Research Synthesis: Tiered pricing

v1.0 researched and written by Elise Erickson, edited by Suerie Moon, last updated June 2018

Introduction

The literature around tiered pricing is considerable.* Papers have been regularly published from the late 1990s through the present, although the disease-focus has shifted from antiretrovirals (ARVs) for HIV in the early/mid 2000s, to hepatitis C in more recent papers.

Search terms

Tiered pricing, differential pricing, price discrimination, market segmentation, Ramsey pricing, equity pricing

Synthesis of the literature

There are two main schools of thought regarding tiered pricing: some advocate for global tiered pricing as an appropriate tool for balancing affordability, access, and innovation (Plahte 2005), while others take a more critical stance and identify possible shortcomings. For example, some present tiered pricing as a suitable solution to affordability and access for vaccines (Berkley 2014), while others point to the limitations of tiered pricing for middle-income countries in particular (Balasegaram 2014).

In examining the pros and cons of tiered pricing, some papers examine whether tiered pricing brings about the lowest prices as compared to other mechanisms such as generic competition or pooled procurement.

Several papers find that generic prices are lower than those offered through tiered pricing, and offer other critiques to tiered pricing, including that decision-making power remains in pharmaceutical company’s hands, or that tiered pricing does not de-link price from R&D financing (Holmes et al. 2010; Moon et al. 2011; Waning et al. 2009). An MSF Access Campaign issue brief lists 2017 ARV prices, and discusses the access concerns around tiered pricing (2017). Papers offering a more critical view of tiered pricing found it to be appropriate only when the market is small, and when competition among generic producers is low (Moon et al. 2011; Waning et al. 2009).

There is a fair amount of literature on the overlap between parallel trade, external reference pricing, and tiered pricing. Some scholars argue that tiered pricing can increase access and incentivize R&D and therefore enhance overall welfare (Danzon 1997; Lichtenberg 2011; Towse et al. 2015). It has been argued that in theory both developing countries and the pharmaceutical company are better off with tiered pricing than with uniform pricing (Scherer and Watal 2002),
but parallel trade, external reference pricing, and price transparency can undermine the welfare benefits of tiered pricing (Danzon and Tows 2003; Ridley 2005; Scherer and Watal 2002). Scherer and Watal (2002) demonstrate this through a hypothetical analysis of AIDS drugs prices. Others are concerned that tiered pricing proposals may undermine TRIPS flexibilities (Williams, Ooms, and Hill 2015).

Beyond the pros and cons of tiered pricing, other papers focus on the manner and extent to which it is implemented, for example, by documenting price differences in hepatitis C treatments or ARVs (Andrieux-Meyer et al. 2015; Hanlon and Zhang 2013; Iyengar et al. 2016). Lopert and colleagues describe methods by which price differentials could be calculated, such as a cost-effectiveness analysis that includes a measure of national wealth (Lopert et al. 2002).

**Research gaps**

- The degree to which medicines prices correlate to different income levels across low, middle and high-income countries
- The determinants of price differentials and country groupings in tiered pricing policies (e.g. the methods by which such prices are established)
- The impact of tiered pricing on the price of first entry generics
- Analysis of the feasibility and/or application of intra-country differential pricing
- Analysis of reference pricing policies and how they impact international differential pricing

**Cited papers with abstracts**


Abstract: Not available

Link: https://www.sciencedirect.com/science/article/pii/S2214109X15001564?via%3Dihub


Abstract: Not available


Abstract: Not available

Abstract: Differential pricing has been considered extensively for its potential to increase access to medicines in low- and middle-income countries. A differential pricing system applied within an economic union (such as the European Union [EU]) comprising high-income and middle-income countries would also increase access and provide stronger incentives to invest in the R&D of innovative medicines. Access to innovative medicines is limited in EU markets with relatively low GDP per capita, indicating that the current pricing system does not promote efficient access. This article looks at how theory could be put into practice suggesting ways to implement a differential pricing system in the EU that can enhance overall welfare.


Abstract: This paper reviews the economic case for patents and the potential for differential pricing to increase affordability of on-patent drugs in developing countries while preserving incentives for innovation. Differential pricing, based on Ramsey pricing principles, is the second best efficient way of paying for the global joint costs of pharmaceutical R&D. Assuming demand elasticities are related to income, it would also be consistent with standard norms of equity. To achieve appropriate and sustainable price differences will require either that higher-income countries forego trying to “import” low drug prices from low-income countries, through parallel trade and external referencing, or that such practices become less feasible. The most promising approach that would prevent both parallel trade and external referencing is for payers/purchasers on behalf of developing countries to negotiate contracts with companies that include confidential rebates. With confidential rebates, final transactions prices to purchasers can differ across markets while manufacturers sell to distributors at uniform prices, thus eliminating opportunities for parallel trade and external referencing. The option of compulsory licensing of patented products to generic manufacturers may be important if they truly have lower production costs or originators charge prices above marginal cost, despite market separation. However, given the risks inherent in compulsory licensing, it seems best to first try the approach of strengthening market separation, to enable originator firms to maintain differential pricing. With assured market separation, originators may offer prices comparable to the prices that a local generic firm would charge, which eliminates the need for compulsory licensing. Differential pricing could go a long way to improve LDC access to drugs that have a high income market. However, other subsidy mechanisms will be needed to promote R&D for drugs that have no high income market.

