

School/Department:	Rotterdam School of Management Department of Strategic Management & Entrepreneurship Burgemeester Oudlaan 50 3062 PA Rotterdam The Netherlands
Project Title:	Pricing of Essential Medicines: Selection and Heterogeneity in Global Impact
Abstract:	<p>Access to essential medicines is viewed as a human right (Hogerzeil 2006, Syrett 2019, Perehudoff et al. 2019). Securing access to a basket of essential medicines is also central to achieving universal health coverage—an important Sustainable Development Goal 3.8—which many LMICs are striving but struggling to reach (Wirtz et al. 2017). These countries face significant challenges in delivering healthcare in general, and, specifically, in ensuring access to essential medicines that meet the basic health needs of their populations. Medicines account for the largest fraction of out-of-pocket expenditure on healthcare, which is 40 percent of total health expenditure, on average, in LMICs (WHO, 2021). Rising medicine prices pose a significant challenge (WHO 2021). To help member countries ensure affordable access to essential medicines, since 1977 the WHO has periodically compiled lists of essential medicines (WHO 1977). These lists are designed to identify a common set of medicines, which member states can adapt to suit their local healthcare priorities. The medicines in WHO’s model lists are continuously revised, incorporating new pharmacological and pharmaceutical knowledge (WHO 1977). The WHO model lists significantly influence country-specific policies because WHO’s guidance and advice are considered valuable by its member countries (Chorev 2012, Legge 2012, Swaminathan 2019). The WHO model lists are relevant for not only LMICs but also rich countries (Duong et al. 2015, Taglione et al. 2017, Morgan et al. 2017).</p> <p>A recent analysis indicates that currently 137 countries use the model list as part of their national health policy to determine medicine selection, public sector procurement and distribution, public education, insurance reimbursement, and donations and international aid (Hogerzeil 2004, Persaud et al. 2019, Richards et al. 2020). The model lists also encourage member countries to regulate their prices and improve affordability. The essential medicine list has played an important role in addressing epidemics such as HIV/AIDS, infectious diseases such as malaria and tuberculosis, antimicrobial resistance, and chronic diseases such as diabetes. The successful diffusion of the model lists to countries around the world has led to the creation of a similar list for children (up to the age of 12). Yet, although four decades have passed and 21 model lists for adults and seven lists for children have been published, the overall impact of</p>

