Curse or Opportunity? A Model of Industrial Development for Natural Resource-Rich Countries and the Case of Indonesia

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Setting a Question

- Model of industrialization ← Poor natural resources
- “Curse” & “Disease” ← Rich natural resources

- Uniqueness of Indonesia (Southeast Asia)
  - Member of regional networks of industrialization (GVC) and concurrently
  - World-leading producer/exporter of natural resources (AGVC)

→ Can Indonesia create a new success story?
→ What is a key to success?
1. Setting a Question
2. Model of Industrial Development
   1. Conventional Model
   2. Model for Natural Resource-Rich Countries
3. Empirical Evidence from Indonesia
   1. Back-and-Forth Industrial Development
   2. Two Waves of Industrialization
   3. Two Natural Resource Booms
4. Conclusion
The Conventional Model of Staged Development

Source: Suehiro (2008:130, Firuge 6-1), arranged by the author.
• Natural resource-based industries can develop into knowledge-intensive industries
A Model of Industrial Development for Natural Resource-Rich Countries

- Production: <natural resource>
- Production: <non-natural resource>
- Export
- Import

- Stage: I, II, III, IV, V
  - I: Manufacturing
  - II: Low Unit Value Added by Industry
  - III: High Unit Value Added by Industry
  - IV: + Services

- Export Substitution
- Export Industrialization
- Import Substitution
- Import Industrialization

- Labor-intensive
- Capital-intensive
- Knowledge-intensive

- Unprocessed resources
- Processed resource-based goods
- Knowledge-intensive resource-based goods & services
- Labor-intensive goods
- Capital-intensive goods
- Knowledge-intensive goods & services

Source: The author
Endowment of Land, Water, and Natural Resources

Prices of Natural Resources

- Labor-intensive
- Capital-intensive
- Knowledge-intensive

Processing industries

- Unprocessed resources
- Processed resource-based goods
- Knowledge-intensive resource-based goods & services

Export Substitution

- Export Industrialization

Import Substitution

- Export Substitution
- Export Industrialization

Production

- <natural resource>
- <non-natural resource>

Export

Import

Stage

I II III IV V

Manufacturing + Services

Low → Unit Value Added by Industry → High

Institutional Conditions for Government, Business, and Society

Source: The author
Two determining factors of industrial development

1. Prices of natural resources (terms of trade)
2. Institutions = rules and systems to promote investment for industrial development at the level of government, business, and society

Price surge  (backward force)
→ ① quantitative expansion of resource production
   ② regress of non-resource industries
If there are institutions,  (forward force)
resource revenue can be diverted into
   ③ investment to resource processing, and
   ④ non-resource industries.
## Indonesia: Back & Forth Industrial Development

<table>
<thead>
<tr>
<th>Year</th>
<th>Leading export items</th>
<th>Degree and kinds of processing</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830</td>
<td>Coffee</td>
<td>Low processed</td>
<td>30 Cultivation System Population growth</td>
</tr>
<tr>
<td>1880</td>
<td>Sugar (refined white cane sugar)</td>
<td>Processed resource-based, labor &amp; capital-intensive</td>
<td>29 Depression</td>
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<td></td>
<td></td>
<td></td>
<td>45 Independence</td>
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<td></td>
<td></td>
<td></td>
<td>58 Nationalization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>66 Authoritarian developmentalism</td>
</tr>
<tr>
<td>1930</td>
<td>Natural rubber</td>
<td>Low processed</td>
<td>98 End of developmental regime</td>
</tr>
<tr>
<td>1970</td>
<td>Crude petroleum</td>
<td>Low processed</td>
<td>04 Democracy</td>
</tr>
<tr>
<td>1980</td>
<td>Manufactured goods</td>
<td>Processed resource-based/ labor-intensive/ capital-intensive</td>
<td>09 Democratical developmentalism</td>
</tr>
<tr>
<td></td>
<td>(Plywood, textiles, electrical appliances)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Coal, Crude palm oil (CPO)</td>
<td>Low processed</td>
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</tr>
<tr>
<td>2012</td>
<td>Manufactured goods</td>
<td>Processed resource-based/ labor-intensive/ capital-intensive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Motor vehicle, plywood, footwear, fatty acid and alcohol)</td>
<td></td>
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</tr>
</tbody>
</table>

Note: Export items in red are within the world’s largest three.