Link: https://link.springer.com/article/10.1023/A%3A1025384819575

Abstract:

Background Few data are available on what donors, governments and other implementing organisations pay for the medicines they procure. To partly address this shortcoming, we analyse transactions of pharmaceuticals on the WHO's essential medicines list. Our objective was to identify the determinants of prices paid for these drugs.

Methods We used data from the 2008 version of the International Drug Price Indicator Guide. We normalised transactions by representing their value as a 'price per daily dose'. We used a mixed-effects regression model to quantify the impact of observable characteristics on prices paid.

Results We present evidence of first-degree price discrimination in the market for essential medicines. We find that as a country's per capita wealth doubles, prices paid for the same pharmaceutical increase by 33%.

Conclusions These data indicate that purchasing agents from wealthier countries pay more for essential medicines, all factors constant. This behaviour is not a form of development assistance for health but rather is indicative of inefficient markets in which buyers' lack of information enables suppliers to charge higher prices than they could otherwise.

Link: https://academic.oup.com/inthealth/article/5/1/58/699097


Abstract:

Context: One of the biggest hurdles to the rapid scale-up of antiretroviral therapy in the developing world was the price of antiretroviral drugs (ARVs). Modification of an existing US Food and Drug Administration (FDA) process to expedite review and approval of generic ARVs quickly resulted in a large number of FDA–tentatively approved ARVs available for use by the US President's Emergency Plan for AIDS Relief (PEPFAR).

Objective: To evaluate the uptake of generic ARVs among PEPFAR-supported programs in Guyana, Haiti, Vietnam, and 13 countries in Africa, and changes over time in ARV use and costs. Design, Setting, and Participants: An annual survey from 2005 to 2008 of ARVs purchased in 16 countries by PEPFAR implementing and procurement partners (organizations using PEPFAR funding to purchase ARVs).
Main Outcome Measures: Drug expenditures, ARV types and volumes (assessed per pack, a 1-month supply), proportion of generic procurement across years and countries, and cost savings from generic procurement.

Results: ARV expenditures increased from $116.8 million (2005) to $202.2 million (2008); and procurement increased from 6.2 million to 22.1 million monthly packs. The proportion spent on generic ARVs increased from 9.17% (95% confidence interval [CI], 9.17%-9.18%) in 2005 to 76.41% (95% CI, 76.41%-76.42%) in 2008 (P < .001), and the proportion of generic packs procured increased from 14.8% (95% CI, 14.79%-14.84%) in 2005 to 89.33% (95% CI, 89.32%-89.34%) in 2008 (P < .001). In 2008, there were 8 PEPFAR programs that procured at least 90.0% of ARV packs in generic form; South Africa had the lowest generic procurement (24.7%; 95% CI, 24.6%-24.8%). Procurement of generic fixed-dose combinations increased from 33.3% (95% CI, 33.24%-33.43%) in 2005 to 42.73% (95% CI, 42.71%-42.75%) in 2008. Estimated yearly savings generated through generic ARV use were $8 108 444 in 2005, $24 940 014 in 2006, $75 645 816 in 2007, and $214 648 982 in 2008, a total estimated savings of $323 343 256.

Conclusion: Among PEPFAR-supported programs in 16 countries, availability of generic ARVs was associated with increased ARV procurement and substantial estimated cost savings.

Link: https://jamanetwork.com/journals/jama/fullarticle/186252


Abstract:

Introduction: New hepatitis C virus (HCV) medicines have markedly improved treatment efficacy and regimen tolerability. However, their high prices have limited access, prompting wide debate about fair and affordable prices. This study systematically compared the price and affordability of sofosbuvir and ledipasvir/sofosbuvir across 30 countries to assess affordability to health systems and patients.