	<p>this initiative across several countries remains significantly underexplored (see, for some exceptions that focus on specific countries or diseases, Attaran 2004, Lessing et al. 2013, Wong et al. 2019, Yang et al. 2013).</p> <p>The WHO's model lists of essential medicines have received strikingly opposing reactions from various stakeholders. In a review marking the 25-year long history of the initiative, Laing et al. (2003) note that its proponents describe the initiative as “a peaceful revolution in international public health” and “a brilliant symbolic strategy on the part of WHO for mobilizing opinion and resources.” Consistent with this view, the model list has been adopted by more than 50 non-governmental organizations and several governments in prioritizing their activities in the developing world. On the other hand, critics, such as the International Federation of Pharmaceutical Manufacturers Associations (IFPMA), caution that the medical and economic arguments for the essential medicine list are fallacious and that it could undermine medical care and health standards (Laing et al. 2003: 1726). In its statement delivered to the expert committee on the selection and use of essential medicines in 2017, IFPMA circumscribed the role of the WHO model list as a guide for countries and procurement agencies in their decisions rather than a tool for improving access and affordability to essential medicines. The pharmaceutical manufacturer groups from developed countries have also maintained their opposition to the initiative being extended to the developed countries, characterizing it as a serious threat to delivering effective healthcare (Laing et al. 2003: 1727). Bloom (2011) notes that the pharmaceutical industry “resents the WHO's essential medicines list, a register of minimum medicine needs for every health-care system, as this stresses the usefulness of inexpensive, off-patent drugs.”</p> <p>A separate literature examining access to medicines in LMICs focuses on newer medicines still under patent protection (e.g., Berndt and Cockburn 2014, Kyle 2007). This literature argues that price regulations targeted at making essential medicines more affordable and accessible delay the launch of newer medicines in these countries. For example, India's efforts to improve access and affordability of essential medicines by introducing price ceiling regulation on 350 medicines in 2013 led some firms to coordinate on raising the prices of nonessential dosages of the same medicine as well as shifting production away from the regulated dosages to unregulated dosages (Bhaskarabhatla 2018). Therefore, it is important to examine the impact of the WHO model list, which promotes inexpensive, off-patent medicines, taking into account the strategic actions firms undertake to minimize the potential negative impacts on their profitability. Since pharmaceutical firms pay significant attention to expanding the sale of their off-patent medicines (Frank and Salkever 1992), how these firms respond to their medicines being added to the list becomes particularly significant.</p> <p>In the context of these contrasting views about the merits of the WHO's model list, the project will go beyond the qualitative narratives of the functioning of the World Health Organization (Chorev 2012, Hanrieder 2015a, 2015b, Hanrieder and Kreuder-Sonnen 2014) and develop</p>
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	<p>systematic evidence concerning its goal to make essential medicines more accessible and affordable to those living in LMICs. Specifically, the PhD candidate will examine the following three objectives:</p> <p>Objective 1 “Selection”: Identifying the determinants of medicine selection into and deletion from the WHO model list of essential medicines and the diffusion of model lists across countries.</p> <p>Objective 2 “Global Impact”: Assessing the impact of selection into the list on the affordability (prices) and access (quantities) to medicines in response to selection.</p> <p>Objective 3 “Heterogeneity in Impact”: Identifying the determinants of deviation of country-specific lists from the WHO model list, assessing the impact of country-specific deviations on affordability and access to medicines, and on health outcomes, and examining the heterogeneity in firm responses to medicines joining the lists.</p> <p>By focusing on a program that the WHO considers the most important and enduring within the organization (often described as the “best-selling product” of the WHO), and employing the latest advances in differences-in-differences estimation methods (e.g., de Chaisemartin and D’Haultfoeuille 2018, 2019, 2020), the candidate will evaluate whether the WHO model lists of essential medicines promote or undermine access and affordability of essential medicines. By integrating global data on medicine prices and sales with WHO model lists revised biennially, along with the details of the applications submitted to the WHO expert committees on the selection and use of essential medicines, the country-specific lists of essential medicines for 137 countries, and country-level burden of disease data, the research will deliver evidence on the effectiveness of the WHO program in promoting access to medicines and its impact. Although these data exist, they remain independent and some of the data from the WHO are yet to be compiled and shared in a systematic way. The WHO has made significant efforts in this direction in recent years, developing a list of additions and deletions to the WHO model lists over the years and making the technical reports on the expert committees’ decisions public.</p> <p>An initial analysis indicates that the WHO model list accounts for 20 percent of the overall list of medicines (Bhaskarabhatla 2018, Persaud et al. 2019). As shown in Figure 1, the number of medicines on the WHO’s list more than doubled since its inception. Several medicines entered and exited the WHO list and other medicines are rejected allowing for robust comparison. There is also considerable cross-country variation in the adoption and diffusion of these medicines. Collectively, data on these medicines will allow the candidate to develop reliable and independent evidence for realizing the objectives of this proposal.</p> <p>The candidate will employ suitable methodologies to examine the pricing of essential medicines. Previous research examined the impact of price ceiling regulation on essential medicines in India (Bhaskarabhatla et al. 2017, 2021). Using the examples of widely used medicines in India such as</p>
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metformin and paracetamol where some dosages (500mg in both medicines) are regulated and other dosages are surprisingly left unregulated citing the WHO model list as a justification, previous research documents how firms coordinated effectively to push up the ceiling price and shift production away from the regulated to unregulated medicines (see Figure 2). These studies form the basis for examining the pricing of essential medicines globally.

