Pharmaceutical Tariffs: What is their effect on prices, protection of local industry and revenue generation?

By

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** This paper should be read in reference to original data tables which can be found at* www.who.int/intellectualproperty/studies/tariffs_data

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ABSTRACT

The objective of this study was to examine tariffs levied on medicines. This paper provides data on the tariff rates levied and revenue generated by over 150 countries around the world on different categories of pharmaceutical products. These categories include active pharmaceutical ingredients, finished products and vaccines for human medicines. Data for selected sub-categories of pharmaceutical products is also provided.

The analysis has shown that many countries (41% for active pharmaceutical ingredients and 39% for finished products) for which data are available do not levy duties on pharmaceutical products. Fifty-nine percent of countries for which data are available levy tariffs on pharmaceutical active ingredients. Sixty-one percent of countries levy tariffs on finished pharmaceutical products. A total of 35% of countries still levy import duties on vaccine imports. Ninety percent of countries apply less than 10% tariff rates on medicines. Pharmaceutical tariffs generate less than 0.1% of Gross Domestic Product (GDP) in 92% of countries for which data is available. Furthermore, pharmaceutical tariffs generally do not appear to be structured to protect local pharmaceutical industries.

Factors other than tariffs such as manufacturer's prices, sales taxes including value-added tax (VAT), mark-ups and other charges are likely to impact the price of medicines more than tariffs do. Nonetheless tariffs are a regressive form of taxation which target the sick. We conclude that pharmaceutical tariffs could be eliminated without adverse revenue or industrial policy impacts.

THE COMMISSION ON INTELLECTUAL PROPERTY RIGHTS, INNOVATION AND PUBLIC HEALTH

The Commission was established by the World Health Assembly in 2003:

"…to collect data and proposals from the different actors involved and produce an analysis of intellectual property rights, innovation, and public health, including the question of appropriate funding and incentive mechanisms for the creation of new medicines and other products against diseases that disproportionately affect developing countries…"

Intellectual property rights are important for innovation relevant to public health and are one factor in determining access to medicines. But neither innovation nor access depend on just intellectual property rights. The work of the Commission focuses on the intersections between intellectual property rights, innovation and public health.

This study was undertaken as part of the Commission's work to look at the factors that determine access to medicines, tariffs being one of them. For more information on the work of the Commission, please visit www.who.int/intellectualproperty.

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INTRODUCTION

One third of the world's population lacks reliable access to the medicines they need primarily because they cannot afford to purchase them (The World Medicines Situation, 2004)[1]. According to the WHO Medicines Strategy, there are several challenges involved with meeting essential medicine needs which limit access to effective pharmaceutical treatment. These include irrational use of medicines, inequitable health financing mechanisms, unreliable medicines supply, problems associated with the quality of medicines and unaffordable medicine prices. The high prices of medicines in resource-poor settings can significantly restrict access to medicines, which in developing countries can account for 25%-70% of overall health care expenditure, compared to less than 15% in most high-income countries (The World Medicines Situation, 2004). Moreover, most medicines in developing countries are purchased privately, in contrast to developed countries. Table 1 shows the percentage of the population with regular access to essential medicines in different regions.

Table 1: Financing, delivery, and other constraints still limit access to essential medicines

WHO region	Percentage of population with regular access to essential medicines				
	Very low access (<50%)	Low to medium access (50%-80%)	Medium to high access (81%-95%)	Very high access (>95%)	
	Number of countries	Number of countries	Number of countries	Number of countries	Total countries
Africa	14	23	5	3	45
Americas	7	14	7	7	35
Eastern Mediterranean	2	7	5	8	22
European	3	12	6	25	46
South-East Asian	2	4	3	0	9
Western Pacific	1	8	8	9	26
Total countries	29	68	34	52	183

Source: World Medicines Situation (2004)

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Health expenditure and pharmaceuticals

In most low-income countries, the private sector is the main source of spending in the health sector and in almost all these countries individual, out-of-pocket expenditure is very high, with Burkina Faso reaching a 97.4 percentage according to 2001 figures (World Health Report, 2004). Table 2 illustrates government and private spending on pharmaceuticals in 1990 and 2000. For both years, private sector spending is higher than government spending; at the global level, private spending increased while government spending on pharmaceuticals fell. In all country income groups and for both years, private spending on pharmaceuticals is higher than government spending and the main source of pharmaceutical expenditure in 2002 is 57.8% in high-income, 70.9% in middle-income and 71.6% in low-income countries. The impact of the fact that households account for the majority of pharmaceutical expenditure may have a varying impact depending on countries. *"While in the high-income countries, a prominent concern is lengthy waiting lists for elective surgery, the poor in low-income countries are more likely to be preoccupied with how many items on a prescription they can afford to buy…"* (The World Medicines Situation, 2004).

The countries where out-of-pocket expenditure is slightly lower are those with insurance schemes or other prepaid programmes (Grant & Grant, 2002). High-income countries usually intervene much more than low-income countries in delivery, financing and regulation (World Health Report 2002). Furthermore, a major proportion of this expenditure is on pharmaceuticals. In low- and middle-income countries, 50% to 90% of medicines are paid for by patients themselves (WHO Policy Perspectives on Medicine 2004).

Table 2: Private and government-funded expenditure on pharmaceuticals, 1990 and 2000

(Percentage of total expenditure on pharmaceuticals)

Income clusters	1990		2000	
	Private	Public	Private	Public
WHO Member States	57.8	42.2	60.6	39.4
High-income	54.2	45.8	57.8	42.2
Middle-income	72.6	27.4	70.9	29.1
Low-income	71.4	28.6	71.6	28.4

Source: The World Medicines Situation, 2004

Factors affecting drug prices

There are a number of determinants affecting prices of internationally traded goods: these include manufacturer or importer prices, price differences arising from inter-country differences in import tariffs and non-tariff barriers and differences in procurement costs such as transport, delivery costs, wholesaling, domestic taxes and other mark-up costs which can differ considerably from one country to another. There are additional factors which specifically affect pharmaceutical products such as price discrimination by suppliers of patented products according to market conditions in different countries or the presence of a domestic pharmaceutical industry with the capacity to produce generic substitutes.

An import tariff is a customs duty imposed by importing countries on the value of goods brought in from foreign countries. Tariffs are a vital determinant of prices as they can considerably increase the prices of imported goods or locally produced goods incorporating imported inputs. Tariffs may play a role in protecting the financial position of domestic producers and generating government revenue. They vary greatly from one country to another. This paper focuses only on tariffs.

Recently as part of negotiations on the implementation of TRIPS by the World Trade Organization (WTO), medicines were recognized to be a special category of goods in the Doha Agreement. This study focuses on tariffs as one component of medicine prices which may be amenable to international agreements.

Exemptions

This paper analyzes tariff rates for different categories of pharmaceutical finished products, active ingredients and vaccines for over 150 countries. It is important to note that tariffs on pharmaceutical products are typically subject to a range of national exemptions, waivers or reductions which differ significantly between countries, products and sectors. Krasovec and Connor (1998) surveyed tax treatment of public health commodities in 22 developing countries and found that purchases of contraceptives, vaccines and oral rehydration salts were exempt from import taxes or subject to waivers for public sector buyers in 69-77% of countries, for private non-profit buyers in 42-57% of countries, and for private-for-profit buyers in 28-43% of countries, depending on the product in question. Partial reliefs or

reductions were available in up to a further 20% of countries. However, it is important to stress that the survey was sent to 50 countries but only 22 responded.

There is currently no centralized international source for extracting data on tariff exemptions for pharmaceutical products. Health Action International (HAI) and the World Health Organization (WHO) are currently undertaking a project to look at the various costs associated with the prices of medicines in different countries, including tariffs. However, data is currently available for only a small selection of countries although not all of the countries have collected price component data and much of the data is for patent prices and availability.[2] (HAI/ WHO web database on drug prices: http://www.haiweb.org/medicineprices/). This is further discussed in the price components section of this paper.

The scope of this paper therefore did not allow for further research at a country level on exemptions or waivers on tariffs on pharmaceutical products. However, where available, these exemptions are discussed in the subsequent sections of the study.

[2] Currently the survey contains data from Armenia (Nov. 2001), Brazil (Rio de Janeiro State) (Nov. 2001), Cameroon (May 2002), Ghana (May 2002), India (Rajasthan) (Jun. 2003), Kenya (Nov. 2001), Peru (May 2002), Philippines (Jun 2002), South Africa (KwaZulu Natal State) (Sept. 2001), Sri Lanka (Oct. 2001), Lebanon (Mar. 2004) and Chad (May 2004). The data and reports from the 9 surveys (Ethiopia, Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Uganda and Zimbabwe) will also be available soon.

BACKGROUND

Prices of medicines is determined by a combination of variables, including national and individual income, government policy, degree of competition in the public and private markets, health system capacity, public policies, intellectual property protection, non-tariff barriers and import tariffs.

In developing countries, pharmaceutical costs are the largest health-related expenditures after staffing costs, comprising 40-60% of total health costs (World Bank 1993). The cost of medicines incorporates several added costs prior to reaching patients and includes the base prices (i.e. its price as sold from the manufacturer) as well as all costs for transportation, storage, import tariffs and taxes, wholesale and retail mark-ups, staff salaries, stock losses and procurement practices. These hidden costs can often more than double the manufacturer's price (Perez-Casas, Herranz & Ford 2001).

From the government's standpoint, the purpose of tariffs can be divided into two categories; as a revenue generating mechanisms or to protect the local pharmaceutical industry (Pindyck & Rubinfeld 1998). From the point of view of the consumer, tariffs raise the domestic price of the good, and hence lower the demand (Bollinger, 2002).

Tariffs on medicines are essentially a regressive form of taxation since a smaller proportion of the payers' income is affected by the tariff as income rises. This regressive "tax" on medicines targets the poor and the sick.

Import Tariffs

An import tariff is a customs duty imposed by importing countries on the value of goods brought in from foreign countries. They are usually levied either on an ad valorem basis (percentage of value) or on a specific basis (e.g. $7 per 100 kgs.). Tariffs on finished products give a price advantage to similar locally-produced goods and raise revenues for the government (World Trade Organization online glossary). Tariffs on imported inputs (e.g. active pharmaceutical ingredients) also raise revenue, but can adversely affect local production costs.

This study will refer solely to tariffs rather than other indirect taxes such as value added tax (VAT), which may also be levied on medicines following their import into a country.

GATT, WTO and Uruguay Round

Before 1995, in the absence of a permanent institutional framework for the multilateral trading system, the expression "the GATT" tended to be used to refer to both the actual General Agreement on Tariffs and Trade and to the framework in which the multilateral trade negotiations took place. Since 1 January 1995, the World Trade Organization constitutes the permanent institutional framework for the multilateral trading system. The GATT, however, survives, as an Agreement: the General Agreement on Tariffs and Trade as it resulted from the Uruguay Round negotiations is referred to as "GATT 1994". It embodies a modified and updated version of the original General Agreement on Tariffs and Trade, now referred to as "GATT 1947".

The Uruguay Round of the GATT was the most recent round of the GATT, which was completed in 1994 after nearly 8 years of negotiations. It included for the first time, protections for trade-related intellectual property rights under the TRIPS agreement in all fields of technology, including drugs (Declaration on the TRIPS Agreement and Public Health, 2001).[3] It also created the World Trade Organization (WTO) to improve the process of settling trade disputes.

The World Trade Organization (WTO) provides the common institutional framework for the conduct of trade relations among its members in matters related to the agreements negotiated during the Uruguay Round. It monitors and oversees, through its various bodies, the implementation, operation and administration of the various agreements. It also administers the trade policy review mechanism and the dispute settlement mechanism. In addition, the WTO provides the forum for further negotiations between its Members, in matters dealt with under the Agreements and also more generally concerning their multilateral trade relations.[4]

The WTO is the legal and institutional basis of the multilateral trading system. It embodies the main contractual obligations which determine how governments must formulate and apply their laws and regulations relating to trade. It is also the framework for the conduct of trade relations among its Members, through a collective process of discussions, negotiations and decisions.

