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INNOVATIONS AND DEVELOPMENT

ROLE OF INNOVATION IN GROWTH OF COUNTRIES

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Abstract: The paper discusses the role of innovative capability in growth of a country by arguing that in the long run, a nation's higher order competitive advantage can be built only with innovation. The paper also identifies eight determinants of innovation capability of a country. The discussion of these eight determinants should be useful for policy makers in countries attempting to promote economic growth by improving the productivity of the firms in their countries.

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Introduction

It is well recognized that productivity of a country is the key to its economic growth and level of prosperity. In recent years technology and innovation have been cited as important drivers of long-term productivity of firms of a country. Thus, the unit of analysis in seeking keys to a country's growth and prosperity must start with its firms. The question of interest is what conditions in a country will make its firms more competitive in a global economy.

Since individual firms create jobs and growth in a country, it is essential to study the functioning of these firms. So, the key to a country's prosperity is the productivity of its firms. Many a times studies on economic prosperity of countries focus only on macroeconomic variables, such as, budget deficits, interest rates, tariffs, etc. There is no denying that these are important variables for growth, but they ignore the roots causes of productivity of the firms. Even though improvements in human capital, infrastructure, institutions, and macroeconomic variables have shown to contribute economic growth, these factors eventually run into diminishing returns (World Economic Forum, 2005). In today's age of global competition, national economies progress by "upgrading and extending their competitive positions, through higher order competitive advantages in existing industries and developing the capability to compete successfully in new, high productivity segments of industries" (Porter, 1990). In the long run, a nation's higher order competitive advantage can be built only with innovation. A nation's firms must use technical innovation to develop cutting-edge products and processes. In innovation-driven competitiveness, firms not only create technology, but also appropriate and improve technology available in other nations. This is because globalization has brought down geographic and market boundaries, thereby improving a company's ability to innovate by borrowing ideas from other countries. In a recent survey by McKinsey and Co. seventy percent of the senior executives said that innovation will be

one of the top three drivers of growth in their company in the next three to five years (Barsh, Capozzi, and Davidson, 2008). In another survey, executives see innovation as the most important way for companies to stay competitive in today's global business environment (The McKinsey Quarterly, 2006).

Theory of comparative advantage does not explain why firms in some nations are better at product designs and more efficient use of resources that lead to high and rising productivity. Neoclassical theory, which is based on the assumption of perfect competition between firms producing similar products with similar inputs, prevents individual firms from raising the price of its output to more than what covers the costs of its inputs and a fair return to the investors. It assumes that all activity involves making old products with old technology (Morck and Yeung, 2001). Introduction of innovation violates the assumption of perfect competition. Innovation includes not only designing and producing new and better goods for which firms can charge higher price compared to their competitors, but cheaper ways of producing existing goods. In either case, innovative firms can earn profits excess of their input costs.

Many decades ago, Joseph Schumpeter had recognized that competition was constantly changing (Schumpeter, 1934). In other words, there is no such thing as "equilibrium" in competition. According to Schumpeter's insight innovative firms bring new products or better technology into the economy, but this destroys stagnant firms. Even though the "destruction" of stagnant firms can be considered a downside of innovation, it can lead to higher productivity and national competitive advantage that is more durable. National advantage based on factor costs is easy to replicate. But higher order advantages that can, for example, help establish brand name products can be difficult to replicate and bring competitive advantage to a country's firms. As an illustration, in early years of development, Korean electronic firms had not developed sustainable advantage and competed on basis of labor costs. But this advantage started eroding when Japanese, American, and European firms started manufacturing

operations in other Asian countries such as, Malaysia, Indonesia, and Thailand. In response to this threat, Korean firms such as Samsung used innovation to develop cutting-edge products and processes that has propelled Korea to the level of a developed country. There have been a number of studies that support the view that there is a positive relationship between innovation and growth of countries. For example, a Canadian study shows that correlation between a country's log per capita GDP and the log of the number of patents its residents hold normalized by GDP is +0.69, significant at the 0.001 level (Morck and Yeung, 2001). Other studies that support this view are Jacobs (1984), Porter (1990), and Romer (1994). Given innovation's role in economic growth of countries, in the next section we discuss factors that are conducive to innovation activity in a country.

