

Double diamond essay



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A generalized double diamond approach to the global competitiveness of Korea and Singapore H. Chang Moona,^{*}, Alan M. Rugman^b, Alain Verbeke^c a Graduate Institute for International & Area Studies, Seoul National University, Seoul 151-742, South Korea b Templeton College, University of Oxford, Oxford OX1 5NY, UK c Solvay Business School, University of Brussels (V.

U. B.), Brussels, Belgium Abstract Globalization is very important for small economies such as Korea and Singapore. The single diamond model (Porter, 1990, *The competitive advantage of nations*) suggests some important determinants for a nation's global competitiveness.

However, this model is incomplete, mainly because it does not incorporate multinational activities. A new approach, the generalized double diamond model (Moon et al. , 1995, in *Research in global strategic management: Volume 5: Beyond the diamond*) offers some important extensions to Porter's original model. To test the validity of these two models this paper evaluates relevant data for both domestic and international variables in the case of Korea and Singapore.

The results generally support the generalized double diamond model © 1998 Elsevier Science Ltd. All rights reserved. Keywords: International competitiveness; Double diamond; Porter's single diamond; Korea; Singapore; Small open economies 1. Introduction In his famous book, *The competitive advantage of nations*, Porter (1990) studied eight developed countries and two newly industrialized countries (NICs).

The latter two are Korea and Singapore. Porter is quite optimistic about the future of the Korean * Corresponding author. Tel. : (82-2) 880-8518; fax: (82-2) 886-6303; e-mail: snu. ac.

r 0969-5931/98/\$19. 00 © 1998 Elsevier Science Ltd. All rights reserved. PII: S 0 9 6 9 – 5 9 3 1 (9 8) 0 0 0 0 2 – X 136 H. Chang Moon et al. / International Business Review 7 (1998) 135–150 economy.

He argues that Korea may well reach true advanced status in the next decade (p. 383). In contrast, Porter is less optimistic about Singapore. In his view, Singapore will remain a factor-driven economy (p. 566) which reflects an early stage of economic development.

Since the publication of Porter's work, however, Singapore has been more successful than Korea, as will be discussed in this paper. This difference in performance raises important questions regarding the validity of Porter's diamond model of a nation's competitiveness. Porter has used the diamond model when consulting with the governments of Canada (Porter & the Monitor Company, 1991) and New Zealand (Crocombe, Enright & Porter, 1991). While the variables of Porter's diamond model are useful terms of reference when analysing a nation's competitiveness, a weakness of Porter's work is his exclusive focus on the 'home base' concept. In the case of Canada, Porter did not adequately consider the nature of multinational activities (Rugman, 1991).

In the case of New Zealand, the Porter model could not explain the success of export-dependent and resource-based industries (Cartwright, 1993). Therefore, applications of Porter's home-based diamond require careful

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consideration and appropriate modification. In Porter's single home-based diamond approach, a firm's capabilities to tap into the location advantages of other nations are viewed as very limited. Rugman (1992, p. 59) has demonstrated that a much more relevant concept prevails in small, open economies, namely the 'double diamond' model.

For example, in the case of Canada, an integrated North American diamond (including both Canada and the United States), not just a Canadian one, is more relevant. The double diamond model, developed by Rugman and D'Cruz (1993), suggests that managers build upon both domestic and foreign diamonds to become globally competitive in terms of survival, profitability, and growth. While the Rugman and D'Cruz North American diamond framework fits well for Canada and New Zealand, it does not carry over to all other small nations, including Korea and Singapore. Thus, Moon, Rugman and Verbeke (1995) adapted the double diamond framework to a generalized double diamond which works well for analysing all small economies.

The main purpose of the present paper is to assess the global competitiveness of Korea and Singapore using this new, generalized double diamond framework. It should be emphasized that the comparison between the single diamond approach and the generalized double diamond will be performed at the macro level rather than the level of individual industries. In this context, it should be remembered that Porter himself made statements about Korea and Singapore at the macro level. This paper consists of three sections. The first section reviews Porter's (1990) original diamond model and contrasts it with a new framework, the generalized double diamond model (Moon et al. , 1995).

