

ROBERT Z. LAWRENCE

Brookings Institution

Efficient or Exclusionist? The Import Behavior of Japanese Corporate Groups

IN THEIR DISPUTES with Japan, U.S. trade negotiators have increasingly concentrated on deeply rooted structural aspects of the Japanese economy. In the recent structural impediments initiative (SII), for example, the U.S. government argued for increased antitrust enforcement, and, in particular, for increased policing of Japanese corporate groups known as *keiretsu*. The joint report issued at the conclusion of the SII recognized that “certain aspects of economic rationality of *Keiretsu* relationships notwithstanding, there is a view that certain aspects of *Keiretsu* relationships also promote preferential group trade, negatively affect foreign direct investment in Japan, and may give rise to anticompetitive business practices.”¹ In response to the SII, the government of Japan agreed to strengthen its Fair Trade Commission’s (FTC) monitoring of transactions among *keiretsu* firms and to take the necessary steps toward eliminating any restraints on competition that might arise from their business practices.

This paper reflects work in progress on my study “First Among Equals: U.S. Manufacturing in a Global Economy,” funded by the Ford Foundation. I am indebted to Kashif Mansori for superb research assistance and to Peter Petri for generously providing data. I thank Evelyn Taylor for text processing and am grateful for comments received from Anne Krueger, Yoshiyuki Noguchi, Sylvia Ostry, Gary Saxonhouse, T. N. Srinivasan, Nobuaki Takahashi, and participants in conferences sponsored by (1) the Economic Research Institute of the Economic Planning Agency and (2) the Japan Center for International Finance and the Institute for International Economics.

1. U.S. and Japanese Governments (1990, p. V-1).

Keiretsu are groups of firms characterized by close business relations and long-term business commitments among their members. Firms in these groupings are attached to one another through cross shareholdings, time-honored buyer-supplier arrangements, interlocking directorates, the interchange of personnel among constituent companies, and the sharing of information concerning product development and distribution.

How these ties bind member firms together varies substantially across *keiretsu*. Whether they are horizontal or vertical in structure accounts for some of the variation. Horizontal *keiretsu* have a long history in Japan, with three of the present groups—Mitsubishi, Mitsui, and Sumitomo—having grown out of the prewar *zaibatsu* (industrial combines); the other horizontal *keiretsu* have developed around large banks. The horizontal linkages among these industrial groups are far-flung, stretching to almost every corner of the economy in an attempt to achieve wide-scale diversification. Firms within these *keiretsu* can range from textiles to insurance, auto production to construction, consumer electronics to breweries. Horizontal *keiretsu* typically exhibit extensive cross shareholding—within *keiretsu*, aggregate cross shareholding ranges from 12 to 27 percent of total paid-up capital—and also engage in intragroup financing by a common bank.² Constituent companies also share information, management personnel, the use of trading companies for marketing and organizing projects, and joint investment in new industries.

By contrast, vertical *keiretsu* have a tighter, more concentrated membership. A manufacturing concern stands at the center of a supply-distribution network and usually dominates the other group members, who are made up of the main company's subsidiaries, subcontractors, and important customers. In these vertical arrangements, each member fulfills a specific function and is fully integrated into the production and marketing strategies of the core manufacturing business. In addition, this form of corporate architecture is enhanced by long-term, mutual agreements concerning supplier-buyer relations, which operate largely under an unwritten, intragroup covenant. Examples of vertical groups include Nissan and Toyota in the auto industry, Nippon Steel in metal production, and Hitachi and Toshiba in electronics.

2. Nanto (1990, p. 4). Use of the common bank is not exclusive. Member-companies typically use the common bank for only a fraction of their financing needs; they also form ties with banks outside the group in order to spread risk and prevent one bank from attaining undue influence. See Dodwell Marketing Consultants (1986).

Difficulties in Analyzing *Keiretsu*

It should be stressed that the preceding description of *keiretsu* is general and simplistic. It is hard to be more detailed because the relationships surrounding *keiretsu* are fluid and ambiguous. Indeed, the sundry ways in which *keiretsu* operate—among their constituent parts, toward other *keiretsu* groups, and toward companies outside their group—make generalization rather treacherous. For example, the degree of closeness among a single *keiretsu*'s membership can vary, as can the degree of closeness between *keiretsu* members and outside companies that are affiliated with the *keiretsu*. Within the Mitsubishi group, for instance, cross shareholding by individual companies in 1988 ranged from 0.02 to 4.99 percent.³ Furthermore, members of vertical *keiretsu* often have loose affiliations with horizontal *keiretsu*. Hitachi, for example, is associated with three horizontals. As a further complication, member companies of *keiretsu* can and do change affiliation on occasion.