Figures and Tables

Figure 1. Number of essential medicines in WHO's Model List, 1977-2017

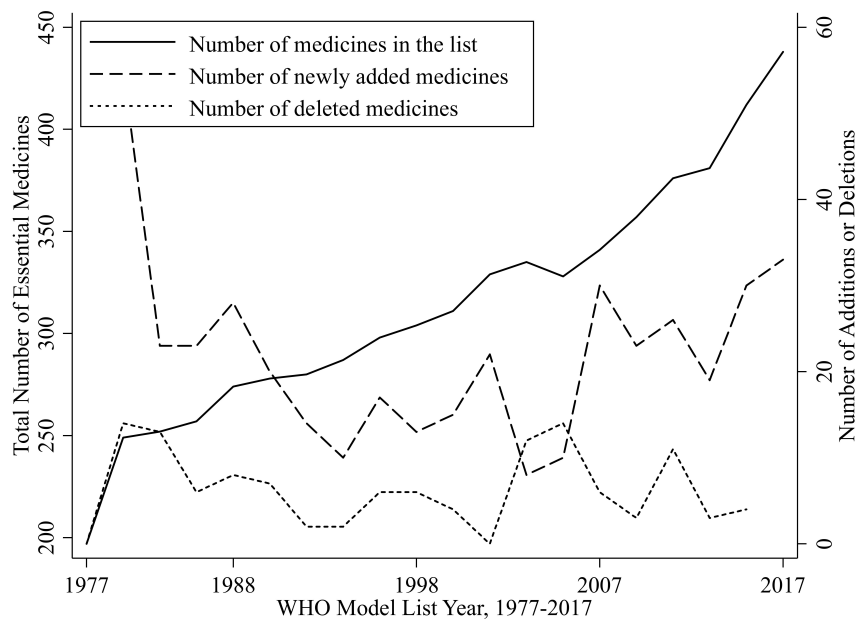
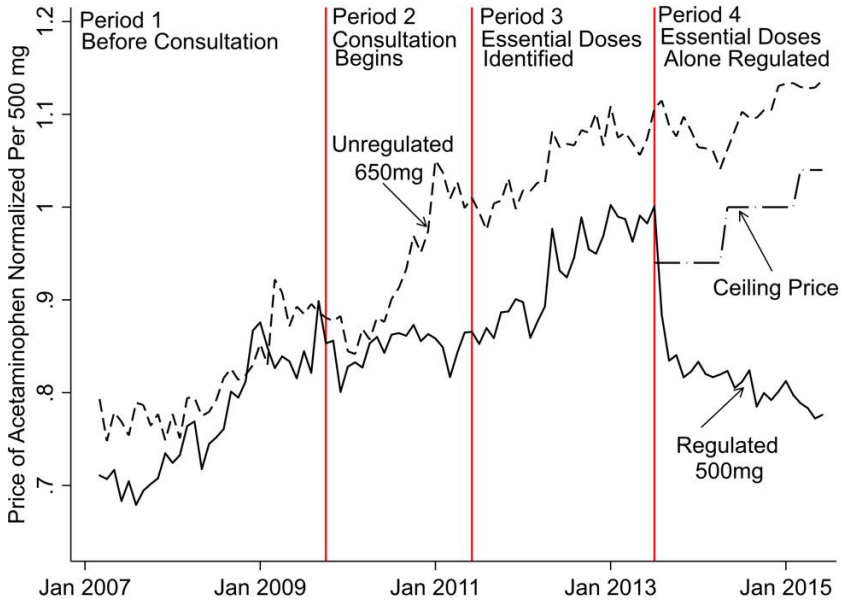


Figure 2. Impact of Partial Regulation of Essential Medicines by Dosage in India

	 <p>Price of Acetaminophen Normalized Per 500 mg</p> <p>Period 1 Before Consultation</p> <p>Period 2 Consultation Begins</p> <p>Period 3 Essential Doses Identified</p> <p>Period 4 Essential Doses Alone Regulated</p> <p>Unregulated 650mg</p> <p>Ceiling Price</p> <p>Regulated 500mg</p> <p>Jan 2007 Jan 2009 Jan 2011 Jan 2013 Jan 2015</p>
<p>Requirements of candidate:</p>	<p>Background: Economics, Management, Strategic Management</p> <p>Master's degree: Yes</p> <p>EUR requirement: See Table Information about English requirements</p> <p>(If the faculty does not have special English requirements, general requirement from Admission Office is applied)</p>
<p>Supervisor information:</p>	<p>Promoter: Prof. dr. Justin Jansen</p> <p>Email address: jjansen@rsm.nl</p> <p>Personal website: https://www.rsm.nl/people/justin-jansen/</p> <p>Recent publication list:</p> <ul style="list-style-type: none"> • T.S. Tarba, J.J.P. Jansen, T.J.M. Mom, S. Raisch, & T. Lawton (2020). Microfoundational Perspective of Organizational Ambidexterity: Critical Review and Research Directions. <i>Long Range Planning</i>, 53(6), [10248]. • R.R. Blagoeva, K. Kavusan, & J.J.P. Jansen (2020). Who Violates Expectations When? How Firms' Growth and Dividend Reputations affect Investors' Reactions to Acquisitions. <i>Strategic Management Journal</i>, 41(9): 1712-1742. doi.org/10.1002/smj.3155. • A.S. Alexiev, J.J.P. Jansen, H.W. Volberda & Frans, A.J. Van Den Bosch (2020). Contextualizing Senior Executive Advice

