

**RUTGERS UNIVERSITY  
RUTGERS BUSINESS SCHOOL Ph.D. PROGRAM  
AND  
GRADUATE DIVISION OF GLOBAL AFFAIRS**

**GRADUATE COURSE IN NATIONAL INNOVATION POLICIES AND  
INTERNATIONAL BUSINESS  
RBS Course Code 26:553:605:01  
DGA Course Code 26:478:593:01**

**COURSE CONVENOR: PROFESSOR J.A. CANTWELL**

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**Spring Semester 2015**

**Class Program and Reading List**

## **Course outline description, and requirements of students**

An outline description of the course in National Innovation Policies and International Business:

This course examines the relationship between the strategies for innovation of multinational corporations (MNCs) and those of national governments in a global economic environment. A key theme is the relationship between innovation and competitiveness at the firm and country levels, and the interaction between these two levels since the majority of technological capacity is held by MNCs while government policies affect the extent and pattern of innovations within national boundaries. Attention is given to the distinctiveness of national patterns of technological specialization, how these reflect the characteristics of local policies and institutions, and how they have been changing over time. The international location of technological activity is considered from the national perspective of the effects of globalization on catching up (or falling behind); from the cross-border perspective of MNCs; and from the local perspective of regional systems of innovation and localized clusters, and the interactions in knowledge creation between MNC subsidiaries and indigenous firms. The course concludes with an evaluation of how innovation policies are being gradually reshaped in the current context of the globalization of a knowledge-driven economy.

Requirements of students on the course:

1. To attend all weekly classes, and any other additional lectures as may be advised from time to time. The weekly classes are to be held on Tuesdays from 1:00pm to 3:50pm, and the full schedule is set out below.
2. To complete a term paper by the end of the Spring semester, to be submitted in week 15 (by Monday, May 4<sup>th</sup>). Term papers should not normally exceed 2,500 words of text (the bibliography is not part of this word count). The title for the term paper must be chosen from the titles given below, each associated with a particular class topic (from topics 2-11; it is not possible to write on topic 1, which is a background introduction). The term paper must demonstrate an understanding of the issues raised in the relevant lecture, and make reference to the readings set for that topic. The term paper must answer the question set, with reference to the key themes of the course articulated in the lectures and readings. It is not to be treated as an independent research paper. All students should read the chapters and articles indicated in the lists below, whether or not they are writing their term paper on that topic. The course has been designed as an integrated treatment of the subject with underlying connections between topics. The term paper should therefore also demonstrate an appreciation of how the answer to a specific question on a given topic fits into the broader context of the course. The course must not be regarded as a set of 11 separate topics that can be treated in isolation from one another. Thus, while students are welcome if they

wish to undertake additional reading on the topic of their term paper, this must be related to or used to critique the central themes of the course in the term paper. Any such extra readings should not be used in the term paper merely to provide some other alternative essentially unrelated approaches to the topic, and in particular additional readings on a specific topic must not be regarded as a potential substitute for undertaking (and where they are relevant, referring to) the readings for other topics that are also part of the course. To reiterate: a term paper should answer the question set so as to (i) incorporate understandings derived from all the readings for the relevant topic and from the lecture on that topic, (ii) incorporate reference to other selected readings required in the course, and to general themes that recurred at various stages during the classes, and (iii) should only incorporate other references not included in the readings for the course to the extent that these help build upon and consolidate (but not detract from) the key themes and content of the course.

3. For Ph.D. students, and selected M.S. students, to give a presentation on their chosen topic to the class towards the end of the semester, prior to the submission of the paper itself at the end of the semester. Presentations can last for a maximum of 15 minutes when given by just one student, and for a maximum of 20 minutes when a joint presentation is given by two or more students (the allotted time then being divided equally between them). Presentations are to be prepared in PowerPoint, and to ensure that the necessary time limits are observed they must be contained in a maximum of 12 slides per student for a lone presenter or 8 slides per student in the case of joint presentations (excluding a title slide, if there is one), and all the text of each slide must be in at least a minimum font size of 24. Any presentation that does not conform to these guidelines may be stopped before it is completed. A hard copy of the slides to be used is to be given to the course convenor prior to the oral presentation. Topics will be allocated in week 1 (January 20<sup>th</sup>), and presentations will be scheduled for specific slots during the classes in weeks 13 or 14 (April 14<sup>th</sup> or April 21<sup>st</sup>). Where students give presentations, assessment will be 25% for the presentation, and 75% for the paper.
4. Those students that will give presentations are expected to consult the class materials for their topic ahead of the session to be held on that topic, and to prepare some questions on the lecture in order to begin a class discussion once that week's lecture has been completed.

