

The Economic Implications of Liberalizing APEC Tariff and Nontariff Barriers to Trade

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This report was prepared principally by

Nancy Benjamin
Project Leader

Supporting assistance was provided by

Paula Wells
Staff Assistant

**Address all communications to
Secretary to the Commission
United States International Trade Commission
Washington, DC 20436**

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Introduction

At the request of the United States Trade Representative (USTR), the U.S. International Trade Commission (USITC) organized a public symposium on tariff and nontariff barriers (NTBs) to trade and investment in the Asia Pacific Economic Cooperation (APEC) economies. The request letter asked that the symposium present research on a broad array of policies and practices concerning deregulation, intellectual property rights, standards and customs procedures, oligopolistic behavior, services, and government procurement and the way these may form barriers to trade and investment. USTR also requested that the symposium include research on the types of general equilibrium models commonly used to evaluate the effects of trade policies, including tariff and other forms of trade barriers. Further, USTR requested that researchers recognized as experts in their fields be invited to provide a critical assessment of the research presented.

The symposium was held at the Commission on September 11 and 12, 1997 following a public call for papers on relevant topics. The symposium participants represent a broad spectrum of academic, research, and government institutions from a large number of APEC members. Collectively, the papers they presented include specific research on most of the APEC economies. The request letter from USTR asked that the report on this investigation consist of four parts: "... (1) an assessment of the principal results presented at the symposium, ... (2) a compilation of the technical papers submitted in the symposium, ...(3) a compilation of the written critiques of those papers, and (4) an objective summary and critical evaluation by the Commission of the analytical frameworks and of the main findings of these papers."

This chapter begins with a summary of the main findings of the symposium participants and then summarizes and critically evaluates the papers presented. Subsequent chapters include the abstracts from all papers presented and then the papers themselves, followed by comments on them provided by researchers in the respective fields.

Main Findings of the Symposium Participants

- Research presented at the symposium shows that nontariff barriers have a major impact on trade in APEC, far greater in scope than the impact of tariffs. Progress on nontariff issues is essential to meeting the goals of APEC's Bogor Declaration on trade liberalization and could be one of the most important global contributions of the APEC forum. In many of the cases examined, the economic welfare gains from liberalizing NTBs far exceed those from removing tariffs.
- NTBs, as identified by participants, vary greatly in nature across issues such as intellectual property rights, government procurement, investment, services, and competition policy. Yet in each case, detailed study of the issue yields some information on quantifying or measuring the relative importance of the barrier, and on the comparability of approaches in different countries.
- In many instances, symposium participants found that the nature and importance of NTBs depend directly on government practices, but they depend more often on government choices of how to enforce the laws governing private markets. Even

NTBs generated largely by private practices raised significant public policy questions.

- Based on their research, several of the authors draw tentative policy conclusions on particular issues. One of the most complex areas was domestic regulations governing competition policy, where the approach of several researchers was to rank issues according to the likely productivity of pursuing an international consensus.
- Recent general equilibrium (GE) modeling work has expanded on the measurement of economic gains from liberalizing both tariff and nontariff barriers by including new trade issues and new modeling techniques. The most general APEC liberalization scenarios indicate potential static gains of around 1 percent of APEC GDP.
- Trade issues more recently represented in GE trade models include trade facilitation, trade externalities, trade in services, and deregulation. In many instances, the estimated economic welfare gains from liberalization in these areas substantially exceed those from tariff elimination.
- Newer modeling techniques include the more regional focus of multicountry dynamic models with investment behavior, and improved parameterization of dynamic models using econometrics. While comparisons between static and dynamic model results can be difficult to make, dynamic gains from trade liberalization are likely several times as large as the static gains.

Summary and Assessment of Symposium Papers

Collectively, the papers presented at the symposium use a wide variety of analytical approaches in examining a wide variety of issues. The researchers who wrote comment reports on the papers raise a number of technical points and recommend modifications in the application of some of the respective analytical frameworks. These technical points have largely not been referenced here. However, it should be noted that the comment reports fundamentally support the basic thrust of the research in the respective papers and consider the analytical approaches to provide useful avenues for increasing understanding of relevant tariff and nontariff barriers.

Foreign Investment

The potential to attract increased foreign direct investment (FDI) is at the heart of expected gains from regional trade liberalization for many countries. As Blomström points out in his paper, the impact of regional trade and investment liberalization on FDI inflows depends on the motives for FDI in the region. FDI intended to avoid tariffs on traded goods is likely to decrease while that intended to help firms exploit firm-specific assets in foreign markets is likely to increase.

On net, Blomström concludes that under regional trade liberalization FDI inflows will probably increase, especially if the initial trade barriers are low (i.e., tariff-jumping FDI is small) and investment-related reforms are strong. Such reforms include reducing restrictions on FDI and offering national treatment, effective dispute resolution, and investor property rights to foreign investors while avoiding export requirements. Then regional trade liberalization leads to a large barrier-free market with other economic reforms “locked in,” where such other reforms may include privatization of public firms and improved macroeconomic stability.

Blomström notes the potential for dynamic feedback between the FDI encouraged by an enlarged regional market and greater diffusion of technology, engendering higher growth, efficiency, and attracting even more FDI. He cautions that in a large region, FDI could concentrate in the locations offering the best advantages and would not necessarily be evenly distributed across countries.

The second half of Blomström’s paper considers the evidence on investment from several specific regional integration agreements and, despite the complexity of events, finds evidence to support his precepts.

One of the best examples of Blomström’s view of FDI expressed elsewhere in the symposium is in the paper by Park, Tan, and Toh treating ASEAN’s strategic interests. They describe ASEAN as being “... heavily dependent on foreign direct investments (FDI) from outside the region to drive the industrialization process.” (p. 8-4.) Among motives for promoting trade liberalization among ASEAN countries, they mention the competitive pressures in attracting FDI created by regional integration elsewhere, especially in the Americas.

In addition, the authors considered China’s increased integration into the world economy, along with the return of Hong Kong, a great challenge. “The bulk of foreign direct investment from Taiwan, Hong Kong that flowed to Southeast Asia between 1987-91 has been diverted to China. Increasing amount of investment from Korea, Japan, US and Europe have also been attracted by the expanding China market.” (p. 8-17). In response, “... each ASEAN member nation has been forced to enhance economic cooperation to strengthen collective market size and attractiveness to direct foreign investment.” (p. 8-5.) In the conclusion to their paper, mentioned again in the section on GE modeling below, they recommend the broadest possible regional integration, i.e., APEC-wide rather than ASEAN-wide, as being most in ASEAN’s interest.

