Combating Optical Disc Product Piracy in Malaysia: Is Price Control the Answer?

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Abstract

Optical disc product piracy is considered to be a serious economic and social problem in Malaysia. In the past, the Malaysian government has attempted to deal with this problem via a series of legislations to enhance the legal framework for copyright protection. Despite the rigorous enforcement of these laws via raids and checks on manufacturers, distributors, retailers and, to a lesser extent users, the piracy problem continues to persist. The most recent initiative is the government's proposal to regulate the price of optical disc product via the Price Control Act of 1946. The efficacy of such a policy is likely to depend on consumers' willingness-to-pay for originals. The differentiated pricing approach to be adopted will definitely need to take into account the nature and diversity of optical disc products. The social desirability of the policy itself is ambiguous.

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1. Introduction

The piracy of optical disc product (ODP) has been become a serious problem in Malaysia, particularly since the late 1990s. In the past, the Malaysian government has attempted to deal with this problem via a series of legislations such as the amendments to the Copyright Act of 1987 and enactment of the Optical Disc Act of 2000. Even though these laws have been vigorous enforced via raids and checks on manufacturers, distributors, retailers and to a lesser extent users, the piracy problem continues to persist. The most recent initiative is the government's proposal to regulate the price of optical disc product via the Price Control Act of 1946.

The complexity of optical disc products necessitates a detailed analysis of the price control proposal. The purpose of this paper is to discuss the efficacy of the proposed price control as a mechanism for combating digital piracy. The outline of the paper is as follows. We begin by discussing the problem of optical disc product piracy in Malaysia in Section 2. This is followed by a discussion of the Malaysian government's efforts to eradicate ODP piracy in Section 3. Section 4 discussed the nature of digital products and their implications for piracy. Section 5 discusses the efficacy of proposed price control policy in light of the nature of digital products. Section 6 concludes.

2. The Problem of Optical Disc Piracy in Malaysia

Optical disc product (ODP) piracy has been a serious problem in Malaysia particularly since the late 1990s. A number of factors are responsible for this. The crackdown on ODP piracy in several East Asian countries (such as China, Macau and Hong Kong) coupled with Malaysia's inadequate legal protection of intellectual property rights led to the migration of international OPD pirates into the country. In some cases, the government was slow to discern the true nature of FDIs that were related to such activities – granting tax allowances for the set-up of optical disc plants that were later found to be production centers of pirated ODPs.[1]

The extent of ODP piracy can be discerned by the level of piracy and loss of revenues to the rightful/legal producers and distributors in the various industries. Table 1 summarizes such information.

Table 1: Trade Losses Due to Piracy and Levels of Piracy in Malaysia, 1998-2002
(Losses in USD, million)

Industry	1998		1999		2000		2001		2002	
	Loss	Level	Loss	Level	Loss	Level	Loss	Level	Loss	Level
Motion Picture	40.0	80%	42.0	85%	41.0	80%	40.0	80%	42.0	75%
Records & Music	13.0	70%	5.0	40%	15.6	65%	148.9	70%	110.2	70%
Business Software	63.8	73%	67.8	71%	75.4	66%	75.0	70%	82.7	70%
Entertainment Software	135.2	99%	164.0	99%	NA	98%	56.4	93%	NA	NA
Books	8.0	NA	8.0	NA	8.0	NA	8.2	NA	8.3	NA
	260.0		286.8		140.0		328.5		243.2	

Note: NA – Not Available

Source: International Intellectual Property Alliance, 2003 Special 301 Report, Malaysia.

[1] See International Intellectual Property Alliance's 1999 Report on Malaysia at http://www.iipa.com/rbc/1999/rbc_malaysia_301_99.html

While the overall level of piracy in the various industries has declined over the past few years, the level of piracy and total loss of revenues remains relatively high. The average level of piracy in most industries exceeded 70 per cent in year 2002. In the same year, the total loss of revenues was at least USD243 million.

The impact of ODP piracy goes beyond Malaysia's borders as some of the pirated ODPs have been exported to countries in Asia Pacific (China, India, Indonesia, Taiwan, Philippines, Australia and New Zealand), Latin America (Brazil and Mexico), Europe (UK and Germany) and Africa (Ghana and South Africa).