Keiretsu in the Japanese and World Economies

The *keiretsu* form a significant part of the Japanese economy. In 1985, 17 of Japan's *keiretsu*, as defined by Dodwell Marketing Consultants, accounted for nearly 25 percent of annual sales in Japan, with Mitsubishi alone accounting for almost 4 percent.⁴ The *keiretsu* share of net income is even larger; they received around 32 percent of Japanese net income in 1985.⁵ In addition, the *keiretsu* are significant exporters; their names have become household words around the world—Mitsubishi, Mitsui, Sumitomo, Hitachi, Nissan, Toyota, Toshiba, Matsushita, and several others whose group names are less well known but whose member enterprises include Kawasaki, Sapporo Breweries, and Canon. In 1985 the nine largest trading companies in Japan, all members of *keiretsu*, handled 44 percent of Japan's exports and 68 percent of Japan's imports.⁶

3. Nanto (1990, p. 4).

4. Dodwell Marketing Consultants (1986, p. 37).

5. Dodwell Marketing Consultants (1986, p. 38).

6. Dodwell Marketing Consultants (1986, p. 519).

Trade Positions toward Keiretsu

In the American-Japanese trade debate over *keiretsu* three contrasting positions can be distinguished: the benign neglect, trust busting, and dilemma positions. The first of these, benign neglect, contends that *keiretsu* do not have important effects on Japanese economic performance.⁷ Evidence used to support this view includes Japanese FTC data showing that the intragroup transactions of *keiretsu* members are not particularly large. A 1981 study found that within-group transactions for the six major horizontal groups account for only 11 percent of their sales and 12 percent of their purchases.⁸ Proponents of the benign neglect position also cite the low rates of return typically earned by large companies that are *keiretsu* members. Low returns, it is argued, show that competitive pressures are strong.⁹ Finally, these observers cite studies showing that Japanese trade patterns can be adequately explained by other economic variables, such as factor endowments.¹⁰

The second view, trust busting, takes a contrary position. Its proponents maintain that *keiretsu* create entry barriers for newcomers and engage in anticompetitive practices. These analysts seek stricter antitrust enforcement against the *keiretsu*, not only by the Japanese authorities but also by the U.S. government. As Dick Nanto reports, the U.S. Justice Department is currently deliberating whether to punish antitrust violations by *keiretsu* in Japan by suing their U.S. subsidiaries, and the U.S. Federal Trade Commission has begun a probe of the actions

7. According to Komiya (1990, p. 186), for example, "The three largest *keiretsu* not descended from the *zaibatsu*—have little more than monthly meetings which are primarily of a social nature, with little functional significance. These industrial groups are, therefore, more imaginary than real."

8. See Imai (1990). The data, however, have several problems. Yamamura (1990, p. 31) notes that these measures ignore secondary and tertiary suppliers; Okumura (1990) notes that the denominator is inflated by sales of trading companies which include oil, gold, and foreign trade transactions; and Gerlach (1989, p. 156) notes that "in some sectors intra-*keiretsu* transactions actually surpass 50 percent of firms' total trade."

9. See Yoshitomi (1990). However, low profits could also indicate sheltered inefficiency. Caves and Uekusa (1976, p. 87) found that profits were negatively related to group affiliation and concluded, "It remains distinctly possible that rents yielded by group affiliation are consumed in technical inefficiency."