Methods and Findings: Published 2015 ex-factory prices for a 12-wk course of treatment were provided by the Pharma Price Information (PPI) service of the Austrian public health institute Gesundheit Österreich GmbH or were obtained from national government or drug reimbursement authorities and recent press releases, where necessary. Prices in Organisation for Economic Co-operation and Development (OECD) member countries and select low- and middle-income countries were converted to US dollars using period average exchange rates and were adjusted for purchasing power parity (PPP). We analysed prices compared to national economic performance and estimated market size and the cost of these drugs in terms of countries’ annual total pharmaceutical expenditure (TPE) and in terms of the duration of time an individual would need to work to pay for treatment out of pocket. Patient affordability was calculated using 2014 OECD average annual wages, supplemented with International Labour
Organization median wage data where necessary. All data were compiled between 17 July 2015 and 25 January 2016. For the base case analysis, we assumed a 23% rebate/discount on the published price in all countries, except for countries with special pricing arrangements or generic licensing agreements. The median nominal ex-factory price of a 12-wk course of sofosbuvir across 26 OECD countries was US$42,017, ranging from US$37,729 in Japan to US$64,680 in the US. Central and Eastern European countries had higher PPP-adjusted prices than other countries: prices of sofosbuvir in Poland and Turkey (PPP$101,063 and PPP$70,331) and of ledipasvir/sofosbuvir in Poland (PPP$118,754) were at least 1.09 and 1.63 times higher, respectively than in the US (PPP$64,680 and PPP$72,765). Based on PPP-adjusted TPE and without the cost of ribavirin and other treatment costs, treating the entire HCV viraemic population with these regimens at the PPP-adjusted prices with a 23% price reduction would amount to at least one-tenth of current TPE across the countries included in this study, ranging from 10.5% of TPE in the Netherlands to 190.5% of TPE in Poland. In 12 countries, the price of a course of sofosbuvir without other costs was equivalent to 1 y or more of the average annual wage of individuals, ranging from 0.21 y in Egypt to 5.28 y in Turkey. This analysis relies on the accuracy of price information and infection prevalence estimates. It does not include the costs of diagnostic testing, supplementary treatments, treatment for patients with reinfection or cirrhosis, or associated health service costs.

Conclusions: Current prices of these medicines are variable and unaffordable globally. These prices threaten the sustainability of health systems in many countries and prevent large-scale provision of treatment. Stakeholders should implement a fairer pricing framework to deliver lower prices that take account of affordability. Without lower prices, countries are unlikely to be able to increase investment to minimise the burden of hepatitis C.

Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4886962/#pmed.1002032.ref060


Abstract: Drug prices vary considerably across and within countries. On average, pharmaceutical companies charge lower prices in low-income countries than in industrialized nations. Manufacturers’ ability to price products differently for different markets—a practice known as price discrimination—increases their profits overall. But it is also likely to result in greater investment in research and development, and therefore in more new drugs on the market. Although reducing price discrimination in order to cut costs might benefit consumers in the short run, it would harm them in the long run by reducing the number of new drugs developed.


Abstract: Not available

Abstract:

Background: Tiered pricing - the concept of selling drugs and vaccines in developing countries at prices systematically lower than in industrialized countries - has received widespread support from industry, policymakers, civil society, and academics as a way to improve access to medicines for the poor. We carried out case studies based on a review of international drug price developments for antiretrovirals, artemisinin combination therapies, drug-resistant tuberculosis medicines, liposomal amphotericin B (for visceral leishmaniasis), and pneumococcal vaccines.

Discussion: We found several critical shortcomings to tiered pricing: it is inferior to competition for achieving the lowest sustainable prices; it often involves arbitrary divisions between markets and/or countries, which can lead to very high prices for middle-income markets; and it leaves a disproportionate amount of decision-making power in the hands of sellers vis-à-vis consumers. In many developing countries, resources are often stretched so tight that affordability can only be approached by selling medicines at or near the cost of production. Policies that “de-link” the financing of R&D from the price of medicines merit further attention, since they can reward innovation while exploiting robust competition in production to generate the lowest sustainable prices. However, in special cases - such as when market volumes are very small or multi-source production capacity is lacking - tiered pricing may offer the only practical option to meet short-term needs for access to a product. In such cases, steps should be taken to ensure affordability and availability in the longer-term.

Summary: To ensure access to medicines for populations in need, alternate strategies should be explored that harness the power of competition, avoid arbitrary market segmentation, and/or recognize government responsibilities. Competition should generally be the default option for achieving affordability, as it has proven superior to tiered pricing for reliably achieving the lowest sustainable prices.


Abstract: Not Available

Abstract: This article explores the tension between granting patent protection under the TRIPS Agreements and the availability of medicines at affordable prices to developing countries. A crucial consideration under the TRIPS compulsory licensing option is the ‘adequate remuneration’ paid. A theoretical and empirical analysis shows that the royalties set under past compulsory licenses have been much lower than those that would be established under the ‘foregone profits’ standard of US patent law. To respect comparative advantage in the supply of licensed drugs, the TRIPS language requiring that compulsory licensing be predominantly for domestic supply needs clarification. The multinational drug pricing strategy that best combines equity with coverage of R&D costs is a variant of Ramsey pricing, under which prices are much lower in nations with low ability to pay and/or high price elasticities of demand than in wealthy nations. Statistical evidence on the prices of 15 AIDS drugs in 18 low- and medium-income nations reveals that tendencies toward Ramsey pricing were at best weak. To encourage Ramsey pricing, parallel exports should be barred from low-income nations, and price controls should not benchmark the prices charged in low-income nations. Outright donation can also enhance the supply of drugs to low-income nations. A quantitative analysis shows that when the marginal cost of production is low relative to ‘inventoriable’ average cost, donations can actually enhance a drug producer’s after-tax profits under US tax laws. Minor tax law changes to enhance donation incentives are suggested.

