

# The Relationship between Regionalism and Multilateralism: A Case Study of the Korean Computer Industry

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## 지역주의와 다자주의간의 관계

- 한국 컴퓨터 산업을 중심으로 -

서 정 욱\*

**Abstract** : Korea remains one of the few countries in the world that has not participated in any formal regionalism except its first FTA with Chile which was just recently concluded. The lack of regionalism in Northeast Asia reflects post-war national policies that favored international export markets as an engine of economic growth. Based on a survey of 50 firms in Korea, this paper examines the relationship between regionalism and multilateralism in terms of computer industry. The results show that the industry favors international rather than regional markets for its continued export growth. According to the results, accelerated trade liberalization measures through the multilateralism of the WTO dilute the demand for and negative impacts from regionalism. Overall, the results suggest that the Korean computer industry supports a trading system with a strong multilateral commitment based on non-discrimination.

**Key Words** : regionalism, multilateralism, computer industry, trade liberalization, WTO

**요약** : 한국은 최근 체결된 칠레와의 자유무역협정을 제외하고는 어떤 공식적인 지역주의에도 가입하지 않고 있는 예외적인 국가중의 하나이다. 동북아시아에서의 지역주의의 결여는 경제성장의 엔진으로서 세계수출시장을 선호한 전후의 국가정책을 반영한다. 한국의 50개 기업에 대한 설문조사를 바탕으로 본 연구는 컴퓨터산업의 관점에서 지역주의와 다자주의간의 관계를 고찰한다. 연구결과는 지속적인 수출증가를 위해 한국 컴퓨터 산업은 지역주의보다는 다자주의를 선호함을 보여준다. 연구결과에 따르면 세계무역을 통한 가속적인 무역자유화 조치가 지역주의에 대한 수요와 지역주의로부터의 부정적 영향을 감소시키는 것으로 나타난다. 전반적으로 연구결과는 한국 컴퓨터산업은 무차별원칙에 기초한 강력한 다자간 구속력이 있는 무역체제를 선호한다는 것을 시사한다.

**주요어** : 지역주의, 다자주의, 컴퓨터산업, 무역자유화, 세계무역을

## 1. Introduction

The 1990s witnessed a renaissance in worldwide regionalism with the formation of the North American Free Trade Area (NAFTA) and the European Union (EU). In Asia, regionalism also gained momentum with the establishment of the

ASEAN Free Trade Agreement (AFTA) in 2002. This turn towards regional rather than international economies for economic and industrial growth and development has largely been interpreted in terms of the "failure" of the then General Agreement on Tariffs and Trade (GATT) to move forward with trade liberalization in areas related to traditional

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goods such as agriculture and textiles as well as new issues such as intellectual property rights, services, investment, and government procurement. New economic reasoning has also emerged that has provided a rethinking of international trade in favor of regional markets for economic development (see Section 2).

Northeast Asia has remained cautious to regional pacts, participating only in non-institutionalized forms of regionalism such as Asia Pacific Economic Cooperation (APEC). Korea is no exception to this. For more than forty years, the country has relied largely on open international market to achieve economic growth and development with its trade policies firmly rooted in the principles of multilateralism and non-discrimination. As a result, Korea had remained one of the few countries in the world that did not participate in any formal regionalism until its first FTA with Chile which was ratified by the Korean parliament just this year.

On the other hand, Korea has traditionally been a staunch supporter of multilateralism in international trade and was one of the original members of the World Trade Organization (WTO) which replaced GATT in 1995. Compared to GATT, the WTO is much more institutionalized bearing the characteristics of a legal international organization. Its *raison d'être* rests on its power to conclude binding trade agreements among its members and to effectively settle international disputes in trade-related matters.

Hence, the existing international economic order is simultaneously paralleled with the centripetal force of multilateralism of the WTO and the centrifugal force of regionalism of RTAs (Regional Trade Agreements), which has resulted in what Bhagwati (1997) has called a "spaghetti bowl" trading pattern. Under this circumstance, this paper seeks to examine the impact of the WTO vis-a-vis regionalism, utilizing Korea's computer industry as an illustration of the argument. The analysis draws from a firm survey of the industry that was conducted by the author in the spring of 2003.

