Vaccine Supply Chains: Economic & Commercial Considerations

UNESCAP Regional Consultation in Preparation for MC 12
7 September 2021
Demand for COVID-19 vaccines

- Six months ago it was thought that between 11-12 billion doses were needed to inoculate 70% of the adult population.

- Confidence in these estimates has been shaken because of:
  1. New aggressive variants (Delta variant): feedback loop from limited supply and distribution.
  2. Diminishing efficacy of some vaccines—creates demand for booster shots.
  3. Decisions to inoculate children despite evidence of limited medical benefit.
As of last Friday, 5.819 billion doses have been produced.

To date, over 1 billion doses have been produced for each of four vaccines.

Scale up has been impressive—and faster than forecasts at Q2 of this year.
- Forecast: end August 2021 was 4.7 billion.
- Forecast: end September 2021 was 5.9 billion.

End year production forecast from Airfinity in excess of 11 billion doses.
The vaccine supply chain: from discovery to distribution

Source: Bown and Bollyky (2021).
## Trade policy dimension 1: export curbs

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Items affected</th>
<th>Nature of curb</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>Final vaccine</td>
<td>Informal: linked to procurement contract. But note recent shipment to Australia.</td>
</tr>
<tr>
<td>EU</td>
<td>Final vaccine</td>
<td>Formal: Export authorisation regime (third revision). Chilling effects.</td>
</tr>
<tr>
<td></td>
<td>Vaccine ingredients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Syringes, Needles, etc</td>
<td>Formal export ban: <a href="https://www.globaltradealert.org/intervention/84419">https://www.globaltradealert.org/intervention/84419</a>. Came into effect on 31 December 2020.</td>
</tr>
<tr>
<td>India</td>
<td>Final vaccines</td>
<td>No formal ban but repeated statements by Indian officials about prioritising domestic needs over exports.</td>
</tr>
</tbody>
</table>
Two more vaccine-related trade policy matters

TRIPs waiver:
- Stalemate in Geneva.
- No progress likely before MC 12.

Trade facilitation:
- Needed to distribute vaccines safely and efficiently.
- Some proposals link this to the implementation of the Agreement on Trade Facilitation.
- But must technical assistance be linked to the TFA?
The business model for a vertically integrated vaccine producer is compromised.

1. Large up front investment.
2. Vaccine R&D may come to nothing (or little).
3. Revenue model compromised by:
   - Single/dual jab treatment
   - Unknown duration and intensity of a pandemic.
4. Supply chain disruption can affect downstream production.
5. Technical difficulties in raising productivity levels.

Deeper question: Why is there so little vaccine production capacity?
## The Industrial Policy Conundrum

<table>
<thead>
<tr>
<th>Success cases (so far): UK and USA</th>
<th>Precedent case: Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invested along the entire supply chain; de-risked investment and were willing to back a portfolio of risky projects.</td>
<td>Spent over 1.4 billion euros over a decade building up domestic vaccine production capacity.</td>
</tr>
<tr>
<td>Requisition and repurpose factories</td>
<td>No Korean COVID-19 vaccine developed.</td>
</tr>
<tr>
<td>Insisted on domestic production capacity</td>
<td>Late to start vaccination.</td>
</tr>
<tr>
<td><strong>But is copying this model the best thing to do for second/later movers?</strong></td>
<td>Late to sign contracts with COVID-19 vaccine developers.</td>
</tr>
</tbody>
</table>
COVID-19 vaccine shortages require a significant expansion of supply.

But the business case for investing in vaccine development and production capacity is weak—and part of that is due to excessive political risk.

- We are paying for the price for the antagonistic relationships between some governments, civil society organisations, and pharma companies.

TRIPs waiver is a sideshow—I know of no vaccine production expert that says sharing codified IP is the bottleneck.

Vaccine ingredient shortages may be slowing the ramp up of supply.

Mixed success with industrial policy solutions: contrast Korea’s experience with US and UK over the past year.