

The WTO and Korea's Computer Industry*

서 정 옥

외교통상부 국제경제국 외무관, 미국 뉴욕주립대 (SUNY-Buffalo) 경제지리학 Ph.D.

1. Introduction

The manner in which the World Trade Organization (WTO) is altering the economic and political dimensions of geography is an important academic concern. There are several reasons why the establishment of the WTO should be of interest to geographers. First, the WTO embodies the principle of comparative advantage and thereby global free trade. The geography of international trade has recently witnessed trade relations organized around regional blocs with centrifugal forces potentially dominating over centripetal forces. Yet the *raison d'être* of the WTO is to encourage centripetal forces that foster trade between distant countries and global integration, not just proximate countries and regional integration (Poon et al., 2000). Second, by championing open trade and non-discriminatory trade practices between industrialized and developing countries, the WTO's policies potentially modify North-South economic relations. That is to say, the WTO is expected to have a great effect on the processes of global core-periphery patterns in the evolution of the global economic landscape. Third, through its encouragement of global integration, the WTO also impacts geographic transformations within individual countries as local and regional economies become unevenly integrated into the global economic process to produce winners and losers in the context of global change (O'Brien and Leichenko, 2003). In other words, the WTO affects the competitiveness of local and regional economic systems by changing their competitive conditions. Fourth, given recent contestation of the benefits of globalization and free trade, as evidenced in the Seattle protests in 1999, it is unclear just what the nature of benefits is for national economies which are members of the WTO. The main objective of this paper is to shed light on this question. Finally, economic geographers have paid much

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attention to the regulatory nature of economic activities. Interest in regulation in economic geography has focused on the importance of "institutional thickness" in the successful operation of regional industrial systems, since it circumscribes the boundary of both potential opportunity as well as constraint surrounding the industrial systems (Amin, 2001). Despite a general interest in institutions and the roles they play in shaping economic activities, however, very little research by geographers exists on an important international regulatory institution such as the WTO. Indeed, much of the scale of analysis on institutions remains at the regional level. This paper aims to remedy this deficit and attempts to address the impact of the WTO on a specific industry sector, the computer industry, utilizing Korea's case as an illustration of the argument.

2. Research Design and Methodology

1) Research Sector

The research sector for this paper is Korea's computer industry, which is more specifically defined as HS (Harmonized System) 8471. This industry 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. The computer industry is a good candidate for evaluating the effects of the WTO 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 pervasive applications for other industries in the economy, that is, it is an important industry for building backward linkages (Dicken, 1998;2003). Furthermore, in terms of the relationship between exports and economic performance, this sector has significant implications for trade liberalization and is a good candidate for export promotion program (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. 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 in Korea, such as

semiconductors and mobile phones, which renders statistical analysis more tenable.

2) Data and Research Propositions

The data for examining the WTO's impact on the Korean computer industry were obtained from a series of surveys 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. 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. This stage of the survey mainly involved both telephone and e-mail interviews: The questionnaires were e-mailed to the targeted respondents, followed immediately by telephone calls or further e-mails that clarified survey-related issues. Hence this stage of the survey was semi-structured with extensive clarifications of the survey instrument. In the final stage of the survey, intensive follow-up telephone interviews were conducted with several respondents to help shed light on the results. With these data, two major propositions for this research are as follows:

- P1: Given the heavy reliance of Korean firms on world markets for its computer exports, the WTO has a positive impact on the Korean computer industry in terms of export growth.
- P2: The WTO's impact will be different between larger and smaller firms. More specifically, larger firms should experience more positive impacts from the WTO in terms of export growth.¹⁾

1) According to Korea's legal stipulation, firms that have more than \$6 million in capital assets are classified as large firms. Based on this criterion, of the 50 firms in the sample, 21 firms are large and 29 firms are small.