## 2. Regionalism

A vast majority of the WTO members are currently involved in at least one or more regional trade agreements. By the end of 2005, it is estimated that the total number of RTAs in force might reach at almost 300 ([www.wto.org](http://www.wto.org)). Current regionalism differs from the regionalism of the 1960s. First, the regionalism of the 1960s was pursued as an extension of the inward-looking import-substitution-industrialization strategy from the national to the regional level. Current regionalism is, on the contrary, emerging from outward-oriented policies. Second, in the 1960s, developing countries sought regional agreement partners among other developing countries. Today, by contrast, such countries, especially in Latin America, want integration with larger, more developed countries (De Melo, *et al.*, 1993). Third, past regionalism tended to be concluded between neighboring countries; the importance of geographical proximity has decreased in current regionalism (e.g. between Korea and Chile). The last distinctive feature of current regionalism is the emphasis on new issues such as competition policy, investment, intellectual property rights, and government procurement, as traditional trade barriers like tariffs have been reducing (Bergsten, 1994; 1996; Pomfret, 1997).

According to Viner's classic book, *The Customs Union Issue* (1950), while a RTA may have a trade creating effect by promoting additional international trade and improving real incomes, it can possibly reduce efficiency and cause lower real incomes instead. The Vinerian model of trade diversion suggests that any increase in trade within a preferential or free trade agreement should not come at the expense of third countries that are not members of the agreement. If a RTA member is trading with another member as a result of lower tariffs rather than lower production costs, the result is a net welfare loss for the countries involved.

However, the Vinerian model on static efficiency

of RTAs has been criticized for the fact that the distinction between trade creation and trade diversion has been oversimplified. For example, Wonnacott and Lutz (1989) pointed out that Viner's narrow focus on the costs of production ignores the possibility of an improved pattern of consumption.<sup>1)</sup> Furthermore, while the proposition that trade diversion has a negative effect on economic efficiency may be valid in cases where tariffs are the primary barrier to trade, the idea that trade diversion will reduce efficiency is no longer so apparent if quotas and voluntary export restraints emerge as more prominent features of the protective framework. In addition, as Bhagwati (1993) emphasizes, the dynamic time-path effect must be considered: even if a RTA creates additional trade, over time trade creation can degenerate into trade diversion, and vice versa (De Melo and Panagariya, 1993; Wonnacott and Lutz, 1989).

Regionalism can serve as an effective mechanism to create large markets to achieve economies of scale. With increased demand based on RTAs, internal economies of scale occur because of falling unit costs over a range of output. Sources of internal increasing returns include technological innovations, learning-by-doing, and large R&D outlays. There are also external economies of scale, especially those associated with knowledge spillovers in international specialization induced by trade (Krugman, 1992; Poon, 1997).

Regionalism also has an advantage in terms of bargaining costs. With increasing GATT/WTO membership and member diversity in terms of preferences and circumstances, reaching a consensus on the various trade issues at the global forum has become increasingly difficult. Moreover, as modern trade barriers become less quantifiable than the traditional ones such as tariffs and quotas, ex-post transaction costs substantially increase, since monitoring of trade agreements becomes more difficult. Under these circumstances, negotiations among a limited number of "like-minded" countries may

reach an agreement more promptly and certainly, because, with fewer participants, calculations of benefits and costs on RTAs can be made with less difficulty. This contributes to the reduction of total transaction costs (Bergsten, 1996; Cooper, 1993; Krugman, 1993; Pomfret, 1997).

### 3. Multilateralism

In the area of international trade, multilateralism can be represented by the World Trade Organization (WTO) system. Since its formal establishment in January 1995 as a result of the conclusion of the Uruguay Round multilateral trade negotiations, the WTO has become the only international body that administers the rules of trade among nations. Since then, the WTO has been regarded as an important independent factor affecting firms' international business.