10. See Saxonhouse (1986, 1989) and Leamer (1987).

of Japanese companies and their suppliers operating in the United States.¹¹

The third view, the dilemma position, concedes that *keiretsu* have a negative impact on Japanese imports and on the ability of foreign firms to enter the Japanese market, but argues that *keiretsu* have also been an important reason for the superior performance of the Japanese economy. *Keiretsu* firms constitute the Japanese corporate elite, and a *keiretsu*'s linkages are seen as providing risk- and information-sharing benefits to its members. *Keiretsu* may also serve as a more efficient substitute for vertical integration—permitting reliable supply while preserving corporate flexibility.¹² Proponents of this view see Japan confronted with a painful trade-off between openness and efficiency. One way to avoid this trade-off might be to incorporate foreign firms into the *keiretsu* structure. Indeed some see recent agreements between Mitsubishi and Daimler Benz as an effort in this direction. A second way would be to manage trade with Japan in such a way that foreign firms are simply granted satisfactory market shares.¹³ A possible third way would be foreign direct investment by Japanese firms. A fourth might be to create a “level playing field” in which foreign firms form *keiretsu* of their own.¹⁴

Unfortunately, too many papers on this topic marshal data to support a particular view without subjecting them to tests of alternative hypotheses. An exception, which explicitly investigates the impact of *keiretsu* on trade behavior, is by K. C. Fung.¹⁵ He found that *keiretsu* did have a negative and statistically significant impact on the U.S.-Japan bilateral trade balance by industry, but the impact was small and the other variables performed poorly. The present paper aims to further examine the effects of *keiretsu* on trade.

Investigating the Effects of *Keiretsu*

In what follows, I separately test the impact of *keiretsu* on exports and imports. If reduced imports are statistically associated with *keiretsu*, it could be assumed that either these groups discriminate against foreign

11. Nanto (1990, pp. 18–19).

12. See Aoki (1984, 1990) and Yoshitomi (1990).

13. See Prestowitz (1988).

14. See Ferguson (1990).

15. Fung (1990).

products, or all else being equal, they enhance the performance of Japanese firms. Performance abroad, however, is less likely to be influenced by discriminatory practices.¹⁶ Therefore, if increased exports are associated with *keiretsu*, I assume that *keiretsu* improve competitiveness. Thus, I can distinguish between the three positions above. If *keiretsu* have no effect on either imports or exports, the benign neglect position is supported. If they reduce imports but do not boost exports, the import-reducing effect may reflect discrimination against imports rather than increased efficiency. This finding would thus support the trust-busting view. Finally, if *keiretsu* reduce imports *and* increase exports, this supports the dilemma position, because both these effects could be due to superior efficiency.

As emphasized at the outset, one problem in conducting this investigation is that *keiretsu* are not well defined. Because of this, many Japanese economists view the policy discussion on *keiretsu* as ill-informed. To get around this, I use data from a report prepared by Dodwell Marketing Consultants, which contains information through 1985 on individual firms and their *keiretsu* affiliations.¹⁷ Firms are classified as either unaffiliated or belonging to one of 17 major industrial groups. Combining this information with data on sales by industry in 1985, I have developed three variables. The first (K) measures the total share of the 17 groups in each industry's sales. A second (K_h) measures the share of industry sales by the horizontal groups.¹⁸ The third (K_v) measures the share of industry sales by the remaining *keiretsu*, which are primarily vertical.¹⁹

Empirical Model

My empirical model builds on an extremely useful paper by Peter Petri, which explains, across Japanese industries, the share of imports in domestic consumption and the share of exports in world markets.²⁰

16. This becomes less true as Japanese firms increase their foreign presence. See Kreinen (1988).

17. Dodwell Marketing Consultants (1986).

18. In the empirical analysis, the horizontal *keiretsu* are Mitsubishi, Mitsui, Sumitomo, Fuyo, DKB, Sanwa, Tokai, and Industrial Bank of Japan.

19. The verticals are Nippon Steel, Hitachi, Nissan, Toyota, Matsushita, Toshiba, Tokyu, Seibu Railway, and Seibu Saison.