Link: https://academic.oup.com/jiel/article/5/4/913/948449


Abstract: Differential pricing has been considered extensively for its potential to increase access to medicines in low- and middle-income countries. A differential pricing system applied within an economic union (such as the European Union [EU]) comprising high-income and middle-income countries would also increase access and provide stronger incentives to invest in the R&D of innovative medicines. Access to innovative medicines is limited in EU markets with relatively low GDP per capita, indicating that the current pricing system does not promote efficient access. This article looks at how theory could be put into practice suggesting ways to implement a differential pricing system in the EU that can enhance overall welfare.

Link: http://www.tandfonline.com/doi/abs/10.1080/13571516.2015.1045747


Abstract:

Objective: To estimate the impact of global strategies, such as pooled procurement arrangements, third-party price negotiation and differential pricing, on reducing the price of antiretrovirals (ARVs), which currently hinders universal access to HIV/AIDS treatment.
Methods: We estimated the impact of global strategies to reduce ARV prices using data on 7253 procurement transactions (July 2002–October 2007) from databases hosted by WHO and the Global Fund to Fight AIDS, Tuberculosis and Malaria.

Findings: For 19 of 24 ARV dosage forms, we detected no association between price and volume purchased. For the other five ARVs, high-volume purchases were 4–21% less expensive than medium- or low-volume purchases. Nine of 13 generic ARVs were priced 6–36% lower when purchased under the Clinton Foundation HIV/AIDS Initiative (CHAI). Fifteen of 18 branded ARVs were priced 23–498% higher for differentially priced purchases compared with non-CHAI generic purchases. However, two branded, differentially priced ARVs were priced 63% and 73% lower, respectively, than generic non-CHAI equivalents.

Conclusion: Large purchase volumes did not necessarily result in lower ARV prices. Although current plans for pooled procurement will further increase purchase volumes, savings are uncertain and should be balanced against programmatic costs. Third-party negotiation by CHAI resulted in lower generic ARV prices. Generics were less expensive than differentially priced branded ARVs, except where little generic competition exists. Alternative strategies for reducing ARV prices, such as streamlining financial management systems, improving demand forecasting and removing barriers to generics, should be explored.

Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2704041/


Abstract: Recently, there has been a policy momentum toward creating a global tiered pricing framework, which would provide differentiated prices for medicines globally, based on each country’s capacity to pay. We studied the most influential proposals for a tiered pricing framework since the 1995 World Trade Organization’s Agreement on Trade-Related Aspects of Intellectual Property Rights. We synthesized 6 critical questions to be addressed for a global framework to function and explored the many challenges of implementation. Although we acknowledge that there is the potential for an exceptional global commitment that would benefit both producers and those in developing countries in need of wider access to medicines, our greatest concern is to ensure that a global framework does not price out the poor from pharmaceutical markets nor threaten current flexibilities within the international patent regime.


* For the purposes of this review, we have established three categories to describe the state of the literature: thin, considerable, and rich.

• Thin: There are relatively few papers and/or there are not many recent papers and/or there are clear gaps
• Considerable: There are several papers and/or there are a handful of recent papers and/or there are some clear gaps
• Rich: There is a wealth of papers on the topic and/or papers continue to be published that address this issue area and/or there are less obvious gaps

ABOUT US
The Knowledge Network on Innovation and Access to Medicines is a project of the Global Health Centre at the Graduate Institute, Geneva. The project seeks to maximize the contributions of research and analysis to producing public health needs-driven innovation and globally-equitable access to medicines.

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Scope: While many of these issues can touch a variety of sectors, this review focuses on medicines. The term medicines is used to cover the category of health technologies, including drugs, biologics (including vaccines), and diagnostic devices.

Disclaimer: The research syntheses aim to provide a concise, comprehensive overview of the current state of research on a specific topic. They seek to cover the main studies in the academic and grey literature, but are not systematic reviews capturing all published studies on a topic. As with any research synthesis, they also reflect the judgments of the researchers. The length and detail vary by topic. Each synthesis will undergo open peer review, and be updated periodically based on feedback received on important missing studies and/or new research. Selected topics focus on national and international-level policies, while recognizing that other determinants of access operate at sub-national level. Work is ongoing on additional topics. We welcome suggestions on the current syntheses and/or on new topics to cover.