What you export (and produce) matters

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Preface

Learning goals Students...

- ...can explain why production and export composition of a country matters for economic growth.
- ...learn that externalities and spillover effects are a foundation of industrial policy.

Prerequisites As this lecture targets students of the master "Internationale Betriebswirtschaftslehre", I expect that students have a very basic understanding of Micro- and Macroeconomics.

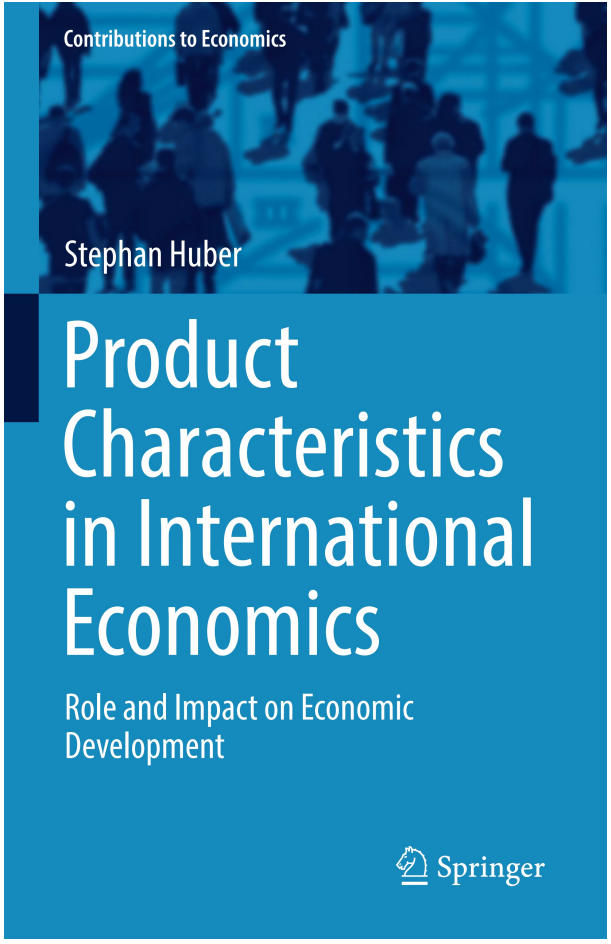
Required Readings The following article will be discussed in the exercise:
Dawar, K. and Ronen, E. (2022). Industrial policy and international competition: Trade and investment perspectives. White Paper February, World Economic Forum. https://www3.weforum.org/docs/WEF_Industrial_Policy_and_International_Competition_2022.pdf

Recommended Readings Frankel, J. A. (2012). *The Natural Resource Curse: A Survey of Diagnoses and Some Prescriptions*, pages 7–34. International Monetary Fund
Lederman, D. and Maloney, W. F. (2012). *Does What You Export Matter? In Search of Empirical Guidance for Industrial Policies*. World Bank Publications, Washington, D.C

Disclaimer This script aims to support my lecture. It is incomplete and no substitute for taking actively part in class. I am thankful for comments and suggestions for improvement.

Hausmann, R., Hwang, J., and Rodrik, D. (2007). What you export matters. *Journal of Economic Growth*, 12(1):1–25


- 4473 citations on Google Scholar
- "countries that export goods associated with higher productivity levels grow more rapidly" (p. 23)
- So-called *sophisticated goods* entail a higher potential to operate as a catalyst for growth than others do.
- If the degree of technology that is necessary in order to produce a good is high, we call it a sophisticated good.



Huber (2018)

- The first comprehensive work on the impact of product characteristics on economic development
- Includes practical tips for measuring product characteristics with the aid of a newly developed software using macro-data
- Shows how FDI is changing the production landscape for firms
- Presents empirical evidence on the linkages between trade and institutions

International Trade 101

- Why do countries trade? (differences in technology, differences in endowments, differences in demand, the presence of economies of scale, and the presence of government policies, ...)
- Is international trade beneficial? (winners and losers)
- Are economies bettter of with free trade or trade barriers? (tarrifs, quotas, . . .)