20. Petri (1989).

Table 1. Variables Used in Import and Export Equations

<i>Import penetration</i> : Ratio of imports to domestic demand by industry.
<i>Share of world exports</i> : Ratio of Japanese exports to total world exports by industry.
<i>Raw material intensity</i> : Share of mining, refinery products, electricity, and gas in sectoral production costs. ^a
<i>Capital intensity</i> : Share of operating surplus plus depreciation in sectoral value added. ^a
<i>Technological intensity</i> : Share of scientists and engineers in sectoral employment. ^a
<i>Government</i> : Share of government, government investment, public enterprises, and research institutes in purchases of the sector's products. ^a
<i>Personal consumption</i> : Share of households in purchases of the sector's product. ^a
<i>Transportation costs</i> : Ratio of weight to value. ^b
<i>Tariffs</i> : Total tariffs levied as a percent of value. ^a
<i>Producer concentration</i> : Herfindahl index of supply concentration for 1986. ^c
<i>Keiretsu sales, K</i> : Share of industry sales reported by Dodwell made by firms affiliated with one of the 17 broadly defined <i>keiretsu</i> in 1985.
<i>Horizontal keiretsu sales, K_h</i> : Share of industry sales by 8 horizontal <i>keiretsu</i> in 1985.
<i>Vertical keiretsu sales, K_v</i> : Share of industry sales by 9 vertical <i>keiretsu</i> in 1985.

Sources: *Keiretsu* sales data are from Dodwell Marketing Consultants (1986); all other variables are from Petri (1989).

a. Shares are derived from the 1985 input-output table in Petri (1989).

b. Share is derived from U.S. trade statistics.

c. Producer concentration is an index, not a percentage.

As reported in table 1 of this paper, Petri uses traditional variables in his analysis—measures for factor intensity, industrial organization, and protection—and also includes variables indicating margins in the distribution sector and the relative importance of consumers and the government as final buyers.²¹

Petri found, among other results, that import penetration was negatively related to distribution margins, and concluded that the Japanese distribution system acts as a barrier against imports. He also found that markets in which household purchases accounted for a large share of sales had a relatively high import penetration ratio. Petri estimated that if the Japanese government and Japanese business behaved like consumers, imports of manufactured goods might double.²²

21. See Petri (1989) for an excellent discussion of the theoretical basis of this factor-intensity model.

22. There is a statistically significant positive correlation of 0.35 between the relative importance of *keiretsu* sales, *K*, and the measure of the importance of sales to businesses developed by Petri. This indicates that *keiretsu* linkages are associated with producer purchasing decisions.

The available data, up through 1985, allow an estimation of the share of sales by *keiretsu* members for 38 of the 49 industries in Petri's original sample. There are, however, strong reasons to believe that the behavior of the aircraft industry has been heavily influenced by unusual historical and political factors. In 1985 this sector imported 39 percent of its consumption, a figure almost four times as high as the next biggest importing sector and over ten times higher than the sample mean of a little more than 3 percent. As might be expected, the inclusion of aircraft has a big effect on the estimated coefficients that explain imports—particularly on the capital-intensity and technology-intensity variables.²³ Accordingly, the regressions reported in table 2, which explain imports using the variables developed by Petri, exclude aircraft from the sample and are based on observations for 37 industries.

Effect of Keiretsu on Imports

When import equations are estimated over the smaller sample using Petri's data and ordinary least squares, most of Petri's findings are qualitatively confirmed, although the statistical significance of some of the variables is lower.²⁴ As shown in equation 2.1, Japanese imports tend to be intensive in raw materials and technology but not necessarily in capital. They are negatively related to the share of government in total demand and to transportation costs (though not significantly), and positively related to producer concentration.

When the regression is reestimated adding the *keiretsu* variable, *K* in equation 2.2, its explanatory power is considerably improved: the adjusted R^2 rises from 0.29 to 0.45. The coefficient on the variable is negative and statistically significant, and the *t*-statistics on most of the other variables also increase. Pared-down versions of the regression and alternative sample specifications (neither of which are reported here) were also estimated. The degree to which the *keiretsu* variable contributes to the explanatory power of the regressions, its statistical significance, and its negative sign all appear robust.²⁵

23. When a dummy variable for aircraft is included together with data on the aircraft industry in the regressions in table 2, the dummy has a *t*-statistic of 8.8.

24. Petri obtained statistically significant effects from his variables measuring distribution margins and the square of technology. These were not statistically significant in the regressions here and have been dropped from the specifications reported in table 2.