Competition Policy

The types of reforms identified by Blomström as encouraging FDI – reducing restrictions on FDI, national treatment, dispute resolution, investor property rights – indicate how closely linked domestic market regulations are with the degree of openness to foreign investment, and therefore to trade. His paper thereby indicates how domestic market regulations can discriminate against foreigners and form barriers to trade. Yet assessing the magnitude of such barriers is difficult because these regulations play complex roles in domestic institutions that have not traditionally been made subject to international trade disciplines.

Richardson reports in his symposium paper on efforts to assess market regulations governing competition policy and how they affect trade. In acknowledging their relative importance he notes "... border barriers are waning in importance relative to entry barriers. More precisely, tariffs, quotas, and border discrimination are being negotiated away, while most regulatory and other barriers that protect incumbent firms, by keeping new suppliers from establishing themselves, are declining much more slowly, especially in large service sectors." (p. 1-27.)

Based on studies by a group of researchers, Richardson and his colleague Edward Graham rate competition policy issues according to the likely economic gains from increasing international convergence of practices and the political possibility of achieving convergence on the issue. In this rating according to the efficiency of taking action, the following issues top the list: cartelization, other horizontal restraints, mergers and acquisitions, price fixing, voluntary export restraints and orderly marketing arrangements, and national treatment for foreign direct investors and services.

Most of these fall in the category of market access issues. Focusing specifically on the Asian context, Richardson notes wider gaps across countries and greater potential gains from convergence on issues concerning vertical integration, strategic alliances, exemptions, and national treatment for investors. "Formal competition policies are in early gestation in some countries, which is almost to say that every sector is treated uniquely as an exemption, and formal acceptance of national treatment for investors is a long way off." (p. 1-37.)

Richardson points out an Asian tradition of honoring incumbents in a market and taking affront at new entrants. He sees the family-type social structure of Asian firms, the primacy of internal decision-making and the limited role of capital markets in monitoring and directing firms, as important regional characteristics. He predicts that as Asian financial markets liberalize and become subject to normal competition policy strictures, public information on corporate plans and performance, derived through the financial market, will help make other markets work more competitively.

Richardson argues that the World Trade Organization (WTO) cannot at present deal effectively with many competition policy issues, but could usefully pursue an agenda for multilateral trade-related antitrust measures (TRAMS) aimed at market access issues. In addition to such multilateral action, he proposes joint investigation and mediation of disputes by the relevant parties as a natural, constructive outgrowth of current practice. He suggests that "positive comity" could, over time, develop enough common ground to produce international "competition policy safeguards" that would be preferable to current trade measures. His proposals, as well as table 1, evaluating which issues present the most fruitful prospects for international convergence, could provide useful focal points for further investigation.

Deregulation

In his paper, Barfield also suggests adding certain market access issues to the WTO agenda. His topic is regulatory reform, and he begins by pointing out that both trade liberalization and regulatory reform aim to achieve truly contestable markets. He notes a number

of examples of how domestic regulations can be used to limit market access and discriminate against foreign suppliers. Japan's regulation of its insurance market and U.S. regulation of fuel are cases in point. He lists regulation of public and private monopolies, of environmental impact, of the financial sector, of public information requirements and product standards as areas where market-oriented approaches would improve regulations and increase domestic and international market access.

He believes the well-documented gains from regulatory reforms undertaken so far will spur reforms in other countries. Therefore he suggests harnessing these expected reform efforts to serve the ends of trade liberalization.

He proposes that, when reforming domestic regulations, countries should observe the principles developed in the multilateral WTO setting. These principles are: transparency, national treatment, minimal distortion of trade, and due process. He suggests extending discussions of mutual recognition agreements (MRAs) from the transatlantic forum to other regional fora such as APEC. Negotiating mutual recognition of regulatory systems, product testing, and trade and investment-related standards would help harmonize different country systems and lead toward a multilateral code of regulatory rules. "Mutual recognition has been called an extreme form of national treatment: it restricts the regulatory authority of member nations, but it does not involve a transfer of power to the supranational level." (p. 2-43.)

Barfield also notes that MRA's can increase market contestability by generating a competition between different regulatory systems. In his comments, Hoekman largely concurs with Barfield's view, but doubts the WTO will be able to take on the proposed added responsibilities.

Deregulation in the United States

Winston's paper does not focus on trade issues, but deals with measuring the gains from deregulation using data from the U.S. experience. He details the adjustments that took place during deregulation of airlines, trucking, railroads, banking, and natural gas and estimates the likely future changes in telecommunications, cable television, and electricity. For each sector he evaluates how deregulation has affected the degree of competition, efficiency, technological innovations, and meeting consumer demands. Summarizing from table 3 in the paper, he reports that the deregulated industries have improved service quality and reduced real average prices from 30 to 75 percent.

His conservative estimate of the net benefits for consumers from deregulation of inter-city transport alone is roughly \$50 billion (1996 dollars) per year. Further, he shows that the process of how industries adjust to deregulation demonstrates how the benefits can accumulate and grow over time.

The evidence Winston presents for the United States indicates the potential gains from similar developments in the other APEC countries. While it might not seem appropriate to tally such potential gains under trade liberalization, as Barfield points out, regulatory reform can significantly improve market access. Moreover, as discussion during the symposium indicated,

international market access may be necessary for smaller or less developed countries to reap the full benefits of deregulation. Countries where technological and financial expertise are not sufficiently widespread to generate enough competitors in airlines or telecommunications, for example, would need foreign participants to help spark the improvements in efficiency and cost reduction observed elsewhere. While some countries would perceive this as a threat to the local industry, foreign participants could bring in needed technology while providing benefits to consumers and preserving an open market for local competitors that may develop over time.

Deregulation in China

Among all APEC members, China presents a unique case for deregulation, having started from a centrally planned economy. As Yu-shi Mao describes it in his paper, “Such economics has led to a distorted price system, where resources are allocated not by price signal but by the planners’ subjective verdict. ... Due to this, shortage and surplus were prevalent.” (p. 4-2) Mao demarks two important turning points in China’s economic policy: the first beginning with increased market orientation in 1979 and the second beginning with substantial reforms of the international trade system in 1994.

Prior to 1994, China’s international trade was largely conducted by state-owned trading companies guided by the state plan, not by comparative advantage. Foreign exchange was rationed while two different exchange rates were maintained. The system of import quotas, licenses, and inspections was applied extensively. Mao reports on a study of Chinese import barriers for 25 of the most heavily protected goods in 1994.¹ The unweighted average of the combined tariff and NTB tariff equivalents was 43.3 percent. Reporting on the same study, Ingersoll and Frankena note that the highest NTB tariff equivalents among these were about 70 to 110 percent on basic agricultural goods carrying tariffs from 0 to 30 percent.