[3] WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), negotiated in the 1986-94 Uruguay Round, introduced intellectual property rules into the multilateral trading system for the first time.
[4] WTO web site accessed on 10/ 02/ 2005 (www.wto.org/english/thewto_e/whatis_e/tif_e/agrm2_e.htm)

The current round of WTO negotiations agreed at the Doha Ministerial Conference in November 2001, were notable for the Declaration on the TRIPS Agreement and Public Health. It confirmed that the Agreement can and should be interpreted and implemented in a manner supportive of WTO members' right to protect public health and, in particular, to promote access to medicines for all (Doha WTO Ministerial Declaration, 2001). This recognition of medicines being a "special category of goods" under the TRIPS Agreement justifies this study focusing on tariffs on medicines as a special issue.

Price components

In May 2004, Health Action International (HAI) and the World Health Organization Department of Essential Drugs and Medicines Policy published a working draft of a manual to collect and analyse the prices paid for a selection of essential medicines, as well as identifying price components (taxes, mark-ups etc...) and the affordability and availability of key medicines. The manual was developed as a result of several World Health Assembly Resolutions[5] which had expressed concern by WHO's member states over the prices of medicines and which had urged WHO to increase its efforts in providing support to countries on price information. Governments, NGOs and others who wish to be involved in the process undertook a survey using the methodology which was provided in the manual. Currently, survey results are available for a total of 12 countries with preliminary results available for a further five countries (HAI web database on drug prices: http://www.haiweb.org/medicineprices/).[6] It is envisaged that the methodology will develop further over time as more surveys are undertaken. The approach also contains guidelines on how to collect data on taxes and duties that are levied on medicines and the level of various mark-ups which contribute to the final price (Medicine Prices, WHO 2001-2002).

There are three key factors which characterize pharmaceutical procurement: quality, supplier reliability and price (Management Sciences for Health, 1997). While the assured quality of the product and supplier reliability are prerequisites to procurement, price on the other hand

[5] See World Health Assembly documents A55/12, WHA55/14 and WHA54/11 for more information.
[6] Currently the survey contains data from Armenia (Nov. 2001), Brazil (Rio de Janeiro State) (Nov. 2001), Cameroon (May 2002), Ghana (May 2002), India (Rajasthan) (Jun. 2003), Kenya (Nov. 2001), Peru (May 2002), Philippines (Jun 2002), South Africa (KwaZulu Natal State) (Sept. 2001), Sri Lanka (Oct. 2001), Lebanon (Mar. 2004) and Chad (May 2004). The data and reports from the 9 surveys (Ethiopia, Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Uganda and Zimbabwe) will also be available soon.

is variable. Many hidden components of the price, including tariffs, could safely be eliminated without sacrificing quality or reliability.

Prior studies

To date, there has been little research on tariffs implemented on pharmaceutical products and on their relative importance in terms of the "hidden costs" of pharmaceutical products and the direct impact on access to medicines.

Bale (2001)

This paper, prepared for the Commission on Macroeconomics and Health, looked at tariffs as one of the barriers to access to essential medicines. Bale indicates that access to medicines is largely due to the following factors: "financing, infrastructure, lack of political will, corruption and counterfeiting" (Bale, 2001). He states that,

> *Developing countries, which have three-quarters of the world's population, produce less than 10% of the world's total pharmaceutical output and account for less than a quarter of the annual global expenditure on drugs […] Thus, trade in pharmaceuticals among developing countries […], as well as between industrialized countries and developing countries, is a very important part of the access issue.* (Bale, 2001).

The paper also draws interesting conclusions from the data regarding high tariffs as an incentive to strengthen internal markets.

Unfortunately, Bale does not provide a breakdown of medicament and ingredient data into different pharmaceutical products categories which is important as different rules may apply to different substances. Moreover, he does not consider vaccine tariff data which is essential in giving a more complete picture of tariff profiles.

Woodward (2001)

Woodward's paper considers how import tariffs and other trade barriers determine the price of essential health sector inputs, both pharmaceutical and non-pharmaceutical, necessary for prevention and treatment objectives. Generally, tariffs increase the prices of imported inputs directly, by levying a tax on them, while non-tariff barriers create an artificial scarcity, driving up prices in the local market. At the same time however, there are costs associated

with the lowering of trade barriers. In particular, the reduced protection worsens the financial position of domestic producers, potentially causing loss of employment and income and lower receipts from tariffs reduce overall government revenues. This said, Woodward argues that these assumptions may not necessarily apply to pharmaceuticals. In particular, he states, that border prices vary considerably between countries as a result of price discrimination by suppliers and due to the presence of a domestic pharmaceutical industry. On top of this, there may also be price discrimination within countries, e.g. to charge lower prices to the public and/or non-profit sectors than for the private-for-profit sector.

Woodward suggests that this may be because prices are held down by the availability of low-cost domestic production and that tariffs help to maintain the viability of domestic pharmaceutical producers. The author concludes that:

1) *"reducing tariffs on pharmaceuticals and the active ingredients required for their production appears more likely to increase final pharmaceutical prices than to reduce them overall by undermining low-cost domestic producers;*
2) *both for pharmaceuticals and ITNs, other domestic and international factors affecting prices are likely to be of substantially greater significance than tariffs as price determinants;*
3) *even where tariff reduction has the potential to reduce prices, the associated revenue loss may have a significant impact on public sector recurrent health spending, at least in some Sub-Saharan countries, so that the trade-off between price reduction (and the associated effect on utilisation) and government revenue losses needs to be taken into account"* (Woodward, 2001).

Woodward's conclusions are surprising and call for a better understanding of the relative importance of tariffs in government revenue. Moreover, the data cannot account for countries which do not fit into the same pattern, which may have a thriving domestic industry yet low tariffs like South Africa or countries with no industry.

Levison (2002)

This paper investigated the hidden costs inherent in the procurement process that diminish purchasing power, looking at tariffs as but one component. The data was collected and

presented from ten countries. The author saw evidence that the protectionist strategy for local manufacturers (discussed earlier) is reflected in the fact that Nigeria, Pakistan, India and China-which all have local industry-, are included in the group of countries with the highest import duties on finished products. Some countries also do not levy tariffs for certain drugs or for certain institutions. For instance, India excludes life-saving drugs -e.g. for cancer and HIV. The high prices of medicines are due to a combination of manufacturer's price and hidden costs incurred during procurement. The paper identifies nine options available to governments and pharmaceutical procurement offices to lower the cost of medicines. One action point for governments is to "develop an equitable tariff and tax policy that aims to remove taxes and tariffs on essential medicines". Another action point concerns the establishment and enforcement of price controls for brand name medicines for which there does not exist a therapeutic equivalent in the market. Levison considers the comparative import and export rates of pharmaceuticals both to and from developing countries in order to elucidate the disparities between custom duties. The study also provides the differences in tariff rates for active pharmaceutical ingredients and finished products for a selection of countries. Unfortunately there is too little raw data to follow up on.

Table 3: Percentage additions to manufacturers' CIF price on pharmaceuticals in 10 countries

	Sri Lanka 2000	Kenya 2000	Tanzania 2000	South Africa 2000	Brazil 2000	Armenia	Kosovo	Nepal	Mauritius
Import tariff	0%	0%	10%		11.70%	0%	1%	4%	5%
Port charges	4%	8%	1%				4%		
Clearance and freight		1%	2%					1.50%	5%
Pre-shipment inspection		2.75%	1.20%						
Pharmacy board fee			2%						
Importer's margins	25%						15%	10%	
VAT				14%	18%	20%	0%		
Central govt tax									
State govt tax					6%				
Local town duty									
Wholesaler	8.50%	15%	0%	21.20%	7%	25%	15%	10%	14%
Retail	16.25%	20%	50%	50%	22%	25%	25%	16%	27%
Total cumulative mark-up	64%	54%	74%	74%	82%	87.50%	74%	48%	59%

Source: Levison (2002)

Simon et al (2002)

Simon *et al* proposed a framework to examine the extent to which reform of tariff and tax policy could be expected to increase insecticide-treated bednets (ITN) purchases, focusing on a small selection of case studies including Zambia, Burkina Faso and Nigeria.

To do so they considered the following questions:

1) How much does the retail price of ITNs change if tariffs and taxes are reduced or eliminated?

2) How responsive is consumer demand to changes in the retail prices of ITNs?

The authors found little data on the price elasticity of demand for ITNs, untreated nets and retreatment. They did find that price reduction or the distribution of free nets can reduce willingness to pay in certain instances but that nonetheless, ITN demand was not highly

responsive to lower prices so long as household preferences remain constant. The results led them to conclude that the reduction in retail prices associated with the removal of tariffs and taxes depends on the structure of the market in individual countries and that "the reduction of tariffs and taxes can contribute to the expansion of ITN utilization" (Simon et al, 2002). It is thus difficult to conclude from this paper what the potential effects of tariff reduction or elimination might have on the price of or access to essential medicines.

The European Commission 2003

Between 2001 and 2003, The European Commission carried out a study to assess the duties and taxes applied to pharmaceutical products used in the treatment of the major communicable diseases to lend support to *Programme for Action: Accelerated action on HIV/AIDS, malaria and TB in the context of poverty reduction.* The study covered 57 countries and looked at the range, the average and the distribution of the different rates of custom duties, VAT and "other duties" (European Commission, 2003). The study distinguished between duties and taxes on four categories of product: compounds (molecules), bulk manufactured medicaments, retail manufactured medicaments and vaccines. The study also looked at the value of EU exports to developing countries as a basis for estimating the value of duties and taxes collected. Within this framework, the study provided a review of country trends. The findings highlighted the large disparities in custom duties between countries but also that in general, few developing countries applied peak tariffs and that the least developed countries had the lowest rates of duties and taxes (See Table 4). The findings also indicated that customs duties represent one third of the total taxes and duties applied to pharmaceutical products and that applied total duties and taxes on compounds were usually higher than on manufactured medicaments. Finally, the study concluded that, "taxes and duties collected on pharmaceutical products represent 17% of the public health expenditure of least developed countries and 9% on average for the countries covered by the study". (European Commission, 2003).

The overall picture led them to suggest that large disparities between countries point to a lack of direct correlation between the volume of imports and rates of customs duties. Unfortunately, the study did not attempt to give an explanation as to why this may be.

Table 4: Range of duties and taxes applied to medicinal products used in the treatment of communicable diseases

	Customs duties		VAT		Other Duties		Sum of Duties and Taxes	
	Minimum	Maximum (1)	Minimum	Maximum (2)	Minimum	Maximum (1)	Minimum	Maximum (1)
Compounds	0%	35%	0%	20%	0%	15%	0.0% Tanzania	55% India
Medicaments (bulk and retail)	0%	35%	0%	20%	0%	15%	0,0% Gabon, Iran, Malaysia, Nicaragua, Uganda	55% India
Vaccines	0%	35%	0%	20%	0%	15%	0,0% Cuba, Gabon, Iran, Malaysia, Nicaragua, Uganda	40% Sierra Leone

(1) India

(2) Georgia, Kyrgyz Republic, Moldova, Morocco, Turkmenistan, Uzbekistan

Source: European Commission, 2003

Bate, Tren and Urbah (2005)

A recent paper titled "Taxed to Death" by Bate, Tren and Urbach has reviewed the effect of tariffs, taxes and regulatory requirements on access to medicines (Bate et al., 2005). As this paper covered some of the same areas as our study and their paper is not fully referenced, we sent detailed queries to the authors to which they have replied. In our review of their paper, we focus our comments only on aspects related to tariffs, their choice of products and their subsequent regression analysis.

Bate, Tren and Urbach have used the 1999 WHO Model List as the basis for selecting products for study. This is unfortunate as the 2002 and 2003 revisions include antiretrovirals for the treatment of AIDS and artemesinin containing antimalarials.