	<p>Seeking: The Role of Decision Process Comprehensiveness and Empowerment Climate. <i>Organization Studies</i>, 41(4): 471-497. doi.org/10.1177/0170840619830128.</p> <ul style="list-style-type: none"> • R.R. Blagoeva, T.J.M. Mom, J.J.P. Jansen & G. George (2020). Problem-solving or Self-Enhancement? A Power Perspective on how CEOs affect R&D search in the face of inconsistent feedback. <i>Academy of Management Journal</i>, 63(2): 332-355. doi.org/10.5465/amj.2017.0999. • S.P.L. Fourne, N. Rosenbusch, M.L.M. Heyden & J.J.P. Jansen (2019). Structural and Contextual Approaches to Ambidexterity: A Meta-Analysis of Organizational and Environmental Contingencies. <i>European Management Journal</i>, 37(5): 564-576. doi.org/10.1016/j.emj.2019.04.002. • T.J.M. Mom, Y.Y. Chang, M.N. Cholakova & J.J.P. Jansen (2019). A Multilevel Integrated Framework of Firm HR Practices, Individual Ambidexterity and Organizational Ambidexterity. <i>Journal of Management</i>, 45(7): 3009-3034. doi.org/10.1177/0149206318776775. • H. Fasaei, M.P. Tempelaar & J.J.P. Jansen (2018). Firm Reputation and investment decisions: The contingency role of securities analysts' recommendations. <i>Long Range Planning</i>, 51(5): 680-692. doi: 10.1016/j.lrp.2017.07.010. • Garcia-Granero, A. Fernandez-Mesa & J.J.P. Jansen (2018). Top Management Team Diversity and Ambidexterity: The Contingent Role of Shared Responsibility and CEO Cognitive Trust. <i>Long Range Planning</i>, 51(6): 881-893. doi.org/10.1016/j.lrp.2017.11.001. • P. Wang, V.J.A. van de Vrande & J.J.P. Jansen (2017). Balancing Exploration and Exploitation in Inventions: Quality of Inventions and Team Composition. <i>Research Policy</i>, 46(10): 1836-1850. doi: 10.1016/j.respol.2017.09.002. • S. Ahmadi, S. Khanagha, L. Berchicci & J.J.P. Jansen (2017). Are Managers Motivated to Explore in the Face of a New Technological Change? The Role of Regulatory Focus, Fit, and Complexity of Decision-Making. <i>Journal of Management Studies</i>, 54(2): 209-237. doi: 10.1111/joms.12257. • J.J.P. Jansen, K. Kostopoulos, O. Mihalache & A. Papalexandris (2016). A Socio-Psychological Perspective on Team Ambidexterity. <i>Journal of Management Studies</i>, 53(6): 939-965. doi: 10.1111/joms.12183. <p>Co-Promoter: Dr. Mirko Benischke Email address: benischke@rsm.nl Personal website: https://www.rsm.nl/people/mirko-benischke/ Recent publication list, preferably last 3-5 years (1-2 pages):</p> <ul style="list-style-type: none"> • M.H. Benischke, O. Guldiken, J.P. Doh, G.P. Martin & Y. Zhang (2021). Political Risk, Uncertainty, And Behavioral
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	<p>Agency in Multinational Establishment Mode: The Role of CEO Equity Wealth at Risk. <i>Journal of World Business</i>, accepted.</p> <ul style="list-style-type: none"> • M. Mallon, O. Guldiken, M.H. Benischke, D. Feng & T. Nguyen (2021). Is there an Advantage of Emergingness? A Politico-Regulatory Perspective. <i>International Business Review</i>, accepted. • G. Ljubownikow, M.H. Benischke & A. Nadolska (2021). Multimarket Contact and Target Size: The Moderating Effect of Market Concentration and Location. <i>Strategic Organization</i>, in press. doi: https://doi.org/10.1177/14761270211009745. • M.H. Benischke, G.P. Martin, L.R. Gomez-Mejia & G. Ljubownikow (2020). The Effect of CEO Incentives on Deviations