Industrial Policy 101

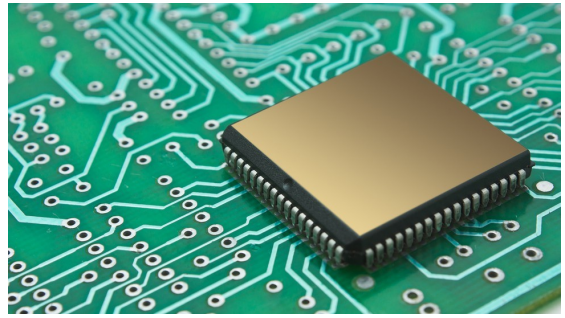
If production in sector A is subject to external economies of scale or if it spurs the productivity other sectors, a government should subsidize sector A at the expense of sector B which has no scale or spillover effects.

International Trade Data Analysis 101

How can we use the available disaggregated trade datasets that are available for almost all countries at a high quality?

Harding and Javorcik (2012, REStat): "Politicians tend to believe that it is better to make computer chips than potato chips"

Thaiprasert (2011, p. 1): "Exporting potato chips or microchips is vastly different, so the capacity of exports to generate and sustain GDP growth is related not only to the volume but also to the structure of exports."



The belief that some goods and technologies are better to spur economic growth are powerful arguments for market interventions. For example, the European Commission (2012, p. 8) spends a budget of €6,663 million to support so-called **key enabling technologies** (KET)[1] based goods.

[1] Schlüsseltechnologie

Exercise 1 — Are computer chips better for economic growth and business success? (Solution → p. ??)

a) Discuss why politicians tend to believe that it is better to make computer chips than potato chips.

b) Read the two quotes below and discuss the meaning of the German term *Key Enabling Technology*.

> *European Commission (2012, p. 2): "The Commission defines KETs as knowledge intensive and associated with high R&D intensity, rapid innovation cycles, high capital expenditure and highly skilled employment.* ***They enable process, goods and service innovation throughout the economy*** *and are of systemic relevance. They are multidisciplinary, cutting across many technology areas with a trend towards convergence and integration. KETs can* ***assist technology leaders in other fields*** *to capitalise on their research efforts"*
>
> *European Commission (2011, p. 12): "The macroeconomic importance of KETs is that they can open up entirely new markets or underpin and enhance existing markets through accelerating technological progress with trickle-down effects on productivity and concurrent leaps in efficiency levels. In addition to feeding numerous full value chains, products based on KETs often serve as inputs of great value added that are integrated into more complex products. It is these subsequent applications that drive major economic growth and competitiveness."*

Computer chips can be better for economic growth and business success

> *Moon (1999, p. 42): "[...] it matters whether a nation specializes in potato chips or microchips [...], because the latter offers **spin-off effects in technology and human capital development that encourage growth in other industries**, thereby strengthening everything from the nation's education to its national security"*

Key enabling technologies are not only applicable in one field of work, but have market potential for many sectors of the economy. It is hard to think how technologies and knowledge that arises from producing potato chips can be of any use in a larger varieties of industries. The production of computer chips, however, is more likely to be associated with products and innovations that can be used elsewhere.

To produce computer chips tend to be better for economic growth as the production of a **sophisticated good**[2] like a computer chip ...

- ... entails positive spillover effects and externalities within and across firms and sectors (Woo, 2012; Hausmann et al., 2007)
- ... benefits the most from technological progress (Spilimbergo, 2000)
- ... is more and more demanded worldwide (Mathews, 2006)

[2] If the degree of technology that is necessary in order to produce a good is high, we call it a sophisticated good.