The seriousness of the ODP problem in Malaysia is also reflected in the placement of the country on the Special 301 Watch List since 1999.[2] In 1999, Malaysia was classified as a country that required close monitoring (through an out-of-cycle review or OCR). This deteriorated to 'Priority Watch List' status in years 2000-2001. Malaysia's status changed to that of 'Watch List' in year 2002 following improvements in the country's IPR record (chiefly through legislative changes). More recently, in February 2003, IIPA recommended that Malaysia be placed on the 'Watch List' but with an OCR.

3. Government's Initiatives to Eradicate Optical Disc Product Piracy

The Malaysian Government has implemented both long term and short measures to eradicate optical disc product (ODP) piracy in the country. Long term measures mainly took the form of the legislative enactments of laws to protect IPRs. Short term measures took the form of checks on raids on users, retailers / distributors and factories producing ODP.

[2] Under the "Special 301" provisions of the US Trade Act of 1974, the US Trade Representative is required to monitor and identify countries that deny adequate and effective protection of IPRs or fair or equitable market access for US persons that rely on IPR. Countries that have poor record in this area (e.g. 'Priority Watch List') can be subject to US trade sanctions.

3.1 Legislative Enactments

The main legislation dealing with the infringement of intellectual property rights in Malaysia is the *Copyright Act* which was enacted in 1987.[3] Section 41 of the Act covers the various offences related to IPR infringement and their penalties. Another important legislation is the *Optical Disc Act* of 2000.[4] While the *Copyright Act* focuses on the manufacturing, sale and use of pirated goods in general, the *Optical Disc Act* deals with the licensing and regulation of optical media production facilities in the country. Under the *Optical Disc Act*, licensed manufacturers of optical media are required to use unique source identification (SID) codes in the replication of masters as well as the production of masters. These manufacturers also have to keep inventories of optical grade polycarbonate, production runs, shipment of finished products and production orders received. Prior to recent amendments to the *Copyright Act*, the much older *Trade Descriptions Act* was used to prosecute retail pirates via labeling violations.[5]

A variety of government agencies are involved in combating ODP piracy. Enforcement of the above laws is carried out mostly by the Ministry of Domestic Trade and Consumer Affairs (MDTCA).[6] MDTCA carries out raids and checks on both manufacturers of optical media and retailers / distributors of ODPs. The Royal Malaysian Police Force also undertakes raids and prosecution.[7] Local municipal councils have also conducted raids, confiscated pirated ODPs and levied fines on pirate retailers via trading licensing requirements. Even though

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[3] It is interesting to note that the IIPA states that the enactment of the Copyright Act was a result of bilateral negotiations between the governments of Malaysia and the US. See http://www.iipa.com/rbc/1999/rbc_malaysia_301_99.html .

[4] The need for a legislation to control the manufacture of optical media were highlighted by IIPA as far back as year 2000.

[5] The reason for this is that, prior to its amendment, officials from MDTCA could not prosecute pirate retailers directly.

[6] State offices of MDTCA present the cases to the Attorney General's Chambers for consent to proceed with prosecution. See IIAP 2000 Report.

[7] These prosecutions are directly handled by legal officers from the Attorney General's Chambers.

the Copyright Act provides for the prosecution of individuals for using pirated ODPs there are very few instances of such cases.[8] The enforcement's focus on users has mostly involved business firms.

The effectiveness of the enforcement of the above laws to eradicate OPD piracy has been mixed. Table 2 gives a summary statistics of the current state of copyright enforcement in Malaysia. There have been a significant number of raids on optical media manufacturers and pirate retailer in the past few years. However, there have been no convictions resulting in jail sentence thus far. Most of the cases involved confiscation of goods (VCDs, DVDs) and production equipment, and fines. Amongst the factors cited for inefficacy of enforcement include lack of manpower (on the part of MDTCA), lack of skill and manpower (MDTCA and court), slow legal process (as long as three years to conclude), and lack of follow-up on raids. More recent efforts to combat ODP piracy continue to involve more or less the same strategy but with the possibility of a slightly different twist, namely price control.