The Uruguay Round had a comprehensive agenda, encompassing familiar areas like industrial goods, agriculture and textiles, and new issues such as services, intellectual property rights, and investment. The main results are as follows: First, developed countries reduced their tariffs on industrial products by about 40 percent, while developing countries lowered their tariffs by 20 percent. Second, in the non-tariff areas, the Uruguay Round attempted to improve disciplines, clarity, and objectivity through agreements in some specific areas such as import licensing, customs valuation, pre-shipment inspection, and rules of origin. Third, as a prominent feature, the Uruguay Round significantly expanded the coverage of the agenda to new issues such as services, intellectual property rights, and investment, accommodating new demand for the trading system. Fourth, compared to the former GATT, the WTO provides more effective and expeditious dispute settlement procedures. Fifth, the WTO undertakes regular reviews of its members' trade policies and practices through a Trade Policy Review

Mechanism (TPRM) which enhances transparency and surveillance. Lastly, the WTO replaced the essentially ad hoc GATT by its presence as a permanent international organization (Das, 1998; Hoekman and Kosteck, 2001; Schott, 1994; WTO, 2001).

The fundamental spirit of the WTO is “without discrimination,” which is realized through two basic principles: (i) most-favored-nation (MFN) treatment; and (ii) national treatment. Under the WTO agreements, members should not discriminate between other members and should treat them on an equal

basis; a member should also not discriminate between its own nationals and foreigners (WTO, 2001).

Compared to the former GATT, the WTO has a solid institutional basis. The Marrakech Agreement establishing the WTO prescribes that the WTO provides the common institutional framework for the conduct of trade relations among its members (Article 2). The WTO’s highest authority is the Ministerial Conference, composed of representatives of all the members and which convenes at least once in every two years. The Ministerial Conference performs the functions of the WTO and takes necessary

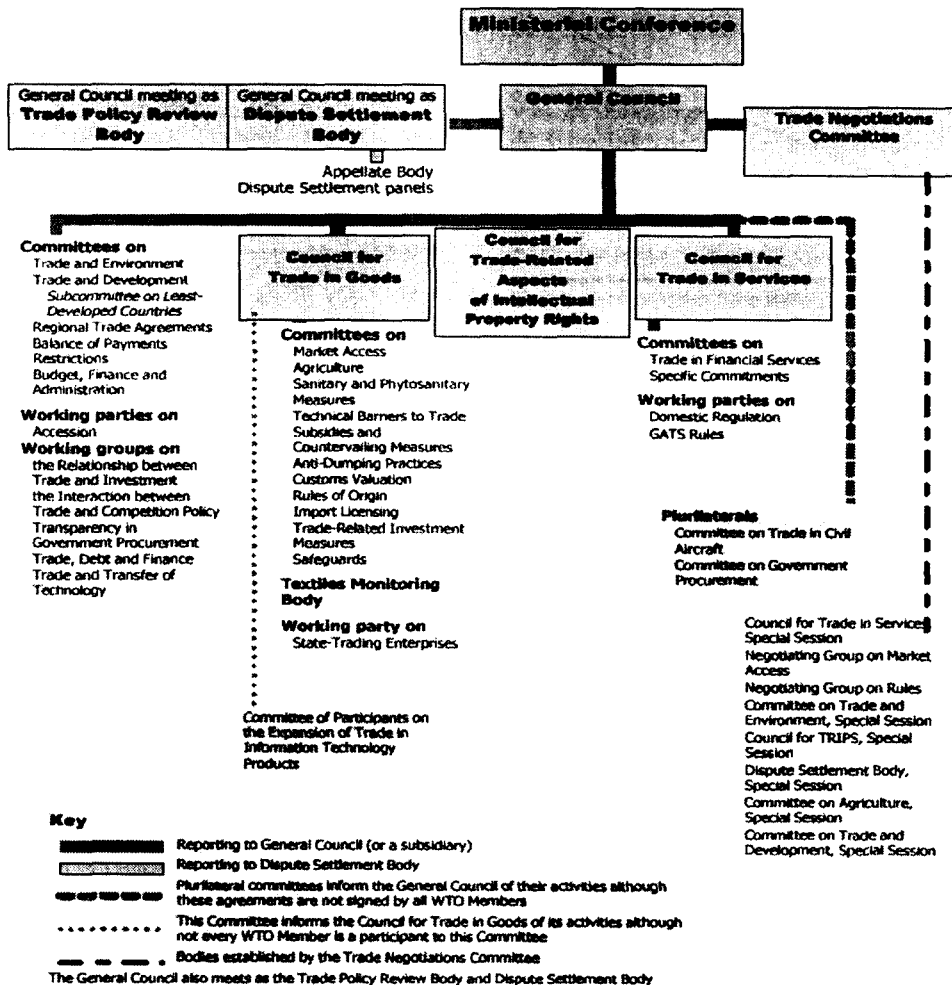


Figure 1. The WTO Structure (source: www.wto.org)