3. Analysis and Discussion

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

Source	Total		Large (n=21)		Small (n=29)		p-value
	Mean	StDev	Mean	StDev	Mean	StDev	
1) Tariff reduction and elimination	5.62	1.12	6.38	0.59	5.07	1.10	0.000
2) Clarification and improvement of rules on anti-dumping measures	4.64	1.44	5.29	1.15	4.17	1.47	0.006
3) Simplification of import procedures	5.08	1.18	5.52	1.03	4.76	1.18	0.021
4) Improvement of the rules on product standards and technical regulations	4.64	1.22	4.67	1.20	4.62	1.27	0.897
5) Elimination of investment measures	4.74	1.54	5.29	1.19	4.34	1.65	0.031
6) Elimination of subsidies	4.70	1.42	5.33	0.80	4.24	1.60	0.003
7) Strengthening of intellectual property rights	4.90	1.20	5.19	1.08	4.69	1.26	0.147
8) More opportunities to enter government procurement markets	4.80	1.48	5.00	1.34	4.66	1.59	0.423
9) Provisions of dispute settlement procedures	4.76	1.27	5.14	0.96	4.48	1.40	0.055

Table 1 shows the survey results of the importance of nine sources of the WTO impacts. These sources were ranked from 1 to 7, with 7 being critically important and 1 not important at all. The results indicate that all of the factors listed in the 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. Larger firms also attached significantly greater importance to these factors than smaller firms. Other factors that registered significantly different means for large and small firms are: clarification and improvement of anti-dumping rules, elimination of investment measures (e.g. local content requirement), elimination of subsidies, and the provision of dispute settlement procedures. Only the WTO rules on product standards and technical regulations, intellectual property rights, and government procurement showed no significant differences according to the t-tests for large and small firms. Notably, the standard deviations for large firms are lower than for small firms, indicating that a high number of large firms gave scores that are close to the means of the factors in Table 1.

Based on the analysis in Table 1, Proposition 1 and 2 may be supported, which means that the WTO has a positive impact on the Korean computer industry in terms of export

growth, but the impact is, on the whole, significantly more positive for larger than for smaller firms. The importance of Table 1 is that it explains why firms view the WTO so positively. While the results show that all the trade liberalization measures created by the WTO have positive impacts on the Korean firms' exports, the most prominent factor is tariff elimination. It is also the most quantifiable. For other dimensions, if the current trade rules (e.g. anti-dumping agreement) are further improved and clarified, they could yield significant advantages for Korean firms' exports. The analysis here suggests that the Korean government should maintain its position to improve and enhance the multilateral trading system, in that strengthening of the multilateral trading system would, overall, likely attain more gains than losses for Korea's manufacturing industry. This final conclusion should be qualified, however. While Proposition 1 and 2 indicate that Korean computer firms have positive gains in terms of their exports to world markets, which explains their favorable views toward the WTO policies and institutional safeguards, trade liberalization on the other hand also requires important industrial adjustment and transformation back home. Adjustment costs need to be considered alongside the benefits of trade liberalization. Increased global competition arising from the WTO-led reforms has resulted in significant changes in the corporate strategy of Korean computer firms. Specifically, the WTO's strategic impact on firms' internationalization patterns consists of increased global procurement and outward investment, particularly among large Korean firms. The results suggest that the WTO has encouraged Korean firms to configure their production chain, transforming the geography of production from a local to a global scale. One potential outcome of increased foreign sourcing is that it is occurring at the expense of the local supply chain, which has serious implications for the small and medium-sized domestic suppliers of the Korean computer industry.

4. Conclusion

Korea's post-war industrial development has largely depended on open, international markets. Hence, multilateral trade liberalization via the WTO is arguably the best option for Korea. Based on this premise, the impacts of the WTO on Korea's computer industry were investigated in this paper. In analyzing the sources of the WTO impacts, this paper finds that Korean computer firms welcome the WTO because its policies help them achieve greater integration in world markets through exports. The evidence indicates Korean firms need to

adjust to growing competition from WTO-led reforms. This adjustment has largely been accomplished through corporate re-strategizing and repositioning, such as global sourcing and competitive pricing, instead of through more traditional tools such as government export subsidies.

While this study has focused basically on the manufacturing industry to investigate the impact of the WTO, future research on other industries (particularly in the more protected sectors) will be necessary to compare the results and to illuminate the potential diverse economic impacts of the WTO on Korea. Furthermore, issues related to income distribution in more vulnerable sectors such as agriculture and textiles should also be examined. Finally, some econometric studies could be conducted to complement the results of this research.

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