In his comments on Mao and Ingersoll/Frankena, Tavares points out that traditional NTB measures, such as the Chinese measure derived from comparing import prices to a survey of wholesale prices, can be quite misleading in economies characterized by officially distorted prices, state-owned firms, and extensive subsidies. He suggests improving estimates of NTB measures by combining price gap data with other information, such as data on the profitability of companies allowed to exploit the gaps created by restricting access to imports.

One example cited by Mao illustrates Tavares’ point. In 1987 a Chinese producer of polyethylene, seeking to obtain a higher price than the domestic planned price, sold to a dealer in Hong Kong. To alleviate the domestic shortage, Chinese consumers tried to import. “By chance, the same product, without moving an inch, was “exported” then “imported” to and from Hong Kong.” (p. 4-2.) In this case, comparing the import price to the planned price would not fully indicate the size of the trade distortion, and the profitability of the Hong Kong dealer adds relevant information.

¹ Zhang Shuguang, Zhang Yansheng, and Wan Zhongxin, *Costs of Protection in China*, a project sponsored by the Institute of International Economics, 1997.

Nevertheless, Mao emphasizes progress. He notes dramatic changes in China since 1994 in allowing access to foreign exchange and maintaining a market exchange rate. He notes the reduction in tariffs and in the number of goods subject to quotas, licenses, and inspections, and he expects further progress to come.

Measures of Specific NTBs

Both Bosworth et al. and Ingersoll and Frankena discuss various methods of measuring NTBs using price gaps between imported and domestic goods. Both papers also propose methods for particular applications: Bosworth et al. for services in Australia and Ingersoll/Frankena for chemicals in ASEAN countries.

Ingersoll and Frankena report data on NTBs from two USITC studies of APEC economies. A comprehensive multi-industry survey and a public hearing associated with the studies helped Commission staff produce tables 1 and 2 in the paper. These tables designate the industries perceiving high tariffs and/or NTBs in the four ASEAN countries under study – Malaysia, Indonesia, Philippines, and Thailand. These data are used to identify the dozen or so U.S. industries facing trade barriers in three or more of the countries.

This initial screen leads the authors to focus on particular chemical products with well-defined physical quality traits. Using the specific examples of polyethylene, polypropylene, and polystyrene imports in Thailand, they note that differences between import unit values and domestic wholesale prices exist for all three products but have narrowed over time. For high density polystyrene, after relevant tariffs are deducted from the initial price gap, a 9 percent gap remains in 1996. In the paper this price gap is associated with government policies including restrictions on entry and expansion, along with other NTBs.

Among the symposium papers, the one by Bosworth et al. contains the most extensive description of various price gap measures and the advantages and shortcomings of applying them in different cases. The paper also provides a wide-ranging discussion of potential approaches to measuring the extent of trade barriers in such complex areas as services and foreign direct investment. The details are not easily summarized, so only a few examples will be included here. It is encouraging that the authors plan to implement their proposed techniques, beginning with a case study of telecommunications in Australia.

The authors explore various ways to construct a benchmark “free market price” for comparison with the domestic service price. One of these methods involves using industry data to estimate “frontier” or “best practice” production costs. The authors further propose to account for gaps between the benchmark and domestic prices by first registering all potential barriers to services trade, including those on modes of supply. Here they build on work done under the General Agreement on Trade in Services (GATS) and usefully evaluate the schedules of APEC member GATS commitments.

Bosworth et al. emphasize the need to relate specific barriers to observed price gaps and to account for how these barriers could contribute to higher prices. They further explore the

potential influence on prices of factors unrelated to policy and propose specific data measures for assessing these factors. These could include differences in costs, wages, service quality, etc.

As recognized by the authors, foreign investment is necessary for exporting services where sales depend on a local presence, and therefore, trade liberalization in many services requires liberalization of FDI. Yet the impact of FDI restrictions on services prices is difficult to isolate since it works through the rate of diffusion of new technologies. Nevertheless, the authors consider several possible approaches.

They begin with the GATS FDI schedules, which indicate that “... less than one-quarter of all APEC service markets are open to [foreign] commercial presence.” (p. 6-39) Moreover, they consider this an underestimate of FDI restrictions since many barriers are not identified. These schedules for APEC members are usefully graphed in figures 6 and 7 in the paper.

The authors consider the advantages and difficulties of estimating the rate of return impact of FDI barriers. They further discuss developing an index of FDI restrictiveness that would include weights on the different types of barriers according to the degree of restriction imposed. They acknowledge that these weights would need to be decided in some manner. One option might be to apply surveys of the type cited in Ingersoll/Frankena.

This paper concludes with a case study applying the authors’ proposed methods of price gap measurement to the telecommunications sector in Australia. The case study includes references to specific data sources and presents substantial data analysis. They propose that once the price effects of various barriers can be identified, a general equilibrium simulation model should be used to estimate the impact of these barriers on economic welfare.

Quantifying the Effects of Public Practices

The papers by Park, Dixit and Josling, and by Evenett take up trade barriers generated by public practices. Park’s study treats the protection of intellectual property rights. Dixit and Josling consider government ownership or control of commercial operations, and Evenett looks at the question of trade discrimination in government spending.

Government procurement

Evenett points out the surge in ongoing and expected infrastructure spending in many Asian APEC economies. Under these circumstances, the impact of government procurement policies on trade will grow in importance.

To quantify the impact of public discrimination against foreign suppliers, Evenett estimates a gravity model of bilateral import volumes. He modifies the model to distinguish public from economy-wide shares of spending on tradable goods. He further assumes that the government sector buys tradable goods exclusively from domestic suppliers. He then estimates the model with data for 14 APEC members in 1990. World Bank and International Monetary

Fund (IMF) sources are used for data on bilateral trade flows and proxies for the public-sector and GDP shares spent on tradable goods.

Finding the model to provide a reasonable fit for the data, he uses the coefficient on the public versus GDP shares on import spending to predict the likely change in import volumes if the government eliminates all discrimination against foreign suppliers of tradable goods. He finds these estimates to vary widely across APEC economies. For Australia, Canada, and the United States, increases in import volumes from full liberalization of procurement policies would be limited to about 1 percent, while the increases for Indonesia, Malaysia, and Singapore would be 11 to 12 percent. He concludes that the different APEC members would likely take different positions on any international agreement regarding government procurement, and those wanting to avoid import surges will seek more gradual changes.

Both commenters on this paper raise issues regarding econometric specification which are of general interest to applied economists using the gravity model. Nevertheless, they agree that more work along these lines can help indicate the costs that some economies may incur by restricting government purchases to domestic suppliers.