Table 2: The State of Copyright Enforcement in Malaysia, 2002

ACTIONS	MOTION PICTURES	SOUND RECORDINGS
Number of raids conducted	976	227
Number of VCDs seized	1,612,506	
Number of DVDs seized	246,773	
Number of CD-Rs seized	618,570	
Number of investigations	150	
Number of VCD factory raids	11	
Number of cases commenced by MDTCA	962	487*
Number of cases commenced by the Police, Customs & Censorship Board	14	224*
Number of defendants convicted	2	4*
No of acquittals and dismissals	2	2
Number of cases pending	800	21
Number of cases resulting in jail time	0	0
Number of cases resulting in criminal fines	28	
Total amount of fines levied (in USD)	48,538	

Note: * Figures covering 1997 – November 2002

Source: International Intellectual Property Alliance, 2003 Special 301 Report, Malaysia.

[8] Recent prosecutions on individual users of pirate ODPs mostly involve pornographic materials.

3.2 Recent Enforcement Efforts

The combat against ODP piracy in Malaysia has intensified late May 2003. Very little is known about the actual cause of the recent resurgence in enforcement rigor. On the domestic front, it could be due to the rise in social problems such as organized crime (that are involved in ODP piracy) and pornography (which is spread via pirated VCDs and DVDs). On the international front, it could be pressure from the US following the IIAP recommendation that an out-of-cycle review of Malaysia be made.[9]

Raids on Retailers & Factories

The intensification in property rights enforcement took the form of a sustained and widespread of raids on optical disc product retailers and manufacturers under the codename of "Operasi Sepadu" (or integrated operation) from 26 May 2003 to 7 June 2003. Unlike previous efforts, which were mainly undertaken by officers from the Ministry of Domestic Trade and Consumer Affairs (MDTCA), Operasi Sepadu involved the Malaysian police force. The focus of the recent efforts was mainly video CDs (of movies), audio CDs and computer software (both entertainment and business software).

The joint operations were generally considered to be successful. Between 12 May 2003 and 25 June 2003, it was reported that MDTCA had confiscated 483,914 CDs and VCDs worth RM3.56 million while the Police confiscated 2.5 million CDs worth RM25 million.[10]

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[9] In February 2003, IIPA recommended that an out-of-cycle review of copyright protection practices be conducted in Malaysia. Malaysia was the only country from the 'Watch List' group that was identified for such action.

[10] STAR, 26 June 2003.

Price Control

With the relatively successful implementation of the short-term program to reduce optical disc product piracy, the government embarked on a long-term plan to eradicate optical disc product piracy. This initiative probably came about as a result of MDTCA's past experience in which confiscations were always followed by the re-emergence of optical disc product piracy. Following approval by the ministerial cabinet, the Minister of Domestic Trade and Consumer Affairs announced on 25 June 2003 that all optical discs including video compact discs (VCDs), Digital Video Discs (DVDs), computer software and other optical discs are designated `controlled items' under the Price Control Act of 1946.[11] The idea is to enable MDTCA to set price ceilings for ODPs. To implement this policy, the industry associations were given two weeks (until 17 July 2003) to submit to the Ministry proposals on what they consider to be an appropriate pricing scheme.[12] Thus far, the MDTCA has indicated that it will go ahead with plans to fix the ceiling prices for all music and movie CDs in the country. The Ministry has also deferred its proposal to fix the prices of the computer software CD-ROMs until a detailed study is carried out.[13]

The act of including optical discs in the list of goods which prices are controlled by the government is a radical departure which hints at the government's perception of the source of the piracy problem in Malaysia. In other words, the high prices of optical discs are to be partly blamed for optical disc product piracy in the country. Whilst details of the price control scheme are still being

[11] In general, the Price Control Act 1946 together with the Supply Control Act 1961 and their subsidiary legislations empower the Ministry of Domestic Trade and Consumer Affairs (MDTCA) to ration the supply of selected goods as well as to control and stabilize prices in the country. The subsidiary legislations include the Price Control Order 1980, 1993, 2000 and the Price Control Regulations 1984 and 2000. To date, these Acts have been mainly used to stabilize the prices of essential food items such as food items (poultry and vegetables).