Further, they also do not describe how they matched the various Harmonised System codes to specific medicines as these codes are rather broad. They have chosen to study all products in

both Chapter 29 (Organic Chemicals) and Chapter 30 which are manufactured pharmaceutical products. Chapter 30 includes both raw materials and finished products. In our paper, we chose only to use those sections of Chapter 30 (Sections 3003 and 3004) which describe either pharmaceutical raw materials (APIs) or finished product pharmaceuticals. We excluded sections for bandages, first aid boxes etc which Bate et al chose to include. Bate et al did not use the UNCTAD World Bank TRAINS database which we used for our study. Due to the limitations of the data base which they used, they were obliged to calculate tariffs as simple averages. We were able to calculate weighted average tariffs which better reflect reality as a weighted average is indicative of what is actually being charged and not just what is listed on a tariff schedule.

An innovation in the Bate et al. paper was the use of regression analysis to attempt to relate tariffs and taxes with access. However the validity of such methods depends on the reliability of the data that is used to construct the regression equation. In this case, the dependent variable "**Access to essential drugs % 1999"** is obtained from UNDP Human Development Report 2004, 2002 (incorrectly cited as UNDP World Development Report). In Table 2 of the Bate et al paper, this statistic is given as a single number. For example, Ghana is reported to have 44% access but in the actual source table in both the 2002 and 2004 UNDP Human Development Reports the figure is quoted as a range 0-49%.[7] In both the 2002 and 2004 tables is the foot note which reads:

> *The data on access to essential drugs are based on statistical estimates received from World Health Organization (WHO) country and regional offices and regional advisers and through the World Drug Situation Survey carried out in 1998-99. These estimates represent the best information available to the WHO Department of Essential Drugs and Medicines Policy to date and are currently being validated by WHO member states. The department assigns the estimates to four groupings: very low access (0-49%), low access (50-79%), medium access (80-94%) and good access (95-100%). These groupings, used here in presenting the data, are often employed by the WHO in interpreting the data, as the actual estimates may suggest a higher level of accuracy than the data afford.*

[7] **Human Development Report 2004** *Cultural Liberty in Today's Diverse World* http://hdr.undp.org/reports/global/2004/ and **Human Development Report 2002** *Deepening democracy in a fragmented world* http://hdr.undp.org/reports/global/2002/en/

It is not clear how the single numbers for "**Access to essential Drugs %, 1999"** were actually calculated or estimated. But if the data on which the regression analysis is so questionable, the subsequent analysis cannot be relied upon. Thus this aspect of the paper must be disregarded.

In the paper Bate et al. also make a number of questionable statements. For example they state *"Poor and developing country governments often raise a considerable portion of their budget from import tariffs."* However, they do not provide a reference or data to support this statement. They also state *"The high import tariffs that India keeps in place bring little benefit to most Indian consumers, but they do protect and enrich the highly successful generics drug industry."* In reality, there is no difference in India for tariff rates between pharmaceutical raw materials and finished products. Also, Indian generics in India are among the cheapest in the world despite the tariffs levied.[8] Without these tariffs the Indian generics industry would be even more successful.

In summary, the paper by Bate et al. attempts to assess the affect of duties, taxes and regulatory barriers on access to medicines. We have not commented on their work on VAT, other taxes or other duties as that is not the focus of our paper. Unfortunately, the analysis on tariffs appears to be fatally flawed in their overbroad use of Harmonized System codes, their use of simple rather than weighted tariff rates and their dependence on access data which was presented as a number when in fact the source data was given as a range.

Previous studies undertaken in the area of tariffs on pharmaceutical products have been a useful resource in conducting this study but there remains a lack of data to further our understanding of the reasons for the variability of tariff rates between countries. Based on all of these articles we decided to investigate what the level of tariffs on pharmaceuticals actually were in as many countries as possible, whether these tariffs did in fact protect local industry or generate substantial revenue. In contrast to all of the above referenced papers, we have provided the raw data and detailed summary tables for reviewers and other researchers to utilize. These data tables are available at www.who.int/intellectualproperty/studies/tariffs_data.

[8] Health Action International Europe Medicine Prices http://www.haiweb.org/medicineprices/

METHODS

The data for the tariff rates for the study were based on the World Integrated Trade Solution (WITS) which accesses and retrieves information on trade and tariffs compiled by **The United Nation Statistical Division** (UNSD) **Commodity Trade** (COMTRADE), **The United Nations Conference on Trade and Development** (UNCTAD) **Trade Analysis Information System** (TRAINS), **The World Trade Organization** (WTO) **Integrated Data Base** (IDB) and the **Consolidated Tariff Schedule** Data Base (CTS). (WITS Database http://wits.worldbank.org/witsweb/default.aspx)

More specifically, the TRAINS database was used which is a computerized information system at the HS-based tariff line level covering tariff and non-tariff measures as well as import flows by origin for countries. The Harmonized System (HS) is an international nomenclature developed by the World Customs Organization, which is arranged in six digit codes allowing all participating countries to classify traded goods on a common basis. Beyond the six digit level, countries are free to introduce national distinctions for tariffs and many other purposes. The data are available at the most detailed commodity level of the national tariffs (i.e., at the tariff line level).

"Bound" tariffs are those resulting from World Trade Organization negotiations or accession agreements that countries negotiate upon becoming WTO members or through Free Trade Agreements (FTA), which are the maximum tariffs a country agrees to levy on imported goods. They represent commitments not to increase tariffs above the listed rates — the rates are "bound". For developed countries, the bound rates are generally the rates actually charged. Most developing countries have bound the rates somewhat higher than the actual rates charged, so the bound rates serve as ceilings.

"Applied" tariffs are those that are actually levied on imported goods. For the purposes of this study, applied tariffs have been used.[9] There is no legally binding agreement that sets out the targets for tariff reductions (e.g. by what percentage they were to be cut as a result of the Uruguay Round). Instead, individual countries listed their commitments in schedules annexed

[9] WTO web site accessed on 22/ 02/ 2005 (www.wto.org/english/thewto_e/whatis_e/tif_e/agrm2_e.htm)

to the Marrakesh Protocol to the General Agreement on Tariffs and Trade 1994. This is the legally binding agreement for the reduced tariff rates.

In order to base the analysis on the most precise available data, the data used from the WITS database was based on the applied tariffs rates of countries. Furthermore, the weighted average was used rather than simple averages. The weighted average measures tariff rates by the share of total imports by value in the category (in this case the category for pharmaceutical products). Thus if a country imports most of its pharmaceuticals in a single product category with very low tariffs, but has high tariffs in many low-import product categories, then the trade-weighted average tariff would indicate a low level of overall tariff protection.

The study is based on research founded on an extensive range of references including print materials and other sources from the Internet. The search terms used for the research included such terms as ”tariffs”, “taxes”, “import duties”, “access to medicines”, “pricing of medicines”, “tariff exemptions” for particular countries and “mark-up costs”. A range of economic and scientific journals were searched in addition to the web sites of different Ministries of Health or Trade and Finance as well as international institutions or organizations such as the International Trade Centre, World Trade Organization and UNCTAD. Unfortunately, there does not exist a centralized database for global tariff rates on medicines or other products at the present time. The tariff rates reported in this paper are the last rates reported to the UN system and range from 1992 to 2003.

The analysis of the data on tariff rates for each country is presented in the form of summary tables for a range of analyses. A weighted average figure has been used to display the tariff rates of all active pharmaceutical ingredients and all finished products for each country. In addition data for finished products and active pharmaceutical products containing insulin and antibiotics are presented, which are displayed in separate tables.

It was also found that differences may exist between different categories of pharmaceutical products, namely between active pharmaceutical ingredients, finished products and vaccines for human medicine. This data is presented in the results section of this study. [10]

For the purposes of this study, HS-based category 30 for pharmaceutical products was used and more specifically, categories 3003 for active ingredients, 3004 for finished products and their corresponding tariff lines (See Annex 1). An active pharmaceutical ingredient is a substance or compound that is intended to be used in the manufacture of a pharmaceutical product as a therapeutically active compound (ingredient). In addition, information pertaining to category 300220 for human vaccines is also presented. Chapter 29 items of the HS classification system (organic chemicals) have not been considered because these cannot be considered as pharmaceutical products though some items may be used in pharmaceutical production.

[10] The raw data tables for all the categories compiled for this study can be found on the CIPIH web site at www.who.int/intellectualproperty/studies/tariff/data

RESULTS

In this section we present the data collated for tariffs on pharmaceutical active ingredients and finished products for countries, which will be discussed further in the next section.

Distributional rates

This section allocates countries to a range of tariff rates and presents the percentage of countries which fall into those ranges. Furthermore, countries are allocated into four different groups depending on their economic development (See Annex 3). Table 6 presents information pertaining specifically to all active ingredients (HS-code 3003). Breakdowns for all the categories are presented in Annex 2.

Table 5: Distribution of tariff rates by country groups for all active pharmaceutical ingredients

Active pharmaceutical ingredients (HS Code 3003) (All active ingredients)						
Tariffs rate (%) **	Number of countries (n=151)	Percentage of all countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	62	41%	21	14	9	18
0-5	40	26%	15	15	6	4
5.1-10	33	22%	8	10	12	3
10.1-20	13	9%	3[11]	4[12]	6[13]	0
> 20	3	2%	1[14]	2[15]	0	0
*MEAN= 5.04%; MEDIAN= 3%						

***Note: The percentages have been rounded**

**** All rates based on weighted average and applied tariffs**

Active pharmaceutical ingredients

An analysis of the data pertaining to active ingredients has shown that many countries do not levy duties on these products. Sixty two countries out of the 151 countries for which data was

[11] Burundi, Nepal, Nigeria.
[12] Suriname, Guyana, Peru, Tunisia.
[13] Argentina, Grenada, Uruguay, Barbados, Seychelles, Mexico.
[14] India
[15] Morocco, Islamic Republic of Iran

available have zero average tariffs rates which correspond to 41% of all countries reporting. Twenty-six percent of all countries are in the 0-5% tariffs range, 22% of all countries in the 5.1-10% tariff range and only 9% are in the 10.1-20% tariff range. Two percent of countries apply tariffs greater than 20%. The distribution of country groups based on income shows that the majority of countries with high tariff rates i.e. > 10% are in the upper-middle income group. The overall mean rate is 3%.

According to the data extracted from the TRAINS database on 20th February 2005 (see Annex 4), India is the only low-income country with active ingredients tariffs above 20%, although more recent data from the Indian Ministry of Finance indicates that tariffs levied on active ingredients are now 16%. Morocco and the Islamic Republic of Iran also fall above the 20% range with tariff rates of 23.74% and 100% respectively. Again, both countries produce finished products from imported active ingredients. The high tariff rates could be a factor for generating additional revenue for governments in these countries, however further research is required since it is difficult to understand why governments would want to levy duties on products needed to produce finished products locally, when the overall gain is likely to be small. India is an exception since it can make APIs from “scratch” so they can levy import duties on APIs and finished product to protect the local API industry.

There would be some industrial logic in applying tariffs to active pharmaceutical ingredients if one produces them like India, however, it is not necessarily the case that all countries that apply high tariffs on active pharmaceutical ingredients use them to produce finished products. There is also no industrial logic for a country to import active pharmaceutical ingredients on which high tariffs are charged, in order to incorporate them in finished products.

Table 6: Distribution of tariff rates by country groups for all finished products

Finished products (HS Code 3004) (All finished products)						
Tariffs rate (%)	Number of countries (n=153)	Percentage of all countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	60	39%	22	14	8	16
0-5	39	25%	13	13	9	4
5.1-10	32	21%	8	11	9	4
10.1-20	20	13%	6[16]	7[17]	7[18]	0
> 20	2	1%	1[19]	1[20]	0	0
*MEAN= 4.95%; MEDIAN= 3.93%						

***Note: The percentages have been rounded**

**** All rates based on weighted average and applied tariffs**

Finished products

An analysis of tariff rates on finished products illustrates, as in the case for active ingredients, that many countries, 39%, do not levy tariffs on finished pharmaceutical products. But 46% have tariffs between 0% and 10% and 13% of countries have tariff rates between 10.1-20%, the majority of which are in the lower-middle income and upper-middle income bracket. Only 1% of countries impose tariff rates of higher than 20% on finished products which are India and the Islamic Republic of Iran. All countries with tariff rates of 10.1-20% in the lower-middle income group have capacity for producing finished products with the exception of Suriname which does not have a local pharmaceutical industry. Seven of the twenty countries with tariff rates of 10.1-20% are in the upper-middle income category. The overall mean rate is 4.95%.

