

Comment Lorraine Eden

The petroleum industry is an international oligopoly, consisting of four stages: extraction, shipping, refining, and distribution. The purpose of the Bernard and Weiner paper is to test the effectiveness of U.S. transfer price regulation at the extraction and shipping stages. The key variable in their analysis is "transaction type," which consists of three main categories: U.S. imports from foreign affiliates (A), host governments (H), and third parties (T). The authors hypothesize that, over the 1973–84 period, U.S. petroleum multinationals (MNCs) underinvoiced crude oil exports from high-tax source countries into the United States in order to reduce overall tax payments. Thus $P(T) - P(A)$ should be positively related to $t(J) - t(US)$, where imports of A, H, and T come from country J, and $t(J)$ is the marginal income tax rate in country J. In addition, MNCs may have also overinvoiced shipping charges.

In many cases (see table 4.4), the authors do find significant transfer price manipulation (TPM); for example, repeated overinvoicing through Nigeria and Indonesia and underinvoicing through Saudi Arabia. The peak years appear to be 1976, 1977, and 1981. Overall, there is net underinvoicing, equal to less than 2 percent of the total value of affiliate imports into the United States (dominated by the large underinvoicing in 1979 by Adu Dhabi and in 1981 by Saudi Arabia [\$527 million]). More significant differences in transport costs occur than in transfer prices (see table 4.6). In general, the reverse occurs: Nigeria, Libya, and Algeria undercharge and Saudi Arabia overcharges; Indonesia is mixed. The total value of net shipping transfers is an overcharge of less than 1 percent of affiliate imports (dominated by a huge overcharge by Saudi Arabia, also in 1981, of \$354 million).

The authors conclude that little manipulation of transfer prices and shipping charges occurred and that it was only weakly related to income tax differentials. Three rationales are offered for these results: the effectiveness of U.S. transfer price regulation, MNCs using other channels to avoid taxes, or problems related to using average tax rates to proxy for marginal rates.

Since the authors have an unusually detailed data base and have performed the most rigorous tests of TPM to date, their failure to find significant evidence of transfer pricing in response to tax differentials is an important result and one that may be extensively cited. Their results clearly contradict the widely held view of substantial MNC price manipulation in the petroleum industry (see Jenkins and Wright 1975; Bertrand 1981). Therefore it is important to determine whether their conclusions are robust or confounded by statistical problems.

Since there are several issues involved, let me deal with them individually. The key issues are (1) how to measure transfer price manipulation, (2) the factors affecting TPM, and (3) the relevant income tax differential.

How Should Transfer Price Manipulation Be Measured?

Transfer price manipulation has a different meaning in the theoretical MNC literature than in government regulations. *Theoretical* transfer price manipulation (TTPM) is measured by the gap between the transfer price $P(A)$ and the shadow price, the marginal cost of the exporting firm (Eden 1985). *Regulatory* transfer price manipulation (RTPM) is measured by the gap between $P(A)$ and $P(T)$, the price at which the same product is sold to or bought from an unrelated buyer (e.g., Sec. 482). There is no reason for TTPM and RTPM to be the same or for one necessarily to imply the other (Eden 1989).

In Bernard and Weiner, while the motivation for transfer pricing is based on theoretical models of TPM, the definition used in the tests is the regulatory one, $P(T) - P(A)$. However, the implicit reference hypothesis in the background must be that such an empirical gap does not also exist between $P(T)$ and $P(H)$ or between $P(A)$ and $P(H)$. If significant differences exist between these other pairs of prices, the evidence on RTPM is much less clear. In fact, the authors do find a significant differential between $P(A)$ and $P(H)$ (see n. 14); however, they do not report calculations for the third price gap.