## **Class topics**

1. A review of cross-country differences in national innovation policies.
2. International competitiveness at a country or industry level.
3. Historical patterns of technological change across countries, and the impact of international business activity.
4. Cross-country catch-up (or falling behind) in innovative activity, and the effects of globalization.
5. The competitiveness of multinational corporations (MNCs) and the organization of innovation.
6. The modern technological competitiveness of Japanese and East Asian firms.
7. Regional systems of innovation and localized clusters.
8. Local and international knowledge accumulation in MNCs.
9. National systems of innovation, and their interaction with MNCs.
10. MNC subsidiary and indigenous firm local competence development, and inter-firm knowledge spillovers.
11. National innovation policies in catching up economies, and the varying role of international business.

## Detailed topic schedule, outlines and reading lists

Week 1, January 20<sup>th</sup>

1. A review of cross-country differences in national innovation policies.

(An introduction pertinent to each of the remaining topics; students should treat this as essential background material, but there is no term paper corresponding to this topic.)

Lundvall, B.-Å. and Borrás, S. (2005), "Science, technology and innovation policy - old issues and new challenges", chapter 22 in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (Eds.), *Oxford Handbook of Innovation*, Oxford and New York: Oxford University Press.

Ergas, H. (1987), "Does technology policy matter?", in Guile, B.R. and Brooks, H. (Eds.), *Technology and Global Industry: Companies and Nations in the World Economy*, Washington DC: National Academy Press.

Pavitt, K.L.R. (2001), "Public policies to support basic research: what can the rest of the world learn from US theory and practice? (And what they should not learn)", *Industrial and Corporate Change*, Vol. 10, No. 3, pp. 761-779.

Ostry, S. and Nelson, R.R. (1995), "National innovation systems, industrial policies, and the rise of technonationalism", chapter 2 in *Techno-Nationalism and Techno-Globalism: Conflict and Cooperation*, Washington DC: The Brookings Institution.

Branscomb, L.M. and Florida, R. (1997), "Challenges to technology policy in a changing world economy", chapter 1 in Branscomb, L.M. and Keller, J.H. (Eds.), *Investing in Innovation: Creating a Research and Innovation Policy that Works*, Cambridge, Mass.: MIT Press.

Week 2, January 27<sup>th</sup>

2. International competitiveness at a country or industry level.

Paper Title: Discuss why national competitiveness need not be a zero sum game.

Cantwell, J.A. (2005), "Innovation and competitiveness", chapter 20 in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (Eds.), *Oxford Handbook of Innovation*, Oxford

and New York: Oxford University Press.

Lipsey, R.G. (1997), "Globalization and national government policies: an economist's view", chapter 2 in Dunning, J.H. (Ed.), *Governments, Globalization and International Business*, Oxford and New York: Oxford University Press.

Krugman, P.R. (1994), "Competitiveness: a dangerous obsession", *Foreign Affairs*, Vol. 73, No. 2, pp. 28-44.

Fagerberg, J. (1988), "International competitiveness", *Economic Journal*, Vol. 98, pp. 355-374.

Nelson, R.R. and Pack, H. (1999), "The Asian miracle and modern growth theory", *Economic Journal*, 109, pp. 416-436.

Week 3, February 3<sup>rd</sup>

3. Historical patterns of technological change across countries, and the impact of international business activity.

Paper Title: Evaluate the effect of historical changes in the way in which innovation is organized on national patterns of technological specialization.

Cantwell, J.A. and Vertova, G. (2004), "Historical evolution of technological diversification", *Research Policy*, Vol. 33, No. 3, pp. 511-529.

