High-Income Country Spending on Innovative Medicines

Research Brief

Prepared for PhRMA by EY Quantitative Economics & Statistics

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Research Brief

The biopharmaceutical industry invests hundreds of billions of dollars annually in the research and development (R&D) of new medicines. Decades of R&D are required before a new medicine can be brought to market and provided to patients, and most development efforts result in failure. The financial incentive to invest in the development of new innovative medicines, despite the high risk of failure and the uncertain time horizon, is the expected revenue from future sales of successfully launched medicines. The amount of investment in capital and resources (e.g., scientists, laboratories, clinical trials) needed to develop new medicines is drawn away from other economic pursuits because of these expected future sales, meaning that today's sales of new innovative medicines are the funding for the R&D that was needed to create them and bring them to market.

The biopharmaceutical industry is a global industry. Biopharmaceutical R&D is performed in many countries, and patients around the world benefit from new medicines. Sales of new innovative medicines in each country reflect how much each country spends on the global R&D needed to create those medicines and bring them to the market for patients. One might expect spending on new innovative medicines to vary based on the relative wealth of countries, but data show that many high-income countries are not paying for these innovations proportionately to their wealth. Differences in country healthcare systems, particularly in how new innovative medicines are priced and the extent to which they are reimbursed by health insurance, drive these differences in spending.

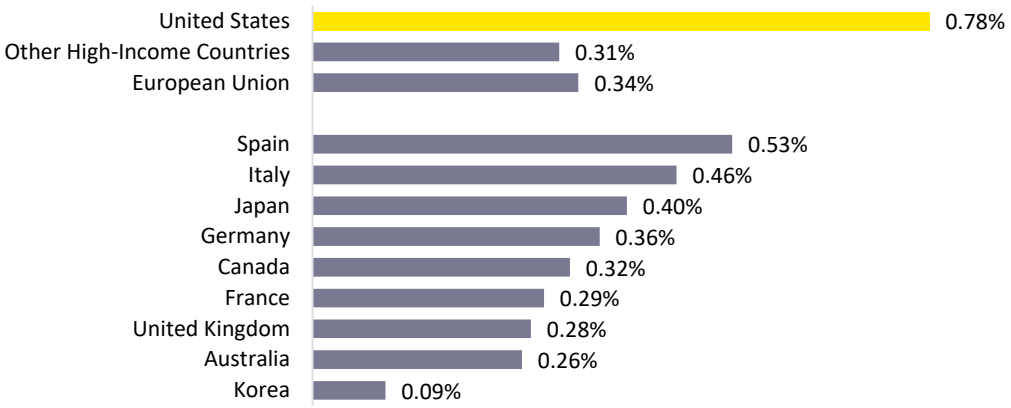
EY's Quantitative Economics & Statistics practice was commissioned by PhRMA to compare high-income country spending on new innovative medicines based on relative income and the size of their economies. EY assessed high-income country spending on new innovative medicines by estimating their per capita spending on medicines launched globally during the past ten years as a share of GDP per capita. EY then compared the composition of spending on new innovative medicines across high-income OECD countries to the composition of combined high-income OECD country GDP. If these countries each spent the same share of GDP per capita on new innovative medicines, then each country would contribute to their combined spending on new innovative medicines in amounts commensurate with their share of combined GDP. Instead, other high-income countries spend a far smaller share of their gross domestic product (GDP) per capita on new innovative medicines than the United States.

Key findings of this analysis are summarized below.

- The United States spends a larger share of its income (0.78% of GDP per capita) on new innovative medicines (see Figure 1).
    - Other high-income OECD countries spend a far smaller share of their incomes: Australia (0.26%), Canada (0.32%), France (0.29%), Germany (0.36%), Italy (0.46%), Japan (0.40%), Korea (0.09%), Spain (0.53%), United Kingdom (0.28%).