Among the higher tariff percentile countries are India, Morocco and the Islamic Republic of Iran. Morocco and the Islamic Republic of Iran both have local finished products industry developed from imported ingredients. The latter has rates of 100% for both active ingredients and finished products. Morocco on the other hand applies 12% tariffs on imported finished products and a 24% tariff rate on active ingredients.

[16] Paraguay, Pakistan, Burundi, Congo Democratic Republic, Nigeria, Zimbabwe
[17] Brazil, Suriname, Guyana, Peru, Morocco, Tunisia, Thailand
[18] Argentina, Belize, Uruguay, Trinidad and Tobago, Grenada, Barabados, Seychelles
[19] India
[20] Islamic Republic of Iran

India, which is considered to be among those countries with a sophisticated pharmaceutical industry with significant research capabilities, had 35% tariff rates on both active ingredients and finished products. The high tariff rates on both categories may be explained by the fact that India is an important producer of both active pharmaceutical ingredients and finished products, both for the domestic market and for export. More than half of the exported active pharmaceutical ingredients are destined for developing country markets, although the US is the largest market for pharmaceutical exports, receiving 10-12% of the total.

Table 7: Distribution of tariff rates by country groups for active pharmaceutical ingredients and finished products containing antibiotics other than penicillin

a) Active pharmaceutical ingredients containing other antibiotics (300320)						
Tariffs rate (%)	Number of countries (n=140)	Percentage of all countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	70	50%	22	18	13	17
0-5	28	20%	9	11	6	2
5.1-10	29	21%	8	9	10	2
10.1-20	10	7%	3[21]	4[22]	3[23]	0
> 20	3	2%	1[24]	2[25]	0	0
*MEAN- 4.46%; MEDIAN- 0.50%						
b) Finished products containing other antibiotics (300420)						
Tariffs rate (%)	Number of countries (n=148)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	64	43%	21	14	12	17
0-5	35	24%	11	14	7	3
5.1-10	34	23%	10	10	10	4
10.1-20	13	9%	3[26]	7[27]	3[28]	0
> 20	2	1%	1[29]	1[30]	0	0
*MEAN- 5.14%; MEDIAN- 3.5%						

***Note: The percentages have been rounded off**

**** All rates based on weighted average and applied tariffs**

[21] Burundi, Nepal, Nigeria
[22] Guyana, Peru, Suriname, Tunisia
[23] Barbados, Seychelles, Mexico
[24] India
[25] Morocco, Islamic Republic of Iran
[26] Burundi, Nepal, Nigeria
[27] Guyana, Jamaica, Peru, Suriname, Russian Federation, Tunisia, Morocco
[28] Barbados, Trinidad and Tobago, Grenada
[29] India
[30] Islamic Republic of Iran

APIs and finished products containing other antibiotics

The tariff rates on pharmaceutical products containing antibiotics other than penicillin show similar data for both active pharmaceutical ingredients and finished products. Fifty percent of the 140 countries for which data are available do not apply tariff rates on APIs containing other antibiotics. Of these, 22 countries are low-income countries and include mostly countries from Sub-Saharan Africa. On the other hand, of the 140 countries, only three of them apply tariffs above 20%, with India - a low-income country - reaching 35%, Morocco - a lower-middle-income country - 32.5% and the Islamic Republic of Iran - also a lower-middle-income country- 52%. Twenty percent of the countries apply tariff rates in the range of 0-5% and include Cameroon (low-income country), Lebanon (lower-middle-income country) and Qatar (an upper-middle-income country).

Data for tariffs on finished products show that 43% of countries, which accounts for a total of 64 countries, out of the 148 countries for which data was available, do not levy taxes on finished products. Of these 21 countries are low-income countries. Only two countries, India - a low-income country- and the Islamic Republic of Iran - a lower-middle income country- apply tariff rates higher than 20% with rates at 35% and 100% respectively. Nine percent of countries apply tariffs rates in the range of 10.1-20% which includes Burundi, Nepal and Nigeria in the low-income country group, Guyana, Jamaica, Peru, Suriname, Russian Federation, Tunisia and Morocco in the lower-middle-income country group and Grenada, Trinidad and Tobago and Barbados in the upper-middle income group.

Table 8: Distribution of tariff rates by country groups for active pharmaceutical ingredients and finished products containing insulin

a) Active pharmaceutical ingredients containing insulin (300331)						
Tariffs rate (%)	Number of countries (n=63)	Percentage of all countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	40	63%	11	9	10	10
0-5	8	13%	2	5	1	0
5.1-10	6	9%	3	0	2	1
10.1-20	7	11%	3[31]	3[32]	1[33]	0
> 20	2	3%	1[34]	1[35]	0	0
*MEAN- 4.25%; MEDIAN 0%						
b) Finished products containing insulin (300431)						
Tariffs rate (%)	Number of countries (n=126)	Percentage of all countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	75	60%	19	19	20	17
0-5	25	20%	9	10	4	2
5.1-10	17	13%	6	5	3	3
10.1-20	6	5%	0	3[36]	3[37]	0
> 20	3	2%	1[38]	2[39]	0	0
*MEAN- 4.05%; MEDIAN 0%						

***Note: The percentages have been rounded off**

**** All rates based on weighted average and applied tariffs**

APIs and finished productions containing insulin

The tariff rates for active pharmaceutical ingredients containing insulin was available for 63 countries and shows that 63% of countries have tariff rates of 0%. For finished products the percentage of countries with no tariffs is 60% of the total of 126 countries for which data was available. The number of countries decreases as tariff rates increase. Seven countries, which accounts for 11% of countries studied, impose tariff rates between 10.1-20% for insulin

[31] Burundi, Nepal, Nigeria
[32] Tunisia, Brazil Paraguay
[33] Mexico
[34] India
[35] Islamic Republic of Iran
[36] Peru, Brazil, Tunisia
[37] Argentina, Mexico, Uruguay
[38] India
[39] Morocco, Islamic Republic of Iran

containing active pharmaceutical ingredients. These countries are Burundi, Nepal, Nigeria, Tunisia, Brazil, Paraguay and Mexico. For finished products containing insulin, 5% of countries apply tariffs in the 10.1-20% range. These countries are Peru, Brazil, Tunisian, Argentina, Mexico and Uruguay. Only 2% of countries, which are India, Morocco and the Islamic Republic of Iran, apply tariffs above 20% for these finished products. For active pharmaceutical ingredients containing insulin, only India and the Islamic Republic of Iran apply tariffs above 20%.

Table 9: Distribution of tariff rates by country groups for vaccines for human medicine

Vaccines for human medicine (300220)						
Tariffs rate (%)	Number of countries (n=147)	Percentage of all countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	96	65%	28	28	21	19
0-5	31	21%	12	11	7	1
5.1-10	15	10%	5	6	3	1
10.1-20	4	3%	2[40]	1[41]	1[42]	0
> 20	1	1%	1[43]	0	0	0
*MEAN= 2.39%; MEDIAN= 0%						

***Note: The percentages have been rounded off**

**** All rates based on weighted average and applied tariffs**

Vaccines on human medicines

The tariff rates on vaccines for human medicine show that for the majority of countries, 65% of the 14 countries for which data are available have tariff rates set at 0%. India, which according to the TRAINS database has tariff rates of 30%, does not apply tariffs on vaccines on human medicines according to the Ministry of Finance.[44] Burundi and Nigeria apply tariff rates of 15% and 20% respectively and are both categorized as low-income countries according to the World Bank. The two other countries that are in this higher rate range are Peru, at 12%, and the Seychelles at 15%.

[40] Burundi, Nigeria
[41] Peru
[42] Seychelles
[43] India
[44] Indian Ministry of Finance (http://finmin.nic.in/) Accessed 29-02-2005

Differences in tariff rates within countries

Table 10: Distribution of differences in tariff rates by number of countries [45]

ACTIVE INGREDIENTS-MEDICAMENTS			
	Difference rate	**Number of countries**	**Percentage of countries**
(ingr.<med.) *Protects local industry*	(-15) - (-5) %	7*	4.64%
	(-5.1) - (0) %	29	19.21%
(ingr.=med.)	0 %	91	60.26%
(ingr.>med.) *Hurts local industry Unless local industry can make their own APIs .*	0 - 5 %	17	11.26%
	>5 %	7**	4.64%
Total number of countries		**151**	
* Zimbabwe, Slovenia, Thailand, Vietnam, Congo Dem. Rep., Ukraine, El Salvador			
** Croatia, Poland, Ghana, Nepal, Mexico, Morocco, Islamic Republic of Iran			

This section analyzes the differences that exist in countries between tariff rates for active pharmaceutical ingredients and finished products. We used the same method as Levison (2002).

Annex 4 lists the 151 countries for which data was available. This table sorts countries by the difference in tariff rates between finished products and active pharmaceutical ingredients. For Morocco, the difference is 11.62%. A total of 24 countries levy higher tariffs on ingredients than on finished products. These include large countries such as China and Egypt and many small countries such as Iceland, St. Lucia and Montserrat. Such a differential in tariffs would seem to hurt local producers unless the intention is to protect active pharmaceutical ingredients producers. Conversely at the other end of the table, there are 36 countries which levy higher tariffs on finished products than on active pharmaceutical ingredients. These tariffs would tend to protect local industry. The countries with the greatest differential are Zimbabwe, Slovenia, Thailand, Vietnam, Democratic Republic of Congo, Ukraine and El

45 These tables have been created by subtracting the tariff rates for two categories of pharmaceutical products at a time from one another.

Salvador. Many of these countries do have active local industries although it is difficult to explain the presence of the Democratic Republic of Congo in this group.

Finally, the most significant finding of this table is that 91 countries have no difference in tariff rates. This includes many with zero rates but also includes 35 countries where equal tariffs are levied on both raw materials and finished products. In these cases the tariffs can be considered as a revenue generating tax without any industrial policy significance.

Tariffs and government revenue

Government revenue[46] generation is often quoted as being one of the two main explanations for tariffs on pharmaceutical products. Table 11 presents summary data relating to government pharmaceutical tariffs revenue as a percentage of Gross Domestic Product (GDP) (See Annex 5 for detailed results). The data in this annex presents the average country weighted tariff rates for all active ingredients and finished products and revenue generated from pharmaceutical import tariffs as a percentage of GDP for a total of 145 countries.

What this table shows is that for 92% of the 145 countries, revenue generated by pharmaceutical import tariffs amounts to less than 0.1% of national GDP. This can be considered to be an insignificant amount in national economies. If these tariffs were eliminated, there would appear to be a minimal impact on government revenues and national economies.

[46] Government revenue includes all revenue to the central government from taxes and nonrepayable receipts (other than grants), measured as a share of GDP. Data are shown for central government only.

Table 11: Government revenue and tariff rates

(See Annex 5 for a breakdown of countries)

Total pharmaceutical import tariff revenue as a % of GDP	Number of countries	Percentage of countries	Cumulative percentage of countries
0%	56	38.62%	38.62%
0.01 - 0.025 %	31	21.38%	60.00%
0.0251 - 0.05%	26	17.93%	77.93%
0.051 – 0.075%	17	11.72%	89.66%
0.0751 – 0.1%	4	2.76%	92.41%
0.101 – 0.125%	2[47]	1.38%	93.79%
0.126 – 0.5%	7[48]	4.83%	98.62%
> 0.5%	2[49]	1.38%	100.00%
TOTAL	145	100%	100%

Sources: Tariff Revenue from TRAINS database,GDP data retrieved from World Development Indicators database (WBDI) 2005 http://www.worldbank.org/data/wdi2005/

[47] Grenada, Islamic Republic of Iran
[48] Djibouti, Guyana, Slovak Republic, Costa Rica, Seychelles, Belarus, Bolivia
[49] Brazil, Chile

DISCUSSION

This study has raised a number of issues related to both the amount of research associated with tariffs on pharmaceutical products and the implications of that data. These are discussed in the following sections.