Related to this is another question as to the role played by firm A in the host country. Prior to this time period, many countries nationalized their oil fields. In these cases, A acts as a middleman, supplying technical expertise in return for crude petroleum, so that $P(H)$ should be related to $P(A)$. In other countries, A extracts the oil from private fields, and $P(H)$ represents an unrelated price like $P(T)$; or, alternatively, $P(H)$ may be a posted price. Given note 14, the latter situation may be the representative one. In the absence of information as to the share of A's exports (or of T's exports) purchased from the host government relative to own production, it is impossible to determine what these price gaps mean. Hence, a significant $P(T) - P(A)$ gap may not indicate RTPM at all.

In addition, the value of price manipulation to the petroleum multinationals depends on the relative shares of their affiliates' purchased versus produced crude oil. Bernard and Weiner find significant underinvoicing equal to 2 percent of the value of affiliate imports; however, if much of this was purchased rather than produced, the relevant denominator is value added, not sales. The underinvoicing percentage would therefore be larger, implying more RTPM than first appears.

What Factors Affect TPM?

Eden (1989) explores the factors that affect TPM in a model of a vertically integrated multinational petroleum company. During the 1973–84 period,

most petroleum affiliates were organized as branches in order to take advantage of deductible losses and U.S. percentage depletion. In addition, most were taxed on an overall basis so that surplus and deficit foreign tax credits were pooled. Eden finds that TTPM depends on differences in the statutory tax rates, days of credit, the host country's pricing policy for calculating the income tax, and the importing government's definition of an acceptable transfer price. Under posted prices (mostly prior to 1974, although data are unavailable), the MNC should theoretically overinvoice since a higher $P(A)$ does not affect host taxes. However, after 1978 the U.S. government disallowed crediting posted prices so that underinvoicing would be the preferred route, given high statutory rates abroad. Moreover, if tax credits are pooled, the relevant tax rate is the weighted average statutory rate, not the tax rate where A is located.

Even if MNCs do not theoretically transfer price (i.e., assume that $P(A)$ equals marginal cost), there are several reasons why $P(A)$ would not equal $P(T)$: gravity and sulphur characteristics differ; number of credit days differs; per-unit transport costs vary; the MNC refinery may have monopsony power in the external market; there may be transactions costs associated with the external market; the posted price is different from the transfer price; statutory tax rates and method of foreign tax crediting differ; and royalties are charged by the host country. Bernard and Weiner control for the first three: days of credit, transport costs, and characteristics of oil; but this is not sufficient to guarantee that $P(T)$ equals $P(A)$ even if no TTPM occurs.

What Tax Differential Should Be Used?

Bernard and Weiner use $t(J) - t(US)$, the difference between the average effective tax rate in the host country and in the United States to proxy for the tax differential. This measure is problematic on both theoretical and empirical grounds.

As other papers in this volume show, statutory tax rates affect financial and transfer price decisions; marginal effective tax rates affect real capital investment decisions. The relevant gap between the statutory rates depends on the organizational structure (branch/subsidiary) of the affiliate, deferral, whether the affiliate has a surplus or deficit of foreign tax credits, the per-country or overall limitation, the ability to carry tax credits forward and backward, and the definition of the tax base including the use of posted prices (Eden 1989). Average tax rates on a per-country basis may therefore be a poor proxy for the relevant differential. And, as pointed out earlier, other variables besides a tax gap affect RTPM.

In Bernard and Weiner's empirical work, the tax rates in table 4.8 used to calculate the tax differential are problematic for several reasons. First, most tax rates other than for the years 1976 and 1982 were determined by the interpolations between 1976 and 1982 or were assumed to be constant (e.g., 1983 and 1984). Given that U.S. law changed considerably over this period,

using interpolated rates may have confounded the results in table 4.9. A more reliable test (although the number of cases falls substantially) would be to use only 1976 and 1982 data. Additional support for this is shown by table 4.1, where the foreign tax as a percentage of U.S. taxable income falls from .8 to .9 in the 1972–78 period and to .6 in 1980–82. Clearly, what happened was a shift of foreign taxes from creditable to deductible status. This is also reflected in the tax credit as a percentage of the foreign tax, which rises over the period.