	Current market size (~2006/08) USD	Expected size in 2015 (~2012/15) USD	Expected compound annual growth rate
Nanotechnology	12 bn	27 bn	16%
Micro and nanoelectronics	250 bn	300 bn	13%
Industrial biotechnology	90 bn	125 bn	6%
Photonics	230 bn	480 bn	8%
Advanced Materials	100 bn	150 bn	6%
Advanced Manufacturing systems	150 bn	200 bn	5%
TOTAL	832 bn	1282 bn	

Table 1: Estimated global market potentials of Key Enabling Technologies

Source: European Commission (2011, p. 12)

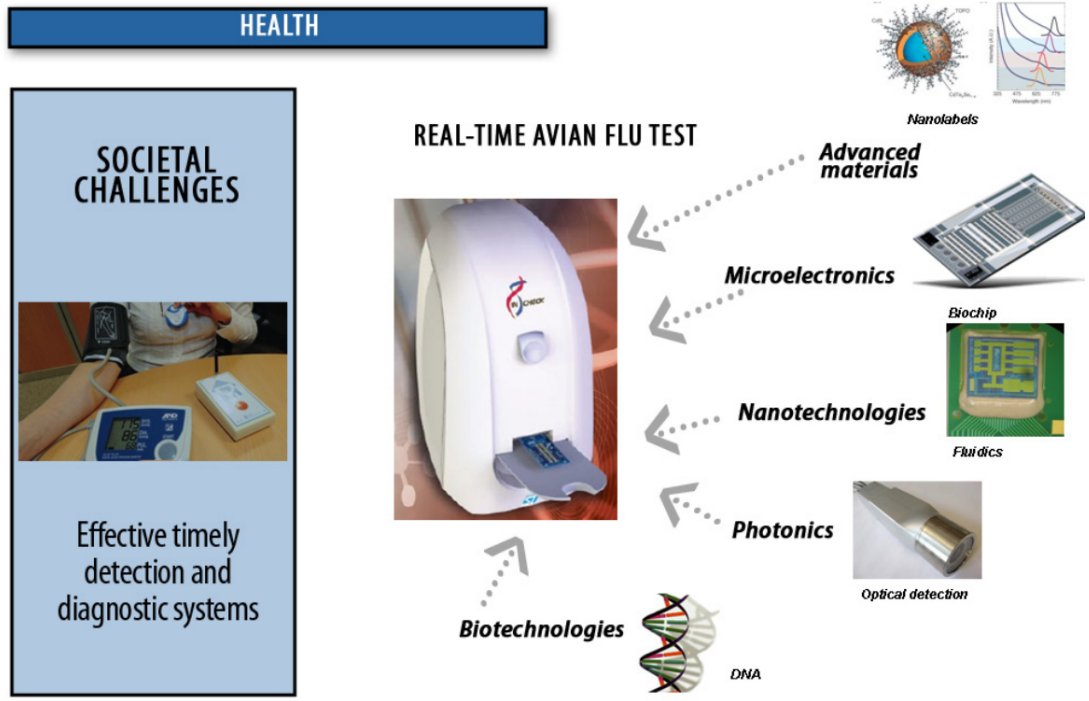


Figure 3: Advanced products are a combination of KETs: the case of real-time avian flu monitoring

Source: European Commission (2011, p. 11)