25. However, the share of sales by *keiretsu* members in the aircraft industry is extremely high. As a result, when the observations on aircraft, which have an extremely high import

Table 2. Equations Modeling Japanese Imports by Industry, 1985

Independent variable	Import penetration				
	2.1	2.2	2.3	2.4	2.5
Constant	1.10 (0.59)	3.32 (1.82)	2.32 (1.24)	1.40 (0.73)	3.39 (1.83)
Raw material intensity	0.20 (1.64)	0.26 (2.35)	0.24 (2.05)	0.21 (1.67)	0.26 (2.35)
Capital intensity	-0.07 (1.70)	-0.04 (1.17)	-0.06 (1.55)	-0.07 (1.53)	-0.05 (1.17)
Technological intensity	0.44 (2.81)	0.46 (3.31)	0.44 (3.00)	0.45 (2.87)	0.45 (3.23)
Government share of demand	-0.04 (1.31)	-0.03 (1.02)	-0.06 (1.88)	-0.03 (0.80)	-0.04 (1.17)
Consumer share of demand	0.03 (0.83)	-0.01 (0.35)	-0.01 (0.25)	0.03 (0.89)	-0.02 (0.52)
Transportation cost	-0.35 (0.63)	-0.39 (0.79)	-0.15 (0.28)	-0.47 (0.81)	-0.32 (0.62)
Tariffs	0.22 (1.41)	0.22 (1.64)	0.29 (1.93)	0.19 (1.17)	0.25 (1.72)
Producer concentration	0.0008 (1.51)	0.0008 (1.75)	0.0010 (1.97)	0.0007 (1.31)	0.0009 (1.82)
<i>Keiretsu</i> sales (<i>K</i>)	...	-0.056 (2.99)	...	...	...
Horizontal <i>keiretsu</i> sales (<i>K_h</i>)	...	...	-0.046 (2.11)	...	-0.063 (2.83)
Vertical <i>keiretsu</i> sales (<i>K_v</i>)	...	...	...	-0.023 (0.93)	-0.048 (2.03)
<i>Summary statistic</i>					
<i>R</i> ²	0.29	0.45	0.37	0.29	0.43
Standard error	2.46	2.17	2.32	2.47	2.20
<i>F</i> -statistic	2.84	4.23	3.33	2.60	3.75

Sources: See table 1 for sources and description of variables. Numbers in parentheses are *t*-statistics. The critical values for the *t*-statistics are $t > 1.31$, significant at the 90 percent level, and $t > 1.70$, significant at the 95 percent level.

The *keiretsu* variable in the import equation is not only statistically significant but, unlike the estimates of Fung, is also quantitatively important.²⁶ If the variable were set at zero in equation 2.2, the overall value of imports for the industries in the sample would be \$58.8 billion rather than their predicted value of \$28.2 billion in 1985. Of course, if

share, are used in the regression, the coefficient on *K* remains negative but is no longer statistically significant.

26. Fung (1990).

these import-reducing effects were actually eliminated, given Japanese saving and investment behavior, the yen would depreciate and offset some of the impact of this change. Overall, therefore, the impact would be smaller than the difference between \$58.8 and \$28.2 billion.

Table 2 also reports regressions in which the *keiretsu* variable is divided according to whether the group is horizontally or vertically shaped. When estimated simultaneously (equation 2.5), the coefficients on each variable are similar in magnitude and both are statistically significant. Thus, *both* types of *keiretsu* are associated with quantitatively important reductions in imports.²⁷

On balance, these results do not appear to reflect reverse causation—that low import shares lead to the formation of the *keiretsu*—they actually seem to suggest the reverse. In fact, imports are not particularly low when *keiretsu* sales are high. The correlation coefficients between import shares and the horizontal and vertical *keiretsu* variables (-0.11 and -0.26 respectively) are not statistically significant. Rather, it is only after controlling for the other variables in the import regression that there is a significant negative association between import shares and the three *keiretsu* variables.

Effect of Keiretsu on Exports

The model is applied to explain Japanese export performance in table 3. As can be seen from equation 3.1, which does not yet include the *keiretsu* variables, Japanese exports do not tend to be intensive in raw materials (although the coefficient is not statistically significant). The positive coefficient on the technology-intensity variable and the negative coefficient on the square of this variable suggest that Japan's export strength lies in medium-tech products. Japan also tends to have higher exports in industries with a high degree of producer concentration. As with imports, capital intensity does not contribute to the explanation.

However, in the case of exports, inclusion of the *keiretsu* variable brings no additional explanatory power (equation 3.2). The coefficient is not statistically different from zero, and the equation including this variable has a higher standard error (and does nothing to raise the R^2) than

27. When the horizontal variable is split into two variables—the sales of the three former *zaibatsu* (Mitsubishi, Mitsui, and Sumitomo) and those of the remaining five groups—both have a negative and significant impact on imports.