Vertova, G. (2002), "A historical investigation of the geography of innovative activities", *Structural Change and Economic Dynamics*, Vol. 13, No. 3, pp. 259-283.

Lazonick, W. (1992), "Business organisation and competitive advantage: capitalist transformations in the twentieth century", in Dosi, G., Giannetti, R. and Toninelli, P.A. (Eds.), *Technology and Enterprise in a Historical Perspective*, Oxford and New York: Oxford University Press.

Cantwell, J.A. (1991), "Historical trends in international patterns of technological innovation", in Foreman-Peck, J. (Ed.), *New Perspectives on the Late Victorian Economy: Essays in Quantitative Economic History, 1860-1914*, Cambridge and New York: Cambridge University Press.

Vertova, G. (1998), "Technological similarity in national styles of innovation in a historical perspective", *Technology Analysis and Strategic Management*, Vol. 10, No. 4, pp. 437-449.

Week 4, February 10<sup>th</sup>

4. Cross-country catch-up (or falling behind) in innovative activity, and the effects of globalization.

Paper Title: Assess how the role of international business connections in countries that are catching up technologically depends on the stage of national development, and on the local institutional and policy environment.

Athreye, S. and Cantwell, J.A. (2007), "Creating competition? Globalisation and the emergence of new technology producers", *Research Policy*, Vol. 36, No. 3, pp. 209-226.

Ernst, D. and Kim, L. (2002), "Global production networks, knowledge diffusion and local capability formation", *Research Policy*, Vol. 31, Nos. 8-9, pp. 1417-1429.

Zhao, M. (2006), "Conducting R&D in countries with weak intellectual property rights protection", *Management Science*, Vol. 52, No. 8, pp. 1185-1199.

Fagerberg, J. and Godinho, M.M. (2005), "Innovation and catching-up", chapter 19 in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (Eds.), *Oxford Handbook of Innovation*, Oxford and New York: Oxford University Press.

Henisz, W. (2000), "The institutional environment for economic growth", *Economics and Politics*, Vol. 12, No. 1, pp. 1-31.

Week 5, February 17<sup>th</sup>

5. The competitiveness of multinational corporations (MNCs) and the cross-country organization of innovation.

Paper Title: Consider the relationship between corporate competitiveness, the multinationality of activity, and R&D-intensity.

Cantwell, J.A. and Sanna-Randaccio, F. (1993), "Multinationality and firm growth", *Weltwirtschaftliches Archiv*, Vol. 129, No. 2, pp. 275-299.

Dosi, G., Nelson, R.R. and Winter, S.G. (2000), "Introduction: the nature and dynamics of organizational capabilities", in Dosi, G., Nelson, R.R. and Winter, S.G. (Eds.), *The Nature and Dynamics of Organizational Capabilities*, Oxford and New York: Oxford University Press.

Cantwell, J.A. (1991), "The theory of technological competence and its application to international production", in D.G. McFetridge (Ed.), *Foreign Investment, Technology and Growth*, Calgary: University of Calgary Press.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Review*, Vol. 18, No. 7, pp. 509-533.

Florida, R. and Kenney, M. (2000), "Transfer and replication of organizational capabilities: Japanese transplant organizations in the United States", in Dosi, G., Nelson, R.R. and Winter, S.G. (Eds.), *The Nature and Dynamics of Organizational Capabilities*, Oxford and New York: Oxford University Press.

Week 6, February 24<sup>th</sup>

6. The modern technological competitiveness of Japanese and East Asian firms.

Paper Title: Assess the role of international business connections in the recent success of Japanese and East Asian firms, and how these firms have contributed to the emergence of a new technological paradigm.

Ozawa, T. (2003), "Japan in an institutional quagmire: international business to the rescue?", *Journal of International Management*, Vol. 9, No. 3, pp. 219-235.

Kodama, F. (1992), "Japan's unique capacity to innovate: technology fusion and its international implications", in Arrison, T.S., Bergsten, C.F., Graham, E.M. and Harris, M.C. (Eds.), *Japan's Growing Technological Capability: Implications for the US Economy*, Washington DC: National Academy Press.