State trading

In their paper on state trading, Dixit and Josling point out that the issue has been discussed in the GATT forum since its inception. They note that in the recent Uruguay Round, state trading enterprises (STEs) were defined as government and nongovernment enterprises with exclusive or special rights over purchases and sales that influence imports or exports. They assert that state trading garners interest because STEs have a notable influence on agriculture markets; STEs can be used to circumvent commitments made in the Uruguay Round; and two large countries that use STEs extensively, namely China and Russia, are seeking to join the WTO.

Picking up on the second of these concerns, the authors note that STEs may be granted resources and market power that are not available to firms competing in the same market. For example, "... tariffs can be of very little meaning when a parastatal organization regulates total demand." (p. 7-27) The paper argues that the trade impact of such privileges can be quantified by calculating the relevant import-tax or export-subsidy equivalent. It proceeds with an extensive demonstration, on a case by case basis, of how the myriad forms of market influence from STEs of various types can be quantified by tariff equivalents, import/export subsidies, or producer and consumer subsidy equivalents, and how the trade effects can be derived from these.

After demonstrating this comprehensiveness and arguing in favor of making these calculations, the authors acknowledge the practical difficulties of getting relevant data and providing timely results. They suggest that progress can be promoted in the meantime by developing a classification scheme for STEs that would rank different types of STEs according to their capacity to distort international trade.

Dixit and Josling identify the following characteristics as key to such a ranking: whether the STE is an importer or an exporter; the degree of market control the STE exercises over

imports, exports, and domestic purchases and sales; whether the instruments of control are quotas or taxes and subsidies; whether the STE controls a narrow or broad range of products that include relevant substitutes; and finally, the ownership, objectives, and degrees of public assistance for the STE. The paper then concludes with a sample table (table 1) of what such a classification might look like and how a few specific STEs would be ranked according to this system. The authors propose specific policy goals for different types of STEs that are tailored to their ranking on degree of trade distortion. Thus the paper provides both a specific guide on quantification of STE trade effects and a practical device for pursuing freer trade in markets affected by state trading.

Intellectual property rights

Park also develops a qualitative estimate of trade effects from public regulation in his paper on patent systems. In this case the commodities in trade are inventions or intellectual property, and international variation in intellectual property rights (IPRs) affects the distribution of rents between inventors and consumers, who may be in different countries.

The world economy gains both by providing rewards to inventors and by disseminating the benefits of new technologies to consumers. Therefore it is difficult to define the optimal amount of protection for intellectual property. Moreover, as noted by Richardson, the best trade-off between inventors and consumers would differ across countries. It is for this reason that Richardson does not classify IPR among competition policy issues with the clearest direction for improvement. Yet most countries seem to be able to pursue their own interests along the spectrum of IPR protection by assessing whether they are more often inventors, imitators, or consumers. Even so, both Park and Blomström point out the value of offering certain basic IPR guarantees in order to attract foreign investors. They both, along with Ferrantino in his comments, cite research on the impact of IPR protection on trade and investment volumes.

Park poses the question of whether a country's patent system can be used as a means to prevent foreign companies from selling the products of their inventions in the home economy. He also examines whether the implementation of a country's patent rules can be used as a strategic trade policy. Thus he points out the potential for discrimination even when patent rules are transparent and applied equally to domestic and foreign inventors:

“Weak patent rights nations can, for example, by imposing compulsory licensing, providing lax enforcement, or citing public interest claims, divert the market away from foreign nationals who own patent rights to local domestic producers, and thus distort international trade. Weak patent rights nations can discriminate against foreigners even when adhering to the national treatment principle, provided the same low levels of protection are provided to both domestic and foreign innovators. This favours domestic producers (at the expense of foreign) if domestic producers are imitators.” (p. 6-6)

The paper then illustrates this point with case studies of several patent disputes and the role played by features of the relevant patent systems. Four features in particular drove the outcome in many of the disputes, which were chiefly between the United States and Japan.

These features were patent examination, which governs the breadth of scope that the patent covers; pre-grant opposition, which can generate delays in granting patents; patent publication, which affects the dissemination of information about new inventions; and compulsory licensing.

Park notes that compulsory licensing is the main instrument of the government when it perceives certain sectors to represent a vital national interest. Park describes how the Japanese government promoted the domestic semiconductor and telecommunications industries by requiring certain U.S. firms to cross-license their patents to Japanese firms. In one of these cases a licensed technology for optical fiber cables leaked. Another Japanese company copied the technology and tried to export to the United States, where it was blocked by U.S. patent law.

In other examples from telecommunications and electronics, Park relates how Japanese examiners refused to grant patents to U.S. firms until the scope of the patents was substantially narrowed. These delays, along with those caused by pre-grant opposition and combined with the early publication of the patent application, made it easy for Japanese competitors to “patent around” the original technology. Holding a narrowly defined patent and surrounded by rivals with patents representing minor changes in design, shape, or structure, the original inventors will not be able to use their technology without infringing on one of the surrounding patents. They will have no choice but to cross-license with the foreign firms.

The paper points out that this practice of “patent flooding” also overburdens the patent system and causes further delays. In contrast, the United States, Canada, New Zealand, Australia, and China recognize the “doctrine of equivalents,” which holds that technologies substantially the same as that in the original patent are covered by that patent.

Park notes that one of the main foreign complaints about the U.S. system has been the priority accorded to first-to-invent rather than first-to-file. This increases the chance that new product applications will infringe on the rights of an earlier inventor.

Park spells out the social and efficiency losses incurred from poor implementation of patent systems, and he cites both public and private practices as responsible for inefficient outcomes. Yet his recommendation for reducing the losses from costly private practices is not so much better patent law as better competition policy rules. This reintroduces the IPR question into the competition policy arena, not as an issue of optimal rights protection, but as a question of regulating private practices that manipulate patent laws in ways that are socially inefficient.

Private Practices

The next group of papers all deal with the way markets in certain APEC economies tend to work and how these traditions may affect trade. The first two deal with business practices in Japan, the second two with certain domestic and international business networks.

Case studies of Japan

In the first paper Tilton examines the detailed workings of Japan's cement and steel industries. He uses both statistical data and personal interview sources. For the intent and nature of business practices, including those admitted to be in violation of national antitrust laws, the statements of people actually involved in the Japanese businesses can be vital for forming the stylized facts.

Tilton cites a Japanese study using price gap measures of nontariff barriers in Japan. That study estimated the overall tariff equivalent of NTBs to be 174 percent. He then documents the significant price gaps between Japan's domestic price and world prices for cement and steel. He further documents that much of the gaps cannot be accounted for by international quality differences. He points out that despite the great price incentives to import, Japan's steel imports comprise only a small share of the market and its cement imports are almost nonexistent. At the same time, Japan exports substantial amounts of both commodities.