The second section presents data and analyses the variables. In the subsequent section, the results are discussed. 2. Single or double diamonds? Porter (1990, p. 1) raises the basic question of international competitiveness: “ Why do some nations succeed and others fail in international competition? ” As its title H. Chang Moon et al.

/ International Business Review 7 (1998) 135–150 37 suggests, the book is meant to be a contemporary equivalent of The wealth of nations, a new-forged version of Adam Smith’s opus (Ryan, 1990, p. 46). Porter argues that nations are most likely to succeed in industries or industry segments where the national ‘ diamond’ is the most favourable. The diamond has four interrelated components: (1) factor conditions, (2) demand conditions, (3) related and supporting industries, and (4) firm strategy, structure, and rivalry, and two exogenous parameters (1) government and (2) chance, as shown in Fig. 1.

This model cleverly integrates the important variables determining a nation’s competitiveness into one model. Most other models designed for this purpose represent subsets of Porter’s comprehensive model. However, substantial ambiguity remains regarding the signs of relationships and the predictive power of the ‘ model’ (Grant, 1991). This is mainly because Porter fails to incorporate the effects of multinational activities in his model.

To solve this problem, Dunning (1992), for example, treats multinational activities as a third exogenous variable which should be added to Porter’s model. In today’s global business, however, multinational activities represent much more than just an exogenous variable. Therefore, Porter’s original

diamond model has been extended to the generalized double diamond model (Moon et al. , 1995) whereby multinational activity is formally incorporated into the model. Fig. 1.

The home-based single diamond. 138 H. Chang Moon et al. / International Business Review 7 (1998) 135-150 Firms from small countries such as Korea and Singapore target resources and markets not just in a domestic context, but also in a global context. Therefore, a nation's competitiveness depends partly upon the domestic diamond and partly upon the ' international' diamond relevant to its firms. Fig.

2 shows the generalized double diamond where the outside one represents a global diamond and the inside one a domestic diamond. The size of the global diamond is fixed within a foreseeable period, but the size of the domestic diamond varies according to the country size and its competitiveness. The diamond of dotted lines, between these two diamonds, is an international diamond which represents the nation's competitiveness as determined by both domestic and international parameters. The difference between the international diamond and the domestic diamond thus represents international or multinational activities.

The multinational activities include both outbound and inbound foreign direct investment (FDI). In the generalized double diamond model, national competitiveness is defined as Fig. 2. The generalized double diamond.

1 Global targeting also becomes very important to firms from large economic systems such as the United States. H. Chang Moon et al. / International Business Review 7 (1998) 135-150 139 the capability of firms
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engaged in value added activities in a specific industry in a particular country to sustain this value added over long periods of time in spite of international competition.

Theoretically, two methodological differences between Porter and this new model are important. First, sustainable value added in a specific country may result from both domestically owned and foreign owned firms. Porter, however, does not incorporate foreign activities into his model as he makes a distinction between geographic scope of competition and the geographic locus of competitive advantage (Porter & Armstrong, 1992). Second, sustainability may require a geographic configuration spanning many countries, whereby firm specific and location advantages present in several nations may complement each other.

In contrast, Porter (1986, 1990) argues that the most effective global strategy is to concentrate as many activities as possible in one country and to serve the world from this home base. Porter's global firm is just an exporter and his methodology does not take into account the organizational complexities of true global operations by multinational firms (Moon, 1994). Porter's narrow view on multinational activities has led him to underestimate the potential of Singapore's economy. Porter (1990, p. 566) argues that Singapore is largely a production base for foreign multinationals, attracted by Singapore's relatively low-cost, well-educated workforce and efficient infrastructure including roads, ports, airports, and telecommunications.

According to Porter, the primary sources of competitive advantage of Singapore are basic factors such as location and unskilled/semi-skilled labour

which are not very important to national competitive advantage. In actual fact, Singapore has been the most successful economy among the NICs. Singapore's success is mainly due to inbound FDI by foreign multinational enterprises in Singapore, as well as outbound FDI by Singapore firms in foreign countries. The inbound FDI brings foreign capital and technology; whereas outbound FDI allows Singapore to gain access to cheap labour and natural resources.

