Effects of Exchange Rates
On International Transfer Pricing Decisions

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Abstract

Events leading to the passing of the Sarbanes-Oxley Act have led to increased concern with and scrutiny of potential management manipulation of financial statements. From an agency theory perspective, managers have incentives to manipulate organizational methods and choices in order to produce financial statements that those managers believe will maximize their incentive compensation. Transfer pricing represents one possible choice that managers can manipulate.

This paper investigates whether exchange rates affect transfer pricing particularly as it relates to maximizing overall corporate profitability. The effects of taxes and government regulations have been explored in considerable depth in the transfer pricing literature. However, while transfer prices should also be affected by exchange rates in predictable ways, this variable has received comparably little attention in the literature. Inclusion of exchange rates in an analysis of transfer pricing and corporate profitability presents an opportunity to add to the literature.

We conducted an experiment to examine how managers set transfer prices. We found that, while individuals were influenced by managerial incentives, they seemed genuinely concerned with firm profitability. We found that individuals, and therefore possibly managers, consider the effects of exchange rates on their transfer pricing decisions, even in the absence of incentives. This is an important finding not only with relation to the transfer pricing literature but also with regard to the underlying agency theory literature.

1. Introduction

The question of whether multinational corporation managers' manipulate earnings via transfer pricing is a still unresolved and controversial issue in the academic literature (Chan 2002; Rutledge 1995). Prior studies have suggested that international variables, such as tax rates and government regulations, should have significant effects on transfer pricing decisions. In addition to tax rates and government regulations, the "Asian Currency Crisis" of 1997 invites investigation of exchange rates with regard to transfer pricing. The severity of the crisis and the resulting exchange rate volatility warrants inclusion of exchange rates in a test of the model proposed by this study. Table 1 lists many variables that have been suggested in the literature as potentially influencing managers' transfer price decision making. These variables include exchange rates (Chan and Landry 2002; Anthony and Govindarajan 1998; Cravens and Shearon Jr. 1996; Christopher 1994; Kogut and Kulatilaka 1994; Dicker and Carlson 1992; Patton et al. 1992). While the importance of exchange rates in determining transfer prices has been recognized in the literature, little research has been conducted concerning the effects of exchange rates on transfer pricing. While exchange rates did not figure prominently in Tang's (1977 and 1992) survey results, the relatively recent "Asian Currency Crisis of 1997" saw several Asian nations' currencies, such as in Thailand, Indonesia, and Malaysia, suffer huge currency down swings compared to other currencies, particularly the US dollar. The economic effects were substantial and were lingering.

Table 1: Review Of Variables Affecting Transfer Pricing (Chan 2002)[1]

External Characteristics	
Competition	Choi and Mueller, 1992
	Tang, 1992
Exchanges rates	Anthony and Govindarajan, 1998
	Choi and Mueller, 1992
	Christopher, 1994
	Cravens and Shearon Jr., 1996
	Dicker and Carlson, 1992
	Knowles and Mathur, 1985
	Kogut and Kulatilaka, 1994
	Patton et al., 1992
	Picciotto, 1992
	Tang, 1992
	Wu and Sharp, 1979
Inflation rates	Choi and Mueller, 1992
	Knowles and Mathur, 1985
	Rushinek and Rushinek, 1988
	Tang, 1992
	Wu and Sharp, 1979
Tax rates	Al-Eryani, 1987
	Borkowski, 1990
	Choi and Mueller, 1992
	Donnenfeld and Prusa, 1990
	Harris, 1993
	Ikawa, 1989
	Khan and Ravenscroft, 1992
	Klassen et al., 1993
	Knowles and Mathur, 1985
	McAulay and Tomkins, 1992
	Picciotto, 1992
	Shackelford, 1993
	Tang, 1992
	Wu and Sharp, 1979
Tax regulations	Choi and Mueller, 1992
	Knowles and Mathur, 1985
	McAulay and Tomkins, 1992
	Picciotto, 1992
	Tang, 1992
	Wu and Sharp, 1979
Tariffs	Choi and Mueller, 1992
	Donnenfeld and Prusa, 1990
	Knowles and Mathur, 1985
	Rushinek and Rushinek, 1988
	Tang, 1992
	Wu and Sharp, 1979
Corporate Characteristics	
Company profits	Al-Eryani, 1987
	Johnson and Kirsch, 1991
	McAulay and Tomkins, 1992
	Tang, 1992
Strategy	Adler, 1996
Degree of autonomy	Anthony et al., 1989
	Diewert, 1985
Goal congruence	Anthony et al., 1989
	Eccles, 1983, 1985
	Khan and Ravenscroft, 1992

Table 1 (cont'd)