A second problem with the tax data is the elimination of years without a tax rate. Unfortunately, most of the transfer pricing was caused by Saudi Arabia, which, owing to absence of tax data, was excluded from the runs. Abu Dhabi, the other large manipulator, has tax rates that were interpolated for all but three years; its tax data are, therefore, not very reliable.

A third problem is that shipping charges are regressed against the same average tax differential as transfer prices. This is problematic because it assumes that the MNCs use shipping affiliates rather than independent firms and that both the shipping and the extraction affiliates are located in the same host country. Data are unavailable on either of these issues. Assuming that the shipping affiliate is located elsewhere, under the overall limitation it is legitimate to use a foreign statutory rate pooled across all affiliates. However, that information is also not available.

Finally, a vertically integrated petroleum MNC can take its profits at any stage; tight regulation of the transfer price at one stage may simply shift profits to another stage or by means of another form (e.g., financial maneuvers). Given that the petroleum MNCs were forced to report prices of shipped crude oil, it is not surprising that the authors find little evidence of RTPM. The authors argue that the limited evidence of RTPM implies the effectiveness of government regulation; however, regulation at one stage does not ensure effectiveness.

Conclusions

In summary, this is a nice paper trying to handle a complex task. The authors have taken a new and rigorous approach to the transfer pricing problem, isolating differences between $P(T)$ and $P(A)$ and relating them to tax differentials. The paper concludes that the petroleum MNCs did *not* substantially manipulate transfer prices between 1973 and 1984. This is a surprising result since it is contrary to theoretical predictions of MNC behavior, conventional wisdom, and previous tests.

My conclusions are somewhat different. Although the Bernard and Weiner approach is clearly superior to earlier tests, both the amount of transfer pricing and the tax differential, as measured in the paper, are problematic on theoretical and empirical grounds. Additional information is needed to determine the actual amount of transfer price manipulation in response to tax differentials.

As explained above, the required information would include the organizational form of the affiliates, the statutory tax rate affecting each affiliate, the foreign tax credit limitation used, the share of affiliate exports produced within the MNC relative to that purchased from the host government, the location of the shipping affiliate, the role of the posted price, and the size of the royalty payment. Clearly, this is a tall order.

My presumption, therefore, in the absence of this additional evidence, is to continue to assume the petroleum MNCs guilty until proved innocent.

References

- Bertrand, R. J. 1981. *The state of competition in the canadian petroleum industry. Volume III International linkages: Canada and the world petroleum market.* Ottawa: Minister of Supply and Services.
- Eden, Lorraine. 1985. The microeconomics of transfer pricing. In *Multinationals and transfer pricing*, ed. Alan M. Rugman and Lorraine Eden. New York: St. Martin's.
- _____. 1989. The taxation of U.S. petroleum multinationals and their foreign affiliates. Mimeo.
- Jenkins, G. P., and B. D. Wright. 1975. Taxation of income of multinational corporations: The case of the United States petroleum industry. *Review of Economics and Statistics* 57 (1): 1-11

Taxation in the Global Economy

Edited by

**Assaf Razin and
Joel Slemrod**



The University of Chicago Press

Chicago and London

Contents

Preface	ix
Introduction	1
Assaf Razin and Joel Slemrod	

I. AN OVERVIEW OF THE U.S. SYSTEM OF TAXING INTERNATIONAL TRANSACTIONS

1. Taxing International Income: An Analysis of the U.S. System and Its Economic Premises	11
Hugh J. Ault and David F. Bradford	
<i>Comment: Daniel J. Frisch</i>	

II. TAXATION AND MULTINATIONALS

2. U.S. Tax Policy and Direct Investment Abroad	55
Joosung Jun	
<i>Comment: Michael P. Dooley</i>	
3. Tax Effects on Foreign Direct Investment in the United States: Evidence from a Cross-Country Comparison	79
Joel Slemrod	
<i>Comment: David G. Hartman</i>	
4. Multinational Corporations, Transfer Prices, and Taxes: Evidence from the U.S. Petroleum Industry	123
Jean-Thomas Bernard and Robert J. Weiner	
<i>Comment: Lorraine Eden</i>	