[12] The industry response has been below the Ministry's expectations thus far. See STAR, "Poor response to price survey", 21 July 2003.

[13] STAR, "Ministry to set pricing on new music, movie CDs", 20 July 2003.

formulated by MDTCA, both the industry and the general public has begun to debate the efficacy of price control to combat optical disc product piracy. A workable solution to the problem requires an understanding of the nature of optical disc products. This is discussed in the following section.

4. The Economics of Optical Disc Products & Piracy

The problem of the piracy optical disc products is best understood by exploring the economic nature of these products.

4.1 Optical Disc Product: Definition

Information goods are products that can be digitalized i.e. encoded as a stream of bits.[14] Examples of information goods include books, journals, movies, music and computer software. Information goods can be stored digitally in a variety of formats such as floppy disc, memory sticks, flash cards, compact disc (CD), video compact disc (VCD), digital versatile disc (DVD)[15] , CD-ROM, CDR and super audio compact disc (SACD).[16] Optical disc is the dominant class of digital storage format that includes CDs, VCDs, DVDs, CD-ROMs, CD-Rs and SACDs. Optical disc products are information goods that are stored in optical discs.

4.2 Supply Characteristics of Optical Disc Products

(a) Production Cost

The characteristics of an optical disc product are a combined result of it being an information good as well as its storage format (i.e. optical disc). Optical disc products are expensive to produce but are cheap to reproduce or copy. In other words, the production of optical disc products involves very high fixed costs and very low marginal costs. The resulting scale economies imply that the average cost of producing optical disc products decline as more optical discs are

[14] This definition of information goods come from Shapiro & Varian (1999).
[15] DVD does not stand for digital video disc.
[16] There is also an abundance of storage formats e.g. JPEG, MPEG, MP3 etc.

produced. A stark example is the case of Hollywood movies which may cost USD100 million to produce but only USD0.50 to reproduce in the form of a VCD copy! In addition, optical disc copies often match the original in terms of quality. In the absence of effective copyright enforcement, it is easy to see why optical disc products are susceptible to illegal copying i.e. piracy.

It should also be noted that the production and distribution of original optical disc products incur additional costs such as marketing, royalty payments and distribution costs. Pirated optical disc products do not incur these costs. However, in some cases, the production of pirated optical disc product incurs additional costs such as the addition of subtitles.[17]

(b) Distribution Strategies

While economies of scale is a common characteristic of optical disc products, there is significant variation in the manner in which these products are distributed in the market. We focus on three major types of products that are the target of recent efforts in intellectual property rights enforcement in Malaysia, namely, movies, music and computer software. Implications of the various distribution strategies (essentially non-price strategies) for product piracy are also discussed.

Staggered (Delayed) Product Release

Movies are usually distributed sequentially over different markets to maximize distributors' revenues. A movie is first exhibited in the theatrical exhibition market followed by pay-per-view, video / DVD rental and sale, cable / satellite TV subscription (e.g. HBO) and finally national TV networks. This approach takes into account the different degrees of eagerness amongst consumers to view

[17] The author is not aware of any studies comparing the distribution costs of pirated vs. original optical disc products.

movies. In a global setting, markets are sometimes segmented regionally with movies debuting in some countries ahead of others. Optical disc piracy of movies takes advantage of the eagerness consumers in countries where movies are usually shown later.[18]

Product Bundling

In the music industry, sequential release does not take place. However, it has one supply characteristic that renders music recordings vulnerable to piracy. A given music album comprises a bundle of songs. This bundling enables a recording company to sell the recordings of more songs that it would otherwise have if it were to sell only singles.[19] Music piracy sometimes unbundles music recordings for consumers.

Product Upgrading

Computer softwares are not distributed sequentially nor are they usually bundled with other software. However, a given software evolves through different versions, each subsequent versions incorporating additional improvements. Frequent upgrades may prove costly for consumers thus encouraging them to resort to buying pirated versions.

The above examples indicate that there are non-price considerations arising from how information goods are produced and distributed that creates demand for pirated optical disc products.