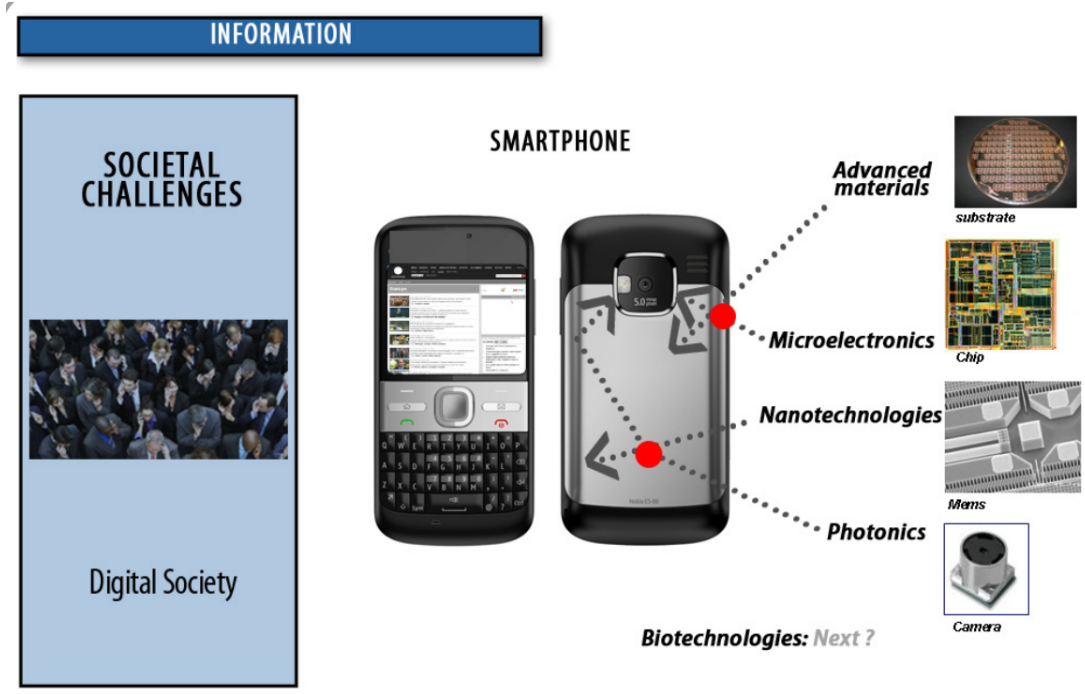


Figure 2: Advanced products are a combination of KETs: the case of the mobile phone

Source: European Commission (2011, p. 11)

Actually, the idea of a strategic-industry policy is not new

- The concept of varying growth enhancing effects from industries goes back to Hirschman (1958) and his **unbalanced growth theory** which states that unequal support of industries within a country can increase the speed of economic growth due to an efficient usage of **productivity enhancing linkages across industries**.
- Adam Smith (1776, Book II, Chapter III) already had this logic in mind when he wrote about **'productive' labor** (manufacturing), and **'unproductive' labo**r (military work, services, and art).
- The inherent logic of productive vs. unproductive labor is also used by Nicholas Kaldor (1966) and, more recent, by Rodrik (2016) when they argue that the increasing **de-industrialization can harm economic growth because the service sector is less technologically progressive than the manufacturing sector**.

Which goods and which characteristics of goods may particularly entail a catalyzing effect on economic development?

- There is a lot of research on
  - capital-intensive production (and exports, respectively) and technologically sophisticated production (Cuaresma and Wörz, 2005; Hausmann et al., 2007; Jarreau and Poncet, 2012),
  - human capital-intensive production (Gould and Ruffin, 1995; Gemmell, 1996; Söderbom and Teal, 2001), and
  - natural resource-intensive production (Havranek et al., 2016).
- Overall, the answer is still disputed. (Lederman and Maloney, 2012; Huber, 2018)
- capital and human capital-intensive production is found to be beneficial for most parts, where exports of natural ressources can be a curse.

Natural ressource curse. . .

. . . is the phenomenon of countries with an abundance of natural resources (such as fossil fuels and certain minerals) having less economic growth, less democracy, or worse development outcomes than countries with fewer natural resources.