Odagiri, H. and Goto, A. (1993), "The Japanese system of innovation: past, present and future", chapter 3 in Nelson, R.R. (Ed.), *National Innovation Systems: A Comparative Analysis*, Oxford and New York: Oxford University Press.

Sachwald, F. (2001), "Globalization and Korea's development trajectory: the roles of domestic and foreign multinationals", chapter 9 in Sachwald, F. (Ed.), *Going Multinational: The Korean Experience of Direct Investment*, London and New York: Routledge.

Hobday, M. (1995), "The Republic of Korea: catching up in large corporations", and "Conclusions and implications", chapters 4 and 8 in *Innovation in East Asia: The Challenge to Japan*, Aldershot: Edward Elgar.

Week 7, March 3<sup>rd</sup>



7. Regional systems of innovation and localized clusters.

Paper Title: Assess how MNCs may create competitive advantage through their participation in localized inter-firm clusters, and comment on the implications for regional policy-makers.

Cantwell, J.A. and Iammarino, S. (2000), "Multinational corporations and the location of technological innovation in the UK regions", *Regional Studies*, Vol. 34, No. 4, pp. 317-332.

Cantwell, J.A. and Piscitello, L. (2002), "The location of technological activities of MNCs in European regions: the role of spillovers and local competencies", *Journal of International Management*, Vol. 8, No. 1, 2002, pp. 69-96.

Andersson, U., Forsgren, M. and Holm, U. (2002), "The strategic impact of external networks: subsidiary performance and competence development in multinational corporations", *Strategic Management Journal*, Vol. 23, No. 11, pp. 979-996.

Ernst, D., Guerrieri, P., Iammarino, S. and Pietrobelli, C. (2001), "New challenges for industrial clusters and districts: networks and knowledge diffusion", chapter 6 in Guerrieri, P., Iammarino, S. and Pietrobelli, C. (Eds.), *The Global Challenge to Industrial Districts: SMEs in Italy and Taiwan*, Cheltenham: Edward Elgar.

Feldman, M.P. and Schreuder, Y. (1996), "Initial advantage: the origins of the geographic concentration of the pharmaceutical industry in the Mid-Atlantic region", *Industrial and Corporate Change*, Vol. 5, No. 3, pp. 839-862.

Week 8, March 10<sup>th</sup>

8. Local and international knowledge accumulation in MNCs.

Paper Title: Evaluate the conditions under which, when they are developing innovations in a given location, MNCs source relatively more technological knowledge from the local environment, from their home country, or from other parts of the world.

Cantwell, J.A. and Mudambi, R. (2011), "Physical attraction and the geography of knowledge sourcing in multinational enterprises", *Global Strategy Journal*, Vol. 1, Nos. 3-4, pp. 206-232.

Frost, T.S. (2001), "The geographic sources of foreign subsidiaries' innovations", *Strategic Management Journal*, Vol. 22, No. 2, pp. 101-123.

Singh, J. (2005), Collaborative networks as determinants of knowledge diffusion

patterns", *Management Science*, Vol. 51, No. 5, pp. 756-770.

Cantwell, J.A. and Zhang, F. (2013), "Do foreign-owned subsidiaries in China follow a distinctive pattern of technological knowledge sourcing?", *Management and Organizations Review*, Vol. 9, No. 3, pp. 489-512.

Chung, W. and Alcácer, J. (2002), "Knowledge seeking and location choice of foreign direct investment in the United States", *Management Science*, Vol. 48, No. 12, pp. 1534-1554.

Week 9, March 17<sup>th</sup>

Spring recess week, no class.

Week 10, March 24<sup>th</sup>

9. National systems of innovation, and their interaction with MNCs.

Paper Title: Briefly describe the concept of a national innovation system (NIS), and examine how the interrelationship between NISs and the international innovation networks of MNCs has affected NISs.

Nelson, R.R. and Rosenberg, N. (1993), "Technical innovation and national systems", chapter 1 in Nelson, R.R. (Ed.), *National Innovation Systems: A Comparative Analysis*, Oxford and New York: Oxford University Press.