[18] This is particularly true for developing countries. This practice is enhanced by the near-monopoly state of international film distribution (by United International Pictures).

[19] In a sense, this is akin to product tying. This practice is also related to the ability to charge more to recover the sunk cost of music recordings.

4.3 Demand & Diversity in Optical Disc Products

In discussing piracy of optical disc products, it is also useful to examine the diversity of such products (e.g. movies, music, software) and their demand characteristics.

(a) Experience vs. Search Goods

First, it is useful to distinguish between search and experience goods. Search goods are products in which the quality is known a priori. In the case of experience goods, quality is only known ex-ante after purchase and consumption. Demand for search goods are generally price-sensitive thus making price a strategic variable for sellers. In contrast, the lack of information on a product quality usually implies that prices of experience goods are usually fixed to allow sellers to obtain information on the quality of the experience good i.e. through the sales volume. Movies and music are experience goods while computer software is less of an experience good. This implies that one would expect more variations in the prices of computer software compared to movie or music recordings. Furthermore, the willingness-to-pay, on the part of consumers, for 'new' experience goods might be lower compared to new search goods due to lack of information on product's suitability vis-à-vis one's tastes or preference.[20]

(b) Consumption Externalities

There are also other non-price characteristics of optical disc products that need to be taken into account in formulating a policy to reduce piracy of such products. Some optical disc products such as computer software and game console software exhibit 'consumption externalities' that arise from network effects or

[20] We hesitate to use the term quality. The lack of information on experience goods can be overcome to some extent by product reviews.

network externalities.[21] Other type of optical disc products such as digital recordings of music and movies may not exhibit network effects as large as those for computer software. Such externalities exist when the value of a given product (e.g. Microsoft Word) to the consumer depends on the number of people that have adopted or potentially will adopt the product.

Supply aspects are also intertwined with consumption externalities in some cases. For example, game console software developers may choose a given format (e.g. *PlayStation2*) over others (*Nintendo* or Microsoft's *X-Box*) due to the larger customer base of the former.

Software developers sometimes tolerate a certain degree of piracy of their product to develop a larger demand base so that they can benefit from the resulting network effects.[22] In other words, the degree of copyright protection is sometimes a (non-price) strategic variable that is used to compete with other products in the market.

(c) Complementarity, Compatibility, Standardization and Lock-In

The existence of different formats of optical disc recordings / storage (e.g. VCD, DVD) also implies that issues of complementarity, compatibility (between optical discs and their players), standardization and lock-in are important. Piracy of products where such aspects are important could significantly influence competition between different formats in the market. Extensive piracy of a particular format of optical discs (e.g. VCDs) may entrench the format as the dominant industry standard (for recordings as well as equipment). Of course, hardware manufacturers can overcome this problem by offering multi-format

[21] See Conner & Rumelt (1991) and Shy & Thisse (1999).
[22] See Shy & Thisse (1999).

players (e.g. a hybrid VCD-DVD-SACD player).[23] By producing multi-format players, hardware manufacturers minimize the risk of lock-in into an unpopular format. Furthermore, multi-format players provide hardware manufacturers with a larger demand base thus enabling them to gain scale economies in production. Such business practice benefits consumers by preventing lock-in into any particular format.

Similarly, in the case of market allocation schemes to reduce piracy (e.g. DVD regional coding), hardware manufacturers may weaken such a scheme by producing multi-region compatible players. Even when manufacturers do not this, hardware retailers may take it upon themselves to modify such players into multi-region players. An example of this is the landmark in Australia in which Sony Computer Entertainment Australia attempted to use the anti-circumvention provisions in the Copyright Act 1968 to outlaw the installation of modification chips (in PlayStation console) to overcome regional coding restrictions.[24] This example point to the ingenuity of the markets to seek profit opportunities that arise from copyright protection enforcement – not surprising since nature abhors a vacuum! The latest development to enter the fray is the emergence of recordable DVD players! In a sense, such phenomena arise because both industries are often not vertically integrated. There are a few exceptions such as Sony and Phillips.

The above discussions indicate that price is just one variable in the economics of piracy. Policies aimed at eradicating piracy of optical disc product ought to take cognizance of other 'non-price' factors as well.

