

Evidence that regulating pharmaceutical prices negatively affects R&D and access to new medicines.

Description

Evidence that regulating pharmaceutical prices negatively affects R&D and access to new medicines.

Yanick Labrie, MSc

Canadian Health Policy, June 2020. ISSN 2562-9492

Abstract

The Canadian federal government will be implementing changes to the guidelines used by the Patented Medicines Prices Review Board (PMPRB) on January 1, 2021. The amendments aim at imposing stricter price controls for patented medicines marketed in Canada. In response to an opinion piece arguing that tightening price controls in Canada would keep life-saving new drugs out of the country, the Executive Director of the PMPRB stated that there is no evidence of a link between pricing, research and development, and access to medicines. The objective of this paper is to test the veracity of that statement. A systematic review of published academic studies from January 1995 to May 2020 was conducted using the following databases: Academic Search Complete, EconLit, JSTOR, PubMed and Web of Science. Additional searching was performed with the aid of Google Scholar. Only empirical studies performed on populations of developed countries were considered eligible. Reference lists of papers identified were screened to track additional relevant publications. A total of 921 studies were retrieved after the initial search. Out of this retrieval, 34 articles were found eligible based upon study design, outcome measures and inclusion criteria. Searching through the reference lists of the retrieved articles yielded 15 additional articles. A total of 49 studies were considered to have met the inclusion criteria and relevant to be included in this review. Forty-four of the 49 studies reviewed showed a significant negative relationship between drug price controls and investment in pharmaceutical R&D or access to innovative drugs. The claim that there is no link between price and R&D or access to medicines is not supported by the evidence from the scientific literature.

References

1. Abbott, Thomas A. and John A. Vernon, "The Cost of US Pharmaceutical Price Regulation: A Financial Simulation Model of R&D Decisions", *Managerial and Decision Economics*, Vol. 28, No. 4-5, 2007, pp. 293-306.
2. Atella, Vincenzo, Jay Bhattacharya and Lorenzo Carbonari, "Pharmaceutical Price Controls and Minimum Efficacy Regulation: Evidence from the United States and Italy", *Health Services Research*, Vol. 47, No. 1, 2012, pp. 293-308.
3. Bardey, D., A. Bommier and B. Jullien, "Retail Price Regulation and Innovation: Reference Pricing in

-
- the Pharmaceutical Industry", *Journal of Health Economics*, Vol. 29, No. 2, 2010, pp. 303-316.
4. Civan, Abdulkadir & Michael T. Maloney, "The Determinants of Pharmaceutical Research and Development Investments", *Contributions to Economic Analysis & Policy*, Vol. 5, No. 1, 2006, Article 28.
5. Civan, Abdulkadir and Michael T. Maloney, "The Effect of Price on Pharmaceutical R&D", *The B.E. Journal of Economic Analysis & Policy*, Vol. 9, No. 1, 2009, Art. 15.
6. Cockburn, Iain M., Jean O. Lanjouw and Mark Schankerman, "Patents and the Global Diffusion of New Drugs", *American Economic Review*, Vol. 106, No. 1, 2016, pp. 136-164.
7. Costa-Font, Joan, Alistair McGuire and Nebibe Varol, "Regulation Effects on the Adoption of New Medicines", *Empirical Economics*, Vol. 49, No. 3, 2015, pp. 1101-1121.
8. Danzon, Patricia M. and Andrew J. Epstein, "Effects of Regulation on Drug Launch and Pricing in Interdependent Markets", *Advances in Health Economics and Health Policy Research*, Vol. 23, 2012, pp. 35-71.
9. Danzon, Patricia M. and Jonathan D. Ketcham, "Reference Pricing of Pharmaceuticals for Medicare: Evidence from Germany, the Netherlands, and New Zealand", *Frontiers in Health Policy Research*, Vol. 7, 2004, pp. 1-54.
10. Danzon, Patricia M. and Michael F. Furukawa, "Prices and Availability of Pharmaceuticals: Evidence from Nine Countries", *Health Affairs*, Vol. 22, No. S1, 2003, pp. w3-521-w3-536.
11. Danzon, Patricia M. and Michael F. Furukawa, "International Prices and Availability of Pharmaceuticals in 2005", *Health Affairs*, Vol. 27, No. 1, 2008, pp. 221-233.
12. Danzon, Patricia M., Y. Richard Wang and Liang Wang, "The Impact of Price Regulation on the Launch Delay of New Drugs – Evidence from Twenty-five Major Markets in the 1990s", *Health Economics*, Vol. 14, No. 3, 2005, pp. 269-292.
13. Dubois, Pierre et al., "Market Size and Pharmaceutical Innovation", *RAND Journal of Economics*, Vol. 46, No. 4, 2015, pp. 844-871.
14. Eger, Stephan and Jörg C. Mahlich, "Pharmaceutical Regulation in Europe and its Impact on Corporate R&D", *Health Economics Review*, Vol. 4, No. 23, 2014.
15. Ferrario, Alessandra, "Time to Entry for New Cancer Medicines: From European Union-wide Marketing Authorization to Patient Access in Belgium, Estonia, Scotland, and Sweden", *Value in Health*, Vol. 21, No. 7, 2018, pp. 809-821.
16. Filson, Darren and Neal Masia, "Effects of Profit-Reducing Policies on Firm Survival, Financial Performance, and New Drug Introductions in the Research-Based Pharmaceutical Industry", *Managerial and Decision Economics*, Vol. 28, No. 4-5, 2007, pp. 329-351.