Administrative Characteristics	
Performance evaluation	Eccles, 1983, 1985
	Klassen et al., 1993
	Mautz, 1968
	Rushinek and Rushinek, 1988
	Tang, 1992
	Wu and Sharp, 1979
Allocation of resources	Anthony et al., 1989
Information: existence of asymmetry	Stoughtom and Talmor, 1994
Individual/Group Characteristics	
Perception of fairness	Emmanuel and Gee, 1982
	Eccles, 1983, 1985
Transfer Characteristics	
Existence of Market Prices	Wu and Sharp, 1979
Value of Transfers	Cravens and Shearon, 1996

[1] See Chan 2002 for complete reference citations

Multinational Companies (MNCs) caught up in such a world event might attempt to protect themselves through many means, including the setting of transfer prices. However, there are few empirical studies, if any, regarding the impacts of exchange rates on international transfer pricing. For instance, Shackelford (1993) noted in his discussion of Harris (1993) and Klassen et al. (1993) that exchange rates could have significantly affected the findings of their study, but neither paper directly addressed or expanded on the issue of exchange rates. Moreover, Harris (1993) and Klassen et al. (1993) themselves make the same acknowledgement. Furthermore, the foreign currency topic has received consideration as one of the most important issues for business executives and academics (Foroughi and Reed 1987). By including exchange rates as an independent variable, this study addresses an area neglected, by and large, in the literature in the shadow of a major world event, namely the Asian Currency Crisis.

Our findings show that, similar to predictive effects of tax rates and government regulations, exchange rates did affect individuals' transfer prices in terms of generally sourcing profits in strong versus weak currencies. However, individuals did not necessarily maximize corporate profits in their decision making. Furthermore, varying incentive compensation schemes produced mixed results with respect to predicted outcomes.

The organizations of this study are as follows. The next section of this study offers an overview of exchange rates. Section III provides the theory and hypotheses for this study. Section IV covers the research method, experimental design and variables of interest of this study. Section V follows with discussing of statistical results. Finally, section VI covers discussions and implications followed by discussions of limitations and recommendations for future research.

2. Background: The Effect Of Foreign Currency Issues On Financial Statements

An exchange rate is usually used to measure "how much of one currency may be exchanged for another currency (Fischer et al. 2002, p.10-3)". Thus, exchange rate fluctuations may significantly affect cash flows and reported earnings of corporations. For example, in examining transactions occurring between Japan and the United States (US), if the Japanese Yen is weakening relative to the U.S. dollar, more Japanese Yen would be required in future exchanges for each U.S. dollar. This could create a situation of greater cash outflows for the Japanese firm (or division) and/or greater cash inflows for the U.S. firm depending on the specific nature of the transaction and/or the relationship of the particular subsidiary's functional currency[1] to the reporting currency[2].

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[1] Functional currency is the currency in which subsidiaries (or parent) generate and expend cash as a result of primary economic activities (Fischer *et al* 2002, p.11-3).

[2] Reporting currency is the currency used by a corporation to prepare its financials statements (Choi *et al* 2002, 210).

Fluctuating exchange rates have at least three effects on firms. Two of the effects affect firms' financial statements. One arises because of foreign-currency transactions, a second because of foreign-currency translations. The third effect occurs because of economic risk. A discussion of each of these three effects follows.

2.1. The Effect Of Foreign Currency Transactions On Financial Statements

Foreign-currency transactions are transactions such as sales or purchases of goods or services, or loans payable or receivable which are stated in a foreign currency (Choi et al. 2002). Transaction gains or losses arise from the fluctuation of exchange rates between transaction and settlement dates given the differences between how transactions are denominated and then measured (Fischer et al. 2002). For example, a corporation in the US purchases goods from a company in Japan which requires payments in terms of Yen, but the US corporation reports the transaction in US dollars. Thus, exchange gains or losses will directly affect divisional profits. With regard to foreign currency transactions, paragraph 15 of International Accounting Standard (IAS) 21, similar to US GAAP, requires transaction gains or losses to be recognized as income in the period in which they arise.