actions to this effect (Article 4.1). In the intervals between meetings of the Ministerial Conference, its functions are conducted by the General Council, which is also composed of representatives of all the members (Article 4.2). The Dispute Settlement Body (DSB) convenes to adjudicate trade disputes, and the Trade Policy Review Body (TPRB) convenes to review trade policies of the member countries (Article 4.3; 4.4). Three subsidiary councils - the Council for Trade in Goods, the Council for Trade in Services, and the Council for Trade-Related Aspects of Intellectual Property Rights (TRIPs) - operate under the general guidance of the General Council (Article 4.5). The WTO structure is illustrated in Figure 3.1.

## 4. Research Design

### 1) Research Sector: The Computer Industry (HS 8471)

According to Korea's product classification system, the computer industry is listed under the category of "Electronics." The electronics industry is one of the most important and leading industries in Korea, and it has played a significant role in the Korean economy since the 1980s. Within the electronics sector, the computer industry was the third largest industry after semiconductors and cell phones in terms of Korea's exports in 2002. The computer industry in this research is defined as HS (Harmonized System) 8471, which includes automatic data processing machines as well as data transcribing and processing machines such as monitors, keyboards, mice, scanners, printers, terminals, voice input devices, etc. (see Appendix 1).

The computer industry is a good candidate for evaluating the effects of multilateralism and regionalism on the Korean economy for the following reasons: First, the electronics sector, including the computer industry, is the leading sector of Korea's exports. In addition, the industry has more and

more pervasive applications for other industries in the economy, that is, it is an important industry for building backward linkages. Furthermore, in terms of the relationship between foreign exports and economic performance, the electronics sector, which includes the computer industry, has significant implications for trade liberalization, and is a good candidate for export promotion programs (Erickson, 1989; Leichenko and Coulson, 1999; McConnell, 2001). Second, with the WTO, this industry has experienced the most significant reductions in tariffs in recent years, relative to other industries. This is a result of the 1997 Information Technology Agreement (ITA) that required major WTO members to eliminate all tariffs on computers and telecommunication products by 1 January 2000. About 60 countries in the world, including the US, the EU, Japan, and Korea, have tariff rates of zero on computer-related products as a result of this agreement. Lastly, the computer industry in Korea contains a sufficient number of firms for statistical analysis in contrast with the relatively small number of firms in other electronics industries such as semiconductors and mobile phones.

### 2) Data

The data were obtained from telephone interviews of 50 firms that were conducted by the author in the spring of 2003. The survey comprised three major stages: In the first stage, a pilot survey to five firms was conducted through on-site interviews in order to develop a survey instrument and fine-tune questions. Based on the information from the pilot survey, fifty firms were contacted for the survey in the second stage. This stage of the survey specifically identified and targeted managers or directors overseeing international trade and marketing in the organization. Hence, the survey was designed so that the responses of the questions reflected the views of management who were experienced with each firm's international trade and sales. In the final stage of the survey, intensive follow-up telephone inter-

views were conducted with a dozen of firms to help shed light on the results.

While the population size of the computer industry is as large as about 1000, only 50 firms were contacted for the survey and the author received a response rate of 100%. The sample size of 50 is based on the reasoning that only five firms accounted for 93% of the industry's exports in 2002. The 50 firms should reasonably cover the industry's most important firms involved in the production and exports of computer-related products because the 50 firms were chosen sequentially from Korea's ranking of firms in terms of their exports of the products in HS 8471. Large firms are also distinguished from small firms as the impact of trade liberalization is expected to be higher for large than small firms. This is because export-oriented large firms, particularly *chaebols*, have more financial, technological, personnel, and information resources and capabilities that enabled them to internationalize earlier than small firms.<sup>2)</sup>