[23] This occurs presumably when the formats are matured i.e. having existed for a sufficiently long time such that there is a sizeable pool of demand for it.
[24] In the Australian case, console game users buy original softwares with different regional coding.

4.4 Protection Strategies by Producers & Government

Protection of intellectual property rights are undertaken by both producers and the government. Producers and distributors are against piracy because it reduces their revenues (i.e. retail demand) and their incentives to invest (including R&D) in the production of new products. Piracy in the ODP market is particularly pernicious because the marginal costs are very low and the pirated copy is comparable in quality compared to the original version. As for the government, ideally the custodian of social welfare, the reduced incentives on the part of the private sector to invest may have significant impact on the welfare of its citizens in terms of reduced employment and other economic activities.

For producers, the degree of protection is an optimizing variable.[25] The degree of competition (availability of substitutes) and the importance of network effects, switching cost (learning curve) and lock-in affect a producer's decision on the extent of copyright protection to adopt. Producers can chose from a variety of strategies to protect their IPRs, each based on different copyright protection technologies.[26] Aside from this, producers that choose to adopt a weaker copyright protection mechanism for their product but at the same time use support services as a way to ensure consumers buy original optical products. An example is antivirus programs – they are easy to replicate but updating the software's scan engine requires ownership of the software.[27]

The government enforces and protects intellectual property rights via the enactment of copyright law and the undertaking of regular checks on consumers and producers to ensure compliance to the law. Emphasis is usually put on the

[25] The spectrum of protection include freeware, shareware and fully-paid as well as the different degrees in which fully-paid software are protected.
[26] This includes software programming as well as hardware design e.g. regional coding for DVDs, copy-blocking mechanisms etc.
[27] However, support services may foster lock-in.

deterrence effects of copyright legislations on ODP piracy activities. Seldom has government attempted to combat piracy via price controls. The efficacy of such a policy is examined in the next section.

5. Will Price Control Work?

In this section we examine the feasibility of the MDTCA's proposal to control the prices of ODPs to combat ODP piracy.

5.1 The Price Control Scheme

Details of the price control scheme are not available since the MDTCA is still working on the matter. What is known is that the price control scheme will involve the use of price ceilings. Furthermore, a tiered approach will be used i.e. different prices for different product categories. However, there is some confusion over whether the scheme will ultimately be based on demand (value) or cost considerations. On the one hand, the MDTCA has announced that it will take into account the origin of manufacture and whether they are albums or compilations (in the case of music CDs).[28] On the other hand, it has also stated that it will examine the cost and profit margins of each component of the industry.[29]

An example of what the price control may look like is the recently publicized proposal by the Malaysian Cassette Retailers Association.[30] This Ministry has indicated that it will use the Association's proposal as a 'guideline' for fixing the price ceilings of music CDs. This proposal is summarized in Table 3. A comparison is made between the proposed price ceiling and the existing prices.

[28] New Straits Times, "Recording, software owners given two weeks to lower prices", 5 July 2003.
[29] Ibid.
[30] STAR, "CD price proposal to be studied", 23 July 2003.

Table 3: Malaysian Cassette Retailers Association's Proposals on Price Ceiling

(1 USD – RM3.80)

	New Ceiling (RM)	Existing Price* (RM)
CD – local artistes	19.90	20.00
CD – international artistes	34.90	39.00

Note: * Average prices

5.2 Will Price Control Work?

An effective price control scheme is one in which the producer/distributor is willing to meet the demand of consumers. Both value and cost factors need to be taken into account when formulating a feasible price control. Prices have to be set at levels that make it sufficiently attractive for OPD producers to supply the market i.e. above the marginal cost of supplying the product.[31] However, prices have to be set at levels such that (majority?) consumers would not have incentives to purchase pirated versions of the product.

One natural approach the problem is the concept of global price discrimination for ODPs that are marketed globally. Due to the different level of income in developing countries such as Malaysia, it makes sense for ODP producers to practice price discrimination via charging lower prices in Malaysia.[32] The college textbook market shows that such a global price discrimination scheme may be viable. Following the example of this market, (globally marketed) optical disc products in developing countries can be sold at a lower cost by reducing the packaging costs.[33] Of course, the price differentials between ODPs in developing and developed countries can exceed cost differentials.