2.2. The Effect Of Foreign Currency Translations On Financial Statements

Differentiated from transactions, Choi and Mueller (1992, 140) defined foreign-currency translation as "[t]he process of expressing amounts denominated or measured in one currency in terms of another currency by use of the exchange rate between the two currencies". Corporations with subsidiaries located in various foreign countries generally must prepare consolidated financial statements incorporating the results of both domestic and foreign operations in terms of a homogeneous currency (Choi and Mueller 1992). For instance, parent corporations in the U.S. would need to prepare consolidated financial statements in terms of U.S. dollars even if its divisions or subsidiaries are located in Japan. This assumes that the local currency of foreign operations is the functional currency and the U.S. dollar is the reporting currency. The process would be simple and straightforward if the same exchange rate were used to translate each line item on each individual statement. However when different exchange rates are used for different items on a statement, as is common in practice, an imbalance occurs. Different exchange rates are used for different items because accounting principles not only differ from country to country, but those principles require varying treatment for monetary and non-monetary assets as well as for income statement measures, with the principles frequently being a complex compromise between historical, current, and average valuation. Historical exchange rates may be used for some accounts, while current exchange rates may be used on others, and average rates for still others. The imbalance is accounted for in either current income or directly incorporated into the balance sheet. Imbalances passed through the income statement affect the firms' current reported income while those incorporated directly into the balance sheet do not (Eiteman et al. 1998, 269).

According to the U.S. Statement of Financial Accounting Standards (SFAS) 52, which addresses Foreign Currency Translation, the net effect of consolidation translations is that recognition of a foreign-currency translation gain or loss may be needed. Prior to the introduction of FASB 130, according to SFAS 52 in the US, foreign-currency translation adjustments had been reported directly in a separate component of equity in a statement of financial position assuming the local currency was the functional currency (Luecke and Meeting, 1998). In a survey of the CEO's of the 250 largest MNCs appearing in the Fortune 500 list, Kasibhatla et al. (2001) found that an overwhelming majority of firms follow FASB 52. Effective for the fiscal years beginning after December 15, 1997, however, FASB 130 requires that foreign currency translation adjustments be reported in a financial statement for the period in which they are recognized to calculate "comprehensive income" (Luecke and Meeting 1998). FASB 130 (1997) further requires that the financial statement containing comprehensive income be given the same prominence as other financial statements.

Following FASB 52, two methods can be used to translate foreign affiliate financial statements, the current rate method and the temporal method.   Table 2 summarizes the current rate method and the temporal method of US FAS no. 52. The current rate method is the most prevalent today (Eiteman et al. 1998, 270). The IAS 21, Accounting for the Effects of Changes in Foreign Exchange Rates, requires translation gains and losses to be taken into stockholder's equity when using the current rate method. Conversely, under the temporal method, translation gains or losses are taken to the income statement rather than stockholders' equity.   US FAS No. 52 has also become the

basis for similar standards elsewhere. The Canadian Standard, the U.K.'s Accounting Standard, & the International Accounting Standard, and US FAS No. 52 are very compatible (Choi et al. 2002). Table 3 compares foreign currency translation standards of several jurisdictions including Canada, UK, Australia, New Zealand, Japan, EU Fourth & Seventh Directives, as well as the IAS with the US FASB No. 52 (Choi et al. 2002).

Table 2: Summary Of The Current Rate Method And The Temporal Method Of US FAS No. 52
(Sources: Choi *et al* 2002; Fischer *et al* 2002)

Current Rate Method	Temporal Method
I/S items – prevailing current rate or weighted-average exchange rate	I/S items – weighted-average exchange rate
All assets & liabilities – current rate	Monetary assets & all liabilities – current rate All other assets – historical rate

Equity   – historical rate
    – current income added to retained earnings using current rate or weighted-average
	Equity – historical rate
	    – current income added to retained earnings using current rate or weighted-average

- if local currency is functional currency, use current rate method
- if the dollar is the functional currency, translate foreign currency to US$ using temporal method (translation gains/losses are included in the Income Statement)
- if the dollar is not the functional currency, translate foreign currency to functional currency using temporal method first (translation gains/losses are included in the Income Statement), and then translate functional currency to dollar using current rate method (translation gains/losses are included in the Shareholders' Equity section on the B/S)
- I/S = Income Statement
- B/S = Balance Sheet

Division managers generally do not have direct control over foreign-currency translation gains and losses because the translation process is done at corporate headquarters at the end of a financial year and does not directly affect the division's unconsolidated financial statements. However, indirectly, these managers can affect overall profitability in terms of translation. Since the income statement creates translation complexities such as using average exchange rates, transfer pricing decisions can affect translation gains and losses. Because division or subsidiary managers usually are involved in transfer pricing decision making, they have some control of overall profitability. By manipulating transfer prices, thus manipulating intra-division revenues/cost of goods sold, division or subsidiary managers may exert control not only over possible exchange rate transaction gains or losses, but also can affect the consolidated corporate profit as well as overall corporate comprehensive income under FAS 130 via translation gains and losses.

