

General Results: comparing firms

- Firms completely or partially owned by foreign capital [FDI(c) and FDI(p)] tend to be larger, more capital intensive, more export oriented, more R&D intensive and attain high levels of productivity than domestically owned firms;
- Productivity levels in FDI firms has less variation than in domestic firms;
- Productivity levels in FDI(c) and FDI(p) is similar;
- FDI(c) are more export oriented and larger than FDI(p), but are less capital intensive and R&D intensive;
- Productivity levels in FDI and domestically owned firms that are export oriented are similar;
- Domestically owned firms that are export oriented have higher levels of productivity but are less capital intensive than domestically owned firms inward oriented;
- Small and medium firms tend to be more export oriented, whereas large firms are more inward oriented;
- Firms engaged in R&D have higher productivity levels, higher wages and higher capital intensity than firms that do not R&D.

Specific results: FDI, R&D and spillovers

- ***Spillover Effects of FDI on productivity:***
 - FDI has spillover effects on productivity as domestically owned firms' productivity improves as FDI enters the industry: (i) competition effect?; (ii) information effect?; (iii) technological linkage effect?; (iv) substitution (of domestic firms) effect?; (v) spurious effect?. How much is automatic and how much is policy? Why would FDI invest in an industry that is competitive and is going to become more competitive?
 - Scale, export orientation and market openness (because of competition, access to foreign knowledge and learning by doing), and labour quality affect productivity positively.
 - FDI firms do not benefit from spillovers, maybe because of their standardised technology and production patterns.
- ***Spillover Effects of R&D on Productivity:***
 - There are R&D spillovers from R&D firms to non-R&D firms, as an increase in R&D by any one firm in one industry increases productivity in the industry by significantly more than proportionally: (i) competition effect?; (ii) public good nature of knowledge?; (iii) information (best example) effect? How much is due to policy and how can firms protect rents?
 - However, R&D effects on the productivity of firms pursuing R&D are not significantly positive (and may even be negative as R&D, accounted as costs, reduces productivity at the sport): this might be because of lagged effects or accounting problems. Why would firms engage in R&D if: (i) they benefit little; (ii) the other firms (those not pursuing R&D) benefit more.
- ***FDI and R&D Dynamics:***
 - The relationship between FDI and R&D is a very complex one:
 - FDI firms are more R&D intensive;

- To absorb new technologies made available by FDI, or to compete with FDI firms, domestic firms have to develop their technological capabilities – hence, FDI may encourage R&D;
- However, due to high R&D spillovers from R&D firms to non-R&D firms, FDI may actually discourage R&D by domestically owned firms;
- FDI subsidiaries do not R&D because they depend on the parent firm's technology, standards and R&D;
- Taiwanese firms that FDI(out) may not engage in R&D in Taiwan because: (i) they can reduce costs by taking advantage of better factor prices through re-location; (ii) they may conduct R&D in developed countries instead;
- It seems that the relationship between FDI and R&D is not an automatic one: it depends on the relationship between foreign and domestic firms, technological capabilities, specific industries and their core demands (ex., whether they produce standardised products and/or with standardised processes), the markets they serve, investment policy and arrangements, etc.
- On one hand, stronger domestic firms may be able to take better advantage of FDI; on the other, strong domestic firms may rely less, and so be less sensitive, to spillovers from FDI.

Conclusions for policy

- governments should encourage FDI first;
- then, they should shift policy to develop domestic technological capabilities instead.

This seems to be a very strange conclusion.