Table 3. Equations Modeling Japanese Exports by Industry, 1985

<i>Independent variable</i>	<i>Share of world exports</i>				
	<i>3.1</i>	<i>3.2</i>	<i>3.3</i>	<i>3.4</i>	<i>3.5</i>
Constant	-1.70 (0.22)	-3.92 (0.47)	-0.59 (0.07)	-3.32 (0.43)	-3.42 (0.42)
Raw material intensity	-0.55 (1.07)	-0.69 (1.27)	-0.47 (0.87)	-0.63 (1.26)	-0.64 (1.19)
Capital intensity	0.04 (0.22)	0.03 (0.17)	0.04 (0.23)	0.03 (0.19)	0.03 (0.19)
Technological intensity	5.69 (2.26)	5.15 (1.98)	5.65 (2.22)	4.27 (1.67)	4.26 (1.62)
Technological intensity squared	-0.53 (2.18)	-0.49 (1.96)	-0.52 (2.11)	-0.39 (1.57)	-0.39 (1.54)
Transportation cost	0.22 (0.09)	0.37 (0.15)	0.38 (0.15)	1.11 (0.46)	1.10 (0.45)
Producer concentration	0.0043 (2.02)	0.0045 (2.10)	0.0044 (2.03)	0.0051 (2.40)	0.0051 (2.36)
<i>Keiretsu sales (K)</i>	...	0.069 (0.84)	...	...	...
Horizontal <i>keiretsu</i> sales (K_h)	...	...	-0.050 (0.56)	...	0.004 (0.04)
Vertical <i>keiretsu</i> sales (K_v)	...	...	...	0.168 (1.74)	0.169 (1.61)
<i>Summary statistic</i>					
R^2	0.23	0.23	0.22	0.28	0.26
Standard error	10.71	10.76	10.83	10.37	10.55
F -statistic	2.82	2.50	2.41	3.01	2.55

Sources: See table 1 for sources and description of variables. Numbers in parentheses are t -statistics. The critical values for the t -statistics are $t > 1.31$, significant at the 90 percent level, and $t > 1.70$, significant at the 95 percent level.

when it is excluded.²⁸ When the variable is split into the horizontal and vertical groups, the results are interesting. The horizontal *keiretsu* are not associated with higher export shares (equation 3.3), while there is a positive association between the vertical *keiretsu* and export performance (equation 3.4). The t -statistic indicates, however, that the coefficient on K_v is not statistically different from zero at the 97.5 percent level. Nonetheless, it is significant at the 90 percent level.

28. Following Petri, I also tried a seemingly unrelated regression technique to estimate the import and export equations simultaneously. Once aircraft are excluded, however, the results are virtually the same as those using ordinary least squares.

In sum, horizontal *keiretsu* are associated with a significant reduction in imports but have no effect on exports—a result supporting the trust-busting position. By contrast, vertical *keiretsu* are associated with a significant reduction in imports and a positive, moderately significant effect on exports. This export result provides some weak support for the dilemma position when vertical *keiretsu* alone are considered: it indicates that there may be some efficiency gains resulting from this type of *keiretsu*.²⁹

Recent Changes in Trade Performance

Unfortunately, it has not been possible to assemble a complete set of data on recent shares of imports by industry. However, data on import *growth* by industry over the period 1985–88 are available. Regressing the growth in the share of imports between 1985 and 1988 against the levels of the variables in 1985 provides a test of whether the coefficients on the variables have changed between 1985 and 1988. These tests, which are not reported here, suggest that over the period no change occurred in the effects of horizontal *keiretsu* on imports; but they do provide some evidence that the import-reducing effects associated with the vertical *keiretsu* were declining.³⁰ These regressions also indicate that Japanese imports were becoming more capital intensive and less technologically intensive.

Importance of Empirical Analysis

Keiretsu may be associated with lower imports *across* Japanese industries, but in principle this need not imply that Japanese markets are more closed than those in other countries. In other countries different institutional arrangements could be discouraging imports to a similar degree.

Studies of whether Japanese markets are more closed than others have reached different conclusions. Some find that fundamental economic variables, such as factor endowments, gross national output, and

29. This result could also support the view that protected home markets help subsidize and promote exports. For further discussion, see Krugman (1984).