2.3. The Effects Of Economic Risk

A third risk factor is economic risk. Economic risk occurs when an unexpected change in exchange rates alters the present value of the firm's expected future cash flows (Eiteman et. al. 1998, 186). Economic risk occurs because unexpected changes in exchange rates influence the desirability, profitability, and current value of the projects of the firm. By altering the present value of the firm's future projects, economic risk affects the value of the firm and correspondingly, the firm's stock price. Eiteman et al. (1998, 245) suggest a number of methods for diversifying economic risk.   These methods include diversifying operations by diversifying sales, location of production facilities and raw material sources as well as diversifying financing so that funds are obtained from more than one capital market and in more than one currency. Megginson (1997, 264) argues that while in the short term, specific international cash flows can be hedged using financial instruments, in the long term, exchange rate risk is best minimized by financing the project in whole or in part in local currencies and by sourcing production as much as possible in the currency of final sales. By managing transfer prices, managers can influence the relative present value of projects and thus the relative desirability of projects. While important, this research did not specifically examine economic risk.

**Table 3: Comparing Foreign Currency Translation Standards Of Countries
Including Canada, UK, Australia, New Zealand, Japan, EU Fourth & Seventh Directives,
And IAS With The US FAS No. 52
(Source: Choi *et al* 2002)**

Countries	The Main Differences Compared With US No. 52	US No 52
Australia	- In high inflation countries, noncurrent, nonmonetary assets are revalued prior to translation	- FAS No. 52 requires use of the US dollar as the functional currency for foreign operations domiciled in hyper-inflationary countries* (p.234). Financial statements (F/Ss) must be remeasured (translated) to US dollars using temporal method
Canada	- Concerns foreign long-term debt (gains/losses from translation are deferred & amortized) * An exposure draft has proposed to eliminate the defer & amortize approach	- Concerns foreign long-term debt (gains/losses from translation are recognized in the Income Statement immediately)
EU Fourth & Seventh Directives	- No provision for foreign currency translation - Most continental countries, such as France & Germany, have no standards (practice is up to companies)	See Table 2
IAS No. 21	- In highly inflationary environment, F/Ss must be adjusted to reflect changes in the general price level before translation (similar to UK standards)	- FAS No. 52 requires use of the US dollar as the functional currency for foreign operations domiciled in hyper-inflationary countries* (p.234). F/Ss must be remeasured to US dollars using temporal method
Japan	- Current rate method in all circumstances - Adjustments are reported on the B/S in S/E section	See Table 2
New Zealand	- Use monetary-nonmonetary method for translation (very similar to the US temporal method)	See Table 2
UK	1) Income Statements items - current rate method or average-for-the-year exchange rate 2) In hyperinflationary countries, F/Ss must be first adjusted to current price levels, and then translated using current rate method	1) I/S items – average rate must be used 2) In hyperinflationary countries*, F/Ss must be remeasured to US dollars using temporal method

* where the cumulative rate of inflation exceeds 100% over a 3-year period
F/S = Financial Statements

2.4. Foreign Exchange Rate Risk Management

Noting the earlier discussion, managers face exposure to fluctuating exchange rates, and assuming rational, self-interested managers, will attempt to manage risk attributed to such exposure. One way to manage the risk would be for management to enter into forward exchange contracts.

Another way to manage the risk of transaction gains or losses is through the use of transfer pricing as a hedge against dramatic changes in exchange rates (Cravens and Shearon Jr. 1996). "Hedging is any transaction by which risk associated with future cash flow is reduced" (Anthony and Govindarajan 1998, 778). Such hedging transactions can include forward and futures market hedges, money market hedges and option market hedges (Eiteman et. al., 1998, 194). Transfer pricing may also be used to reduce multinational corporations' transaction exposure to exchange rate risk, for instance, by moving funds into strong currencies. On the other hand, transaction exposure to exchange rate risk would be increased by moving funds into weak currencies (Christopher 1994).

Kasibhatla et al. (2001) found in their survey that most MNCs understand translation, transaction and economic exposure, either completely or substantially. CEO's were found to understand transaction and translation exposure better than economic exposure. A large percentage of the firms covered themselves against such risks either substantially or partially. However, they find that few firms covered transaction, translation or economic exposure completely. While most firms covered their transactions exposure to some degree, over one-third of the firms did not seek any risk coverage at all for either their translation or economic exposure.

3. Theory And Hypotheses

Jensen and Meckling (1976) argued that if managers are utility maximizing individuals, they should be expected to act in their own best interests. Moreover, manager best interests are not always consistent with the owners' best interests. They argued that agency issues are general to virtually all cooperative activity undertaken by self-interested individuals. Solutions to the agency problem require some combination of contracting (incentives) and monitoring in order to align agents' goals with those of principals. Fama (1980) argued that a properly functioning labor market for managers serves to minimize agency problems. However, labor markets are limited in their policing role when it is difficult to obtain or assess reliable information. Such is precisely the case with international labor markets. Thus, agency problems are a particularly important issue in international settings. Stoughton and Talmor (1994), in their study of how MNCs chose transfer prices in the presence of corporate tax rates, pointed out that an asymmetric information problem exists between a parent and its foreign subsidiaries. Extending the Stoughton and Talmor (1994) reasoning concerning information asymmetry, agency theory can provide a possible insight into transfer decision making in the face of volatile exchange rates.

