976. The common structure of statistical models of truncation, sample selection, and limited dependent variables and a simple estimator for such models. *Annals of Economic and Social Measurement* 5 (Fall): 475–492.

Hofstede, G. 2001. *Culture's Consequences*. 2nd edition. Thousand Oaks, CA: Sage Publications.

Hout, T., M. E. Porter, and E. Rudden. 1982. How global companies win out. *Harvard Business Review* (September/October): 103.

International Monetary Fund (IMF). 2003. *World Economic Outlook*. Washington, D.C.: IMF.

———. 2004. *World Economic Outlook*. Washington, D.C.: IMF.

Jacob, J. 1996. Taxes and transfer pricing: Income shifting and the volume of intrafirm transfers. *Journal of Accounting Research* 34 (Autumn): 301–312.

Keating, A. S. 1997. Determinants of divisional performance evaluation practices. *Journal of Accounting and Economics* 24: 243–273.

Klassen, K. J., M. Lang, and M. Wolfson. 1993. Geographic income shifting by multinational corporations in response to tax rate changes. *Journal of Accounting Research* 31: 141–173.

KPMG. 2004. *Corporate Tax Rates Survey—January 2004*. Available at: http://kpmg.no/.

Lambsdorff, J. G. 2005. Corruption perception index 2004. *Global Corruption Report 2005*. London, U.K.: Pluto Press.

Mills, L. 1996. Corporate tax compliance and financial reporting. *National Tax Journal* 49 (3): 421–435.

———. 1998. Book-tax differences and Internal Revenue Services adjustments. *Journal of Accounting Research* 35 (Autumn): 343–356.

———, and K. Newberry. 2001. The influence of tax and nontax costs on book-tax reporting differences: Public and private firms. *The Journal of the American Taxation Association* 23 (Spring): 1–19.

Ministry of Commerce, PRC (MOC). 2004. Import and export statistics for FIEs in China. In Chinese. Available at: http://www.mofcom.gov.cn.

———. 2005. Import and export statistics for FIEs in China. In Chinese. Available at: http://www.mofcom.gov.cn.

Mo, P. L. L. 2003. *Tax Avoidance and Anti-Avoidance Measures in Major Developing Economies.* Westport, CT: Greenwood Publishing Group, Inc.

National People's Congress, PRC (NPC). 2001. *Tax Administration and Collection Law of the People's Republic of China.* Beijing, PRC: National People's Congress. In Chinese.

Natke, P. A. 1985. A comparison of import pricing by foreign and domestic firms in Brazil. In *Multinationals and Transfer Pricing*, edited by A. M. Rugman, and L. Eden, 212–222. New York, NY: St. Martin's Press.

Open University of Hong Kong (OUHK). 2004. *Talking to CEOs.* (August). Hong Kong, PRC: Open University of Hong Kong.

Organization for Economic Cooperation and Development (OECD). 1979. *Transfer Pricing and Multinational Enterprises.* Paris, France: Committee on Fiscal Affairs, OECD.

———. 1995. *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administration.* Paris, France: Committee on Fiscal Affairs, OECD.

Phillips, J. D. 2003. Corporate tax-planning effectiveness: The role of compensation-based incentives. *The Accounting Review* 78 (3): 847–874.

PRN (PR Newswire Chinese Content). 2003. Anti-avoidance in China. In Chinese. (August 6).

Radebaugh, L., S. Gray, and E. Black. 2006. *International Accounting and Multinational Enterprises.* 6th edition. New York, NY: John Wiley and Sons.

Rahman, M. Z., and R. W. Scapens. 1986. Transfer pricing by multinationals: Some evidence from Bangladesh. *Journal of Business Finance and Accounting* 13 (Autumn): 383–391.

Rodrigues, C. A. 1995. Headquarters-foreign subsidiary control relationships: Three conceptual frameworks. *Empowerment in Organizations* 3 (3): 25–40.

Shackelford, D. A., and T. Shevlin. 2001. Empirical tax research in accounting. *Journal of Accounting and Economics* 31: 321–387.

Shenzhen Daily. 2005. City's exports continue to top nation. In Chinese. (January 13).

South China Morning Post (*SCMP*). 2005. Wider net cast to catch tax evaders. (January 12).

Spicer, B. 1988. Towards an organizational theory of transfer pricing process. *Accounting, Organization and Society* (Spring): 303–322.

State Administration of Taxation, PRC (SAT). 1992. *Tax Circular No. 237: Implementation Measures on Tax Administration of Business Dealings between Associated Enterprises.* In Chinese. Beijing, PRC: China Taxation Publishing House.

———. 1998. *Tax Circular No. 59: Tax Regulations for Related Party Transactions.* In Chinese. Beijing, PRC: China Taxation Publishing House.