Determinants of innovation

Peter Drucker, an authority on modern management pointed out that innovation is not a "flash of genius", but hard work by firms and individuals of a country (Drucker, 2001). This means that there has to be proper conditions in a country whereby "hard work" by firms and individuals will result in innovations. Below we give a brief explanation of the variables. That we believe are important determinants of the level of innovation capability of a country.

Institutions. Some researchers have contended that the rules of games in a society matter most in creating appropriate incentives for desirable economic behavior (Rodrik and Subramanian, 2003). This is not a new idea. It has been espoused by economists and philosophers for many centuries. Over three hundred years ago philosopher John Locke (2003), over two hundred years ago economist and philosopher Adam Smith (1994), and sixty years ago economist Frederick von Hayek (1944) emphasized the importance of property rights in productivity and economic success of nations. Adam Smith said: "Nations will experience opulence and peace once they create the institutions that encourage entrepreneurship and savings." Recent work on the role of institutions in economic growth has been associated with the writings of Nobel Prize winner economist Douglas North (1990). North emphasized the affect of institutional factors on economic development and concentrated on the relationship between economic growth and two institutional factors, namely, political freedom and civil liberty. More recently, Morck and Yeung have contended that institutions that protect intellectual property rights determine the pace of innovation in a country (Morck and Yeung, 2001). We expect a positive relationship between innovation capability of a country and the quality of institutions in that country.

Business Sophistication. Business sophistication depends on a country's quality of business networks and supporting industries. A country with a network of suppliers and firms with high quality operations and strategies will create opportunities for innovations.

Government Size. For a long time the private sector has been at the forefront of funding successful innovations (Morck and Yeung, 2001). On the other hand, government efforts in spurring innovations have been rather dismal. In 1980s and 1990s, Japan's Ministry of International Trade

(MITI) was credited with financing a number of successful Japanese firms. But a 1996 study showed that most of the firms subsidized by MITI were losers in the long run (Beason and Weinstein, 1996). Economists have recognized that in many cases excessive government expenditures can lead to inefficiency and loss of productivity in the country (Beach and Kane, 2008). Government expenditures compete with private sector and divert resources through a crowding out effect. Thus, we would expect a negative relationship between the size of the government and the pace of innovations in a country.

Training and Education. The quality of labor force in an economy is critical for competitiveness. In a fast changing global economy that requires technological adaptation by firms, a pool of well educated employees provides opportunities for innovative capability. Thus, we expect a positive relationship between the quality and quantity of higher education provided in a country and innovation capability of that country.

Technological Readiness. Technological readiness refers to factors that increase technological capacity of a country. This includes stock of technology available in a country and the penetration rate of information and communication technologies. We expect a positive relationship between state of technological readiness of a country and innovation capability of that country.

Market Size. A large market size gives firms incentive for productivity and expansion because in a large market firms can exploit economies of scale. In a global economy, the market size includes sum of the domestic market and opportunities for export. Larger market opportunities should give firms incentive to become innovative to take advantage of increased business opportunities. We expect a positive relationship between market size and innovation capability of a country.

Labor Market Efficiency. Efficient labor markets give firms the flexibility to recruit and allocate workers to the most productive tasks. It also allows the firms to provide incentives to workers based on their effort and productivity. This should result in firms and workers in efficient labor markets seeking innovative products and processes to increase productivity and profits. We expect a positive relationship between labor market efficiency and innovative capability of a country.

Infrastructure. Firms need good infrastructure such as dependable electricity supply, good and reliable telecommunications networks, and good transportation networks to develop and use innovative products and processes. Thus, we would expect a positive relationship between quality of infrastructure and innovative capability of a country.

Conclusion

Over the years a number of studies have come to the conclusion that economic prosperity of countries depends on the productivity with which national resources are employed. Since individual firms create jobs and growth in a country, it is essential to study the functioning of these firms. If the firms in a country are productive and growing, the country in

aggregate will have a higher growth rate. So, the key to a country's prosperity is the productivity of its firms. Other studies have shown a link between innovative capability of a country and productivity of its firms. Thus, any discussion of growth of economies must focus on determinants of innovation. In this paper we attempted to identify eight determinants of innovation capability of a country. The discussion of these eight determinants should be useful for policy makers in countries promoting economic growth by improving the productivity of the firms in their countries.

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