Strengths of the data

The TRAINS database is an important resource in analyzing tariff rates for all products. The database provides data for all countries for up to 6 digits of the HS-code classification system, which provided for a detailed presentation of data on tariff rates. The database also provided bound tariffs, applied tariffs and preferential rates where regional trade agreements may exist. Although not within the scope of this study, the database provides tariff data for each country based on a partner country basis. Information pertaining to total value of imports is also available. This allows weighted tariffs rates to be calculated. Therefore the database was a vital part of this study and a valuable resource.

Weakness of Data

This study relied primarily on tariff data extracted from the UNCTAD TRAINS database which is based on the harmonized system. However, no data was found on exemptions on the applications of import tariffs on pharmaceutical products either directly through the web site of various organizations or through interviews with staff from these organizations, including the WTO, UNCTAD or the International Trade Centre. Some studies in the past have indicated that certain countries exempt tariffs on life-saving drugs or drugs used in the treatment of certain diseases such as HIV/AIDS, however no data or references were found to this effect. A search of data from most national institutions did not provide any data on tariffs on individual pharmaceutical products nor exemptions on these products. Research was done on various web sites including those of Ministries of Trade and Commerce, Customs Unions, national statistics offices or national Commissions set up to advise governments. Furthermore books dedicated to schedules were also looked at however no data pertaining to exemptions of specific pharmaceutical products was found. The research however was limited since most web sites are in national languages. It was also found that some discrepancies could exist between the data provided in TRAINS and that of governmental web sites. By its very nature the data is always retrospective and there is a time lag between national changes and these

being reported. This was found in the case of India, which according to the TRAINS database, levies tariff rates of 35% both on finished products and active ingredients and 30% on vaccines for human medicines. However, according to data presented on the Indian Ministry of Finance web site, 16% tariff rates are levied on finished products and active ingredients and no tariffs are applied on vaccines. Therefore, exemptions are clearly an area for further research.

Furthermore it was found that the HS-code categorization system can pose limitations for the analysis of medicines. The categorization is based on certain ingredients found in medicines such as antibiotics, insulin or penicillin. However no data is provided to understand how a particular medicine containing several ingredients would be taxed i.e. whether the tariff rate would be levied on an average rate or whether the tariff rate corresponding to the highest chemical component would be levied. Therefore, there are difficulties associated with defining the exact amount tariff levied on specific medicines.

Key findings and implications

1. Many countries have 0% tariff rates- 38% of countries for finished products and 41% of countries for active pharmaceutical ingredients (APIs). Variations were found in some categories such as APIs and finished products containing insulin or for vaccines for human medicines. Most countries did not apply tariffs for insulin and vaccines- 59% of countries for APIs containing insulin, 63% of countries for finished products containing insulin and 66% of countries for vaccines containing human medicines.
2. Those countries with tariffs usually levy rates of less than 10%. Only 12% of countries levy tariff rates of more than 10% on finished products and only 10% of countries on active pharmaceutical ingredients.
3. There often seems to be little industrial policy logic in the tariff structure. With the exception of a few countries, it is not possible to link the tariff structure to protection of the local pharmaceutical production.
4. Pharmaceutical tariffs generate an insignificant amount of revenue when compared with national GDP. Ninety-two percent of countries generate less than 0.1% of GDP through pharmaceutical tariffs.
5. Tariffs on pharmaceutical products while only a small proportion of the total cost of medicines add to the price of medicines paid by consumers because multiple

percentage mark ups are based on the base price which includes tariffs. Thus a 10% tariff may add 20% to the price of a medicine when markups double the total cost as reported by Perez-Cases et al. (2003). For this reason governments need to control excessive markups, remove additional taxes such as VAT and require manufacturers to differentially price their products to ensure access based on ability to pay.

6. From a policy perspective, for most countries tariffs are not a principal reason why medicines are not accessible. Having said that however, there are NO good reasons why those countries should retain tariffs. Tariffs on medicines target the sick which cannot be good public policy.

Tariff Rationale for governments

Ultimately the purpose of duties and taxes is to provide sufficient revenue for required government services through the accumulation of government revenue resulting from these duties as a tool for protecting the local industry for a given product. For medicines these practices, be it in the form of import tariffs or other add-on costs, the burden inevitably falls on the end-user i.e. the sick, patients or individuals in countries where there is limited or no national health insurance system paid by the government, are especially affected. Government revenue from pharmaceutical tariffs constitutes a small share of GDP in most countries. In real terms these product tariffs do not amount to a significant source of governmental income. If one looks at the use of tariffs from a protectionist point of view, past studies have shown that tariffs have an effect that limits free competition where the best drug will achieve the best price, hence protecting often inefficient local producers who may be charging high prices for their drugs (Levison, 2003).

Tariffs, prices and access to medicines

Although there are a number of other determinants such as health system infrastructure or poverty, prices are a vital impediment in accessing medicines for the poor and the sick. In many developing countries, medicines are the largest health related expenditure of households (World Health Report, 2004). Several components make up the final prices of medicines including production costs, import tariffs, value-added tax, port charges, pre-shipment inspection or wholesale markup and an analysis of data is required of all these components. These markups can have a compounding effect on the prices of medicines. (Levison & Laing, 2003).

Access can be affected by several factors including "rational use of medicines, affordable prices, sustainable financing and reliable health and supply systems" (The World Medicines Situation, 2004). However, prices themselves are affected by factors such as industry pricing policies, government price regulation, national health policies, excessive patent extensions on certain medicines or lack of competition resulting from the monopolization of the production of certain medicines.

Recommendation

The Uruguay Round demonstrated the international communities' willingness to address the issue of high tariff rates. The Doha negotiations about the public health implications of the TRIPS agreement have shown that medicines have a special status and should be treated differently from other products and services. For the first time, health sector commodities have been brought into the international trade negotiations arena. Tariffs on pharmaceutical products not only constitute an international trade issue but are also a public health issue, especially for the populations of those few countries that continue to levy high tariff rates on both active ingredients and finished products imports. Negotiations during the Sixth WTO Ministerial Conference which will be held in Hong Kong, People's Republic of China in December 2005 should continue efforts to address the issue of tariffs levied on pharmaceutical products.

Box 1
Tariffs do matter!
It should be noted that at the time of preparing this paper, the tariff rates for Kenya were at 0% for all pharmaceutical products. Recently as part of an East African harmonization exercise the East African Community Customs Union has imposed a 10% duty on goods imported into Uganda, Tanzania and Kenya. Although all medicines containing insulin will be zero-rated, antiretroviral (ARV) drugs and other essential medicines have not been excluded from the tariff agreement. HIV-positive Kenyans using the cheapest generic ARV combination, which cost around 1,500 Kenyan shillings (US $20) a month would now be expected to pay 2,000 shilling (US$ 25) for the same medicines. There are 220,000 people currently in need of ARVs in Kenya and currently of the 24,000 people who receive ARVs, half of them are subsidized by the government. These harmonizing changes result in increased costs of ARVs in Kenya and can have a direct effect on access to these products by patients who need them (UN Integrated Regional Information Networks, 10-02-2005).The 10% duty has, as of May 2005, been suspended by the EAC Customs Union (The EastAfrican, 19-05-2005).

CONCLUSIONS

Based on our analysis of the available data, we conclude that tariffs have a very limited impact on pharmaceutical prices in most countries, that tariffs do not appear to be used substantially for industrial policy objectives of protecting local industry and that very little revenue is actually generated from these tariffs. Other measures related to pricing, taxes, mark-ups and financing are likely to have far greater impact on access to medicines.

Nonetheless, tariffs on medicines may prevent some individuals in some countries having access to affordable medicines. In this context, tariffs may play a role in contributing to the high price of medicines. While governments may generate some revenue and may protect local industries, the public policy implications of exclusively levying duties on the sick must be considered. **It is vital that policymakers, both at a national and international level, address the issue of tariffs on medicines and recognize the regressive nature of these duties, which ultimately tax the sick without regard for their economic status or ability to afford these medicines. Pharmaceutical tariffs could be eliminated without adverse revenue or industrial policy impacts.**

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ANNEXES

Annex 1: Definitions of HS categories

3003- Medicaments (excluding goods of 3002, 3005 or 3006) consisting of two or more constituents which have been mixed together for therapeutic or prophylactic uses, not put up in measured doses or in forms or packings for retail sale.

300310- Containing penicillins or derivatives , with a penicillanic acid structure, or streptomycins or their derivatives.

300320- Containing other antibiotics

300331- Containing insulin

300339- Other

300340- Containing alkaloids or derivatives thereof but not containing hormones or other products of 2937 or antibiotics

300390- Other

3004- Medicaments (excluding goods of 3002, 3005 or 3006) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or in forms or packings for retails sale.

300410- Containing penicillins or derivatives thereof, with a penicillanic acid structure, or streptomycins or their derivatives.

300420- Containing other antibiotics

300431- Containing insulin

300432- Containing adrenal corticosteroid hormones, their derivatives and structural analogues

300439- Other

300440- Containing alkaloids or derivatives thereof but not containing hormones, other products of 2937 or antibiotics

300450- Other medicaments containing vitamins or other products of 2936

300490- Other

300220- Vaccines for human medicine

* The following HS-codes were not included in this analysis:

3001 and all sub-categories- Glands and other organs for organo-therapeutic uses, dried, whether or not powered …

3002 and all sub-categories- Human blood; animal blood prepared for therapeutic prophylactic or diagnostic uses…

3005 and all sub-categories- Wadding, gauze, bandages and similar articles, impregnated or coated with pharmaceutical substances or put in forms of packing for retail sale for medical, surgical, dental or veterinary purposes.

3006 and all sub-categories- Pharmaceutical goods specified in Note 4 to Chapter 30.