Tunali, I. 1986. A general structure for models of double-selection and an application to a joint migration/earnings process with remigration. *Research in Labor Economics* 8B: 235–282.

United Nations. 2000. *Monthly Bulletin of Statistics.* Vol. 11 (November): 92–119.

———. 2002. *Monthly Bulletin of Statistics.* Vol. 16 (July): 104–129.

Wen Wei Po. 2004. Tax evasion of foreign enterprises in China caused loss of tax revenue. In Chinese. (July 5).

Wilson, G. P. 1993. The role of taxes in location and sourcing decisions. In *Studies in International Taxation*, edited by A. Giovanninni, R. G. Hubbard, and J. Slemrod, 195–234. Chicago, IL: University of Chicago Press.

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SUMMARIES OF PAPERS IN THIS ISSUE

Managerial Autonomy and Tax Compliance: An Empirical Study on International Transfer Pricing

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Shackelford and Shevlin (2001) suggest that tax research should better incorporate knowledge from other areas. This paper integrates managerial and tax analyses in transfer pricing by investigating empirically the relations between subsidiary managerial autonomy and tax compliance in an international transfer pricing context. Specifically, we study whether managerial autonomy for foreign subsidiaries of multinational corporations (MNCs) in making pricing and sourcing decisions on intrafirm transfers affects their tax compliance through international transfer pricing. Our sample firms are foreign investment enterprises (FIEs), which include Sino-foreign joint ventures and wholly foreign-owned enterprises in China. We measure tax noncompliance in terms of audit adjustments made by tax authorities.

The transfer pricing literature has indicated that transfer prices are affected by the extent to which the responsibility of pricing decisions is delegated to subsidiary managers and the use of transfer prices for the performance evaluation of subsidiary managers. The more autonomy subsidiary managers have over intrafirm transactions, the more they will be held accountable for subsidiary profits, and such autonomy generates the self-interest behavior identified by agency theory. Notably, these autonomous managers will try to negotiate and set transfer prices that will maximize their subsidiary profits and favor their performance. Many managers even inflate their firm profits for performance evaluation and compensation purposes, despite the need for the firms to pay more taxes.

Conversely, in a centralized organizational structure, the complementary compensation system for subsidiary managers would normally be based on firm-wide profit performance, although alternative systems exist. This is fairness based on "shared fate." In this case, subsidiary managers of MNCs generally will be willing to shift profits out of their subsidiaries through transfer pricing to achieve corporate-wide objectives.

Thus, we expect that, other things being equal, transfer pricing manipulations will vary with the extent of subsidiary managers' autonomy in pricing and sourcing decisions on intrafirm transfers. Specifically, we hypothesize that tax audit adjustments for subsidiaries that have discretion in setting transfer prices or sourcing from the external market will be smaller than those that have their transfer transactions dictated by parent companies, after controlling for other factors that could affect audit adjustments made by tax authorities.

To test our hypotheses, we collected data on a sample of 163 foreign investment enterprises (FIEs) that were audited by tax authorities on international transfer pricing. As to whether an FIE is allowed to have managerial autonomy in pricing and sourcing decisions

is a firm's choice, we used a bivariate probit selection model to deal with these two potentially endogenous choice variables in a two-step regression analysis. The findings are consistent with our hypotheses that the audit adjustments for FIEs having autonomy to negotiate with affiliates to set transfer prices are smaller than those for FIEs having their transfer prices specified by parent companies. Similarly, FIEs that have discretion to trade with outsiders have smaller audit adjustments than those that are not allowed to source from the external market.

This paper provides the first empirical evidence on the effect of managerial autonomy on tax-compliance behavior. The findings should have significant implications for tax authorities, public policy makers, and foreign investors operating in China and other developing economies. For example, the results are useful for tax authorities in designing tailor-made tax audit guidelines and in the selection of transfer pricing audit targets. Traditionally, tax authorities emphasize the analysis of financial accounting information such as profit patterns and sales trends for audit selection. Less attention has been paid to identifying company attributes like organizational structures and management control systems. This research provides empirical support for tax authorities to take into consideration the management control and incentive system of an FIE when selecting targets for transfer pricing audits.

The results should also be useful for MNCs in formulating their transfer pricing policies. MNCs should be aware that if they do not grant subsidiaries autonomy on transfer pricing, they may have a more serious tax-compliance problem and may incur a higher risk of being selected for tax audits. Finally, our results have important implications for public policy makers. As management autonomy will enhance tax compliance, public policy makers should provide incentives to encourage MNCs to establish autonomous FIEs such as giving them priority in the approval process based on the FIEs' feasibility reports. The findings also provide a useful reference for other developing countries that are eager to attract foreign investments.