It is the combination of domestic and international diamond determinants that leads to a sustainable competitive advantage in many Singaporean industries. Multinational activities are also important in explaining Korea's competitiveness. The most important comparative advantage of Korea is its human resources which have been inexpensive and well-disciplined. However, Korea has recently experienced severe labour problems.

Its labour is no longer cheap and controllable. Major increases in the wages in Korea were awarded to a newly militant labour force in 1987-90, which lifted average earnings in manufacturing by 11.6 per cent in 1987, 19.6 per cent in 1988, 25 per cent in 1989 and 20.2 per cent in 1990 (The Economist Intelligence Unit, 1992). Korea's wage level is now comparable to that of the United Kingdom, but the quality of its products has not kept pace.

For the last several years, Korea's wage increases have been significantly higher than those in other NICs and three or four times as high as those in other developed countries (Chungang Daily Newspaper, 1995). Faced with a deteriorating labour advantage, Korean firms have two choices: (1) go abroad to find cheap labour; (2) enhance their production capabilities by

introducing advanced technology from developed countries. In both cases, the implementation of these choices requires the development of multinational activities. 40 H. Chang Moon et al.

/ International Business Review 7 (1998) 135–150 To sum up, multinational activities are very important when analysing the global competitiveness of Korea and Singapore. In fact the most important difference between the single diamond model (Porter, 1990) and the generalized double diamond model (Moon et al. , 1995) is the successful incorporation of multinational activities in the latter. In the next section, we will assess the Porter versus the generalized double diamond models using data for both domestic and international determinants in the cases of Korea and Singapore. . Diamond variables and data 3.

1. Dependent variables The dependent variable of the diamond model is a nation's competitiveness. Porter (1990) argues that the only meaningful concept of competitiveness at the national level is national productivity (p. 6), although he uses exports and outbound FDI as proxies for competitiveness (p. 25). In our view, the two latter variables should be regarded as explanatory variables and not as proxy for the dependent variable.

Table 1 lists possible proxy variables for the dependent variable of the diamond model in the cases of Korea and Singapore. Productivity variables include output per capita and output per unit of energy consumption.

Managers' perception variables include the strength of the general economy

and manufacturing base. While these variables are used for illustrative purposes only, they suggest that Singapore is more competitive than Korea.

3. 2. Independent variables As discussed, the most important debate over the diamond model is whether the international variables should be incorporated into the model or not. We will assess the model, first with the domestic variables only, and then with both the domestic

Dependent variables of the diamond model
Korea Productivity GNP per capita (\$), 1993
GDP per energy kg (oil equil) (\$), 1993
Managers' perception Strong economy as a whole (% agreed), 1992
Strong manufacturing base (% agreed), 1992
Singapore 7660.

0 2. 6 14. 1 27. 1 19, 850. 0 3. 6 58.

8 57. 5 Source: International Monetary Fund (1996); World Bank (1995); IMD (1992). H. Chang Moon et al. / International Business Review 7 (1998) 135–150 141 and international variables. Table 2 lists the domestic independent variables and Table 3 lists the international independent variables.

These variables do not constitute a full set of all relevant parameters but represent acceptable proxies to illustrate the 'value added' of incorporating international elements in the diamond model.

3. 2. 1. Factor conditions Porter distinguishes between basic factors and advanced factors. Basic factors include natural resources, climate, location, unskilled and semiskilled labour, and debt capital.

Advanced factors include modern communications infrastructure and highly educated personnel such as engineers and scientists. Porter (1990, p. 77)

argues that advanced factors are now the most significant ones for competitive advantage. Since Korea and Singapore are not yet fully developed countries, however, basic factors remain important for their competitiveness.