To help explain this outcome, Tilton describes the practice of group boycotts in both industries. In the case of cement, construction trade associations agreed to buy only from members of the Japan Cement Association. The cement association refused to supply any construction firm that bought any imported cement. The government, a major buyer, refused to buy imported cement for its construction projects. The Japanese longshoring companies refused to unload cement that was not directly authorized by the government. The cement manufacturers similarly pressured trucking firms not to carry cement imports. The threat of group boycott was also used to prevent foreign firms from buying Japanese firms in order to gain market access. When one regional concrete union felt competition from outsiders who were importing cheap cement, it arranged for a financial market loan to finance price cuts among its members, so they could drive the competitors out of business.

When a Korean firm tried to export cement to Japan, Tilton reports that the local manufacturers refused to allow them to use Japanese storage silos. When the firm tried to build its own, the government refused to sell the land. The government further insisted on separate and costly weighing and testing procedures only for imports. Tilton reports that Japan's Federal Trade Commission eventually fined the cement industry for price fixing, but overlooked the boycott on imports.

In a distinct but similar way, Tilton relates how Japan's large heavy industries sector relied on the steel industry to supply it with inputs and to purchase its machinery and ships. These and other interlocking relationships with construction companies, trading companies and others led to fear of retaliation for importing steel. After detailing some specific examples, Tilton concludes: "Thus, Japan's largest steel manufacturer thinks of its sales relationships as a broad, all-encompassing commitment rather than simply an agreement to buy specific products, and considers a customer's decision to switch to another buyer for one product a betrayal which should be retaliated against by withholding other products it alone can provide." (p. 3-21)

Tilton describes how various other institutions help protect the prices of downstream users in Japan so they can continue to pay high prices for cement and steel. For example, Japanese surveys have established the pervasiveness of bid-rigging in both public and private

construction projects. This, along with government-published price guidelines for construction materials, helped guarantee that the high prices would be met.

While large domestic/international price gaps indicate substantial nontariff barriers in Japan for cement and steel, one could not recommend changes without, as Bosworth et al. suggest, identifying the particular NTBs that might account for the price gaps. To that end, Tilton has marshaled an extensive array of historical and anecdotal data. Based on Tilton's numerous discussions, Japanese business groups reportedly concur with his description of private practices, though they offer no suggestions for reforms that would help Japan meet its obligations under international trade agreements.

Manifold picks up the story of inter-linked business relations in Japan and extends it to the behavior of Japanese affiliates abroad. Referring to a broad spectrum of sectors, she describes the nature of keiretsu business groups and the entrenched relationships they develop between suppliers and buyers, impervious to large price advantages offered by outside suppliers. She then considers how these relationships might affect market access in other Asian countries where Japanese firms have concentrated their overseas investments. She labels the trade effects of such business practices transferred abroad as "transplanted trade barriers".

Manifold uses data on Japanese FDI from the 1994-1995 *Directory of Japanese Affiliated Companies in Asia* published by the Japan External Trade Organization. These data are cross-referenced with Dodwell's *Industrial Groupings in Japan 1994/95* to identify keiretsu affiliations for Japanese overseas investments. As reported in table 7 of the paper, 61 percent of the Japanese affiliates in Indonesia are associated with one or more keiretsu, as are nearly half in Thailand and Malaysia.

According to surveys by the Export-Import Bank of Japan, sales in the host market is the leading reason for Japanese investments in the other East Asian economies. Further, data from MITI indicate that 59 percent of sales and 63 percent of purchases for Japan's Asian manufacturing affiliates are intra-firm transactions. Japanese electronics firms in Singapore buy almost 80 percent of their audio video components from other local Japanese companies. These data, along with sectoral and country detail, are reported in tables 8 through 11 in the paper.

Thus as Manifold points out, when examining nontariff barriers in Asian economies, a study of local systems may not give the complete picture. The complexity of intra-firm relations among foreign direct investors may play an important role. She concludes that to establish the importance of this feature of Japanese economic organization would require more investigation of intra-firm sales and how Japan's practices compare to those of other foreign investors.

Business networks

The next two papers on business networks provide a different view of private practices and suggest that Japan may be a unique case. Certain similarities exist between the Japanese system and business groups found in Korea, but business networks in Taiwan and among overseas Chinese take on a less restrictive or even trade-promoting nature.

One form of business network is vertical integration between production of upstream intermediate goods and downstream final goods. Yet the ambiguous nature of vertical integration can generate uncertain outcomes and uncertain recommendations. Vertical integration can improve efficiency in some instances while also being exclusionary. These characteristics keep vertical integration off the “highest clarity” section of Richardson’s list of competition policy issues.

Vertical integration can be efficient when firms produce differentiated products under increasing returns to scale. Certain varieties may not be produced in the most efficient quantities if there is uncertainty over the level of demand for them. Vertical integration provides a guaranteed level of demand for a given variety of input, and also allows the buyer to obtain a lower price for a product whose seller could otherwise exercise some market power over price.

Feenstra and Hamilton develop an analytical model of business groups where such price considerations lead to two main stable outcomes: one includes a few large, vertically integrated business groups; the other involves smaller business groups among suppliers of intermediate goods who sell to independent final goods producers. In the model, the price advantages of vertical integration are traded off against the governance costs of keeping the group together and covering the development costs of affiliates with unique varieties of inputs. Free entry and exit of new business groups, as well as independent firms, underlie the dynamic adjustment in the model. A key parameter is the degree of substitutability between different varieties of inputs.

The model produces several equilibrium solutions, but perhaps the most stable are the two described above. The authors find the solution with few large vertically integrated groups to be a close match for Korea and the solution with upstream business groups to closely resemble Taiwan. Using detailed country data to determine shares of within-group sales, the authors portray Korea as dominated by vertically integrated chaebols that cover nearly the entire manufacturing sector. Only a handful of these have been successful while a second rung has struggled. Feenstra/Hamilton find this reflected in their model, where the relevant solution becomes unstable as the number of large vertical groups starts to grow. In similar empirical work on Taiwan they find smaller groups in textiles, pulp and paper, chemical materials, minerals and metals selling to downstream sectors where business groups are virtually nonexistent. This pattern is also reflected in the corresponding model solution where instability arises as upstream groups increase their degree of vertical integration.

Since the model produces more than one solution, the authors conclude that economic factors alone do not predispose an economy toward any particular pattern of business networks. Both commenters on this paper considered it unlikely for Korea’s corporate pattern to arise without government assistance. Yao offers that if a chaebol-type solution emerges from a model that has no government, this could indicate that it would survive without government help, after an initial public effort to put the system in place. Yao further remarks that while potential internal efficiencies could explain vertical integration, they did not explain observed chaebol involvement in unrelated industries. The remark is noteworthy given that heavy investments in unrelated industries was at the heart of instability among chaebol in the course of the 1997-98 Asian financial crisis.