from Institutional Norms in Foreign Market Expansion Decisions: Behavioral Agency and Cross-Border Acquisitions. <i>Human Resource Management</i>, 59(5): 463-482. doi.org/10.1002/hrm.22006. • J.P. Doh, P. Tashman & M.H. Benischke (2019). Adapting to Grand Environmental Challenges through Collective Entrepreneurship. <i>Academy of Management Perspectives</i>, 33(4): 450-468. doi: 10.5465/amp.2017.0056. • M.H. Benischke, G.P. Martin & L. Glaser (2019). CEO Equity Risk Bearing and Strategic Risk Taking: The Moderating Effect of CEO Personality. <i>Strategic Management Journal</i>, 40(1): 153-177. doi: 10.1002/smj.2974. • C. Tupper, O. Guldiken & M.H. Benischke (2018). Capital Market Liability of Foreignness of IPO Firms. <i>Journal of World Business</i>, 53(4): 555-567. doi: 10.1016/j.jwb.2018.03.001. • S.H. Ang, M.H. Benischke & A.W.L. Hooi (2018). Frequency of International Expansion through High Control Expansion Modes and Interlocked Directorships. <i>Journal of World Business</i>, 53(4): 493-503. doi: 10.1016/j.jwb.2018.02.003. • P.J. Buckley, J.P. Doh & M.H. Benischke (2017). Towards a Renaissance in International Business Research? Big Questions, Grand Challenges, and the Future of IB Scholarship. <i>Journal of International Business Studies</i>, 48(9): 1045-1064. doi: 10.1057/s41267-017-0102-z. • S.H. Ang, M.H. Benischke & J.P. Doh (2015). The Interactions of Institutions on Foreign Market Entry Mode. <i>Strategic Management Journal</i>, 36(10): 1536-1553. doi: 10.1002/smj.2295. <p>Co-Promoter: Dr. Ajay Bhaskarabhatla (Erasmus School of Economics, Department of Applied Economics) Email address: bhaskarabhatla@ese.eur.nl Personal website: https://www.erim.eur.nl/people/ajay-bhaskarabhatla/ Recent publication list, preferably last 3-5 years (1-2 pages):</p>
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	<ul style="list-style-type: none"> • Bhaskarabhatla, A., Anurag, P., Chatterjee, C., & Pennings, E. (2021). How Does Regulation Impact Strategic Repositioning by Firms Across Submarkets? Evidence from the Indian Pharmaceutical Industry. <i>Strategy Science</i>. Forthcoming. • Bhaskarabhatla, A., Cabral, L., Hegde, D., & Peeters, T. (2021). Are Inventors or Firms the Engines of Innovation?. <i>Management Science</i>, 67(6), 3899-3920. • Adbi, A., Bhaskarabhatla, A., & Chatterjee, C. (2020). Stakeholder orientation and market impact: Evidence from India. <i>Journal of Business Ethics</i>, 161(2), 479-496. • Bhaskarabhatla, A. (2020). Maximum Resale Price Maintenance and Retailer Cartel Profits: Evidence from the Indian Pharmaceutical Industry. <i>Antitrust Law Journal</i>, 83(1), 41-73. • Bhaskarabhatla, A. (2018). <i>Regulating Pharmaceutical Prices in India</i>. Springer. • Bhaskarabhatla, A., Chatterjee, C., Anurag, P., & Pennings, E. (2017). Mitigating regulatory impact: the case of partial price controls on metformin in India. <i>Health policy and planning</i>, 32(2), 194-204. • Bhaskarabhatla, A. (2016). The moderating role of submarket dynamics on the product customization–firm survival relationship. <i>Organization Science</i>, 27(4), 1049-1064.
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English requirements: Please refer to Erasmus University China Center official website for your information www.eur.nl/eucc

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