In this study, we choose to measure basic factors by wages in manufacturing and advanced factors are measured by the number of the technical staff per 1000 persons, as shown in Table 2 which reports domestic independent variables. 2 Since wages are rapidly increasing in these countries, Korea and Singapore are investing in other countries such as China and the Southeast Asian countries where labour is cheap. Yet Korea and Singapore still Table 2 Domestic independent variables of the diamond model Korea Factor conditions Basic Advanced Demand conditions Size Sophistication Related and supporting industries Transportation Communication Firm strategy, structure and rivalry Rivalry Singapore Wages in manufacturing (USA = 100.0), 1994 37.0 37.

0 Scientists and technicians (1000 persons), 1986-91 45.9 22.9 Average annual growth (%), 1980-93 8.2 6.1 Education index (literacy + schooling), 1992 2.

6 2.1 Paved roads (km/million persons), 1992 1090.0 993. Telephones (per 100 persons), 1990-92 41.4 39.

2 Unequal treatment of foreigners (% agreed), 1992 43.7 37.2 Source: US Department of Commerce (1995); United Nations Development Programme (1994); World Bank (1995); IMD (1992). 2 Both Korea and Singapore are natural resource-poor countries.

Therefore, only labour, but not natural resources, is considered as a determinant for the state of the factor conditions. 142 H. Chang Moon et al. / International Business Review 7 (1998) 135–150 Table 3 International independent variables of the diamond model Korea Factor conditions Basic Advanced Demand conditions Size Sophistication Related and supporting industries Transportation Communication Singapore Outbound FDI per capita (\$), 1994 56. 7 743.

0 Inbound FDI per capita (\$), 1994 18. 2 1907. 2 Export dependency (% of GNP), 1994 25. 5 140. 5 Export diversification (% of exp. without top 3), 1992 53.

5 58. 6 Good air transport system (% agreed), 1992 70. 6 97. 8 International telex traffic (outgoing traffic in minutes per capita), 1990 0. 2 7. 7 Openness to foreign products (% agreed), 1992 57.

5 87. 7 Firm strategy, structure and rivalry RivalrySource: International Monetary Fund (1996); Europa Publications Limited (1995); IMD (1992). need to attract multinational firms from advanced countries, as this may be one way to obtain access to modern technologies. In short, both inbound and outbound FDI are important in enhancing these countries' factor conditions.

These international determinants are reported as international independent variables in Table 3. 3. 2. 2.

Demand conditions The rate of growth of home demand can be more important to competitive advantage than its absolute size. Rapid domestic growth leads a nation's firms to adopt new technologies faster, with less fear

that such technologies would make existing investments redundant, and to build large, efficient facilities with the confidence that they will be utilized (Porter, 1990, p. 94). In addition, a nation's firms gain competitive advantage if domestic buyers are sophisticated and demanding as regards the product or service (Porter, 1990, p.

89). It can be hypothesized that a higher level of education of the consumers increases demand sophistication. The size and sophistication of demand conditions are measured by average annual growth and an education index, respectively in Table 2. 3 For both Korea and Singapore, however, domestic markets are relatively small so global economies of scale cannot be achieved. The most successful firms in these 3 See United Nations Development Programme (1994, p. 108) for the calculation of the education index.

H. Chang Moon et al. / International Business Review 7 (1998) 135-150 143 countries target international, rather than domestic markets. The export market measured as a percentage of GNP can serve as a proxy for the relative importance of international demand. If a country's exports depend on just a few foreign countries, however, its export markets are not diversified and are thus not sophisticated. The diversification of export markets serves a proxy for the sophistication of international demand faced by a nation's firms.

It is hypothesized that a high ratio of exports, excluding the top three destination countries, vis-a-vis total exports, reflects a more diversified and

more sophisticated international demand. These data for proxies for international demand are shown in Table 3. 3. 2.

3. Related and supporting industries Related and supporting industries are those whereby firms coordinate or share activities in the value chain or those which involve products that are complementary to the firms of a given nation. These industries may have strong backward and forward linkages with the firms in a given sector. Since we are testing the competitiveness of manufacturing industries in general in Korea and Singapore, however, the information on general infrastructure such as transportation and communication is important. Transportation is measured by paved roads (km/million persons) and communication is measured by telephone lines (per 100 persons), as shown in Table 2. We recognize that modern physical infrastructure could be regarded as an advanced factor, but we did not incorporate it in our earlier section on factor conditions as we believe that it is better to incorporate physical infrastructure as a related and supporting industry.