30. It should be noted that the evidence for this effect is rather mild. The estimated change in the coefficient had a *t*-statistic of only 1.5.

geographic distance from major trading partners, explain Japanese trade as well as they explain the trade of other countries. The authors of these studies interpret their results as evidence that the Japanese market is not unusually protected.³¹ Other studies, however, have found that Japanese imports are unusually low.³² T. N. Srinivasan and Koichi Hamada have appraised most of the studies and criticized them for methodological weaknesses.³³

Many of the studies presume that import equations in a cross-country sample can test for the distinctiveness of Japanese trade patterns. Their fundamental weakness is that they fail to model the (alleged) Japanese import barriers explicitly. Even where they do find that Japanese trade patterns are different, they cannot distinguish between the effects of different preferences and the effects of barriers to Japanese exports or imports. To obtain more persuasive results, it is necessary to provide explicit proxies for specific barriers. I do this by using the data on *keiretsu*.

In an earlier study of OECD countries, I estimated the “normal” import share for an industry in 1983 given that industry’s share in OECD exports. Using these shares together with distance variables, I estimated, for each Japanese industry, the degree to which its imports relative to consumption differed from the predicted share estimated across all OECD countries.³⁴ In order to determine whether *keiretsu* have influenced the results for Japan, I regressed the difference between the actual and predicted import share (D) for each Japanese industry on the appropriate *keiretsu* variable for that industry, K_h and K_v .³⁵ The results are presented below.

$$\begin{aligned}
 (1) \quad D_h &= 1.67 + 0.014K_h \\
 &(3.63) \quad (1.43) \\
 &R^2 = 0.14 \\
 (2) \quad D_v &= 0.70 - 0.018K_v \\
 &(3.00) \quad (2.22) \\
 &R^2 = 0.28
 \end{aligned}$$

31. Such studies include Bergsten and Cline (1987), Saxonhouse (1986, 1989), and Leamer (1987).

32. Balassa and Noland (1988), Lawrence (1987), and Lincoln (1990).

33. Srinivasan and Hamada (1990).

34. Imports lower than (higher than) predicted were given by a negative (positive) coefficient on a dummy variable for Japan in the cross-country regression.

35. For details concerning the estimation technique and results, see Lawrence (1987).

The horizontal *keiretsu* in equation 1 get a positive, though not significant, coefficient indicating, if anything, that they are associated with unusually high import levels. This could indicate that they are inefficient. However, I would conjecture that this result indicates that they are associated with raw materials imports from foreign subsidiaries of *keiretsu*.

The vertical *keiretsu* get a significant coefficient with a negative sign, indicating that imports are unusually low in *keiretsu*-dominated industries. If the vertical *keiretsu* operated only by improving efficiency, this would show up in both decreased imports and increased exports.³⁶ However, the regressions in the 1987 study allowed for relative export performance in the industry. The *D* variables in equations 1 and 2 above measure the degree to which Japanese imports are low in an industry after allowing for the efficiency of that industry as measured by its export performance. Thus, some part of the negative impact of the vertical *keiretsu* on imports results not from improved efficiency, but from their discrimination against outsiders.³⁷

The import results could reflect collusive behavior by *keiretsu* firms, though an intricate conspiracy theory is not necessarily at the heart of these practices. Nor is it necessary to believe that *keiretsu* firms refuse to deal with outsiders and are unresponsive to price differences. There could be discrimination against imports simply if, everything else being equal, *keiretsu* members prefer to buy from other *keiretsu* members. Discrimination need not be absolute. Buyers may prefer to deal with some sellers but could still be induced by lower prices to deal with others.³⁸ Strong *keiretsu* relationships, acting like tariffs rather than quotas, could reduce imports but not reduce marginal price elasticity. That is why the evidence that Japanese trade has responded to recent

36. This is the case unless foreign protectionist actions were systematically directed against exports in which K_v is high.

37. The vertical *keiretsu* have particularly high shares in the sales of electrical machinery (43 percent) and transport machinery (64 percent). It is striking that Takeuchi (1990) found that these were the industries in which virtually all Japanese imports from Asian countries were imports by Japanese firms from their foreign affiliates. For further discussion see Lawrence (1990a, 1991).