3.1. Hypothesis 1

In addition to differing tax rates across jurisdictions, prior researchers have suggested that exchange rates may also affect transfer price choice (Dicker and Carlson, 1992; Patton, et. al., 1992; Christopher, 1994; Kogut and Kulatilaka, 1994; Cravens and Shearon Jr., 1996; Anthony and Govindarajan, 1998). As discussed earlier, exchange rates have two accounting effects to include foreign-currency transaction and translation gains and/or losses which can affect overall corporation profits. Consequently, MNCs may attempt to reduce foreign-currency exchange rate risk by moving funds into strong currencies via transfer pricing to maximize overall corporation profits. However, as previously discussed, agency theory suggests that in the absence of appropriate motivational factors, individuals will not necessarily choose transfer prices that maximize overall exchange rates benefits (or minimize overall exchange rate losses) to the corporation. Thus, the following hypothesis is suggested in both the null and alternative form with the expectation that the null hypothesis will not be rejected:

$H1_{null}$: In the absence of appropriate motivational factors, individuals will not choose transfer prices that maximize overall exchange rates benefits to the corporation.

$H1_A$: In the absence of appropriate motivational factors, individuals will choose transfer prices that maximize overall exchange rates benefits to the corporation.

3.2. Hypotheses 2 & 3

Agency theory states that incentives can influence individuals' choices in decision making. As discussed previously, MNCs may use transfer pricing to reduce foreign currency transaction exposure to exchange risk by moving funds into strong currencies. However, in the absence of appropriate motivational factors, individuals will not necessarily choose transfer prices to reduce such transaction exposure which in turn could adversely affect overall corporate profit. Such a scenario might be where the manager's divisional profit becomes adversely affected under a given transfer price even though overall corporate profit is positively affected. As agency theory suggests, designing an appropriate incentive contract could provide incentive and motivation such that individuals select transfer prices that maximize overall exchange rates benefits to the firm. With respect to incentive effects on making transfer pricing choices, the following hypotheses are offered with the expectation that the null hypotheses will be rejected.

H2_{null}:   The presence of incentives will not affect individuals' choice of transfer prices.

H2_A: The presence of incentives will affect individuals' choice of transfer prices.

H3_{null}:   In the presence of incentive compensation, individuals will choose transfer prices that maximize exchange rates benefits to the firm as a whole regardless of whether the resulting transfer prices maximize their compensation.

H3_A: In the presence of incentive compensation, individuals will choose transfer prices that maximize exchange rates benefits to the firm as a whole only if the resulting transfer prices maximize their compensation.

4. Experimental Method

4.1. Experimental Task Design

The basis for this study is an experimental task that was designed by Chan (2002). The experimental task was influenced by Luft and Libby (1997). The experimental task as designed allows for the measurement of dependent, independent and control variables. The participants essentially acted as subsidiary managers of a private multinational company located in Australia. The company also had a subsidiary in the United States which would buy final products from its Australia subsidiary. Generally, participants were given a case and asked to choose a preferred transfer price among seven choices. The seven choices were between US$40 to US$70 per unit in US$5 increments. The seven possible transfer price choice options and related profits were shown in the experimental task. An example of the seven possible transfer price choice options and related profits is provided in Appendix A. Participants knew in advance that all calculations for each and every transfer price choice option would be provided.

4.2. Model Variables

The experiment involved three variables of interest, specifically, transfer price, exchange rates and incentive compensation schemes. Transfer prices were treated as the dependent variable. Exchange rates and Incentive compensation schemes were treated as independent variables. Operationalization of variables of interest are further discussed in the next section. A factorial design was constructed based on the variables of interest in this study, namely, a 2 x 3 matrix. Figure 1 shows the factorial design for this study. Control variables not of interest in this study were controlled by randomization. A post-test questionnaire included manipulation check questions and questions relating to demographic information such as age, gender, education, experience, and occupation of the subjects.

Figure 1: Factorial Design

	Weak Exchange Rate			Strong Exchange Rate		
	No Bonus	Div Bonus	Corp Bonus	No Bonus	Div Bonus	Corp Bonus
Condition	1	2	3	4	5	6

No Bonus   = Incentive scheme based on a fixed salary
Div Bonus   = Incentive scheme based on a fixed salary plus bonus based on subsidiary A profitability
Corp Bonus = Incentive scheme based on a fixed salary plus bonus based on overall corporate profitability

4.3. Dependent Variable

Transfer price was operationalized by the subjects' selection of a transfer price by ticking (or checking) one of seven choices. The seven choices corresponded to transfer prices that ranged in US$ 5 increments from US$ 40 to US$ 70 inclusive.

