

APPENDIX - CHAPTER 6

Table A6.1.
The literature on international R&D spillovers, main findings¹

Authors	Sample	Main results
1. Trade		
Fecher (1989)	Belgian firms	No significant effect of foreign R&D or fragile estimates.
Mohnen (1992a)	Canada total manufacturing	Output elasticity of Foreign R&D is more important than for domestic R&D, but the rate of return to foreign R&D is 10 times lower than to domestic R&D.
Soete and Verspagen (1993)	Cross-country	No significant effect of foreign R&D or fragile estimates.
Coe and Helpman (1995)	22 countries	Output elasticity of Foreign R&D is more important than for domestic R&D in all countries but the G7. R&D spillovers in each country increase with the propensity to import.
Coe <i>et al.</i> (1995)	77 South countries	Significant R&D spillovers from 22 North countries, increasing with the level of trade.
Gittleman and Wolff (1995)	Cross-country	No significant effect of foreign R&D or fragile estimates.
Verspagen (1996)*	22 sectors - 14 countries	The results underline the importance of international and domestic R&D spillovers for productivity growth.
Vuory (1997)*	Finnish sectors	Foreign R&D through the import of capital goods more efficient during 1981-93. Then comes the domestic indirect R&D.
Sakurai <i>et al.</i> (1997)*	33 sectors, 10 countries	embodied R&D is an important source of TFP growth in services.
2. Foreign investment		
Hanel (1994)	Canada, 19 sectors	Estimates are fragile, the significance increases with gestation lags. The return to Foreign R&D is much less important than the return on the industry's own R&D.
Hejazi and Safarian (1996)*	21 countries	High spillovers from the US, through FDI and trade (the latter is overestimated without FDI)
3. Foreign technology payments		
Soete and Patel (1985)	5 countries	Do not dissociate the separate effects of foreign technology payments and domestic R&D. They consider implicitly the two technology sources to be substitute.
Deolalikar & Evenson (88)	Indian sectors	Complementarity relationship between own R&D and foreign technology payments.
Mohnen and Lépine (1991)	Canada-sectors	Complementarity relationship between own R&D and foreign technology payments.
Mohnen and Gallant (1992)	5 countries	Foreign technology payments capture part of the foreign R&D spillovers but have a weak impact on productivity growth as compared with foreign R&D.
Soete and Verspagen (1993)	Cross-country	No effects of foreign R&D or foreign technology payments on productivity growth.
4. Foreign patents		
Eaton and Kortum (1994)	5 countries	Calibration of a general equilibrium model; European countries derive most of their growth from foreign R&D whereas the US and Japan rely slightly more on their own research.
Eaton and Kortum (1995a)	19 OECD countries	The spillovers declines with the geographical distance, trade helps but not a lot, and a country's level of education plays a significant role in the ability to absorb foreign ideas.
5. Unweighted sum of foreign R&D		
Fecher (1992)	10 countries	No significant effect of foreign R&D or fragile estimates.
Mohnen (1992b)	5 countries	Own and foreign R&D are complementary, and foreign R&D is a big contributor to productivity growth, even in the US.
Park (1993)	10 countries	Foreign R&D is more important than domestic R&D and its effect is larger for the smaller countries and the more open economies. Foreign R&D less important if the US is excluded.
6. Vector approach		
O'Sullivan and Röger (1991)	6 countries	No spillovers to US; no spillover between Europe and Japan; Foreign R&D has a stronger effect than own R&D in Europe.
Bernstein and Mohnen (1995)	US and Japan 11 industries	Strong spillovers from US to Japan but no spillovers from Japan to US.
Bernstein (1995)	11 sectors - US & Canada	The productivity growth effects of foreign R&D are more important from the US to Canada than the other way round. (the results vary across industries)
Bernstein and Yan (1995)	10 sectors - Canada- Japan	Little international spillovers from Japan to Canada, but quite substantial ones in the other direction. (the results vary across industries)
Badulescu (1996)*	7 countries	All countries benefit from outside R&D; only Japan and Norway are no significant R&D spillovers sources for the other countries.
7. Patent citations		
Sjöholm (1996)*	Sweden, 261 references	Geographic proximity and international trade affect positively the inflow of knowledge to Sweden. Knowledge flows are approximated through patent references.
8. Patent proximity		
Branstetter (1995)*	US & Japan	No significant international spillovers between US and Japanese firms.

1. This table is mainly a summary of Mohnen (1996)'s main text, * indicates the studies which are not included into Mohnen's survey.