17. Filson, Darren, "A Markov-perfect Equilibrium Model of the Impacts of Price Controls on the Performance of the Pharmaceutical Industry", *RAND Journal of Economics*, Vol. 43, No. 1, 2012, pp. 110-138.
18. Giaccotto, Carmelo, Rexford E. Santerre and John A. Vernon, "Drug Prices and Research and Development Investment Behavior in the Pharmaceutical Industry", *Journal of Law and Economics*, Vol. 48, No. 1, 2005, pp. 195-214.
19. Golec, Joseph and John A. Vernon, "Financial Effects of Pharmaceutical Price Regulation on R&D Spending by EU versus US Firms", *Pharmacoeconomics*, Vol. 28, No. 8, 2010, pp. 615-628.
20. Golec, Joseph, Shantaram Hedge and John A. Vernon, "Pharmaceutical R&D Spending and Threats of Price Regulation", *Journal of Financial and Quantitative Analysis*, Vol. 45, No. 1, 2010, pp. 239-264.
21. Grabowski, Henry and John Vernon, "The Determinants of Pharmaceutical Research and Development Expenditures", *Journal of Evolutionary Economics*, Vol. 10, No. 1-2, 2000, pp. 201-215.
22. Han, Euna et al., "Analyses of Direct and Indirect Impacts of a Positive List System on Pharmaceutical R&D Incentives", *Clinical Therapeutics*, Vol. 35, No. 7, 2013, pp. 941-949.
23. Hirai, Y. et al., "Delays in New Drug Applications in Japan and Industrial R&D Strategies", *Clinical Pharmacology & Therapeutics*, Vol. 87, No. 2, 2010, pp. 2012-2018.
24. Kanavos, Panos et al., "Higher US Branded Drug Prices and Spending Compared to Other Countries May Stem Partly from Quick Uptake of New Drugs", *Health Affairs*, Vol. 32, No. 4, 2013, pp. 753-761.
25. Koenig, Pamina and Megan MacGarvie, "Regulatory Policy and the Location of Bio-pharmaceutical Foreign Direct Investment in Europe", *Journal of Health Economics*, Vol. 30, No. 5, 2011, pp. 950-965.
26. Kreutzer, David W. and William C. Wood, "Hangover Without the Party: The Impact of Threatened Drug Price Controls on Pharmaceutical Investment", *Journal of Private Enterprise*, Vol. 16, No. 1, 2000, pp. 137-147.
27. Kyle, Margaret K. "The Role of Firm Characteristics in Pharmaceutical Product Launches", *RAND Journal of Economics*, Vol. 37, No. 3, 2006, pp. 603-618.
28. Kyle, Margaret K. "Pharmaceutical Price Controls and Entry Strategies", *Review of Economics and Statistics*, Vol. 89, No. 1, 2007, pp. 88-99.
29. Kyle, Margaret K. And Anita M. McGahan, "Investments in Pharmaceuticals Before and After TRIPS", *Review of Economics and Statistics*, Vol. 94, No. 4, 2012, pp. 1175-1172.
30. Leopold, Christine et al., "Impact of External Price Referencing on Medicine Prices – A Price Comparison Among 14 European Countries", *Southern Medical Review*, Vol. 5, No. 2, 2012, pp. 34-41.
31. Lichtenberg, Frank R., "Importation and Innovation", *Economics of Innovation and New*

Technology, Vol. 16, No. 6, 2007, pp. 403-417.

