

Good essay about posners technological gap model

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International trade

Technology is a critical factor in production and international trade. The competitiveness of a country correlates with the level of technological development. Posner's technology gap model explains the trade that exists between an innovative country that comes up with a new technology and the country that imports products from the innovative country. According to Posner, a country that has a technology lead will benefit from international trade so long as it keeps the lead. Due to the economic differences between countries, technological advancement and product innovation do not take place simultaneously in countries (Krugman & Obstfeld, 2012).

Innovative countries enjoy quasi-monopoly benefits in their technology-intensive products. The effect is that innovative countries can produce high-quality products at a lower cost compared to the cost incurred by other countries. These countries, therefore, sell to other countries at higher prices than in the domestic market. On the other hand, countries that have not taken the technology lead will import products from innovative countries since it will be more expensive to produce the same products. In addition, the products in the importing countries will not be of quality as those produced in the innovative countries. The innovative countries, therefore, benefit from international trade for a given period.

Posner argues that the length of the technology gap is influenced by the nature and amount of economies of scale the innovation generates. Posner points out the two types of economies of scale as static and dynamic. Static economies of scale refer to those resulting from the size of the firms.

Through innovation, companies in the country can produce in large scale

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thereby enjoying cost advantages. Dynamic economies of scale arise from the learning curve effect. As the country uses the new technology, it becomes more efficient with time.

The innovative gap reduces over time due to technology diffusion as the importing countries try to imitate the technology used by the innovative country. Technology diffusion can occur through direct technology transfers. This results from foreign direct investments involving the formation of Greenfield investments in the importing country. As foreign corporations use the new technology in the formerly importing country, the country acquires the new technology. In addition, the gap can be eliminated if the importing country invests in research and development and develops the technology. Trade in technology can also remove the gap. Innovative countries may sell technology to other countries through royalties and patent rights. Finally, it normally does not take a long time before the scientific idea underlying the innovation becomes public. When the technology is eliminated, the innovative country will no longer enjoy quasi-monopoly benefits from international trade (Grimwade, 2000).

Economies of scale

Economies of scale are the cost advantages resulting from large scale production or operating in a large industry (Salvatore, 2011). Economies of scale are either internal or external. Internal economies of scale relate to the size of the firm. As a firm increases its size of production, the cost per unit of production decreases. This partly results from the fact that some costs remain fixed irrespective of the volume of production. Fixed cost of

production per unit, therefore, decreases with the level of production. For instance, a firm may incur the same amount of administration expenses irrespective of the quantity of production.

External economies of scale, on the other hand, relate to the advantages of operating in a large industry concentrated in a single place. One of the sources of external economies of scale includes availability of suppliers.

Suppliers of raw materials and specialised equipment are readily available when firms are concentrated. Other sources are labor pooling and knowledge and technology spill overs. A company can easily acquire new technology from other companies operating in the region (Appleyard & Field, 2001).

Both internal and external economies of scale play a significant role in international trade. Economies of scale lead lower production costs per unit thereby enabling the firms to sell at lower prices or earn higher profits than companies that do not enjoy economies of scale. A country enjoying economies of scale in the production can export to other countries and earn profit.

The desire to gain economies of scale has promoted international trade through specialization. In this case, a state identifies a product that it has a comparative advantage in producing. In order to realise economies of scale in production, the country will concentrate its resources in the production of that commodity in large quantity. This results in a fall in the cost per unit thereby enabling the country to export the product to other countries. For instance, Japan enjoys cost advantages in the production of electronics and automobiles. Japan has, therefore, focused its resources on the electronics industry leading to further cost benefits from economies of scale.

In a trade between two countries, if one country enjoys economies of scale in producing a particular commodity, most of its resources will be directed to the industry. Other industries in the country will be producing less. This implies that the country has to import other commodities from countries that have cost advantages in their production.

International trade is also promoted by the fact that some domestic markets are not large enough to support large-scale production (Dunn & Mutti, 2004). In smaller countries, the domestic market is so small that mass production is uneconomical without international trade. They, therefore, produce in large scale and export the excess to the international market.

Product life cycle hypothesis

According to Raymond Vernon, the flow of foreign direct investment is influenced by the product life-cycle. Vernon argues that product development in the international market undergoes three stages; the new product, the maturing product and the standardised product phases.

i) The new product phase

Vernon argues that product development starts in developed countries which are characterised by large markets and access to modern technology. In this phase, a new product is introduced into the market. Technology remains unstable as the innovating companies or countries are still in the learning stages of the new technology (Langdana & Murphy, 2014). He further argues that the most critical input at this stage is knowledge. Companies rely on external economies of scale, as internal economies of scale are non-existent during this phase. The market for the product is unstable with the product

having a low price elasticity of demand.

The stage is also characterised by less competition due to barriers to entry.