Rather than study a particular country, Trindade and Rauch examine the international business network formed by ethnic Chinese populations in a number of countries. They consider

the proposition that this network serves to provide information across countries on market opportunities for differentiated products. In other words, they serve as international matchmakers between buyers and sellers of goods in markets where detailed information on product features is important and costly to obtain. In this function, the network serves to increase trade volumes among countries where the network operates.

Trindade and Rauch hypothesize that the information-sharing role of the Chinese network will result in a greater influence on trade in differentiated products than on trade in products with well-organized international exchanges or those with easily found reference prices. They test their hypothesis using a gravity model of international trade volumes. They modify the model by adding, among other variables, a term representing the product of any county-pair's ethnic Chinese population shares. The model was estimated with data from 63 countries, both for 1980 and for 1990. Trade data were disaggregated to the four-digit SITC level and various sources were used to classify commodities into three categories: organized exchange, reference priced, and differentiated.

The authors find that their variable on Chinese population shares was positively and significantly correlated with bilateral trade volumes for differentiated products and more so for these than for the other two types of goods. Specifically, they find that ethnic Chinese networks increase trade volumes of differentiated products between the typical pair of APEC countries by 30.2 percent. Their analysis provides further evidence that this effect does not derive from cross-country similarities in taste caused by ethnic Chinese populations.

Trindade and Rauch emphasize that "... most studies show that ethnic Chinese are quite willing to include non-ethnic Chinese business partners in their network once they get to know them." (p. 5-11.) Indeed, they would reduce their usefulness as information-providers if they excluded businesses of other nationalities. The authors go on to recommend that governments can replicate the trade-enhancing role of coethnic networks by creating and extending access to other international information-sharing networks or trade promotion activities.

Discussants of this paper pointed out that the role of differentiated goods needed to be established as sufficiently different from that of other goods in order to endorse the information-sharing function assigned to the Chinese network. They further found that other, perhaps complementary, explanations for the model results are possible, such as that ethnic networks serve to reduce risk, or that national trade policies changed over the period. If a government were to follow the authors' recommendation on enhancing trade promotion activities, information on precisely how ethnic business networks help increase trade would be essential.

Modeling APEC Trade Liberalization

General equilibrium simulation models, and computable general equilibrium (CGE) models in particular, have often been used to evaluate trade policy changes and regional trade agreements. This is because trade liberalization is an inherently general equilibrium phenomenon, with trade shocks in one sector affecting other sectors, wages, and incomes. The CGE class of models allows the simulation of potential policy changes. It also provides a systematic basis for measuring welfare gains from policy changes. Although each model will

have unique features, they can all report some form of real income or welfare changes for the economy in question. Thus where nontariff barriers can be quantified, CGE models can be used to simulate their trade and welfare effects.

The following sections describe the six modeling papers presented at the symposium. The first two papers make assessments of overall APEC trade liberalization. The next two treat liberalization in the services sector. The last two evaluate trade policies in fully dynamic models, treating issues that can only be handled in the context of developments over time.

General equilibrium models of regional trade liberalization

Dee's paper on the comprehensiveness of APEC trade commitments treats a number of issues not often dealt with in studies of regional trade nor in trade modeling exercises. In particular, she evaluates the potential gains from trade facilitation measures, in light of APEC commitments in this area. She evaluates the limited research available on costs imposed by customs procedures, divergent standards and technical regulations, and other regulations. She finds estimates of the costs imposed by such procedures ranging from 5 to 15 percent of the value of trade. With a varying list of barriers considered, this research finds gains from trade facilitation in the range of 4 to 6 percent of GDP for some countries. Dee's modeling approach is to test two alternative values for the direct cost savings from trade facilitation: 5 and 10 percent of the value of total trade.

In addition to trade facilitation, the paper also focuses on agriculture trade and trade in services. These are both sectors with substantial degrees of protection, even after liberalization undertaken in the Uruguay Round and NAFTA. The measurement of protection in services trade is the more problematic of the two since data on trade in services are much less developed. Dee points out the shortcomings of allowing a large dispersion in protection across sectors by liberalizing those with low barriers and leaving high protection elsewhere. Then resources that move out of some liberalized sectors can move into less efficient activities.

The model used to evaluate the various trade measures is a global CGE model with 37 sectors. The 1992 GTAP (Global Trade Analysis Project) data form the model's data base, although the protection data were replaced with WTO sources on pre-Uruguay Round rates. Then, a preliminary experiment was conducted to reduce protection rates to post-Uruguay Round, post-NAFTA levels. A portrait of the remaining protection levels is given in table 1 of the paper. The model also uses an imperfectly competitive specification for most sectors. It further allows for a period of capital accumulation with limited possibilities for expanding foreign borrowing. In addition, total labor resources can grow in the economies with large shares of informal employment.

The results from simulating the elimination of all the identified barriers in APEC on an MFN basis are reported in tables 2 and 6 of the paper. The overall welfare gains amount to over one percent of GDP, which is impressive given that the starting point is post-Uruguay Round. Clearly the allowance for expansion of the capital and labor resource base enhanced the estimated gains from liberalization. When agriculture is excluded from the experiment, the reduction in gains amounts to 60 percent of the original benefits from liberalization of traded goods.

Countries with high protection in agriculture suffer especially from the exclusion as they no longer free up the resources to take advantage of liberalization in other sectors. The results from liberalization of services and from trade facilitation indicate the important role these measures would take in overall trade liberalization.

According to model simulation results, the annual real income gain for APEC members from the removal of all trade barriers could be \$300 billion. Trade facilitation measures could add from \$200 to \$400 billion more.

The paper by Park, Tan, and Toh also uses a global CGE model with data from 1992. The motives for their analysis of various regional trade groupings, which centered around the ASEAN countries, were described above in the section on foreign investment. Basically, the ASEAN countries found themselves among some of the fastest growing economies, but facing rapid global integration for China and regional trade agreements elsewhere that threatened to divert investment away from ASEAN countries. Forming a regional trade area seemed to have the potential for capturing the dynamism of the region while preserving its attraction as a destination for foreign investors.

Among the distinctive features of the model is the Almost Ideal Demand System (AIDS) specification for import demand. This feature allows the income elasticity of import demand to be higher than one, as has been empirically observed. The importance of specifying a varied responsiveness to income of different product demands, as the AIDS functions allow, is treated in the paper by Jorgenson, discussed below. The AIDS specification also allows the degree of substitutability between goods from different countries to vary according to the specific country-pairs.

