

# The Common Good Summit. National Borders and Pharma Research.

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June 2, 2023

## **The Benefits of Pharmaceutical Research.**

- Much of the decrease in morbidity and mortality around the world is a result of new drugs.
- *Though the quantification of the benefits from pharmaceutical research is difficult, "back of the envelope" calculations indicate that a dollar invested in pharmaceutical R&D likely generates more consumer benefits than a dollar invested in any other industry.*
- So we want to be careful to support the research investments that lead to new pharmaceuticals.

## Costs of Pharmaceutical Research.

- Research for new pharmaceutical products require large sunk costs.
  - Some of the benefits from research investments cannot be internalized by firms, as the output of most of the basic research can be copied relatively easily once the knowledge has been generated.
  - This leads to a role for government in funding the more basic research that underlies drug development.
  - Pharmaceutical firms pay for the remainder of the costs of drug development, and they are profit maximizing entities. The costs that must be covered include those of failed as well as successful projects.
  - The returns pharmaceutical firms earn that enable them to cover their costs depend on the prices they receive for the drugs they sell.

Importantly

- **The benefits from pharmaceutical Innovation do not have national boundaries.**
- So the innovation that emanates from the R&D in one country benefits the consumers in all countries that consume the drugs that are developed.
- On the other hand:
  - Government investment in the basic research needed for developments does differ substantially by country, even once we control for population and/or GDP differences, and
  - The prices of the same drugs differ significantly across countries.

## Differences in

- **Government funded R&D in pharmaceuticals**  
(data from OECD reports).

- United States

- The NIH drug related research spending is \$31.5 Billion or  $\approx$  \$95 per capita; total government funding is higher ( $\approx$  \$135)
- This U.S. government spends .21% of total US GDP on drug research.

- Europe (21 member EU states that are in OECD).

- Government spending on pharmaceutical research is \$16 Billion.
- About .07% of GDP.

- France

- Government spending is 127 million.
- This is under 2 dollars per capita, or .004% of GDP.

- *So, as a fraction of GDP, the U.S. spend on government funded R&D is  $\approx$  3 times the E.U. spend and  $\geq$  50 times that in France.*

- There are tax subsidies to privately funded R&D and these are higher in France ( $\approx 9\%$ ) than in the U.S. ( $\approx 5\%$ )
- However even if we say that the funding of the pharma firm R&D by government through tax subsidies generates just as many international externalities as the basic R & D usually done in government research labs or universities, the U.S.'s contribution to basic research as a fraction of U.S. G.D.P. would still be 25 times that of France.

**Conclude:** *The costs of the basic research underlying pharmaceutical development are unequally distributed among countries, with the U.S. funding a vastly disproportionate share.*

## Research Done in Firms.

- Is more applied, but still likely generates some international externalities that are not internalized by the firms.
- It is hard to measure the extent to which the applied research in one country benefits either the firms or the consumers in other countries.
- If we assume that the externalities generated by the research in a given country that flow to other countries are proportional to firm funded R&D expenditures, we have the following.
  - Pharma R&D in the U.S. is  $\approx$  \$75B or about .36% of GDP
  - Pharma R&D in Europe is  $\approx$  \$25B, or about .10 % of GDP
- So to the extent that more applied research from one country generates public goods that cross national boundaries the U.S. is likely to be disproportionately contributing to these flows also.

## Profits and Markup Differences Across Countries.

- Differences in a firm's profits from marketing its pharmaceutical products in different countries are largely determined by differences in prices among those countries (production costs are similar and often small).
- U.S. prices for the same pharmaceuticals are notably higher.
  - The U.S. General Accounting Office compared the prices for twenty high selling brand-name drugs in 2020 between France, Canada, Australia, US .
  - The prices in the U.S. were 2 to over 4 times higher than in the other countries (this is an underestimate as rebate data was only available fo the U.S.)
  - The biggest differences was with France; U.S. prices were 4.36 times higher than French prices.



- The differences with European countries is especially large for newly developed drugs (examples from OECD report).
  - Humira (anti-rheumatism); \$4,480 in U.S.; \$1,570 in Germany, \$ 1088 in France.
  - Keytruda (lung cancer) \$87 in U.S., \$ 34 in UK, \$27 in Germany.
- There are other policies in Europe which hurt pharmaceutical firms' profits. One can argue about their social efficacy, but not about their effects on profits. Likely the most important one is
  - Extensive drug review of new therapies by governmental institutions even after they have gone through serious safety and efficacy reviews in other countries (usually the U.S. FDA), generates delays in introducing the drugs in European countries.

This leads to

**Conclusion.** *Though the costs of producing new drugs fall disproportionately on Americans, the benefits from consumption of those drugs go disproportionately to countries outside the U.S., with Europe being a major benefactor.*

- **I should note that** this is not the only area where the outcomes from national policies flow across borders, with disproportionate burdens falling on certain countries. The morning discussion of climate change has similar issues, and, though in my view they are both investing too little in stemming climate change, it is likely true that the European countries are contributing more than the U.S. to the struggle to limit planet warming.
- However the situation in pharmaceuticals is about to take a sharp turn for the worse.

- This because the differences in national policies with respect to drugs, particularly those that determine prices, are leading to changes U.S. policy.
- The American electorate has become aware that they are paying higher prices for drugs than comparable countries are.
- This has moved the current administration to write a change in pharmaceutical policy into the Inflation Reduction Act (passed in 2022)
  - In particular starting in 2026 the center for Medicare and Medicaid services (the "CMS") which administers the U.S. health insurance plans for the elderly and the poor, will be allowed to bargain with the drug companies over price. Up until now they were not allowed to.
  - Medicare and Medicaid account for about 57% of U.S. drug expenditures, and the U.S. accounts for about 40% of the world market for pharmaceuticals.

So

- If, when allowed to bargain, the bargained prices are similar to the prices that emanate from the European countries bargaining, the value of US sales of pharma products will fall by about twenty-eight per cent.
- Given the differences in profit rates this would lead to a fall of about thirty percent in the profits of pharma firms (no matter where they are located).
- We can expect this to cause large changes by firms in their R& D investments (no matter where they are located as long as they sell into the U.S. market).

This leads us to

- **Conclude.** *We are in a bad international equilibrium for funding R &D in pharmaceuticals; with the U.S. paying a disproportionate share of costs and receiving a less than proportionate share of benefits. This is inducing changes in U.S. policy with very negative implications for research in pharmaceuticals.*
- Without a change in policy we are about to cut what are likely the most productive investments in the economy by about a quarter, which in turn will cause a lack of progress in morbidity and mortality rates around the world.
- Moreover the morbidity and mortality implications are likely to hit the more developed world well before other countries, as we are the most intensive users of new drugs.