### 3) Hypotheses

As a result of the Uruguay Round, the WTO was established on 1 January 1995. With the WTO, all-around trade liberalization measures including reduction and elimination of tariffs and non-tariff barriers, clarification of trade rules, introduction of new trade agreements such as TRIPs, and strengthening of dispute settlement procedures came into effect across all the member countries. Moreover, the Information Technology Agreement (ITA) under the WTO eliminated the tariffs on some 200 IT-related products, specifically by 1 January 2000. Given the industry's accelerated trade liberalization like the ITA through multilateralism of the WTO, firms would feel little negative impacts on their exports from regionalism since little trade diversion effects are generated due to zero tariff rates. Also, given the industry's high export orientation and its zero tariff levels under the ITA, it is expected that Korean computer firms favor multilateralism over regionalism

for the continuation of superior export performance. In other words, the demand for regionalism for export growth would decrease with the strengthening of multilateralism. Therefore,

H1: There is an inverse relationship between strengthening of multilateralism and the negative effects of regionalism on the exports of Korean computer industry.

H2: Compared to RTAs, the WTO has a more positive impact on the export performance of Korea's computer industry.

## 5. Results and Analyses

### 1) The Impact of the WTO vis-a-vis Regionalism

To understand the relationship between multilateralism and regionalism in terms of Korea's computer industry, two questions were posed to the firms. First, when firms were asked if regional trade agreements such as NAFTA or the EU negatively affected their exports to those markets, all 50 firms answered "no." The major reason for this unanimous response was found in the fact that since the establishment of the ITA tariffs on computer-related products no longer exist. Through the interviews it was also found that Korean firms regard tariff elimination as the most important factor for impacts from trade liberalization. In this regard, now that the tariffs on computer-related products have fallen to zero, the Korean firms' overall answer to the negative impact of regionalism on their exports could be "no." Therefore, in this case, it may be argued that radical liberalization measures via the multilateralism of the WTO diluted the potential negative impacts of regionalism. In other words, the relationship between strengthening of multilateralism and the negative impact of regionalism may be inverse.

Another reason for the firms' response that they feel little negative impacts from regional blocs else-

where may be explained by the industry's technological edge in computer products such as monitors and LCDs. Consistent with the new trade theory, the international market in monitors and LCDs is highly oligopolistic, with Korean firms dominating in international production and exports. The interviewed firms expressed that this imperfect market condition has enabled them to penetrate regional markets with little difficulty, even with NAFTA or the EU. Thus, international geographical concentration of the production of computer monitors and LCDs in Korea explains the firms' relative lack of resistance to regionalism. Some firms, however, elaborated that while they have experienced little negative effects from NAFTA and EU arrangements, negative impacts are not entirely absent, because of country-of-origin problems. For example, to enter the government procurement markets of NAFTA, products are required to be produced within the boundaries of NAFTA countries, creating potential barriers of entry.

Next, when the firms were asked if they preferred to pursue trade liberalization through the WTO or through RTAs, 88% (n=44) favored the WTO and only 6 firms supported regionalism. The results suggest that, on the whole, the firms prefer multilateralism when the WTO is an effective mechanism to eliminate trade barriers, as in the case of the ITA. A major reason why Korean firms prefer multilateralism to regionalism is that since Korea has not participated in any regionalism except its first FTA with Chile, Korean firms fear and oppose discriminatory trading arrangements from which Korea is excluded, because countries left out of trading blocs may face problems with market access (De Melo and Panagariya, 1993). In other words, Korean firms worry that the combination of the presence of trading blocs and the potential for Korea's exclusion from them would severely limit their access to world markets. This apprehensive attitude of Korean firms toward regionalism is understandable, considering that the exclusion of East Asian economies from

European or Western Hemispheric trading arrangements is not an unrealistic concept (Cooper, 1993; Saxonhouse, 1993). Moreover, Krugman (1991) has contended that trading blocs, even in the absence of any explicit increase in protectionism, have a natural tendency to cause a beggar-thy-neighbor effect. Against this backdrop, the survey results exactly reflect Corden's (1993, 459) suggestion that: "For East Asian countries, there is only the option of multilateral free or freer trade - i.e., GATT and the Uruguay Round. Only an adequate multilateral system can provide the 'safe haven'." Patrick (1993, 416) has also indicated that: "The East Asian economies benefit far more from an open global, multilateral trading system than they do from one in which the world is divided into a few major regional blocs."