Cantwell, J.A. and Molero, J. (2003), "Introduction", chapter 1 in J.A. Cantwell and J. Molero (eds.), *Multinational Enterprises, Innovative Strategies and Systems of Innovation*, Cheltenham: Edward Elgar.

Cantwell, J.A. and Kosmopoulou, E. (2003), "Path-dependency and coherence in international networks of technological innovation", chapter 2 in J.A. Cantwell and J. Molero (eds.), *Multinational Enterprises, Innovative Strategies and Systems of Innovation*, Cheltenham: Edward Elgar.

Mowery, D.C. and Oxley, J.E. (1995), "Inward technology transfer and competitiveness: the role of national innovation systems", *Cambridge Journal of Economics*, Vol. 19, No. 1, pp. 67-93.

Patel, P. and Pavitt, K.L.R. (2000), "National systems of innovation under strain: the internationalisation of corporate R&D", chapter 9 in Barrell, R., Mason, G. and O'Mahoney, M. (Eds.), *Productivity, Innovation and Economic Performance*,

Cambridge and New York: Cambridge University Press.

Week 11, March 31<sup>st</sup>

10. MNC subsidiary and indigenous firm local competence development, and inter-firm knowledge spillovers.

Paper Title: Examine the relative significance, to the learning processes of indigenous firms in host countries with a foreign MNC presence, of the following factors: the technology gap, the extent of local absorptive capacity, and the motives and MNC group status of local subsidiaries.

Rasiah, R. (2003), "Foreign ownership, technology and electronics exports from Malaysia and Thailand", *Journal of Asian Economics*, Vol. 14, No. 5, pp. 786-811.

Wignaraja, G. (2002), "Firm size, technological capabilities and market-oriented policies in Mauritius", *Oxford Development Studies*, Vol. 30, No. 1, pp. 87-104.

Blomström, M., Kokko, A. and S. Globerman (2001), "The determinants of host country spillovers from foreign direct investment: a review and synthesis of the literature", in N. Pain (ed.), *Inward Investment, Technological Change and Growth: The Impact of MNCs on the UK Economy*, London and New York: Palgrave Macmillan.

Kokko, A. (1994), "Technology, market characteristics, and spillovers", *Journal of Development Economics*, Vol. 43, No. 2, pp. 279-293.

Chung, W. (2001), "Identifying technology transfer in foreign direct investment: influence of industry conditions and investing firm motives", *Journal of International Business Studies*, Vol. 32, No. 2, pp. 211-229.

Week 12, April 7<sup>th</sup>

11. National innovation policies in catching up economies, and the varying role of international business.

Paper Title: Evaluate how, if at all, innovation policies should differ in catching up economies, compared to such policies in longer established industrialized countries.

Ozawa, T. (2003), "Pax Americana-led macro-clustering and flying-geese-style catch-up in East Asia: mechanisms of regionalized endogenous growth", *Journal of Asian*

*Economics*, Vol. 13, No. 6, pp. 699-713.

Ozawa, T. (1997), "Japan", chapter 13 in Dunning, J.H. (Ed.), *Governments, Globalization and International Business*, Oxford and New York: Oxford University Press.

Lall, S. (1997), "East Asia", chapter 14 in Dunning, J.H. (Ed.), *Governments, Globalization and International Business*, Oxford and New York: Oxford University Press.

Enos, J.L. and Park, W.-H. (1988), "Conclusions", chapter 9 in *The Adoption and Diffusion of Imported Technology: The Case of Korea*, London and New York: Croom Helm.

Bell, M. and Pavitt, K.L.R. (1997), "Technological accumulation and industrial growth: contrasts between developed and developing countries", chapter 4 in Archibugi, D. and Michie, J. (Eds.), *Technology, Globalisation and Economic Performance*, Cambridge and New York: Cambridge University Press.

Week 13, April 14<sup>th</sup>

Discussion of first set of student presentations.

Week 14, April 21<sup>st</sup>

Discussion of second set of student presentations.

Week 15, April 28<sup>th</sup>

No class; completion of term papers; submission of term papers due by Monday, May 4<sup>th</sup>, via the Blackboard course site (under the tab "Assignment", you'll find an assignment named "Term paper", click "View/Complete", upload your paper there, and submit).