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Competition and Innovation: The case of Chinese firms

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Title:

How Do Firms Specialize? The technological positions of Chinese robotics firms

Summary:

Economic growth involves changes in industrial structure. Therefore, industrial differentiation is a major driver for changes in industrial structure, along with the disruption and the fusion of industries. Industrial differentiation means the emergence and development of industries that specialize in a different particular area of economic activities in comparison with existing industries, and that efficiently produces a new variety of products and services. How does an industry differentiate?

Although industrial differentiation has been discussed related to changes in industrial structure, many studies have focused on inter-industry relationships at the industrial level. Consequently, because the difference in technological progress among industries is determined a priori or not explicitly, it is unclear where each different specialization in the industry level come from. Since products consist of multiple technologies, not of a single technology, accordingly technological fields and their combinations for producing products, that is, the technological position, can be different for each industry and firm.

We specifically investigate the technological positions of firms and their changes in the Chinese industrial robotics industry, which has been undergoing a rapid growth recently. Using patent information for specifying technological fields that firms are focusing on, firstly, we show that the technological positions among Chinese robotics firms have been getting close to that of an early started Japanese firm. Secondly, we examine the characteristics of the technological positions of Chinese firms, and show that they have been accumulating technologies that realize basic functions of robots and those that

improve the sophistication of products.

Consequently, the results of this study show that Chinese robotics firms have got technological similarities in the robotics industry in terms of technological fields, and their technologies have been specialized in the robotics business by developing a technological structure combining the two elements of basic functions and technological diversification. Unless technological changes occur that fundamentally alter the technological structure itself, it can become the competitive advantage of existing firms and the technological hurdle of the industry against potential new entrants.