29 including all categories and sub-categories- Organic chemicals

Annex 2: Distribution tariff rates by country group

Active Ingredients (HS Code 3003) (All active ingredients)						
Tariffs rate (%) **	Number of countries (n=151)	Percentage of countries *	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	62	41%	21	14	9	18
0-5	40	26%	15	15	6	4
5.1-10	33	22%	8	10	12	3
10.1-20	13	9%	3[50]	4[51]	6[52]	0
> 20	3	2%	1[53]	2[54]	0	0
MEAN= 5.04%; MEDIAN= 3%						
Containing penicillins or derivatives thereof (300310)						
Tariffs rate (%)	Number of countries (n=121)	Percentage of countries				
0	51	42%				
0-5	28	23%				
5.1-10	31	26%				
10.1-20	7	6%				
> 20	4	3%				
MEAN- 5.44%; MEDIAN- 4%						
Containing other antibiotics (300320)						
Tariffs rate (%)	Number of countries (n=140)	Percentage of countries	Low-income countries	Lower-middle income countries	Upper-middle income countries	High-income countries
0	70	50%	22	18	13	17
0-5	28	20%	9	11	6	2
5.1-10	29	21%	8	9	10	2
10.1-20	10	7%	3	4	3	0
> 20	3	2%	1	2	0	0
*MEAN- 4.46%; MEDIAN- 0.50%						
Containing insulin (300331)						
Tariffs rate (%)	Number of countries (n=63)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	40	63%	11	9	10	10
0-5	8	13%	2	5	1	0
5.1-10	6	9%	3	0	2	1
10.1-20	7	11%	3[55]	3[56]	1[57]	0
> 20	2	3%	1[58]	1[59]	0	0
*MEAN- 4.25%; MEDIAN-0%						

[50] Burundi, Nepal, Nigeria.
[51] Suriname, Guyana, Peru, Tunisia.
[52] Argentina, Grenada, Uruguay, Barbados, Seychelles, Mexico.
[53] India
[54] Morocco, Islamic Republic of Iran
[55] Burundi, Nepal, Nigeria
[56] Tunisia, Brazil Paraguay
[57] Mexico
[58] India
[59] Islamic Republic of Iran

Other (300339)						
Tariffs rate (%)	Number of countries (n=128)	Percentage of countries				
0	69	54%				
0-5	34	27%				
5.1-10	19	15%				
10.1-20	3	2%				
> 20	2	2%				
MEAN- 3.95%; MEDIAN- 0%						
Containing alkaloids or derivatives thereof (300340)						
Tariffs rate (%)	Number of countries (n=93)	Percentage of countries				
0	53	57%				
0-5	20	22%				
5.1-10	13	14%				
10.1-20	5	5%				
> 20	2	2%				
MEAN- 3.46%; MEDIAN- 0%						
Other than alkaloids (300390)						
Tariffs rate (%)	Number of countries (n=147)	Percentage of countries				
0	62	42%				
0-5	36	24%				
5.1-10	32	22%				
10.1-20	13	9%				
> 20	4	3%				
MEAN- 5.30%; MEDIAN- 4%						
Medicaments (HS Code 3004) (All finished products)						
Tariffs rate (%)	Number of countries (n=153)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	60	39%	22	14	8	16
0-5	39	25%	13	13	9	4
5.1-10	32	21%	8	11	9	4
10.1-20	20	13%	6	7	7	0
> 20	2	1%	1	1	0	0
MEAN- 4.95%; MEDIAN- 3.93%						
Containing penicillins or derivatives thereof (300410)						
Tariffs rate (%)	Number of countries (n=149)	Percentage of countries				
0	64	43%				
0-5	34	23%				
5.1-10	35	23%				
10.1-20	14	9%				
> 20	2	1%				
MEAN- 5.36%; MEDIAN- 4%						

Containing other antibiotics (300420)						
Tariffs rate (%)	Number of countries (n=148)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	64	43%	21	14	12	17
0-5	35	24%	11	14	7	3
5.1-10	34	23%	10	10	10	4
10.1-20	13	9%	3	7	3	0
> 20	2	1%	1	1	0	0
MEAN- 5.14%; MEDIAN- 3.5%						
Containing insulin (300431)						
Tariffs rate (%)	Number of countries (n=126)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
0	75	60%	19	19	20	17
0-5	25	20%	9	10	4	2
5.1-10	17	13%	6	5	3	3
10.1-20	6	5%	0	3[60]	3[61]	0
> 20	3	2%	1[62]	2[63]	0	0
MEAN- 4.05%; MEDIAN- 0%						
Other (300439)						
Tariffs rate (%)	Number of countries (n=144)	Percentage of countries				
0	73	51%				
0-5	37	26%				
5.1-10	26	18%				
10.1-20	6	4%				
> 20	2	1%				
MEAN-4.26%; MEDIAN- 0%						
Containing alkaloids or derivatives thereof (300440)						
Tariffs rate (%)	Number of countries (n=146)	Percentage of countries				
0	70	48%				
0-5	39	27%				
5.1-10	26	18%				
10.1-20	9	6%				
> 20	2	1%				
MEAN- 4.46%; MEDIAN- 1.59%						
Other medicaments containing vitamins (300450)						
Tariffs rate (%)	Number of countries (n=147)	Percentage of countries				
0	58	39%				
0-5	35	24%				
5.1-10	31	21%				
10.1-20	19	13%				
> 20	4	3%				
MEAN- 5%; MEDIAN- 5.88%						

[60] Peru, Brazil, Tunisia
[61] Argentina, Mexico, Uruguay
[62] India
[63] Morocco, Islamic Republic of Iran

Other (300490)						
Tariffs rate (%)	Number of countries (n=152)	Percentage of countries				
0	60	39%				
0-5	38	25%				
5.1-10	32	21%				
10.1-20	20	13%				
> 20	2	1%				
MEAN- 5.53%; MEDIAN- 5%						
Vaccines for human medicine (300220)						
Tariffs rate (%)	Number of countries (n=147)	Percentage of countries	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	high-income countries
0	96	65%	28	28	21	19
0-5	31	21%	12	11	7	1
5.1-10	15	10%	5	6	3	1
10.1-20	4	3%	2[64]	1[65]	1[66]	0
> 20	1	1%	1[67]	0	0	0
MEAN= 2.39%; MEDIAN= 0%						

***Note: The percentages have been rounded off**

**** All rates based on weighted average**

[64] Burundi, Nigeria
[65] Peru
[66] Seychelles
[67] India

Annex 3: Country groups based on economy

Low-income economies (61)		
Afghanistan	Guinea-Bissau	Pakistan
Angola	Haiti	Papua New Guinea
Bangladesh	India	Rwanda
Benin	Kenya	Sao Tome and Principe
Bhutan	Korea, Dem Rep.	Senegal
Burkina Faso	Kyrgyz Republic	Sierra Leone
Burundi	Lao PDR	Solomon Islands
Cambodia	Lesotho	Somalia
Cameroon	Liberia	Sudan
Central African Republic	Madagascar	Tajikistan
Chad	Malawi	Tanzania
Comoros	Mali	Timor-Leste
Congo, Dem. Rep	Mauritania	Togo
Congo, Rep.	Moldova	Uganda
Cote d'Ivoire	Mongolia	Uzbekistan
Equatorial Guinea	Mozambique	Vietnam
Eritrea	Myanmar	Yemen, Rep.
Ethiopia	Nepal	Zambia
Gambia, The	Nicaragua	Zimbabwe
Ghana	Niger	
Guinea	Nigeria	
Lower-middle-income economies (56)		
Albania	Georgia	Philippines
Algeria	Guatemala	Romania
Armenia	Guyana	Russian Federation
Azerbaijan	Honduras	Samoa
Belarus	Indonesia	Serbia and Montenegro
Bolivia	Iran, Islamic Rep.	South Africa

Bosnia and Herzegovina	Iraq	Sri Lanka
Brazil	Jamaica	Suriname
Bulgaria	Jordan	Swaziland
Cape Verde	Kazakhstan	Syrian Arab Republic
China	Kiribati	Thailand
Colombia	Macedonia, FYR	Tonga
Cuba	Maldives	Tunisia
Djibouti	Marshall Islands	Turkey
Dominican Republic	Micronesia, Fed. Sts.	Turkmenistan
Ecuador	Morocco	Ukraine
Egypt, Arab Rep.	Namibia	Vanuatu
El Salvador	Paraguay	West Bank and Gaza
Fiji	Peru	
Upper-middle-income economies (37)		
American Samoa	Grenada	Panama
Antigua and Barbuda	Hungary	Poland
Argentina	Latvia	Saudi Arabia
Barbados	Lebanon	Seychelles
Belize	Libya	Slovak Republic
Botswana	Lithuania	St. Kitts and Nevis
Chile	Malaysia	St. Lucia
Costa Rica	Mauritius	St. Vincent and the Grenadines
Croatia	Mayotte	Trinidad and Tobago
Czech Republic	Mexico	Uruguay
Dominica	Northern Mariana Islands	Venezuela, RB
Estonia	Oman	
Gabon	Palau	
High-income economies (54)		
Andorra	Germany	Netherlands
Aruba	Greece	Netherlands Antilles

Australia	Greenland	New Caledonia
Austria	Guam	New Zealand
Bahamas, The	Hong Kong, China	Norway
Bahrain	Iceland	Portugal
Belgium	Ireland	Puerto Rico
Bermuda	Isle of Man	Qatar
Brunei	Israel	San Marino
Canada	Italy	Singapore
Cayman Islands	Japan	Slovenia
Channel Islands	Korea, Rep.	Spain
Cyprus	Kuwait	Sweden
Denmark	Liechtenstein	Switzerland
Faeroe Islands	Luxembourg	United Arab Emirates
Finland	Macao, China	United Kingdom
France	Malta	United States
French Polynesia	Monaco	Virgin Islands (U.S.)

Source: World Bank

Annex 4: Difference between finished products and active ingredients tariff rates

	Medicaments		Ingredients		
Reporter Name	**Tariff Year**	**Weighted average**	**Tariff Year**	**Weighted Average**	**Difference**
Zimbabwe	2002	17.6	2001	2.76	-14.84
Slovenia	2003	8.9	2003	0	-8.9
Thailand	2003	18.01	2001	10	-8.01
Vietnam	2004	5.71	2002	0.08	-5.63
Congo, Dem. Rep.	2003	15.45	2003	10	-5.45
Ukraine	2002	7.02	2002	1.92	-5.1
El Salvador	2004	5	2002	0	-5
Jordan	2003	4.18	2003	0	-4.18
Bosnia and Herzegovina	2001	3.93	2001	0	-3.93
Trinidad and Tobago	2003	12.36	2003	8.55	-3.81
Pakistan	2004	13.63	2003	10	-3.63
Ethiopia(excludes Eritrea)	2002	8.56	2002	5	-3.56
Tunisia	2004	13.79	2003	10.4	-3.39
Russian Federation	2002	9.81	2002	6.5	-3.31
Belarus	2002	8.26	2002	5	-3.26
Colombia	2004	8.04	2002	5	-3.04
Paraguay	2004	10.82	2003	8.27	-2.55
Rwanda	2003	2.5	2003	0	-2.5
Bangladesh	2004	9.63	2004	7.45	-2.18
Saudi Arabia	2004	2.15	2003	0	-2.15
Dominica	2003	8.76	2003	6.78	-1.98
Macedonia, FYR	2004	3.67	2001	2	-1.67
Argentina	2004	11.75	2003	10.08	-1.67
St. Kitts and Nevis	2003	6.82	2003	5.47	-1.35
Belize	2003	10.84	2003	9.62	-1.22
Grenada	2003	12.58	2003	11.37	-1.21
Austria	1990	7.13	1990	6.12	-1.01
Philippines	2003	3.84	2003	3	-0.84
Brazil	2004	10.31	2003	9.51	-0.8
Ecuador	2004	5.64	2002	5	-0.64
St. Vincent and the Grenadines	2003	8.6	2003	8.08	-0.52
Algeria	2003	5.24	2003	5	-0.24
Antigua and Barbuda	2003	8.91	2003	8.7	-0.21
Suriname	2000	11.93	2000	11.73	-0.2
Jamaica	2003	7.7	2003	7.62	-0.08
Guatemala	2004	5	2002	4.93	-0.07
Albania	2002	0	2001	0	0
Angola	2002	2	2002	2	0
Armenia	2001	0	2001	0	0
Australia	2004	0	2004	0	0
Bahamas, The	2002	0	2002	0	0
Bahrain	2001	5	2001	5	0
Benin	2004	0	2003	0	0
Bermuda	2001	0	2001	0	0
Bhutan	2004	0	2002	0	0
Bolivia	2004	10	2002	10	0
Botswana	2001	0	2001	0	0