Figure 3 Estimated Manufacturing Value Added in Indonesia, 1870-1975 (1971 = 100)

- 1971 weights (80% coverage of 1971 GVA)
- 1971 weights (excluding sugar)

1870-1913
3% annual av. growth (3% excl. sugar)

1913-29
4% av. growth (4% excl. sugar)

1929-41
1% av. growth (4% excl. sugar)

1947-66
7% av. growth

1966-75
11% av. growth

Source: Estimation by Pierre van der Eng.
The Second Wave: Full-Set Industrialization under the Developmental Regime

Manufacturing Value Added of Indonesia, 1960-2014


Authoritarian Developmental Regime (Soeharto Regime)
Institutions Supported Industrial Development

〈Sugar Industry in the Netherlands Indies〉(Kano 2004)

• Irrigation → water-intensive cultivation method
• Business association’s laboratory → new species
• Land Law → long-term lease contract → integration from cultivation to refinery under the same ownership

→ proceeded to Stage II

〈Full-set Industrialization in the developmental regime〉

• institutions for Pembangunan (1966-68) + import substitution policies (68-) + export substitution policies (79-) → proceeded to State II

• Reforms in tax, banking, custom clearance + deregulation + Rupiah devaluation + export promotion policies (83-88) → proceeded to Stage III
Endowment of Land, Water, and Natural Resources

Prices of Natural Resources

- Labor-intensive
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Processing industries

Unprocessed resources
- Processed resource-based goods

Export Substitution
- Export Industrialization

Import Substitution
- Import Substitution

Stage

I: Manufacturing
II: Unit Value Added by Industry
III: + Services
IV: V

Low → High

Source: The author
Two Natural Resource Booms

Index of Terms of Trade in Indonesia 1968-2013 (2010=100)

Source: Prepared from Trade Index Numbers for Terms of Trade by BEC, IDE (www.ide.go.jp/English/Data/Trade/index.html).
Manufacturing Shares of GDP: Kept rising in the oil boom, but declining in the 2000s commodity boom.

Indonesia’s Shares of GDP by Industry 1970-2016

Manufacturing Shares of GDP:
- Kept rising in the oil boom, but declining in the 2000s commodity boom.
Institutions in the Two Booms Differed

〈Oil boom 1974-82〉
• Oil revenue = National treasury → fiscal investment + SOEs investment + state bank loans → invest into capital-intensive import substitution + resource processing industries
→ maintained Stage II

〈Commodity boom 2002-11〉
• No state-led developmental institutions (98-04)
• Resource revenue = Private capitalists → invest into the boom sectors and service industries
• Regional FTA + emerging China → influx of manufactured imports
→ regressed from Stage III to Stage I (resource industries) and to Stage I or II (non-resource industries)
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Export Substitution

Labor-intensive goods
Capital-intensive goods

Export Industrialization

Labor-intensive industries
Knowledge-intensive goods & services

Import Substitution

Labor-intensive industries
Knowledge-intensive industries

Import Substitution

Knowledge-intensive industries

Stage

I
II
III
IV
V

Manufacturing + Services

Low
Unit Value Added by Industry
High

Institutional Conditions for Government, Business, and Society

Source: The author
The Model and Indonesia’s Experiences Show…

- **Institutions matter.** A price surge in natural resources works to pull industries back, but the effect can be managed by institutional arrangements for promoting investment in industrial development.

- After the 2000s commodity boom was over, Indonesia seems to be strengthening institutions for promoting investment. If the institutional arrangements function, Indonesia can ride the third wave of industrial development.
Creating a New Success Story?

• The model suggests the path toward **natural resource-based knowledge-intensive industries**. Digital technology makes it easier to increase productivity of raw material production and to connect it with processing, manufacturing, branding, marketing, and R&D along the value chains.

• Indonesia has a great opportunity to **create and utilize synergy** between endogenous resource-based industrial development and exogenous non-resource industrial development.
Reference