In short, the survey results suggest that Korean firms perceive a potential threat in regionalism because such arrangements may imply higher protection against imports from countries outside of the regional arrangements (Corden, 1993). Overall, Korean firms support a trading system with a strong multilateral commitment based on non-discrimination. The next section will further elaborate why Korean firms view the WTO so positively.

## 2) Sources of the WTO Impacts

Table 1 shows the survey results of the importance of nine sources of the WTO impacts on the firms' exports. These sources were ranked from 1 to 7, with 7 being critically important and 1 not important at all. The nine listed factors describe the main functions of the WTO to establish a set of requirements that are targeted at lowering trade barriers and include recent concerns about expanding the role of the WTO to deal with new issues such as intellectual property rights and trade-related investment measures. The results indicate that all of the factors listed in Table 1 are above the neutral score of 4.0. Tariff elimination and simplification of import procedures, however, registered the highest overall means at 5.62 and 5.08, respectively.

Table 1. Survey Results of the Sources of the Impacts of the WTO

| Source   | Total |       | Large(n=21) |       |         | Small=(n=29) |       |         | t-statistic | p-value |
|--|-------|-------|-------------|-------|---------|--------------|-------|---------|-------------|---------|
|  | Mean  | StDev | Mean        | StDev | SE Mean | Mean         | StDev | SE Mean |             |         |
| 1) Tariff reduction and elimination  | 5.62  | 1.12  | 6.38        | 0.59  | 0.13    | 5.07         | 1.10  | 0.20    | 5.44        | 0.000   |
| 2) Clarification and improvement of rules on anti-dumping measures         | 4.64  | 1.44  | 5.29        | 1.15  | 0.25    | 4.17         | 1.47  | 0.27    | 2.90        | 0.006   |
| 3) Simplification of import procedures                                     | 5.08  | 1.18  | 5.52        | 1.03  | 0.22    | 4.76         | 1.18  | 0.22    | 2.38        | 0.021   |
| 4) Improvement of the rules on product standards and technical regulations | 4.64  | 1.22  | 4.67        | 1.20  | 0.26    | 4.62         | 1.27  | 0.23    | 0.13        | 0.897   |
| 5) Elimination of investment measures (e.g.local content requirement)      | 4.74  | 1.54  | 5.29        | 1.19  | 0.26    | 4.34         | 1.65  | 0.31    | 2.22        | 0.031   |
| 6) Elimination of subsidies  | 4.70  | 1.42  | 5.33        | 0.80  | 0.17    | 4.24         | 1.60  | 0.30    | 3.18        | 0.003   |
| 7) Strengthening of intellectual property rights                           | 4.90  | 1.20  | 5.19        | 1.08  | 0.24    | 4.69         | 1.26  | 0.23    | 1.48        | 0.147   |
| 8) More opportunities to enter government procurement markets              | 4.80  | 1.48  | 5.00        | 1.34  | 0.29    | 4.66         | 1.59  | 0.29    | 0.81        | 0.423   |
| 9) Provisions of dispute settlement procedures                             | 4.76  | 1.27  | 5.14        | 0.96  | 0.21    | 4.48         | 1.40  | 0.26    | 1.97        | 0.055   |

Based on the survey question: With the creation of the WTO, multilateral rules and regulations regarding trade and investment have been established and improved. How important are the following factors in multilateral rules and requirements in determining your firm's export growth? (1=not important at all, 7=critically important).

Under the Uruguay Round, the average tariff of industrialized countries fell by 38% so that the average tariff rate in developed countries is now about 3.9%, while the average tariff reduction of developing and transitional economies amounted to 20 and 30% respectively (Jackson, 1997; Schott, 1994). With the introduction of the ITA in particular, tariffs on IT products fell to zero in 2000 among some sixty WTO members. This is significant because tariff rates among some countries before the WTO and its introduction of the ITA were as high as 80% (Table 2).