Again, both Korea and Singapore depend heavily on international business. In today's global business, it is neither efficient nor desirable to rely solely on homebased related and supporting industries. 5 The infrastructure for international business is important. The infrastructure for international transportation is measured by the extent to which international air transport infrastructure meets business requirements.

The infrastructure for international communication is measured by the international telex traffic in terms of traffic in minutes per capita. The

relevant data reflecting these variables are shown in Table 3. We recognize that other proxy variables could be used, such as seaport infrastructure, but we have chosen these proxies for convenience of illustration. 3. 2.

4. Firm strategy, structure, and rivalry The national determinant of a nation's competitiveness reflects the context in which firms are created, organized, and managed. National advantage may result from a good match among these variables. However, Porter (1990) finds that no one manager For example, Korea's export market at the beginning of internationalization was larger than the domestic market (Cho, Choi & Yi, 1994).

Porter (1990, p. 103) argues that foreign suppliers (and related industries) rarely represent a valid substitute for home-based ones. However, when a firm cannot compensate for the disadvantages (e. g. technology) in the home country, the firm will seek this factor in the foreign country (Moon & Roehl, 1993). 144 H.

Chang Moon et al. / International Business Review 7 (1998) 135–150 gerial system is universally appropriate (p. 108). Instead, he expresses a strong preference in favour of vigorous domestic rivalry for creating and sustaining competitive advantage in an industry (p. 17).

In this study we attempt to measure whether rivalry, as well as strategy and structure, is domestically oriented or not. This is difficult to do and we choose to measure it by the extent to which foreigners are treated unequally as compared to domestic citizens, as shown in Table 2. It is hypothesized that a high level of unequal treatment of foreigners is xenophobic and it is correlated with a high domestic orientation of rivalry and firm strategy and

structure. Porter (1990, p. 17) argues that domestic rivalry is superior to rivalry with foreign competitors. This argument may be true in large economies such as the United States, but not in small economies such as Canada (Rugman, 1990), Korea and Singapore.

The successful firms in Korea and Singapore are more concerned about international rivalry than about domestic rivalry. International rivalry can be measured by the openness to foreign products which is the extent to which national protectionism does not prevent competitive products from being imported as shown in Table 3. 4. Empirical results of the diamond tests The data for domestic independent variables in Table 2 and international independent variables in Table 3 are transformed into ‘competitiveness indices’ in Table 4.

It should again be emphasized that these are used for illustrative purposes only, as indications that Porter’s single diamond model lead to wrong conclusions. To calculate the competitiveness index, for each variable, a maximum value ‘100’ is given to the country which has the higher value and a relative ratio in terms of percentage is given to the other country which has the lower value. If a variable is measured by two elements, one half weight is given to each element. For example, in Table 2, both of Korea’s basic and advanced factor conditions have equal or Table 4 Competitiveness index of the diamond model Korea Factor conditions Domestic variables International variables Demand conditions Domestic variables International variables Related and supporting industries Domestic variables International variables Firm strategy, structure and rivalry Domestic variables International variables Singapore 100. 0 4.

3 100. 0 54. 7 100. 0 37. 4 100.

0 65. 6 75. 0 100. 0 77.

6 100. 92. 9 100. 0 85. 1 100.

0 H. Chang Moon et al. / International Business Review 7 (1998) 135–150 145
higher values than those of Singapore so that maximum value ‘ 100’ is given to each of the two factor conditions of Korea. Thus, the competitive index of Korea’s domestic factor conditions is $100/2 + 100/2 = 100$. 0 Singapore’s basic factor condition has the same value (37. 0) as that of Korea.

The maximum value ‘ 100’ is given to Singapore for this element. However, Singapore’s advanced factor has the value (22. 9) which represents 49. 9 per cent of that (45. 9) of Korea’s advanced factor. Thus, the competitive index of Singapore’s domestic factor conditions is $100/2 + 49$.