4.4. Independent Variable

4.4.1. Exchange Rates

        Exchange rates were operationalized via a 10% weakening or a 10% strengthening of exchange rates between the subsidiary's (Subsidiary A) functional currency (in Australian dollars) and the corporate reporting currency (in US dollars). Given the operationalization of the task noted in the "Experimental Task" section, a weakening rate in terms of the subsidiary's functional currency would result in the subsidiary showing a transaction gain while corporate showed no transaction effect but an overall translation loss. A strengthening rate had the opposite effects. The division would show a transaction loss while corporate would show no transaction effect but an overall translation gain.

        The reason for the specific exchange rate effects discussed above lies in the fact that the experimental scenario depicted the perspective of a subsidiary exporter which has a functional currency different than both the import subsidiary's and corporate's functional and reporting currency. Consequently, from Subsidiary A's perspective in the experiment, foreign currency transaction losses or gains would occur whereas they would not appear in Subsidiary B's financial statements.

        From the Subsidiary B and the overall Corporation perspectives, "changes in exchange rates do not affect transactions which are both denominated and measured in the reporting entity's currency" (Fischer et al., 1993, p. 631). However, since Subsidiary A would produce (report) its own financial statements in a different currency, it would show transaction gains or losses on its statements. Unlike foreign currency transaction effects, as discussed in Section II, foreign currency translation would affect overall corporation profits in this situation. Translation effects could, therefore, affect divisional managers' self-interests if tied to bonus compensation based on the profitability of the overall corporation.

        Since the purpose of this study was to examine how gains or losses resulting from exchange rates affect profitability which in turn affects individuals' international transfer pricing decision making behavior, the exchange rate effects, to include transaction as well as translation impacts on Subsidiary A, were of interest in this study. Consequently, this paper sets up an experimental scenario where transaction and translation losses and gains not only occur but also could have potentially conflicting results; e.g. the subsidiary and corporate incomes are inversely affected.

4.4.2. Incentive Compensation

        Incentive compensation schemes were operationalized via the payment of a fixed salary, a fixed salary plus a bonus based on division net income, or a fixed salary plus a bonus based on overall corporate net income.

4.5. Participants

        A total of 60 participants, all located in Hong Kong, voluntarily participated in the experimental exercise. Of the total, 30 were undergraduate business students in their first year or second year of a 3-year degree program from one of the Universities in Hong Kong. The remaining 30 participants were business or professional persons. Participants included 38 female and 22 male, and on average had 1.5 years of work experience as a supervisor or a manager. From an overall perspective, it took subjects 25 to 45 minutes to complete the exercise.

4.6. Procedures

        The experiment was conducted in groups in classrooms. Participants were randomly assigned to different treatments by random assignment of prenumbered experimental packets. The packets consisted of general instructions and task information. After all participants received the packets, they then listened to, and read along with the administrator, the experiment instructions to ensure all subjects received all information (Schulz 1999). Next, participants completed the packet which required the reading of a case, making a preferred transfer price choice

decision, and then answering some questions contained in the post-test questionnaire. After finishing, participants personally handed in their packets to the administrator who checked the packets for completeness and for determination of participants' pay. All packets were required to be returned.

5. Results

5.1. Manipulation Checks

The manipulation-check questions evaluated (1) the success of subject assignment randomization with respect to variables which are not of direct interest in this study, and (2) subjects' perceptions of independent variables among treatment groups. All variables that are not directly manipulated in the experiment including demographic variables, and other potentially confounding variables were controlled by randomization (Schulz 1999). According to the results from an Analysis of Covariance (ANCOVA), the control variables and the demographic variables were insignificant, thus confirming the success of the randomization.

5.2. Descriptive Statistics

Each candidate transfer price was selected from seven choices (see Appendix A). Tables 4, 5 and 6 show transfer price selection by participants under three different sets of exchange rates. In each table, Column 1 indicates each possible transfer price selection. Column 2 indicates the number of participants that selected each transfer price. Column 3 indicates the percentage of participants that selected each transfer price. Finally, Column 4 indicates the cumulative percentage of participants that selected a transfer price at or below each transfer price.