	Medicaments			Ingredients	
Reporter Name	**Tariff Year**	**Weighted average**	**Tariff Year**	**Weighted Average**	**Difference**
Brunei	2003	0	2002	0	0
Bulgaria	2004	0	2003	0	0
Burkina Faso	2004	0	2003	0	0
Burundi	2002	15	2002	15	0
Cambodia	2003	0	2002	0	0
Cameroon	2002	5	2002	5	0
Canada	2003	0	2003	0	0
Central African Republic	2002	5	2002	5	0
Chad	2002	5	2002	5	0
Congo, Rep.	2002	5	2002	5	0
Costa Rica	2004	2.5	2002	2.5	0
Cote d'Ivoire	2004	0	2003	0	0
Cuba	2004	1	2003	1	0
Cyprus	2002	0	2002	0	0
Czech Republic	2003	0	2003	0	0
Djibouti	2002	10	2002	10	0
Dominican Republic	2004	3	2003	3	0
Equatorial Guinea	2002	5	2002	5	0
Eritrea	2002	2	2002	2	0
Estonia	2003	0	2003	0	0
European Union**	2003	0	2002	0	0
Gabon	2002	5	2002	5	0
Guinea-Bissau	2004	0	2003	0	0
Honduras	2004	0	2002	0	0
Hong Kong, China	1998	0	1998	0	0
Hungary	2002	0	2002	0	0
Indonesia	2003	5	2002	5	0
Israel	1993	7.2	1993	7.2	0
Japan	2004	0	2003	0	0
Korea, Rep.	2002	0	2002	0	0
Kuwait	2002	4	2002	4	0
Kyrgyz Republic	2003	0	2002	0	0
Lao PDR	2001	10	2001	10	0
Latvia	2001	0	2001	0	0
Lebanon	2002	5	2002	5	0
Libya	2002	0	2002	0	0
Lithuania	2003	0	2003	0	0
Madagascar	2001	0	2001	0	0
Malawi	2001	0	2001	0	0
Malaysia	2003	0	2002	0	0
Maldives	2003	5	2003	5	0
Mali	2004	0	2003	0	0
Malta	2003	0	2003	0	0
Mauritania	2001	0	2001	0	0
Mauritius	2002	5	2002	5	0
Moldova	2001	0	2001	0	0
Mozambique	2003	0	2003	0	0
Myanmar	2003	1.5	2002	1.5	0
Namibia	2001	0	2001	0	0
New Zealand	2004	0	2004	0	0

	Medicaments			Ingredients	
Reporter Name	**Tariff Year**	**Weighted average**	**Tariff Year**	**Weighted Average**	**Difference**
Nicaragua	2004	0	2002	0	0
Niger	2004	0	2003	0	0
Nigeria	2002	20	2002	20	0
Norway	2003	0	2003	0	0
Oman	2002	5	2002	5	0
Papua New Guinea	2004	0	2004	0	0
Peru	2004	12	2000	12	0
Qatar	2002	4	2002	4	0
Senegal	2004	0	2003	0	0
Seychelles	2001	15	2001	15	0
Singapore	2003	0	2003	0	0
Slovak Republic	2002	10	2002	10	0
Solomon Islands	1995	5	1995	5	0
South Africa	2001	0	2001	0	0
Sri Lanka	2004	0	2001	0	0
Sudan	2002	10	2002	10	0
Swaziland	2001	0	2001	0	0
Sweden	1989	0	1989	0	0
Switzerland	2004	0	2004	0	0
Syrian Arab Republic	2002	1	2002	1	0
Tajikistan	2002	5	2002	5	0
Tanzania	2003	10	2003	10	0
Togo	2004	0	2003	0	0
Turkey	2003	0	2003	0	0
Turkmenistan	2002	0	2002	0	0
Uganda	2004	0	2003	0	0
United States	2004	0	2004	0	0
Uzbekistan	2001	0	2001	0	0
Vanuatu	2002	0	2002	0	0
Yemen	2000	5	2000	5	0
Uruguay	2004	11.7	2002	11.81	0.11
Egypt, Arab Rep.	2002	6.83	2002	7.05	0.22
Azerbaijan	2002	0	2002	0.26	0.26
St. Lucia	2003	8.43	2003	8.79	0.36
Guyana	2003	12.04	2003	12.49	0.45
Barbados	2003	14.37	2003	15	0.63
Venezuela	2004	9.2	2002	9.93	0.73
Chile	2004	6	2002	7	1
Iceland	2003	3.61	2003	4.65	1.04
Zambia	2003	0	2003	1.1	1.1
China	2004	4.41	2004	5.6	1.19
Kenya	2004	5.29	2001	6.86	1.57
Montserrat	1999	6.96	1999	8.87	1.91
Panama	2001	2.77	2001	4.93	2.16
Romania	2001	6.25	2001	9.29	3.04
Georgia	2004	1	1999	5	4
India*	2004	30	2001	35	5
Croatia	2004	1.5	2001	6.56	5.06
Poland	2003	0.46	2003	5.71	5.25
Ghana	2004	4.73	2000	10	5.27

	Medicaments			Ingredients	
Reporter Name	**Tariff Year**	**Weighted average**	**Tariff Year**	**Weighted Average**	**Difference**
Nepal	2004	9.29	2003	15	5.71
Mexico	2004	6.91	2003	14.67	7.76
Morocco	2003	12.4	2003	23.74	11.34
Iran, Islamic Rep.	2004	54.26	2003	100	45.74

* During the preparation of this paper, India lowered its tariff rates on active pharmaceutical ingredients and finished products to 16%.

** The European Union has been counted as an individual country since the rate provided is an aggregate of all the member countries' (for the year indicated) pharmaceutical tariffs rates.

Annex 5: Revenue from tariffs on finished products as a percentage of GDP

Reporter Name	GDP (1000 US$)°	Tariff Year	Active pharmaceutical ingredients 3003				Finished Products 3004				Total pharmaceutical tariff revenue (3003 and 3004) as % of GDP
			Weighted average tariff rate %	Imports Value (1000 US$)	Revenue from API tariffs (1000 US$)	API tariffs revenue as % of GDP	Weighted average tariff rate %	Imports Value (1000 US$)	Revenue from finished products tariffs (1000 US$)	Finished products tariffs revenue as % of GDP	
Albania	4,254,227	2001	0	3896	0	0.0000%	0	24272	0	0.0000%	0.0000%
Armenia	2,118,468	2001	0	38	0	0.0000%	0	22189	0	0.0000%	0.0000%
Australia**	522,377,527	2004	0	148931	0	0.0000%	0	2719031	0	0.0000%	0.0000%
Bahamas, The	7,137,510	2002	0	977	0	0.0000%	0	21340	0	0.0000%	0.0000%
Benin	988,500	2003	0	610	0	0.0000%	0	24131	0	0.0000%	0.0000%
Bermuda	2,371,786	2001	0	766	0	0.0000%	0	170200	0	0.0000%	0.0000%
Botswana	5,014,183	2001	0	1355	0	0.0000%	0	28601	0	0.0000%	0.0000%
Brunei	5,393,727	2002	0	872	0	0.0000%	0	24213	0	0.0000%	0.0000%
Burkina Faso	19,860,228	2003	0	21	0	0.0000%	0	24864	0	0.0000%	0.0000%
Cambodia	628,096	2002	0	1743	0	0.0000%	0	55233	0	0.0000%	0.0000%
Canada	12,490,874	2003	0	137688	0	0.0000%	0	4742140	0	0.0000%	0.0000%
Cote d'Ivoire	17,427,212	2003	0	195	0	0.0000%	0	97156	0	0.0000%	0.0000%
Cyprus	10,105,680	2002	0	2138	0	0.0000%	0	94191	0	0.0000%	0.0000%
Czech Republic	89,715,098	2003	0	35462	0	0.0000%	0	1144247	0	0.0000%	0.0000%
Estonia	9,082,071	2003	0	313	0	0.0000%	0	106682	0	0.0000%	0.0000%
European Union	6,662,332,088	2002	0	683635	0	0.0000%	0	16587454	0	0.0000%	0.0000%
Guinea-Bissau	238,625	2003	0	4	0	0.0000%	0	846	0	0.0000%	0.0000%
Honduras	6,594,071	2002	0	456	0	0.0000%	0	67675	0	0.0000%	0.0000%
Hong Kong, China***	160,636,027	1998	0	6687	0	0.0000%	0	704456	0	0.0000%	0.0000%
Hungary	64,884,163	2002	0	8332	0	0.0000%	0	653152	0	0.0000%	0.0000%
Japan	4,300,857,934	2003	0	111061	0	0.0000%	0	3801266	0	0.0000%	0.0000%
Korea, Rep.	546,713,207	2002	0	136684	0	0.0000%	0	503816	0	0.0000%	0.0000%
Kyrgyz Republic	1,605,641	2002	0	57	0	0.0000%	0	34448	0	0.0000%	0.0000%
Latvia	8,229,764	2001	0	2006	0	0.0000%	0	129793	0	0.0000%	0.0000%
Libya	19,130,702	2002	0	6590	0	0.0000%	0	108273	0	0.0000%	0.0000%
Lithuania	18,215,203	2003	0	1096	0	0.0000%	0	274379	0	0.0000%	0.0000%
Madagascar	4,529,556	2001	0	3241	0	0.0000%	0	21853	0	0.0000%	0.0000%
Malawi	1,704,773	2001	0	2067	0	0.0000%	0	13220	0	0.0000%	0.0000%

Malaysia	95,164,211	2002	0	25713	0	0.0000%	0	335465	0	0.0000%	0.0000%
Mali	4,325,950	2003	0	286	0	0.0000%	0	38165	0	0.0000%	0.0000%
Malta	4,850,810	2003	0	403	0	0.0000%	0	55137	0	0.0000%	0.0000%
Mauritania	962,005	2001	0	696	0	0.0000%	0	7548	0	0.0000%	0.0000%
Moldova	1,479,387	2001	0	168	0	0.0000%	0	26419	0	0.0000%	0.0000%
Mozambique	4,320,574	2003	0	1428	0	0.0000%	0	16145	0	0.0000%	0.0000%
Namibia	3,215,869	2001	0	1634	0	0.0000%	0	28691	0	0.0000%	0.0000%
New Zealand**	79,571,993	2004	0	9865	0	0.0000%	0	364561	0	0.0000%	0.0000%
Nicaragua	4,006,926	2002	0	901	0	0.0000%	0	106785	0	0.0000%	0.0000%
Niger	2,731,418	2003	0	2	0	0.0000%	0	15893	0	0.0000%	0.0000%
Norway	220,853,797	2003	0	25657	0	0.0000%	0	909875	0	0.0000%	0.0000%
Papua New Guinea**	3,182,093	2004	0	2468	0	0.0000%	0	10314	0	0.0000%	0.0000%
Senegal	6,496,372	2003	0	387	0	0.0000%	0	64583	0	0.0000%	0.0000%
Singapore	91,342,283	2003	0	27107	0	0.0000%	0	365665	0	0.0000%	0.0000%
South Africa	114,232,713	2001	0	25750	0	0.0000%	0	524498	0	0.0000%	0.0000%
Sri Lanka	15,745,701	2001	0	2411	0	0.0000%	0	80333	0	0.0000%	0.0000%
Swaziland	1,291,331	2001	0	1518	0	0.0000%	0	9310	0	0.0000%	0.0000%
Sweden***	251,322,253	1989	0	37313	0	0.0000%	0	704337	0	0.0000%	0.0000%
Switzerland**	320,118,227	2004	0	135328	0	0.0000%	0	6150762	0	0.0000%	0.0000%
Togo	1,758,947	2003	0	310	0	0.0000%	0	56344	0	0.0000%	0.0000%
Turkey	240,375,841	2003	0	95904	0	0.0000%	0	1579342	0	0.0000%	0.0000%
Turkmenistan	4,605,930	2002	0	3790	0	0.0000%	0	23031	0	0.0000%	0.0000%
Uganda	6,296,606	2003	0	3910	0	0.0000%	0	45367	0	0.0000%	0.0000%
United States**	10,948,546,920	2004	0	687879	0	0.0000%	0	23112108	0	0.0000%	0.0000%
Uzbekistan	11,401,351	2001	0	559	0	0.0000%	0	31958	0	0.0000%	0.0000%
Vanuatu	234,421	2002	0	155	0	0.0000%	0	5811	0	0.0000%	0.0000%
Azerbaijan	253,126,066	2002	0.26	6926	18	0.0000%	0	11642	0	0.0000%	0.0000%
Central African Republic	724,852,474	2002	5	71	4	0.0000%	5	5216	261	0.0000%	0.0000%
Zambia	4,335,242	2003	1.1	2269	25	0.0006%	0	13560	0	0.0000%	0.0006%
Syrian Arab Republic	19,042,935	2002	1	485	5	0.0000%	1	32167	322	0.0017%	0.0017%
Colombia	1,270,999,941	2002	5	17997	900	0.0001%	8.04	313579	25212	0.0020%	0.0021%
Equatorial Guinea	2,117,683	2002	5	88	4	0.0002%	5	956	48	0.0023%	0.0025%
Congo, Dem. Rep.	80,346,890	2003	10	687	69	0.0001%	15.45	16903	2612	0.0033%	0.0033%