$9/2 = 75$. 0 Table 4 shows that for all four determinants of the diamond model Korea has higher competitive indices for domestic variables, but Singapore has higher competitive indices for international variables. This difference is clearly visualized in Figs. 3 and 4. Korea’s domestic diamond consisting of solid lines and its international Fig. 3.

The competitiveness of Korea. 146 H. Chang Moon et al. / International Business Review 7 (1998) 135–150 Fig. 4.

The competitiveness of Singapore. iamond consisting of dotted lines are shown in Fig. 3. Similarly, Singapore’s domestic and international diamonds are shown in Fig.

4. The international diamond is constructed by adding the international competitiveness index to the domestic competitiveness index for each variable. In Fig. 3, for example, domestic competitiveness index (D1d) for factor conditions is '100.0'. By adding the international competitiveness index '4.

3' to this value, the coordinate 'D1i' represents '104.3'. Therefore, the international diamond represents domestic plus international determinants. It can thus be said that the difference between the international diamond and domestic diamond is the international or multinational determinants of the nation's competitiveness. Three interesting points can be made when comparing the domestic and international diamonds in Figs. 3 and 4.

First, Korea has a 'larger' domestic diamond than Singapore, but Singapore has a 'larger' international diamond than Korea. 6 This result implies that Korea is more competitive than Singapore when considering only domestic determinants, but less competitive than Singapore when considering both 6 Figs. 3 and 4 are drawn on the same scale. H. Chang Moon et al.

/ International Business Review 7 (1998) 135–150 147 domestic and international determinants. As shown in Table 1, Korea is less competitive than Singapore according to several parameters. This leads to the conclusion that both domestic and international determinants are important to the competitiveness of Korea and Singapore. Second, compared with that of Singapore, Korea's international diamond appears to be almost identical to its domestic one with respect to factor conditions. This implies that Korea is relatively weak as regards the international portion of the factor conditions.

Singapore has actively pursued outbound FDI to compensate for a shortage of domestic labour and inbound FDI to obtain access to foreign capital and technology.

However, Korea has not been as active as Singapore in these multinational activities. In contrast, Porter's work reflects a lack of knowledge of the Korean economy and leads to an incorrect suggestion. Porter (1990) claims that Korea's competitive advantage has thus far rested largely on basic factor conditions (p. 477), but that its future depends upon (domestic) demand conditions, related and supporting industries, and vigorous (domestic) rivalry (p.

79).⁷ These variables represent three corners of the diamond, yet neglect one—factor conditions. As can be seen in Fig. 3, the future of the Korean economy depends more on factor conditions than anything else. Third, the government factor is very important in influencing a nation's competitive advantage. Governments frequently pursue interventionist trade and industrial strategies (Rugman & Verbeke, 1990).

For example, the 30 years of Korea's economic growth have been marked by a number of different phases and in each period government intervention in economic and business affairs has been high (Moon, 1992). Facing a new global environment, the Korean government is now taking various steps to enhance Korea's competitiveness. For related and supporting industries, the government brings together research institutions, universities, and private companies in a joint effort to create science parks.⁸ As regards demand

conditions, Korea pushes global demand because of the relatively small size of its domestic market.

The government also emphasizes globalization in the area of firm strategy, structure, and rivalry. Korea has unveiled plans to privatize or merge many statefunded companies. Recent efforts to alleviate entry barriers against foreign companies are also examples of public effort to achieve a globalization of industry structure and rivalry. Yet as shown in Fig. 3, the most important determinant of Korea's global competitiveness lies in factor conditions. Korean firms are no longer cost competitive in overseas markets because the Southeast Asian countries have cheaper sources of labor. In 1994, one of Korea's leading business newspapers, Mae-il-kyung-jai [Daily Economic Review], invited several world-famous scholars to express their opinions on Korea's competitiveness.