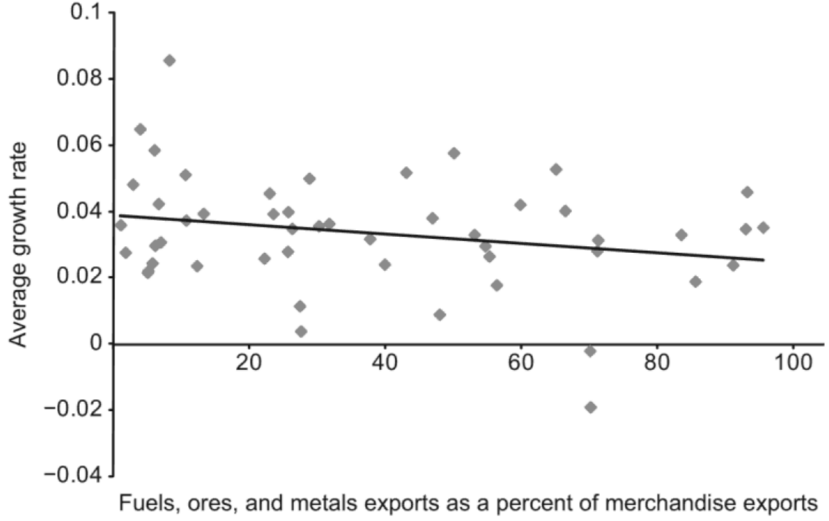


Figure 2.1 Statistical Relationship between Mineral Exports and Growth, 1970–2008

Source: World Bank, *World Development Indicators*.

Explanations (Frankel, 2012):

- Price volatility is high $\rightarrow$ risk and transactions costs
- Natural resources crowds out the manufacturing sector which has more positive externalities
- Natural resource endowments lead to autocractic and oligarchic institutions, characterized by corruption, inequality, class structure, and absence of rule of law.
- Countries that are endowed with natural resources have more armed conflict.
- The **Dutch Disease**. Exports of resources lead to an appreciation of the currency which makes other industries less competitive and vanish.

Conclusion

- Exporting and producing goods that bring positive, productivity-improving spillover effects to other production units are better for economic growth.
- Smart industrial policy should aim to identify and support these sectors.

Strategic-industry policy and the World Trade Organization

Exercise 2 — WTO and industrial policy (Solution → p. **??**)

Read Dawar and Ronen (2022) and the text below. Then, discuss why industrial policy is a challenge for members of the WTO.

The **World Trade Organization (WTO)** is an intergovernmental organization that regulates international trade and replaced in 1995 the General Agreement on Tariffs and Trade (GATT). 164 (!) countries are currently member of the WTO. The WTO facilitates the smooth and free flow of global trade through the administration and monitoring of a rules-based system that should among others help to make international trade (policy) more predictable. This set of rules is embodied in the WTO Agreements which are based on basic principles, that are:

1. **Non-discrimination:**
   - The **Most Favoured Nation rule (MFN)** ensures non-discrimination between trading partners as it states that if a WTO member grants a country an advantage, it has to give such advantage to all WTO members. Thus, a WTO member has to grant the most favorable conditions under which it allows trade in a certain product type to all other WTO members. However, there is no rule without an exceptions.[a]

Watch: https://youtu.be/Q5_Bh-Y48_E *E-Learning short videos - Most-favoured nation (MFN)*

- The **National Treatment Principle (NTP)** ensures non-discrimination between domestic and foreign products or services. It prohibits a member from favoring its domestic products over imported products. The NTP aims to provide equality of competitive conditions for imported products in relation to domestic products. Again, no rule without exceptions.[b]

  Watch: https://youtu.be/y1DW-xPGgdI *E-Learning short videos - The National Treatment Principle*

2. **Transparency:** WTO members must publish their trade regulations and changes therein. Moreover, members should respond to requests for information by other members.
3. **More open and predictable trade:** While the use of tariffs and quotas is not prohibited, members have committed to carry out multilateral negotiations periodically with a view to reduce the general level of trade barriers.

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[a] For example, a member may provide preferential treatment only to some countries within a free trade area or customs union, without having to extend such better treatment to all members. Another exception enables developed members to give unilateral preferential treatment to goods imported from developing countries and least-developed countries (LDCs), without having to extend such better treatment to other members.

[b] For example, there may be a security need to develop and purchase products domestically, or government procurement may, as is often the case, be used as a policy tool to promote smaller business, local industry or advanced technologies, see GATT Article III:8(a). Watch: https://youtu.be/7o0jjajYcnk *E-Learning short videos - General Exceptions*

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