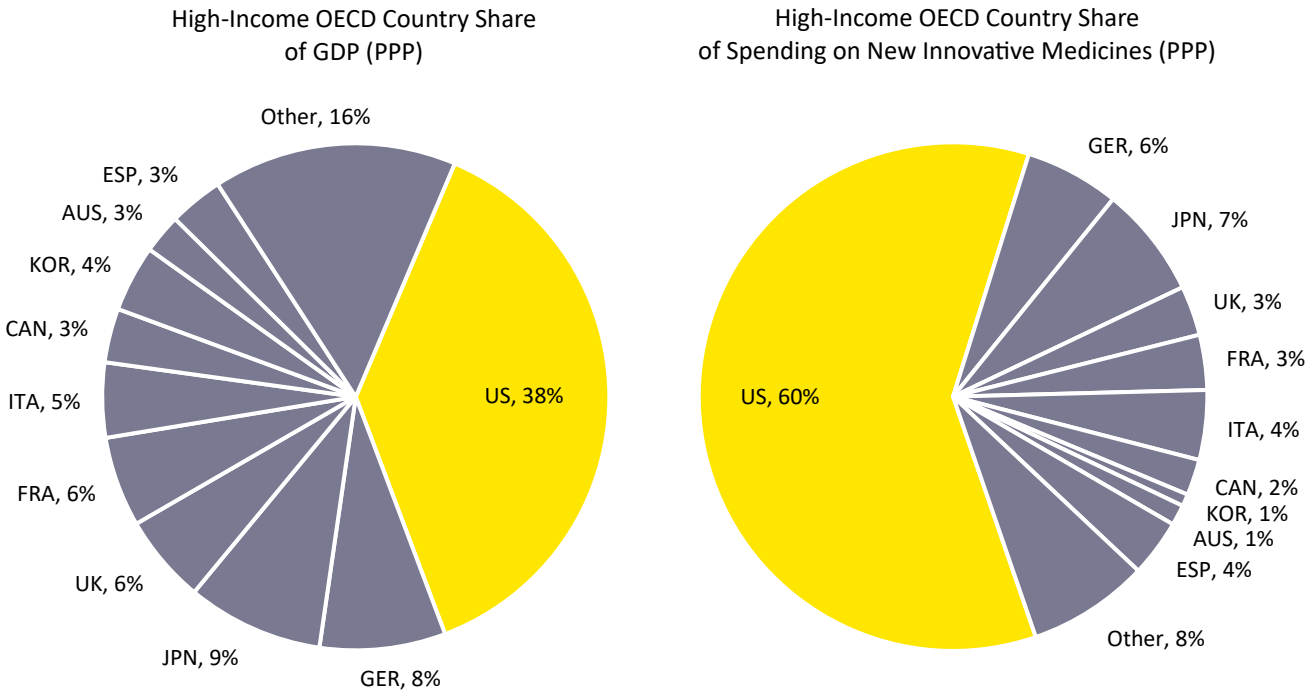
- The United States generates 60% of spending on new innovative medicines by high-income OECD countries even though its share of combined GDP is less than half (38%) (see Figure 2).
    - Other high-income OECD countries contribute a smaller share of spending on new innovative medicines than their GDP would suggest. The United Kingdom, for example, contributes 3% of spending on new innovative medicines even though its share of combined GDP is twice as high (6%).

Figure 1. Per Capita Spending on New Innovative Medicines as a Share of GDP Per Capita, 2023



Source: EY estimates of spending on new innovative medicines are based on analysis of Global Data, NAVLIN, IQVIA MIDAS®, country regulatory data, and publicly available information from government reports on discounts, rebates, and revenue clawbacks. GDP (in local currency) data are from Global Data. EU estimate excludes non-OECD members.

Figure 2. Share of High-Income OECD Country GDP and Spending on New Innovative Medicines, 2023 in PPP dollars



Source: EY estimates of spending on new innovative medicines are based on analysis of Global Data, NAVLIN, IQVIA MIDAS®, country regulatory data, and publicly available information from government reports on discounts, rebates, and revenue clawbacks. International Monetary Fund World Economic Outlook data on purchasing power parities (PPP) are used to calculate combined country spending on new innovative medicines and GDP.

Appendix: Description of Analytical Approach

The analysis described in this brief contains several analytical steps and relies on several data sources, which are described below.

- **Countries Included in the Analysis.** The scope of the analysis is high-income OECD countries identified using the World Bank country income classification for 2023. The countries included in the analysis are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

- **New Innovative Medicines.** New innovative medicines are defined as all global new active substances approved by the U.S. Food and Drug Administration, European Medicines Agency and/or Japan's Pharmaceuticals and Medical Devices Agency and first launched globally during the prior ten years (January 1, 2014, to December 31, 2023).

- **Estimation of Spending on New Innovative Medicines.** EY measured net spending to approximate the actual amount of manufacturer sales revenue because this aligns with financial incentives for biopharmaceutical R&D. Pricing and reimbursement policies vary considerably across countries such that an aggregate net spending measure is needed to account for the different ways that distributor markups are paid in each country and the varying use of government cost containment policies (e.g., confidential rebates, revenue clawbacks, etc.). Estimates of gross sales at list-price values were estimated using a combination of data from Global Data, NAVLIN and IQVIA MIDAS®. Gross sales at list-price values in each country were then reduced by discounts, rebates, and other financial arrangements between manufacturers and purchasers that effectively reduce the amount of manufacturer sales revenue. Estimates of rebates, discounts, revenue clawbacks and other paybacks are modeled using publicly available information on aggregate amounts and mechanisms from official government reports and statistics (e.g., the Comité Economique des Produits de Santé (CEPS) Annual Report for France). Rebates, discounts, revenue clawbacks, and other paybacks paid by manufacturers to governments, payers, or distributors are considered regardless of whether the paybacks are at the product level or on a more aggregate basis. International Monetary Fund World Economic Outlook data on purchasing power parities (PPP) are used to calculate combined country spending on new innovative medicines and GDP.