In addition, the model also specifies three channels for “trade externalities,” meaning changes in an economy’s structure due to the experience of higher trade levels. The authors refer to empirical evidence that the imports of foreign capital and intermediate goods embody new technologies that can improve domestic efficiency. This mechanism is built into the model along with two externalities on the export side. These latter two are based on evidence from the Asia region that the experience of exporting, through the pressures to produce world class products, can help improve domestic productivity.

The authors use the model to simulate the effects of regional trade groupings among various combinations of East Asian countries and the United States. In each case, regional trade groups are formed by members cutting existing (1992) tariff and nontariff barriers to each other by 50 percent. In a useful summary table, table 4 in the paper, they compare outcomes across the different experiments. These results show that the ASEAN countries gain the most from the broadest possible regional liberalization, i.e. APEC-wide, rather than from forming any of the smaller sub-groups. The model results at both the aggregate and sectoral level highlight the important role of trade with the United States for the Philippines, and trade with Japan for Indonesia. Therefore, neither of these ASEAN members would want their major trading partner left out of a regional trade agreement.

Barriers to trade in services

Benjamin and Diao also use a global CGE model to compare different types of trade liberalization. They focus on the treatment of services trade and compare liberalization in that sector with a general trade liberalization. The particular role of services as the largest sector in APEC economies, the single largest intermediate good, and a rapidly growing component of world trade draw attention to the sector.

The barriers identified as influencing trade in services include foreign market regulations, quotas, technical standards, certification requirements, government procurement rules, and the need to obtain foreign market information and maintain foreign distribution networks. The paper presents evidence that the expense of surmounting these barriers imposes fixed costs on firms that export services.

In the model, private tradable services are specified as imperfectly competitive products. The NTBs affecting services reduce international competition, segment markets and limit the scope for cross-border arbitrage by consumers. This leaves producers with a different degree of market power in each national market, including their own. Thus NTBs provide opportunities for service exporters to price discriminate across country markets. Model experiments simulate services trade liberalization by assuming that barrier reduction causes firms to switch from price discrimination to a single pricing strategy within APEC. The fixed costs of exporting services are also reduced in the experiment. These results are compared with a general tariff removal among APEC members on an MFN basis.

The results from the Benjamin/Diao model show that trade liberalization in other sectors has a strong impact on trade in services, and reveals a strong comparative advantage in services among the large western APEC economies. Thus while smaller East Asian economies gain the most in terms of real income from tariff elimination, the larger Western members gain most from reducing services barriers. For the United States, results show that when reduced service barriers lower fixed costs in the sector by five percent, the gains from service trade liberalization alone equal those from complete APEC tariff removal. (These gains are about 0.9 percent of real income for the United States and higher for the other APEC members.)

The results also show that tariff removal causes reductions in a number of the sectoral net trade balances, indicating trends counter to those that produced the base trade patterns. In contrast, services liberalization reinforces the existing sectoral trade balances. The authors find an explanation in the role of services as the major source of intermediate inputs to other sectors. In terms of primary factor use, services are relatively capital intensive and are used most by other capital intensive activities. Therefore, as liberalization reduces the cost and increases the use of intermediate services, the role of primary factors in determining sectoral comparative advantage will be reinforced.

Kawai and Urata use a single-country model with Japanese data to estimate the cost of regulation in the Japanese service industry. Although services in the model are not internationally traded, the authors use the greater influence that foreign productivity and foreign prices would have under deregulation as a means to simulate the reforms.

Kawai and Urata note the rapid expansion of the services sector from two thirds to three quarters of the Japanese economy over the last ten years. As examples of burdensome regulations, they report that new entry in most service sectors requires government approval and that most service prices must be either approved by the government or reported to it. These regulations limit competition and lead to low productivity and high prices. In table 2 of the paper they report Japan's 1990 total factor productivity (TFP) and price relative to that of the United States for 162 sectors. Among services, TFP is almost always lower in Japan and prices are often more than double those in the United States.

When the authors exogenously increase TFP in all their model's service sectors by ten percent, the overall price level falls and real GDP rises by more than five percent. Among all services, higher TFP in the construction and distribution sectors make the greatest contribution to GDP in this exercise. Kawai and Urata assume that if Japan deregulated the services sector, the TFP would converge toward the level of that in the United States. They then conduct two further experiments. First they reduce the gap between Japan and U.S. services TFP by half. Second, to simulate a more general trade liberalization, they reduce the Japan-U.S. TFP gap by half in the primary and manufacturing sectors and eliminate the gap between the Japanese prices of imports and U.S. prices. This last measure removes the price gap that is often measured in determining the total protection rate afforded by the combination of tariff and nontariff barriers.

In the services deregulation simulation, GDP rises by 9.3 percent. The authors find that investment rises by 13.3 percent and consumption by 4.2 percent. The welfare gains amount to 270,000 yen (\$2,300) for the average consumer. Production increases in all sectors of the economy. In the trade liberalization experiment, GDP rises by 2.2 percent while investment and consumption both rise by 3 percent. The authors allow that the responsiveness to lower import prices is limited, because these elasticities were estimated from data observed under a restricted trade regime. When the services and trade experiments are combined, GDP increases by 12.2 percent and consumer gains rise to 562,000 yen per person. (As above, this implies \$4,800 per person.)

Kawai and Urata conclude that the benefits of services deregulation and trade liberalization fully warrant making these policy changes. However, noting model results showing substantial shifts in sectoral output and employment, they suggest the adjustment costs may be large and they recommend adjustment assistance.

Dynamic modeling of trade liberalization

The last two papers consider trade liberalization in a dynamic setting. The models consider the path of adjustment over a period of time long enough for trade shocks to generate a new long run equilibrium. Consumers and investors are able to optimize saving and investment behavior over the adjustment period subject to intertemporal budget constraints. Since saving and investment decisions are inherently functions of time, dynamic frameworks allow modelers to include rational behavior in these important aspects of adjustment to trade policy changes.

Ho and Jorgenson present a dynamic open-economy model of the United States. The most distinguishing feature to mention here is that they use time series data from 1947 on to

develop full econometric estimates of consumer and producer behavior. These time series data are used to estimate production functions chosen from the class of flexible functional forms. Such a specification allows them to represent productivity growth in a way that more closely tracks past data, but it also raises other methodological issues.

On the consumption side, Ho and Jorgenson reject the common assumption that demands for goods rise proportionately with income, and instead specify varying income elasticities of demand for different goods, as the data indicate. They have econometrically estimated the price and income elasticities of demand for their 35 model commodities, for each of 672 types of households. On both the production and consumption side, the authors point out the major structural shifts in recent decades that would be missed without the detail they include in their model. Similarly with import demand, they point out that the current U.S. episode of rapid change in the share of imports is not well-captured by traditional models of import demand. Much of the paper, in fact, focuses on the methodological difficulties of accurately representing medium term adjustments with functional forms that will still allow convergence to a long run equilibrium.