Porter received special attention, thanks to his diamond model. Porter (1994) suggested a similar policy to this, but neglected a possible solution to the problem of factor conditions through multinational activities. For example, Daedok Science town includes 13 government institutes, three private research institutes, and three universities on its 53 square kilometres. The primary goal of the science parks is to develop their own indigenous technologies. These parks are also playing major roles in the transfer of technology from the West. For a comparison of science parks of NICs, see Gwynne (1993).

48 H. Chang Moon et al. / International Business Review 7 (1998) 135–150
labour. On the other hand, Korean firms' technology does not match that of

developed countries such as the United States and Japan. The implications for Korea's competitiveness are now clear: to find cheap labour and to increase technological capability.

In order to obtain access to cheap labour, Korean firms need to invest in Southeast Asian countries and China. For technological improvement, Korean firms need to invest more in R&D and specialize in the most competitive sectors. However, this is a risky and very long-term strategy. The most practical means of compensating for the country's lack of advanced technology is to import foreign technology.

To conclude, both inbound and outbound FDI are important to maintain Korea's competitive edge regarding factor conditions. At the current stage of economic development, the crucial role of the Korean government is to relax various regulations and to provide a favourable environment for both inbound and outbound FDI. 5. Conclusion The concept of globalization has become both a buzzword and a crucial long-term goal in many small economies such as Korea and Singapore.

Globalization represents both a challenge and an opportunity for these countries. However, this concept is extremely complex and it is not clear how to increase global competitiveness. Porter's diamond model is a good starting paradigm for analysing important determinants of global competitiveness. However, Porter's original diamond model is incomplete, mainly because he did not adequately incorporate multinational activities. A new model, the generalized double diamond model, developed and extended in this paper, has led to three important extensions to Porter's original

framework. First, the new model explicitly incorporates multinational activities, whereas Porter's original diamond considers mainly the impact of traditional home-based activities.

Second, the new approach easily allows us to operationalize the competitiveness paradigm, whereas Porter's original approach is hard to operationalize. In the generalized double diamond approach, a comparison of the sizes and shapes of the domestic and international diamonds reveals major strategic differences. Third, the new model includes government, not as an exogenous parameter, but as an important variable which influences the four determinants of the diamond model. All of these three extensions are important when analysing the global competitiveness of Korea and Singapore. First, as discussed above, both outbound and inbound FDI, i. e. , multinational activities, are crucial to a nation's competitiveness. Second, by comparing the sizes and shapes of both domestic and international diamonds of Korea and Singapore, the most important variable requiring policy intervention can be identified (i. e. factor conditions in the case of Korea). Third, the government factor in small economies such as Korea and Singapore is more important than anything else in affecting the other variables.

This does not mean that the government should intervene in every aspect of business affairs, but that the government should be very careful when intervening, considering its potentially large impact on competitiveness. H. Chang Moon et al. / International Business Review 7 (1998) 135-150 149

Acknowledgements Helpful comments have been received from Thomas Brewer and Lorraine Eden. Appendix A A. 1.

Information sources of the variables
 Dependent variables Productivity GNP per capita (\$), 1993 GDP per energy kg (oil equil) (\$), 1993 Managers' perception Strong economy as a whole (% agreed), 1992 Strong manufacturing base (% agreed), 1992 Independent variables Factor conditions Basic Advanced Demand conditions Size Sophistication Related and supporting industries Transportation Communication Firm strategy, structure and rivalry Rivalry Domestic USDC, p. 865 UNDP, p. 138 WB, p. 163 UNDP, p.

129 WB, p. 163 WB, p. 171 IMD, p. 1.

26 IMD, p. 1. 28 International IMF, pp. 344, 508 IMF, pp. 344, 508 IMF, pp.

44, 508 EPL, pp. 1789, 2697 WB, p. 225 UNDP, p. 160 IMD, p. 5.

20 IMD, p. 5. 27 IMD, p. 2. 39 IMD, p. 2.

37 Source: International Monetary Fund (IMF) (1996); World Bank (WB) (1995); IMD (1992); US Department of Commerce (USDC) (1995); United Nations Development Programme (UNDP) (1994); Europa Publications Limited (EPL) (1995). References Cartwright, W. R. (1993). Multiple linked diamonds: New Zealand's experience.

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