Unlike tariff reduction, the high mean score of 5.08 on import procedures has less to do with quantitative restrictions. Governments engage in a wide range of regulatory activities which affect the cost of trade so that simplifying import procedures has become an issue of increased importance to the WTO. Customs procedures, for example, that require excessive documentation can increase the cost of imports up to 10% of the value of world trade

Table 2. Tariff Rates (%) on HS 8471 Products in Some Countries before the WTO and ITA

|                |     |
|----------------|-----|
| United States  | 3.9 |
| European Union | 4.9 |
| Australia      | 7.2 |
| China          | 80  |
| India          | 80  |
| Thailand       | 40  |
| Korea          | 20  |

Source: WTO members' tariff concession schedule (WTO Secretariat)

(Staples, 1998). Firms also complained about the lack of harmony among rules of origin which vary country by country and sector by sector. In addition, customs valuation is another source of uncertainty for the industry's exports. With the WTO, the rules on trade procedures including import procedures, rules of origin, and customs valuation have been considerably clarified and simplified.



Apart from tariff reduction and simplification of trade procedures, the strengthening of intellectual property rights (IPRs), access to government procurement markets, dispute settlement mechanism and elimination of investment-related controls have also been ranked rather highly with mean scores from 4.74 to 4.90. The WTO/TRIPs agreement contributes to the maintenance of technological competitiveness of Korean firms against that of the firms in other developing countries, while it also acts as a catalyst for Korean firms to develop their own technologies rather than just imitating the advanced technologies of developed countries, which in turn contributes to strengthening the competitive edge of the Korean firms in the long run. The current Government Procurement Agreement (GPA) under the WTO, which is based on the Tokyo Round code on government procurement, significantly expands the list of public entities under the agreement so that for the first time, subcentral governments (states, provinces) and public utilities are included. The current GPA under the WTO, therefore, offers more increased market access opportunities for government procurement in participating countries. Likewise, firms also ranked the WTO's dispute settlement system (DSS) rather highly at around 4.8. DSS is particularly important for smaller countries such as Korea which may find themselves unable to resist diplomatic pressure or unilateral actions by large countries. The importance of DSS is that it provides a mechanism to enforce WTO disciplines and members' commitments. Since the establishment of the WTO, Korea has lodged seven complaints to the Dispute Settlement Body in the WTO, and in all cases, it has either won or achieved favorable results. Of the remaining WTO conditions, firms gave relatively lower but still above neutral mean scores of about 4.6 to 4.7 to prohibitions against investment controls (e.g. local content requirement), subsidy elimination, improvement of technical regulation and contingent actions such as anti-dumping measures.

Overall, the WTO is viewed positively by Korean firms because it supports their export-orientation. The survey results suggest that the lowering of quantitative barriers such as tariff reduction is evaluated to be WTO's most important role but the dismantling of non-tariff barriers and clarification of domestic practices related to trade issues are also ranked highly. T-tests also reveal that large firms are more inclined to emphasize tariff reduction and elimination, trade-related investment measures, anti-dumping actions, trade procedure simplification and subsidy elimination much more than small firms. The main reasons can be found in the fact that large firms have more financial, technological, personnel resources and capabilities to achieve economies of scale through larger markets and exports. Also, larger firms such as the *chaebols* have more resources to overcome information gaps that are related to the WTO policies.

## 6. Conclusion

Korea's post-war industrial development has largely depended on open and international markets. With the recent resurgence of regionalism, the country is also contemplating enlarging regional markets via FTAs with Chile, Japan, Singapore, the U.S. and China. This research on computer industry suggests that Korean firms have not been negatively affected by regionalism elsewhere on the whole, and overall, firms still consider multilateral trade liberalization through the WTO a preferable option. The results suggest that for countries like Korea the WTO is the most effective instrument for sustaining its export-oriented activities. The results also imply that by accelerating multilateral trade liberalization the WTO contribute to directing regionalism to serve as a building block rather than a stumbling block for free trade.

There is however one caveat to the findings. Compared to other industries, the computer sector

has experienced the most significant progress in multilateral trade liberalization with zero tariffs as a consequence of the 1997 Information Technology Agreement. It would be interesting to investigate if sectors that are more protected favor regional markets over international ones for the continuation of their export growth.

## Notes

- 1) This point was also indicated by Meade (1955) and Lipsey (1957) in their studies on customs unions.
- 2) Firms with more than \$6 million in capital assets are considered to be large firms in Korea. Based on this criterion, of the 50 firms in the sample, 21 firms are large and 29 are small.