In describing simulations of trade liberalization, they portray the detailed paths of the most important variables. One important development, noted in other dynamic simulations, is that trade liberalization causes the price of capital goods to fall and total investment to rise over the no-liberalization path. An indication of welfare, or real consumption gains, can be taken from one of their experiments which removes all U.S. and foreign tariffs as of 1980, and removes the tariff equivalents of U.S. quantitative restrictions on textiles, apparel, shoes, steel and autos. The results show an initial consumption gain of 0.36 percent and a long run gain of 1.08 percent, compared to the no-liberalization case. These gains increase if substitutability between imports and domestic goods is higher, indicating the value of refining econometric estimates of these parameters. The gains would also increase if the authors had estimates allowing them to simulate the impact of removing NTBs in other countries.

The simulation results in this paper illustrate the impact of trade liberalization on the United States. The liberalization is not APEC-specific, nor are the short run results of a dynamic simulation precisely comparable to those of a static model. Yet one relationship that should be noted among the Ho/Jorgenson results is how much greater long run gains are than short run gains. This point is echoed in McKibbin's dynamic results discussed below. Go, in his comments on Ho and Jorgenson, suggests that the margin of gains added by a dynamic specification may not be so high. Citing results from a model that can be run in both static and dynamic formats, he raises new questions on which factors may account for the added dynamic gains and what their relative importance might be. Kouparitsas, in commenting on McKibbin, also suggests greater comparability between static and dynamic model results.

McKibbin brings dynamic general equilibrium modeling into a global framework. This allows dynamic investment behavior to be extended to international capital flows drawn by cross-country differences in rates of return. Thus countries can borrow abroad in the short run if their capital returns are higher and then build up trade surpluses to pay off foreign debts over time. Consumer and investor behavior is partly determined by dynamic optimization and partly by current income and profits. Also, while financial capital is fully mobile, physical investments are increasingly costly to install and costly to move once installed. Further, wages are not fully flexible, the degree of flexibility varying with labor market institutions in each country.

The author finds that these short term rigidities affect the initial adjustment to trade liberalization, reducing short term substitution possibilities in production. Long run substitution possibilities are higher, and for most of the economies simulated, the long run outcome contrasts with that of the short run.

In model simulations, McKibbin uses WTO data to set baseline tariff levels for APEC economies, and then reduces these gradually to zero by 2010 or 2020, for developed or developing APEC members, respectively. He finds that smaller countries with large trade shares and higher levels of protection gain most from their own trade liberalization, but welfare gains are even higher when the other members participate in the liberalization. In APEC-wide MFN liberalization, U.S. long run real consumption gains are 1.89 percent and most other economies show even greater gains.

The results show that under liberalization, aggregate world investment rises, but investment does not increase in every member economy. Even so, the income from investments made abroad guarantees consumption gains everywhere. Given the short term rigidities mentioned above, liberalization can lead to short run GDP losses and unemployment. Yet some of the long run gains can be tapped early on through access to forward looking asset markets. Moreover, if a number of other countries join in the liberalization, the collective efficiency gains and investment flows serve to reduce short term losses and increase long term gains. McKibbin emphasizes the sensitivity of the results to a number of parameter values and recommends further research.

Principal Lessons from the Symposium

When work on a variety of nontariff barriers is gathered together, it becomes clear that information is available to provide some measure of the size or relative importance of many barriers to trade. Specific estimates of most barriers would require more data gathering and analysis, but may not be necessary in many cases. Where researchers can agree that clear economic benefits will arise by moving trade regulations in a particular direction, the problem becomes one of finding the means to increase international convergence and cooperation in those areas.

Trade modelers similarly have much work to do in improving the precision with which they model markets hindered by trade barriers, including the estimation of relevant parameters. Nevertheless, general equilibrium model simulations have brought forward early indications of the great scope and value of liberalizing NTBs in addition to APEC tariffs. Modeling exercises presented at the symposium illustrate various approaches to trade issues such as trade facilitation, trade externalities affecting productivity, and trade in services. The modelers also demonstrated and proposed new standards for fitting models to time series data and for including dynamically specified global capital flows.

As Dixit and Josling point out, there is much information on NTBs, even in complicated market environments, that ultimately shows up in price gaps measurable as tax or subsidy equivalents. However, as Mao and Tavares caution, the price distortions prevalent in many economies argue for taking account of a variety of information, such as profits or, as in Kawai

and Urata, international productivity gaps, in addition to apparent price gaps. Taking the recommendation of Bosworth et al., price gaps need to be evaluated in terms of the specific barriers affecting the relevant markets and how these barriers might influence price.

The studies by Tilton and Manifold show that understanding the details of how markets work is essential to discerning the NTBs affecting various markets. If research on NTBs is confined to what can be explicitly quantified, the results will be unsatisfying. A number of public and private practices affect a variety of markets in ways that are difficult to isolate or quantify. Research discussed by Winston, Evenett, Dixit and Josling, Bosworth et al. and Dee, all indicate methods of quantifying trade barriers in complex circumstances, such as deregulation, public procurement, public monopoly power, international differences in service quality, or trade facilitation. Nevertheless, some important trade issues will not yield to this approach. It is especially problematic to try to measure a market distortion when there is no consensus on the “best practice” baseline against which a distortion is supposedly imposed.

Park points out divergent interests on patent protection with no obvious optimum for serving inventors as opposed to consumers and imitators. Richardson lists a number of issues where the standards of best practice are difficult to discern. One of these is the issue of vertical integration, posing potential trade-offs between efficiency and exclusion of other, perhaps more innovative, market entrants. The ambiguous role of vertical integration is prevalent in the papers on business networks. Richardson proposes ranking issues according to the productivity of pursuing international convergence on them. This productivity is a mix of clear, likely economic gains and political feasibility.

Richardson’s study focuses on competition policy, yet this field covers most disputes under the description of “private practices.” His paper concludes that, even if such trade barriers cannot all be quantified or even clarified, research can identify certain directions where economic gains are apparent, and policymakers should find ways of heading in those directions. He, like Barfield in discussing deregulation, proposes specific guiding principles for achieving productive international convergence on the most promising competition policy issues.

For NTBs that can be quantified, general equilibrium models provide a more standard metric for evaluating regional economy-wide welfare effects. These models can also indicate the structural effects of trade policy changes, and, in a dynamic setting, portray the nature of adjustment paths over time. Yet this capacity must be seen in light of the fact that these model estimates of effects of liberalization, commonly made and cited, are incomplete without further inclusion and evaluation of NTBs. As several of the symposium presentations have shown, modeling has progressed in these areas, but needs to keep pace with ongoing research on nontariff barriers.