Table 4 presents transfer price selection under both strengthening and weakening exchange rate conditions. The most frequent transfer price selection was option #7, corresponding to a $70 transfer price. The least frequent transfer price selection was option #6 corresponding to a transfer price of $65. Of 60 subjects, 21 subjects (35%) and 6 subjects (10%) chose choices #7 and #1 respectively, while 9 subjects (15%) chose choice #4. The overall mean rank of the transfer price choice was 4.50, corresponding to an average transfer price of $57.50 . The descriptive statistics results show the mean rank of the transfer price choice in the strengthening exchange rate groups (5.93, $64.65) were greater than that of the weakening exchange rate groups (3.07, $50.35).

Table 4: Frequencies of Transfer Price Selection: Weakening and Strengthening Exchange Rates

Transfer Price Selection	Frequency	Percent	Cumulative Percent
1	6	10.0	10.0
2	9	15.0	25.0
3	7	11.7	36.7
4	9	15.0	51.7
5	6	10.0	61.7
6	2	3.3	65.0
7	21	35.0	100
Total	60	100	

In Table 5, transfer price selection under weakening exchange rate conditions are presented. The most frequent transfer price selection was option 2, corresponding to a $45 transfer price. The least frequent transfer price selection was option 6 corresponding to a transfer price of $60. The overall mean rank of the transfer price choice was 3.07, corresponding to an average transfer price of $50.35. The frequency of selection varied considerably in this analysis with one participant selecting option 6 and eight participants selecting option 2.

Table 5: Frequencies Of Transfer Price Selection: Weakening Exchange Rates

Transfer Price Selection	Frequency	Percent	Cumulative Percent
1	6	20.0	20.0
2	8	26.7	46.7
3	7	23.3	70.0
4	3	10.0	80.0
5	2	6.7	86.7
6	1	3.3	90.0
7	3	10.0	100
Total	30	100	

In Table 6, transfer price selection under strengthening exchange rate conditions are presented. By far, the most frequent transfer price selection was option 7, corresponding to a $70 transfer price. Eighteen of Thirty participants selected this option. No participants selected either option 1 or option 3. The overall mean rank of the transfer price choice was 5.93, corresponding to an average transfer price of $64.65. The frequency of selection varied considerably in this analysis with one participant selecting option 6 and eight participants selecting option 2.

Table 6: Frequencies Of Transfer Price Selection: Strengthening Exchange Rates

Transfer Price Selection	Frequency	Percent	Cumulative Percent
1	0	0.0	0.0
2	1	3.3	3.3
3	0	0.0	0.0
4	6	20.0	23.3
5	4	13.3	36.7
6	1	3.3	40.0
7	18	60.0	100
Total	30	100	

The combined results from Tables 4, 5 and 6 clearly indicate differences in transfer price selection based on the prospects for the exchange rate. The results from Table 4 show that the transfer price choices in the presence of weak exchange rate conditions were low, with seventy percent of the participants selecting exchange rate options 1, 2, or 3. Conversely, Table 5 shows that 77% of subjects in the strengthening exchange rates conditions selected transfer prices corresponding to choices 5, 6, or 7. Further, recall that the mean rank for all both strengthening and weakening exchange rates was 4.5. The mean rank for the weakening exchange rates was 3.07 and the mean rank for the strengthening exchange rates was 5.93. These ranks correspond to a variation in transfer price selection resulting from differences in exchange rates of $50.35 to $64.65. The difference clearly suggests that exchange rates affected transfer price decisions.

5.3. Tests Of Hypotheses

We continue by directly testing Hypotheses 1, 2, & 3 using ANOVA. The results are shown in Table 6. The dependent variable in the model is the transfer price choice. The independent variables are the exchange rate, incentive scheme, and the interaction between exchange rates and incentives scheme. The results in Table 7 are discussed in relation to their implications for each of the hypotheses.

Table 7: Tests Of Between-Subjects Effects

Dependent Variable: choice

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	151.200	5	30.240	12.204	.000
Intercept	1215.000	1	1215.000	490.359	.000
EXRATE	123.267	1	123.267	49.749	.000
INCENTYP	19.900	2	9.950	4.016	.024
EXRATE * INCENTYP	8.033	2	4.017	1.621	.207
Error	133.800	54	2.478		
Total	1500.000	60			
Corrected Total	285.000	59			

Hypothesis 1: Hypothesis 1 (H1) predicted that in the absence of appropriate motivating incentives, exchange rates do not significantly affect international transfer price choices. Contrary to the prediction, the ANOVA results showed the main effects of exchange rates on international transfer price choices to be significant at α 0.05 level (p=0.000). The results indicate that the means of the transfer prices chosen by individuals were higher in the strengthening exchange rates group than in the weakening exchange rates group (μ= 5.93 for strengthening exchange rates; μ= 3.06 for weakening exchange rates group). The results suggest that individuals did reduce foreign-currency exchange risk by moving funds into strong currencies via transfer pricing to maximize overall corporate profits even without the presence of incentives to enforce that behavior. However, noting the descriptive statistics, subjects did not universally make choices that would have maximized overall corporate profits. Such choices would have been choice #1 for the weakening currency condition and choice #7 for the strengthening currency condition.