The knowledge of the technology used in the production is not yet public.

The market is, therefore, composed of monopolistic firms. The firms are still uncertain of the market potential hence production is limited to the country of innovation. The success of any company in this stage depends on its expenditure on research and development to improve technology (Kjeldsen-kragh, 2002).

ii) The maturing product phase

In this stage, technology becomes stable, and more firms enter the market leading to increased competition. The market also becomes stable, and the demand becomes more price elastic due to the high number of firms.

Companies build on internal economies of scale by investing more capital in the production of the commodity. Expenditure on research and development is less important, and the success of the firm depends on good management. It becomes convenient for firms to delocalize production and transfer production to other countries.

iii) The standardised product stage

In this stage, firms standardise their goods and produce in bulk. The market becomes so competitive and concentrated as companies concentrate on enhancing internal economies of scale. Consumers are highly responsive to price changes. Since the technology is stable, the most critical success factor is the cost of labour. A firm that can access labour at a low cost will gain competitive advantage over others. At this stage, it is possible to fully transfer production to other countries.

According to Vernon, most developed countries such as the United States have mature markets. The cost of labour is high relative to the cost of capital in developed countries. Due to the stiff competition, firms transfer production to other countries with low cost of labour. Therefore, as the production process of a new product becomes standardised in the innovative country, shifting production to other countries become profitable. Vernon further says that the firms first shift production to other developed countries and eventually to developed countries. A product's life cycle is also determined by the innovative/technology gap. It is only profitable to transfer production to other countries when the technology gap exists. If the technology gap has been eliminated, offshore production may not be cost-effective.

Patterns of trade

Patterns of international trade describe the nature and amount of international trade taking place between any two or more countries. It explains the quantity and type of products a country imports or exports. Several theories explain the patterns of international trade.

According to the theory of country size, large countries are less reliant on foreign trade. This is because of varied climate, natural and human resources (Gandolfo & Gandolfo, 2013). A large country can capitalise on external economies of scale in many products as each region may specialise in producing a given product. These countries, therefore, import less and normally have positive net exports. For instance, United States and China import less than what they export.

According to Adam Smith, countries have absolute comparative advantage in the production of certain commodities (Carbaugh, 2015). It is because of the wealth of natural resources or the climatic conditions in the country. For instance, Brazil's climate is conducive to coffee production. It, therefore, exports more coffee products and import other products for which it does not have an absolute advantage in producing.

The Ricardian model, by David Ricardo, states that a country produces a good that it has a comparative advantage. It assumes a two-product economy and where opportunity cost of producing per unit determines which product it has a comparative advantage in producing. It explains why Japan imports more agricultural products from Kenya while Kenya imports more electronic products from Japan.

Heckscher-Ohlin argues that the specialisation depends on the availability of factors of production and the relative proportions in which the elements are used. He categorised products as either capital or labour intensive. A country that is capital abundant will specialise in the production of capital-intensive commodities. Such countries will, therefore, export capital-intensive goods and import labor-intensive products.

Vernon's Product Life-cycle hypothesis explains that new products are exported from countries where they are developed. This is also supported by Posner's theory of technology gap. Vernon stipulates that product development is a process hence closing the innovation gap between two countries can only be realised with time (Berg & Lewer, 2007). Dynamic economies of scale also make it difficult to eliminate technology gaps. It, therefore, follows that a country that develops a new product will export the

product as other states will not have the same economies of scale in the production of the product.

The pattern of trade is also determined by the nature of the product.

According to the Krugman model, there are some industries that can only accommodate a small number of firms. In these markets, companies make small volumes of sales as the products are of high value. They include manufacture of aircrafts, ships, among other high-value equipment. The country or firms that first enter the market gain the first mover competitive advantage making it difficult for other firms to enter the market.

The benefits from international trade to the country are influenced by the value of its exports relative to that of imports. Countries that export high valued items such as equipment, gain more from international trade than those that export low-value items. Developed countries such as Japan, US, Germany export technology products which are expensive compared to agricultural raw materials exported by developing countries. This explains why most developing countries have unfavourable terms of trade.

Conclusion

The trade between two or more countries is influenced by the technology or innovative gap. The country that has the know-how in producing a product will produce in bulk and export to other countries. Posner provides that the international trade will continue until the innovation gap is eliminated or reduced through transfer of technology and other means. A state that develops external economies of scale in a given industry will be able to produce the commodity at a lower cost and export it to other countries.

Vernon argues that a new product will be exported by the country that develops it. He argues that new product development starts in developed countries due to the large markets and is transferred to developing countries during the standardised product stage of development. The pattern of trade depends on the commodities a country has the advantage in producing. Furthermore, countries exporting expensive goods gain more from international trade than those specialising in the production of cheap products such as agricultural raw materials.

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