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[31] Competition based on marginal cost will drive originals producers out of the market! See Shapiro and Varian (1999). Cost-based pricing may also result in strange results when the cost of producing a degraded (or damaged) version of a software (e.g. student's version) cost more to produce than the full version (e.g. professional version).

[32] Gopal and Sanders (2000) suggests indexing the price of software to per-capita GNP level.

[33] Textbooks in developing countries are mostly sold as paperbacks (and not hardbacks in developed countries).

What about ODPs that are marketed locally? Presently, in the music industry, foreign artiste CDs sell at a 80-90 percent premium compared to local artiste CDs. It is possible that the willingness-to-pay, on the part of developing country consumers, for the products of local artiste is the same as that of foreign artiste. If this true, then the prices for local artiste CDs should be the same as foreign artiste CDs.

However, the following question still remains – is consumer's willingness-to-pay for originals sufficiently high to make it worthwhile for producers to price their product based on value? There are very few studies on consumers' willingness-to-pay for originals vis-à-vis pirated goods. Holm (2000) study which involves students' contingent valuations of computer program indicate that demand for the original version is insensitive to price cut! If this is true, price controls that lower prices may not work.

If the consumer's willingness-to-pay for originals is too low it may be difficult to combat ODP piracy by lowering prices of originals. One solution to this, is of course, combine it with stronger enforcement of copyright protection laws that will reduce the supply of pirated OPDs. It is plausible that the willingness-to-pay for originals is influenced by the availability of pirated versions of the same good. If this is so, the price control (based on willingness-to-pay) will work if combined with stringent enforcement of copyright protection laws.

There is also the issue of the tiered approach to price control. The issue of the willingness-to-pay for local product vs. global product needs to be resolve. As we noted earlier, there is also the distinction between search goods (e.g. computer software) and experience goods (music and movie CDs). Furthermore, some goods have network externalities (computer software) while others do not have network effects (music and movie CDs). Finally, price control on optical

disc product may bias consumer demand towards one format (e.g. VCD) compared to others (e.g. DVD). [34] Hence, there may be a need to ensure that price control policy is a standard-neutral policy. These aspects need to be taken into account in formulating the price control.

5.3 Is Price Control Socially Desirable?

In the earlier part of this section we have analyzed the feasibility of the price control scheme and not its desirability. The social desirability of the price control scheme is an important issue to address. For example, the importance of computer software in enhancing productivity, continues to draw much interests from policy makers. Hence, lower prices for computer software in developing countries is not just a matter of global price discrimination (on the part of the firm) but may confer additional benefits to developing countries.

We have also noted earlier that price is just one strategic variables amongst many that firms use to maximize their profits. The degree of protection (from piracy) itself is a strategic variable. For example, piracy problems may arise when firms (e.g. software developers) adopt protection strategies that are less-than-full-protection in domestic markets where property rights enforcement are different from those of developing countries. The solution, it seems, would be to increase the level of property rights in developing countries to that of developed countries. However, as discussed earlier, willingness-to-pay may be different due to income levels. Should we then use lower price to correct this problem?

Ideally, we want to be able to rank policies (e.g. laissez faire + copyright enforcement vs. price control + property rights enforcement) as first best, second best and so on. In doing so we have to figure whether the piracy problem is a

[34] Prices of DVDs are usually around five times that of VCD. If hardware manufacturers are producing multiformat players / machines they are less affected by a biased pricing policy.

market failure or a government failure or both. However, there is not enough time and space here to deal with this complex issue.

6. Conclusion

The proposed price control on optical disc product to control piracy is premised upon the fact that consumers purchase pirated ODPs because they are cheaper. This is true for many reasons such as income level and nature of goods (search vs. experience). However, the vulnerability of products to piracy itself is an outcome of the nature of the products as well as their complementary hardware (players). Hence, price is just one strategic variable confronting the producers / distributors of these products. An optimal formulation of price control without a proper understanding of these non-price factors may result in welfare-reducing distortions. Even more complex is an analysis of the desirability of the policy of price control itself.

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