32. Moreno, Gigi et al., "The Long-Term Impact of Price Controls in Medicare Part D", Forum for Health Economics & Policy, Vol. 20, No. 2, 2017.

33. Morgan, Steve and Colleen Cunningham, "The Effect of Evidence-Based Drug Coverage Policies on Pharmaceutical R&D: A Case Study from British Columbia", Healthcare Policy, Vol. 3, No. 3, 2008, pp. 54-63.

34. Olson, Mark K. "The Effects of UK Pharmaceutical Policy on Government Drug Expenditure: Cost Control and Incentives for R&D", International Journal of the Economics of Business, Vol. 2, No. 1, 1995, pp. 51-64.

35. Pammolli, Fabio, Laura Magazzini and Massimo Riccaboni, "The Productivity Crisis in Pharmaceutical R&D", Nature Reviews Drug Discovery, Vol. 10, No. 6, 2011, pp. 428-438.

36. Qian, Yi, "Do National Patent Laws Stimulate Domestic Innovation in a Global Patenting Environment? A Cross-Country Analysis of Pharmaceutical Patent Protection, 1978-2002", Review of Economics and Statistics, Vol. 89, No. 3, 2007, pp. 436-453.

37. Ridley, David B., Xiaoshu Bei and Eli B. Liebman, "No Shot: US Vaccine Prices and Shortages", Health Affairs, Vol. 35, No. 2, 2016, pp. 235-241.

38. Santerre, Rexford E. and John A. Vernon, "Assessing Consumer Gains from a Drug Price Control Policy in the United States", Southern Economic Journal, Vol. 73, No. 1, 2006, pp. 233-245.

39. Santerre, Rexford E., John A. Vernon and Carmelo Giaccotto, "The Impact of Indirect Government Controls on U.S. Drug Prices and R&D", Cato Journal, Vol. 26, No. 1, 2006, pp. 143-158.

40. Scherer, Frank M., "The Link Between Gross Profitability and Pharmaceutical R&D Spending", Health Affairs, Vol. 20, No. 5, 2001, pp. 216-220.

41. Schulthess, Duane, Daniel Gassull and Steven Maisel, "Tying Medicare Part B Drug Prices to International Reference Pricing Will Devastate R&D", Therapeutic Innovation & Regulatory Science, Vol. 53, No. 6, 2019, pp. 746-751.

42. Shajarizadeh, Ali and Aidan Hollis, "Delays in the Submission of New Drugs in Canada", Canadian Medical Association Journal, Vol. 187, No.1, 2015, pp. E47-E51.

43. Sood, Neeraj et al., "The Effect of Regulation on Pharmaceutical Revenues: Experience in Nineteen Countries", Health Affairs, Vol. 28, No. 1, 2009, pp. w125-w137.

44. Troyer, Jennifer L. and Alexander V. Krasnikov, "The Effect of Price Regulation on Innovation in the Pharmaceutical Industry", Journal of Applied Business Research, Vol. 18, No. 4, 2002, pp. 87-96.

45. Varol, Nebibe, Joan Costa-Font and Alistair McGuire, "Does the Adoption of Pharmaceutical Innovation Respond to Changes in the Regulatory Environment?", Applied Economic Perspectives and Policy, Vol. 34, No. 3, 2012, pp. 531-553.

46. Verniers, Isabel, Stefan Stremersch and Christophe Croux, "The Global Entry of New Pharmaceuticals: A Joint Investigation of Launch Window and Price", *International Journal of Research in Marketing*, Vol. 28, No. 4, 2011, pp. 295-308.
47. Vernon, John A., "The Relationship Between Price Regulation and Pharmaceutical Profit Margins", *Applied Economic Letters*, Vol. 10, No. 8, 2003, pp. 467-470.
48. Vernon, John A., "Simulating the Impact of Price Regulation on Pharmaceutical Innovation", *Pharmaceutical Development and Regulation*, Vol. 1, No. 1, 2003, pp. 55-65.
49. Vernon, John A., "Examining the Link Between Price Regulation and Pharmaceutical R&D Investment", *Health Economics*, Vol. 14, No. 1, 2005, pp. 1-16.