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# Economics 354: National Innovation System Project

## Spring 2021

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### *What the project is*

The class will be divided into four teams, each consisting of four or five students. Each team is charged with researching the national innovation system of a single country, culminating in a report that is due on Friday, April 23 and a 15-minute presentation in class during the week of April 26. The analysis should include an assessment of the country's overall success in innovation using whatever metrics are available, along with a detailed examination of how the institutions of the country's national innovation system have contributed to (or detracted from) that innovation success.

### *Choice of countries and groups*

Groups will be formed over the weekend of March 27 and 28, leaving you about four weeks to do your research and prepare your report and presentation. You may express a preference for a country and/or for group partners **by email** to the instructor before Friday, March 26.

The countries should be selected from among the following set: United Kingdom, Italy, France, Germany, Japan, Canada, and the Netherlands. These are all relatively large countries that have relatively diverse economies. Some are members of the European Union. All are members of the OECD, which collects vast information about the R&D activities of its members and has some of the best comparative information available on science and technology.

### *Areas of research*

Beyond the initial (and essential) task of assessing the structure and overall success of the country's innovation system, there are many sub-questions that may be relevant. Among the points that you may wish to address are the following: (Note that some of these are not important for some countries, but there may be additional points that are important. Devote your attention to the areas that are most important for *your* country.)

- **Intellectual property regime.** What are the characteristics of the country's patent system and how does it encourage or discourage innovation?
- **Structure of R&D activity.** Is R&D mostly done by large corporations? Universities? Government labs? Startup firms? All of the above?
- **Leading and lagging industries.** Are there industries in the country that are global leaders in developing technologies? Are there industries that lag behind? Are the lagging industries successful imitators?
- **University system.** How is the university system structured? Are there productive connections between the universities and corporate R&D? How strong is the focus on

technologically oriented education? What do we know about the quality of the graduates and the quality of research in universities?

- **Financing of innovation.** How is innovation financed in the country? Is there a successful venture capital market for startup firms? Does government pay for R&D directly or indirectly? Is the banking system involved? Are successful startups (if they exist) able to perform successful IPOs?
- **Government policies toward innovation.** What government policies (beyond intellectual property and funding) facilitate or impede innovation? Has military, space, or other government major-project technology been an important part of innovation?
- **Market structure and innovation.** Is the economy dominated by large corporations or are small and startup firms also important? Are industries monopolized or competitive and how does that affect the incentives for innovation? How easy is it to start up new innovative firms?
- **International trade and investment.** Is the country open to international trade and how has that affected innovation? What are the country's major exports and how important have they been to innovation? Is foreign direct investment a substitute or complement to local innovation? Do import tariffs shelter inefficient firms?
- **Social norms, customs, and institutions.** Are there aspects of the social/cultural institutions of the country that are favorable or unfavorable to innovation?
- **Innovation infrastructure.** Are there features of the transportation, communication, or Internet infrastructure that have helped or hindered innovation?
- **Regional issues.** Are there regions within the country that have been more or less successful in innovation? Are there local "Silicon Valleys" in one industry or another?

### *Assignment of tasks*

Each group should assign topics from the list above to individual members for research. Some topics will turn out to be very important and some less important for any specific country, so try to spread the workload reasonably evenly. The final report and presentation should cover those points that are most relevant for the country's innovation system, either in promoting success or in retarding it.

You should make sure to finish research on the detailed questions well before the deadline so that the last week can be devoted to turning the details into a unified and coherent analysis. It would probably be useful for groups to plan to meet with the instructor a few times to make sure they are on the right course.

### *Resources*

There are many resources at your disposal in doing your research. The final section of the reading list describes several books and book series that contain qualitative information on selected countries. The OECD has massive amounts of data on innovation and R&D for its member countries. There are also journal articles that discuss research on innovation systems of countries. A search on EconLit (or perhaps Google Scholar) for, for example, "innovation Germany" should produce a long list of potential sources for Germany. More detailed searches on the specific subjects in the bullet points above may also be fruitful.