

# How bad is parallel of drugs in Europe?

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# Why parallel trade?

- European countries all have regulated funding of health expenditures;
- They are all striving to contain expenditures, especially on the fastest growing component, drugs.
- They use different systems to do so:
  - Regulated prices.
  - Volume control and free prices.
  - Reference lists.
- The needs of the populations are not the same from one country to another
- Free circulation principles of EU
- As a consequence, price differentials for drugs amongst countries.

# The research question

- How can we analyze the impact of parallel trade of drugs in Europe?
  - On one hand, companies argue that it hurts their profit badly, thus threatening their capacity to finance R&D expenditures;
  - On the other hand, parallel trade is considered by the EU as a normal consequence of free circulation of goods and that it may lower prices, thus making drugs more accessible to the patients.
- Who is right?

# The Ramsey price argument

- Two papers from P. Danzon (1997,1999) on parallel trade.
- First part:
  - A thorough critic of parallel trade;
- Second part:
  - The use of the Ramsey pricing model to demonstrate the existence of a second best optimum that allows companies to recoup their sunk R&D costs.
  - Ramsey pricing leads to price discrimination according to the demand elasticities of different buyers.
  - Ramsey pricing requires that markets are segmentable and separable: in particular, resale must be limited.
  - Recommendation that price agreements between public or quasi-public payors in Europe be held confidential, so as to eliminate parallel trade.

# Is parallel trade the culprit?

- When reading carefully P. Danzon, parallel trade is not the only culprit;
- Regulated markets are under attack:
  - Since there is no competition between country insurance schemes, payors can free-ride and expect that other payors will pay for R&D costs.
  - They can use their monopsony power to lower prices.
  - Parallel trade contributes to lower profits.
  - Because prices are public and publicized, payors can adopt mimetic pricing: they use the prices of other countries to set their price level.
  - This reduces price differentials but at a lower level
  - To counter-attack, companies adopt launching and pricing strategies (price corridors) using countries with high price levels as first market.

# What consequences?

- As a consequence, either prices are set uniformly at a high level, which means abnormally high profits;
- Or prices converge towards uniform low levels, which does not allow firms to recoup their R&D costs.
- **The Ramsey price model is an answer not to parallel trade, but to regulated pricing.**
- Danzon argues that the prices on the USA market approximates best Ramsey prices, and thus a second best optimum that allows firms to make the required profit to finance R&D.

# Does the argument hold?

- Firstly, private insurance in the USA does not maximize the welfare of the population, since it excludes a large share of Americans from access to care. So competitive insurance markets may not be the ideal reference to determine an optimal pricing policy.
- Second, the USA private health care insurance market can become oligopolistic, thus increasing the capacity of payors to negotiate low prices, thus acting quite like their European counterparts. Why should they worry about companies' profits?
- Third, countries also compete with each other to obtain economic spillovers of pharmaceutical investments, which may tend to push prices upward.
- Fourth, the pressure on prices is an inverse function of the control on volumes. Prices are not the only determinant of profits. If it was so, companies would not stay on the French market!
- Finally, it is difficult to predict the outcome in terms of price levels of the strategic interactions between companies and countries

# What is the solution?

- The design of an alternative optimal pricing model with two actors:
  - The industry, on one side, which maximizes global sales on different markets under the constraint of reaching a minimal profit.
  - Public payors, on the other hand, who maximize the health of their population but compete for the economic spillovers of drug expenditures: investments and employment.

# A first approach

- The utility function of the payor has two additive arguments:
  - Utility provided by the improvement of the health of patients through drug prescription;
    - H is a function of volume
  - Utility provided by the economic spillovers of drug expenditures.
    - S is a function of expenditures

# A simple model

- H is assumed to be an increasing function of volume  $V$ , up to  $V_{\max}$ , above which there is disutility to prescribe more:
  - Exposure to adverse effects for patients who don't need the drug.
  - Unjustified extension of indications.
- S is assumed to be an increasing function of the revenue on a given drug,  $P \times V$ ; S increases up to a maximum, over which the economic spillovers are offset by the increase in drug expenditures. P is the price of the drug.
- The payor has a budget constraint, B.
- The payor has a minimum price in mind (average price of the class + bonus for an innovation),  $P_{\min}$ .

# The program

- The payor's program:
  - Max  $U = S(PV) + H(V)$
  - With  $(PV - B) \leq 0$  and  $(P_{min} - P) \leq 0$ .
- The Lagrangian is:
  - $L = S(PV) + H(V) - a(PV - B) - b(P_{min} - P)$ .
  - $a$  and  $b \geq 0$
  - Let us note  $PV = D$  (drug expenditure).

# Three possible solutions:

- **If  $S'_D$  and  $H'_V > 0$ , then:**
  - $V^\circ = B / (a - S'_D)$  and  $V^\circ < V^*$  since  $H'_V > 0$
  - $P^\circ = H'_V / (a - S'_D)$  and  $P^\circ > P_{\min}$  since  $B > 0$
  - $S'_D < a$
- **If  $S'_D > 0$  and  $H'_V \leq 0$ :**
  - $V^\circ = V^*$
  - $P^\circ = B / V^*$
- **If  $S'_D < 0$  and  $H'_V > 0$** 
  - $V^\circ = b / (a + \text{abs } S'_D)$  and  $V^\circ < V^*$  since  $H'_V > 0$
  - $V^\circ = H'_V / (a + \text{abs } S'_D)$

# The program with no spillover

- Max  $U=H(V)$
- With  $(PV-B)\leq 0$  and  $(P_{min}-P)\leq 0$ .
  - One solution:
    - $V^{\circ}=b/a$
    - $P^{\circ}=H'_{v}/a$
- In two cases, the additive model leads to higher prices and volumes than the simple model;
- In the third case, this is not the case because we are in the decreasing part of the spillover curve.

# First Conclusions

- This model demonstrates quite simply that if public payors value spillovers, they will accept higher prices and volumes than when they only try to meet their budget constraint.
- It is consistent with price differentials
- Still needs to be confronted to a global model including firms to see if such prices are compatible with Ramsey pricing.
- Privacy of special arrangements for economic spillovers, but publicity of prices

# The impact of parallel trade

- For exporting countries, parallel trade lowers volumes and consequently expenditures. The loss of welfare will depend on the alternative uses of savings. Savings could also be used to buy the required complement to meet optimal volumes.
- For importing countries, in principle, prices go down and so do expenditures. Savings can be dedicated to alternative uses in health care or elsewhere, according to its marginal utility. BUT the decrease in price can be cancelled if it is captured by the distribution channel.

# Final conclusion

- Not finished! Compatibility with the industry's program.
- But:
  - Regulation is not so nasty:
    - It allows for universal coverage
    - Countries are sensitive to economic spillovers
- What is needed is an analysis of the strategic interactions between firms and payors to know whether prices converge downwards or upwards.
- Future trends:
  - The European union may favor the emergence of European champions  $\Rightarrow$  more concentration in the industry.