Belize	17,492,785	2003	9.62	108	10	0.0001%	10.84	6859	744	0.0043%	0.0043%
Angola	11,248,467	2002	2	1085	22	0.0002%	2	25340	507	0.0045%	0.0047%
Poland	209,562,862	2003	5.71	15976	912	0.0004%	0.46	2038443	9377	0.0045%	0.0049%
Eritrea	630,841	2002	2	5	0	0.0000%	2	1728	35	0.0055%	0.0055%
Indonesia	172,970,721	2002	5	7102	355	0.0002%	5	192265	9613	0.0056%	0.0058%
Solomon Islands***	361,911	1995	5	15	1	0.0002%	5	451	23	0.0062%	0.0064%
Saudi Arabia	214,748,201	2003	0	407203	0	0.0000%	2.15	708734	15238	0.0071%	0.0071%
India	478,524,211	2001	35	28726	10054	0.0021%	30	116294	34888	0.0073%	0.0094%
Barbados	51,913,662	2003	15	548	82	0.0002%	14.37	36119	5190	0.0100%	0.0102%
Rwanda	1,637,261	2003	0	331	0	0.0000%	2.5	6978	174	0.0107%	0.0107%
Dominican Republic	16,540,849	2003	3	7196	216	0.0013%	3	52457	1574	0.0095%	0.0108%
Tajikistan	1,088,689	2002	5	25	1	0.0001%	5	2354	118	0.0108%	0.0109%
Qatar	17,466,483	2002	4	37272	1491	0.0085%	4	18987	759	0.0043%	0.0129%
Philippines	80,573,850	2003	3	9434	283	0.0004%	3.84	290352	11149	0.0138%	0.0142%
Zimbabwe	9,056,895	2001	2.76	876	24	0.0003%	17.6	7525	1324	0.0146%	0.0149%
Kuwait	35,180,495	2002	4	851	34	0.0001%	4	135221	5409	0.0154%	0.0155%
Mexico	626,079,629	2003	14.67	68359	10028	0.0016%	6.91	1336578	92358	0.0148%	0.0164%
Oman	20,309,494	2002	5	975	49	0.0002%	5	77957	3898	0.0192%	0.0194%
Egypt, Arab Rep.	89,853,927	2002	7.05	20113	1418	0.0016%	6.83	264614	18073	0.0201%	0.0217%
Israel***	103,852,212	1993	7.2	8883	640	0.0006%	7.2	310657	22367	0.0215%	0.0222%
Yemen	9,414,753	2000	5	2458	123	0.0013%	5	39824	1991	0.0211%	0.0225%
Georgia	2,805,174	1999	5	138	7	0.0002%	1	62946	629	0.0224%	0.0227%
Croatia	19,863,052	2001	6.56	1980	130	0.0007%	1.5	311816	4677	0.0235%	0.0242%
Burundi	3,203,346	2002	15	122	18	0.0006%	15	5053	758	0.0237%	0.0242%
Lao PDR	1,749,940	2001	10	325	32	0.0019%	10	3917	392	0.0224%	0.0242%
Sudan	15,375,787	2002	10	3288	329	0.0021%	10	35042	3504	0.0228%	0.0249%
Pakistan	82,323,661	2003	10	14587	1459	0.0018%	13.63	141408	19274	0.0234%	0.0252%
Maldives	715,367	2003	5	0	0	0.0000%	5	3792	190	0.0265%	0.0265%
Argentina	129,595,761	2003	10.08	19363	1952	0.0015%	11.75	290115	34089	0.0263%	0.0278%
Gabon	4,970,816	2002	5	154	8	0.0002%	5	28080	1404	0.0282%	0.0284%
Panama	11,807,500	2001	4.93	5339	263	0.0022%	2.77	112969	3129	0.0265%	0.0287%
Suriname	877,460	2000	11.73	171	20	0.0023%	11.93	2069	247	0.0281%	0.0304%
Iceland	10,512,966	2003	4.65	1116	52	0.0005%	3.61	87818	3170	0.0302%	0.0306%

Bangladesh+	7,682,917	2004	7.45	5988	446	0.0058%	9.63	20284	1953	0.0254%	0.0312%
Bosnia and Herzegovina	8,023,456	2001	0	80	0	0.0000%	3.93	67991	2672	0.0333%	0.0333%
Mauritius	4,542,203	2002	5	107	5	0.0001%	5	30737	1537	0.0338%	0.0340%
Tanzania	10,296,812	2003	10	7769	777	0.0075%	10	27302	2730	0.0265%	0.0341%
St. Kitts and Nevis	345,526	2003	5.47	60	3	0.0009%	6.82	1705	116	0.0337%	0.0346%
Bahrain	4,950,000	2001	5	1477	74	0.0015%	5	34276	1714	0.0346%	0.0361%
Nepal	5,850,821	2003	15	141	21	0.0004%	9.29	22578	2097	0.0358%	0.0362%
Venezuela	95,423,881	2002	9.93	12243	1216	0.0013%	9.2	377693	34748	0.0364%	0.0377%
Peru	53,044,273	2000	12	2619	314	0.0006%	12	164226	19707	0.0372%	0.0377%
Russian Federation	345,588,531	2002	6.5	2049	133	0.0000%	9.81	1360194	133435	0.0386%	0.0386%
Ethiopia(excludes Eritrea)	6,059,204	2002	5	1396	70	0.0012%	8.56	26592	2276	0.0376%	0.0387%
Congo, Rep.	5,547,082	2002	5	2984	149	0.0027%	5	44209	2210	0.0398%	0.0425%
St. Lucia	692,778	2003	8.79	16	1	0.0002%	8.43	3481	293	0.0424%	0.0426%
Kenya	11,185,046	2001	6.86	4083	280	0.0025%	5.29	88020	4656	0.0416%	0.0441%
Vietnam	35,058,217	2002	0.08	10377	8	0.0000%	5.71	277876	15867	0.0453%	0.0453%
Paraguay	6,029,826	2003	8.27	112	9	0.0002%	10.82	25660	2776	0.0460%	0.0462%
Dominica	259,148	2003	6.78	32	2	0.0008%	8.76	1381	121	0.0467%	0.0475%
Morocco	43,726,610	2003	23.74	7284	1729	0.0040%	12.4	154689	19181	0.0439%	0.0478%
Uruguay	12,276,741	2002	11.81	4132	488	0.0040%	11.7	48655	5693	0.0464%	0.0503%
Romania	40,165,462	2001	9.29	4294	399	0.0010%	6.25	334813	20926	0.0521%	0.0531%
El Salvador	14,311,900	2002	0	1148	0	0.0000%	5	152834	7642	0.0534%	0.0534%
Nigeria	46,710,833	2002	20	2523	505	0.0011%	20	123014	24603	0.0527%	0.0538%
Chad	1,045,929	2002	5	84	4	0.0004%	5	11458	573	0.0548%	0.0552%
St. Vincent and the Grenadines	371,481	2003	8.08	2	0	0.0000%	8.6	2397	206	0.0555%	0.0555%
Trinidad and Tobago	10,511,080	2003	8.55	277	24	0.0002%	12.36	47227	5837	0.0555%	0.0558%
Algeria	66,530,136	2003	5	37474	1874	0.0028%	5.24	685167	35903	0.0540%	0.0568%
Guatemala	20,961,083	2002	4.93	3880	191	0.0009%	5	234884	11744	0.0560%	0.0569%
Antigua and Barbuda	756,667	2003	8.7	2250	196	0.0259%	8.91	2662	237	0.0313%	0.0572%
Thailand	115,536,396	2001	10	17031	1703	0.0015%	18.01	373569	67280	0.0582%	0.0597%
Ecuador	24,310,999	2002	5	565	28	0.0001%	5.64	258947	14605	0.0601%	0.0602%
Macedonia, FYR	3,436,961	2001	2	175	4	0.0001%	3.67	57103	2096	0.0610%	0.0611%
Ukraine	42,392,895	2002	1.92	1408	27	0.0001%	7.02	369712	25954	0.0612%	0.0613%
Jordan	9,860,106	2003	0	21344	0	0.0000%	4.18	150587	6295	0.0638%	0.0638%

Ghana	4,977,581	2000	10	1829	183	0.0037%	4.73	66642	3152	0.0633%	0.0670%
Jamaica	7,729,946	2003	7.62	985	75	0.0010%	7.7	66409	5113	0.0662%	0.0671%
China**	72,415,388	2004	5.6	79690	4463	0.0062%	4.41	1125658	49642	0.0686%	0.0747%
Cameroon	3,999,766	2002	5	2587	129	0.0032%	5	65652	3283	0.0821%	0.0853%
Lebanon	18,263,230	2002	5	5856	293	0.0016%	5	311648	15582	0.0853%	0.0869%
Slovenia	27,748,856	2003	0	11550	0	0.0000%	8.9	299343	26642	0.0960%	0.0960%
Tunisia	25,037,330	2003	10.4	70074	7288	0.0291%	13.79	123996	17099	0.0683%	0.0974%
Grenada	439,259	2003	11.37	24	3	0.0006%	12.58	3665	461	0.1050%	0.1056%
Iran, Islamic Rep.	137,143,730	2003	100	7311	7311	0.0053%	54.26	287845	156185	0.1139%	0.1192%
Djibouti	591,995	2002	10	118	12	0.0020%	10	7745	774	0.1308%	0.1328%
Guyana	741,972	2003	12.49	954	119	0.0161%	12.04	7490	902	0.1215%	0.1376%
Slovak Republic	24,184,052	2002	10	5511	551	0.0023%	10	418528	41853	0.1731%	0.1753%
Costa Rica	3,017,260	2002	2.5	1381	35	0.0011%	2.5	212245	5306	0.1759%	0.1770%
Seychelles	617,636	2001	15	11	2	0.0003%	15	7710	1157	0.1873%	0.1875%
Belarus	2,534,778	2002	5	1540	77	0.0030%	8.26	125127	10335	0.4077%	0.4108%
Bolivia	603,344	2002	10	342	34	0.0057%	10	28435	2844	0.4713%	0.4770%
Chile	2,007,772	2002	7	3520	246	0.0123%	6	208517	12511	0.6231%	0.6354%
Brazil	7,530,320	2003	9.51	127830	12157	0.1614%	10.31	922010	95059	1.2624%	1.4238%
Austria	N/A	1990	6.12	24336	1489	N/A	7.13	868037	61891	N/A	N/A
Bhutan	N/A	2002	0	1258	0	N/A	0	208	0	N/A	N/A
Bulgaria	N/A	2003	0	556	0	N/A	0	225257	0	N/A	N/A
Cuba	N/A	2003	1	191	2	N/A	1	12960	130	N/A	N/A
Finland	N/A	1990	N/A	14807	N/A	N/A	2	323201	6464	N/A	N/A
Montserrat	N/A	1999	8.87	6	1	N/A	6.96	27	2	N/A	N/A
Myanmar	N/A	2002	1.5	3841	58	N/A	1.5	50370	756	N/A	N/A

Source: World Development Indicators database

* The GDP (1000 US$) corresponds to the same year as tariff

** Based on latest available GDP data (2003)

*** Based on 1999 data

°GDP data corresponds to same year as tariffs data unless otherwise noted

	MEAN	0.0025%	MEAN	0.0437%
	MEDIAN	0.0001%	MEDIAN	0.0107%
	MAXIMUM	0.1614%	MAXIMUM	1.2624%
	MINIMUM	0.0000%	MINIMUM	0.0000%

MEAN	0.0462%
MEDIAN	0.0109%
MAXIMUM	1.4238%
MINIMUM	0.0000%