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## Appendix 1: HS 8471 Products

| Heading<br>Subheading | Code  | Description  |
|-----------------------|-------|--|
| 8471                  |       | Automatic data processing machines and units thereof; magnetic optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included. |
| 10                    |       | Analogue or hybrid automatic data processing machines  |
|                       | 10 00 | Analogue automatic data processing machines  |
|                       | 20 00 | Hybrid automatic data processing machines  |
| 30                    | 00 00 | Portable digital automatic data processing machines, weighing not more than 10kg, consisting of at least a central processing unit, a keyboard and a display   |
| 4                     |       | <i>Other digital automatic data processing machines:</i>   |
| 41                    |       | Comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined  |
|                       | 10 00 | Those of not less than 64 bit in delivering data of C.P.U. and of not less than 64 mega byte in capacity of main memory storage  |
|                       | 20 00 | Those of not less than 32 bit in delivering data of C.P.U. and of not less than 16 mega byte in capacity of main memory storage  |
|                       | 90 00 | Other  |
| 49                    |       | Other, presented in the form of systems  |
|                       | 10    | Of digital processing units which may contain in the same housing one or two of the following types of unit: storage units, input units, output units  |
|                       | 10    | Those of not less than 64 bit in delivering data of C.P.U. and of not less than 64 mega byte in capacity of main memory storage  |
|                       | 20    | Those of not less than 32 bit in delivering data of C.P.U. and of not less than 16 mega byte in capacity of main memory storage  |
|                       | 90    | Other  |
|                       | 90 00 | Other  |
| 50                    |       | Digital processing units other than those of subheadings 8471.41 and 8471.49, whether or not containing in the same housing one or two of the following types of unit: storage units, input units, output units          |
|                       | 10 00 | Those of not less than 64 bit in delivering data of C.P.U. and of not less than 64 mega byte in capacity of main memory storage  |
|                       | 20 00 | Those of not less than 32 bit in delivering data of C.P.U. and of not less than 16 mega byte in capacity of main memory storage  |
|                       | 90 00 | Other  |
| 60                    |       | Input or output units, whether or not containing storage units in the same housing   |
|                       | 10    | Input units  |
|                       | 10    | Character (mark) readers   |
|                       | 20    | Key entry system   |
|                       | 30    | Mouse  |
|                       | 40    | Scanners   |
|                       | 90    | Other  |
|                       | 20    | Output units   |
|                       | 1     | Printers   |
|                       | 11    | Laser beam printer   |
|                       | 12    | Dot-matrix printer   |
|                       | 13    | Ink-jet printer  |
|                       | 19    | Other  |

## Appendix 1: HS 8471 Products

| Heading<br>Subheading | Code  | Description  |
|-----------------------|-------|--|
|                       | 2     | Data display system  |
|                       | 21    | Cathode-ray tube (CRT) monitors  |
|                       | 22    | Data projector   |
|                       | 23    | LCD (liquid crystal display) monitor                                     |
|                       | 29    | Other  |
|                       | 90    | Other  |
|                       | 30    | Input and output units   |
|                       | 10    | CRT terminals  |
|                       | 20    | Video text or teletax  |
|                       | 30    | Voice input output devices   |
|                       | 90    | Other  |
|                       | 90    | Other  |
|                       | 10    | Of subheading No. 8424.89  |
|                       | 20    | Of subheading No. 8469.11, 8469.12 or printers of subheading No. 8472.90 |
|                       | 30    | X-Y co-ordinate input devices of subheading No. 8473.30                  |
| 70                    |       | Storage units  |
|                       | 10 00 | Main storage units (RAM & ROM)   |
|                       | 20    | Peripheral storage units   |
|                       | 10    | Floppy disk drive  |
|                       | 20    | Hard disk drive  |
|                       | 3     | Optical disk drive   |
|                       | 31    | Compact disc drive   |
|                       | 34    | Digital video disc drive   |
|                       | 39    | Others   |
|                       | 90    | Other  |
|                       | 90 00 | Other  |
| 80                    |       | Other units of automatic data processing machines                        |
| 90                    |       | Other  |