

THE ECONOMICS OF PARALLEL TRADE IN PHARMACEUTICAL PRODUCTS

Revised Summary for WTO-WHO Workshop April 2001

This contribution summarizes a longer paper by the same title which is drawn from a more comprehensive manuscript, "Post-TRIPS Options for Access to Patented Medicines in Developing Countries," written jointly with Jayashree Watal. Copies of the complete parallel trade paper will be available at the workshop. The conclusions in this version are my own and not necessarily those of Mrs. Watal.

Let me begin by addressing a semantic muddle. Various workshop contributions speak of "equity pricing," "tiered pricing," and "differential pricing." There is a century-old tradition in economics of calling the subject on which we focus "discriminatory pricing." I prefer to be precise but politically incorrect and abide by that tradition. I will also refer to a special case known as Ramsey pricing (named after British economist Frank Ramsey, 1903-30) and propose that there are good reasons for using that term, since the concept characterizes the kind of pricing that, we shall see, is in a particular sense ideal for international price formation in pharmaceuticals.

Parallel trade occurs when a product covered by intellectual property rights in Nation A is exported to and re-sold in another Nation B without the rights holder's authorization. The incentive for its occurrence is a sufficient difference in prices between the two nations to cover shipping and transaction costs and still offer gains to both the shipper and the Nation B buyer. It is therefore a form of arbitrage. For it to occur, there must be underlying monopoly power and/or market imperfections, among which patent protection figures most prominently, exploited by the original seller through a strategy of price discrimination. Adjudicating parallel trade disputes using

support national laws or international covenants that prevent parallel exportation of pharmaceutical products supplied at low discriminatory prices within less-developed nations.

Second, the attractive logic of Ramsey pricing may vanish if the market for pharmaceutical products within a low-income nation can be segmented into two (or more) groups: an affluent minority, often well-covered by health insurance, with a low price elasticity of demand, and another group (comprising the majority of low-income nations' population) with little ability to pay and high price elasticity of demand. Multinational pharmaceutical companies may find it more profitable to supply only the affluent minority, in which case prices in the low-income nation will be much higher than one would expect under Ramsey pricing with homogeneous demand. To deal with such cases, nations characterized (e.g., under United Nations criteria) as less-developed should not be denied the opportunity to engage in parallel importation from other nations in which prices are lower.

Third, national price controls can undermine the logic of discriminatory world market pricing. Then nations may be the origin of parallel exports not because prices have been kept low under a Ramsey pricing rationale, but because local governments have exerted their price-restraining power. When this happens, individual nations will end up paying less than their Ramsey^a optimal contribution to cover research and development costs. In addition, the pharmaceutical manufacturer may react to the diversion of product from the price-controlled market by reducing its supplies into that market. If parallel exports continue nevertheless, there will be welfare-reducing product shortages in the market from which the parallel exports originate. Recognizing these difficulties, it might be necessary to prohibit parallel exports from national markets subjected to price controls, especially when the receiving market is an affluent industrialized nation.

Further complications can arise under so-called "reference price control" regimes that take as the benchmark for setting controlled prices the lower price charged in some other nation. If discriminatorily low prices in low-income markets are the external reference, pharmaceutical producers will respond rationally by reducing the supply of drugs to the low-income markets and increasing prices there, or perhaps discontinuing supply to those low-income markets altogether. Since this is plainly undesirable, price control systems using low-income nations' prices as an external reference benchmark should be strongly discouraged. Because this may conflict with the narrow national interest of the price-controlling jurisdiction, such a prohibition is likely to be accomplished only through an international accord.

There appears to be considerable uncertainty as to whether pharmaceutical manufacturers actually try to set their prices across diverse national markets in conformity with the idealized Ramsey pricing guidelines. If they did, we should expect to see lower prices for a given product in low-income markets than in high-income markets, other conditions being held equal.

Jayashree Watal and I have assembled a database providing insight into this hypothesis for certain
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Mexico, Peru, the Philippines, South Africa, Thailand, Uruguay, and Venezuela. For most of the nations, the sales covered are at the wholesale level to retail outlets, but for four of the nations, sales to hospitals are also included. Excluded from the data set are donations or other sales at especially low prices to national procurement authorities. Average wholesale prices for each of 586 nation-product-year triplets could be derived by dividing sales revenue by the number of units sold, the latter expressed as standardized daily dose quantities. These standardized prices were then expressed as a ratio of the Red Book wholesale list prices for the same products in the United States. The ratios derived in this way are called U.S. price relatives.

Figure 3 attached plots the price relatives for 461 nation-product-year triplets attributable to multinational pharmaceutical companies. (The average price relatives for the 125 triplets from companies not known to be multinationals were on average 14 percent lower than those of the multinationals plotted in Figure 3.) In 98 of the 461 cases plotted in Figure 3, price relatives were higher, and sometimes much higher, in the less-developed nations covered by our sample than the unit value implying parity with U.S. wholesale list prices. The average of all 461 price relatives was 0.847, suggesting that on average, prices in our sample of low- and medium-income nations were lower than wholesale list prices in the United States. This finding must be amended by recognition that there is extensive discounting of actual transaction prices in the United States below published Red Book values -- assuming typical current experience, in the range of 15 to 25 percent off list. Thus, prices of AIDS anti-retrovirals in the 18 nations were on average at about the same level as those prevailing in the much more affluent United States.

A regression analysis of the multinational drug product price relatives yielded two noteworthy further insights. First, there was a systematic tendency for the price relatives in our sample nations to fall over time -- by about seven percentage points per year. Thus, in 1995, prices in our sample of 18 low- and medium-income nations were on average above those prevailing in the United States, assuming that discounting in the United States then was of about the same magnitude as it has been recently, but by 1999, they had been reduced to average levels below those prevailing in the United States. Second, there was a weak overall tendency for price relatives in the lowest-income nations to be below those for the high-income members of our sample. However, that tendency eroded with the passage of time so that by 1999, the correlation between per-capita income (measured in purchasing power parity terms) and price relatives was close to zero. Since the Ramsey pricing hypothesis predicts that price relatives should rise systematically with income per capita, it would appear that the multinational pharmaceutical companies have moved away from finely-tuned discriminatory pricing strategies toward cruder but more extensive discounting relative to the United States in less affluent nations. Nevertheless, the main impression conveyed both by the scatter diagram presented as Figure 3 and the regression analysis is one of enormous unsystematic variation reflecting idiosyncratic pricing policy variations not adequately explained by our data. Absent evidence to the contrary, these unsystematic variations would appear to suggest that the pricing of AIDS drugs by multinational pharmaceutical companies conforms at best poorly to the Ramsey strictures we have suggested as a rough ideal.

To be sure, our data set ends with price observations for 1999. Since then there have been important new developments as multinational pharmaceutical companies have offered large price concessions on AIDS drugs in some low-income nations. Frank Ramsey's spirit may yet smile approvingly from its exalted place in economist's heaven.