Hypothesis 2: Hypothesis 2 predicted that incentives would influence individuals' transfer price choices. The ANOVA results show that incentives did in fact influence individuals' choices as the main effects of incentives on international transfer price choices was significant at the α 0.05 level (p=0.024). This result is in line with general agency theory expectations that individuals are influenced by incentives.

Hypothesis 3: Hypothesis 2 (H2) predicted that designing an appropriate incentive contract could induce individuals to choose transfer prices that maximize overall exchange rate benefits to the firm only if incentive mechanisms were in place to induce that behavior. Contrary to the predictions, the ANOVA results show that the interaction of incentives and exchange rates was not significant at the α 0.05 level (p=0.207). Coupled with the results of Hypothesis 1, individuals would seem to have been not wholly influenced by incentives, particularly when those incentives would suggest choosing transfer prices that would hurt overall corporate profits.

6. Discussions And Implications

The results send mixed messages with respect to agency theory particularly with respect to transfer decision making choice. While individuals were influenced by incentives, they seemed genuinely concerned with firm profitability. Thus, while incentives were generally significant, they did not factor significantly when looking at the interaction with exchange rate variability. Specifically, subjects did not seem to maximize their personal well-being in terms of incentives when confronted with having to make an incentive-induced choice that negatively affected exchange rate profitability effects on the firm. Thus, we see the Null Hypothesis 1 failing to be rejected in that subjects did generally choose transfer prices in varying exchange rate scenarios such that firm profitability was positively affected, even without having to induce that behavior via incentives.

The implications for this research primarily point to a need to further specify agency theory particularly with regard to transfer pricing choice. MNCs do have an incentive to have managers choose transfer prices that maximize overall corporate profitability. MNCs often structure in decentralized ways to take advantage of the many positive aspects of such a structure. However, how can MNCs ensure that their managers will make appropriate transfer price choices? Much has been made of the use of incentives, particularly monetary incentives, to induce desired behavior, yet this research points out that monetary incentives may not be as powerful as previously thought.

The research does point out that individuals, and therefore possibly managers, do consider the effects of exchange rates on their transfer pricing decisions, even in the absence of incentives. This finding lends some credibility to the fact that individuals will 'look out for the overall benefit of the firm' when considering exchange rates, a reassuring thought. Perhaps moderating agency theory with other variables can better explain the results of this study. In particular, additional transfer pricing studies delving further into behavioral variables would be helpful.

7. Limitations And Recommendations For Future Research

As with any experimental study, external validity is a concern. Subjects in this study consisted of students, many of whom may not have had any specific experience with transfer pricing and many may have not had managerial experience. Thus, one cannot know for certain if managers would make similar decisions. As regards the incentives, saliency is always at issue as is also the concern that the incentives paid to subjects did not, given feasibility constraints, match the incentives made to managers in actual decisions of a similar nature. Finally, the model used in this study cannot have considered all possible variables, and while a bonafide attempt was made to randomize away any possible effects of such variable, it is possible that some variable not included in the model may have affected individuals' decisions.

Future research should consider further expansion of the agency theory model used in this study. Also, comparing and contrasting the agency theory model, given its economics derivation, with behavioral variables and models would be of interest. The failure of agency theory to fully predict outcomes in this study suggests other variables, possibly behavioral in nature, at play. Finally, conducting this study with managers in positions that require transfer pricing decisions would be a great advance. Of course, gaining access to such subjects is always a challenge.

Acknowledgements

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Appendix A
Transfer Price Choice Options and Related Standard Per Unit Transfer Prices and Profits

		Choice						
		1	2	3	4	5	6	7
Transfer Price for Subsidiary A	A$	80.0	90.0	100.0	110.0	120.0	130.0	140.0
(Revenue for Subsidiary A)	US$	40.0	45.0	50.0	55.0	60.0	65.0	70.0
Transfer Price for Subsidiary B	US$	40.0	45.0	50.0	55.0	60.0	65.0	70.0
(Cost for Subsidiary B)								
Net Profit after Tax for Subsidiary A	A$	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	US$	22.5	28.1	33.8	39.4	45.0	50.6	56.3
Net Profit after Tax for Subsidiary B	US$	35.0	30.0	25.0	20.0	15.0	10.0	5.0
Net Profit after Tax for Overall Corporation	US$	50.0	49.4	48.8	48.1	47.5	46.9	46.3