38. Consider a Cobb-Douglas utility function where $\log U = a_1 \log X + (1 - a_1) \log Y$, where *X* equals goods bought from fellow *keiretsu* members and *Y* equals goods bought from nonmembers. If a_1 is greater than 0.5, all else held equal, *keiretsu* goods will have a higher share in spending. However, the elasticity of substitution is always unity.

changes in exchange rates may refute charges of absolute discrimination, but not charges that tariff-like barriers exist.³⁹

The Distribution Sector Dilemma

The evidence thus far has focused on manufacturers. Yet, the SII talks were also concerned with the Japanese distribution system, and in this sector too *keiretsu* relationships play some role. Several manufacturers have organized their own distribution *keiretsu* in which retail and wholesale outlets are linked in a number of ways. In particular, these *keiretsu* are involved in the distribution of electronics, cosmetics, pharmaceuticals, cameras, and newspapers.⁴⁰ The performance of the Japanese system, not only with respect to the role played by *keiretsu*, has come under considerable scrutiny.

Some studies have found that the share of the final prices of goods accounted for by the wholesale and retail trade sectors in Japan (that is, the distribution margin) is similar to those in other countries.⁴¹ This finding has been interpreted as indicating that the Japanese distribution system is as efficient as those in other countries.⁴² Accordingly, some have resisted efforts to intensify the policing of this sector. In fact, though, the OECD has estimated that output per worker in Japanese distribution was 72 percent of the U.S. level.⁴³ Thus, similar price margins by percentage do not necessarily imply similar absolute costs. If final goods prices are then higher in Japan than in other countries, as most purchasing-power parity estimates suggest, Japanese consumers will pay more for distribution services.

The evidence on whether the prices of Japanese exportable goods are more expensive in Japan than abroad is, however, mixed. As might be expected, prices are sensitive to the level of the prevailing exchange

39. See Lawrence (1990b).

40. See Shibayama and Kiji (1990) and Ishida (1983).

41. See Ito and Maruyama (1989) and Lawrence (1989).

42. Komiya and Irie (1990, pp. 95, 97) argue that Japanese margins are the same as those in the United States. They also argue that Japanese retail prices are unusually high compared with those in the United States because the strong yen has increased yen costs in wholesale and retail services. It is surely contradictory to hold both these positions simultaneously.

43. Organization for Economic Cooperation and Development (1988, p. 81).

rate. Yet there is overwhelming evidence that foreign goods, particularly consumer goods with brand names, are more expensive in Japan than in other countries. In 1989 the Ministry of International Trade and Industry (MITI) reported a survey that found the prices of brand name consumer goods in New York and Dusseldorf to be 62 and 73 percent of those prices in Japan.⁴⁴ In addition, European goods are more expensive in Japan than in the United States. Apparently the margins applied to foreign goods in Japan are unusually high by international standards.

William Cline argues that these prices reflect the choice by foreign firms to sell their products at high prices and low volumes.⁴⁵ He further maintains that “these conditions are not imposed by the Japanese government, nor (except in the possible case of the distribution system) by Japanese firms; and ‘reform’ of these conditions could lower U.S. and other foreign firms’ profits in the Japanese market (and U.S. export earnings).”⁴⁶ Japanese authorities could face another tough dilemma. Efforts to make the distribution of foreign goods more competitive could hurt precisely those foreign firms that have taken the trouble to sell in Japan. By lowering the profits of these firms, the Japanese government might actually aggravate the foreign trade balance.

In fact, foreign firms play a remarkably small role in the selling of their products in Japan, and the evidence below indicates that they typically receive only world market prices for their products. Most of the rents from foreign products are earned by Japanese distributors. Thus the beneficiaries of increased competition in the Japanese distribution system would be Japanese consumers and foreign exporters.

Distributor Nationality

The U.S. Department of Commerce has conducted surveys of international intrafirm trade—firms headed by the same parent company exporting and importing their products to and from one another. These government surveys suggest that Japanese firms dominate U.S. intrafirm exports to Japan. By contrast, U.S. firms dominate U.S. intrafirm exports to Europe, and European firms dominate European intrafirm exports to

44. Reported in *Nihon Keizai Shimbun*, March 27, 1989.

45. Cline (1990).

46. Cline (1990, p. 27).

the United States. Even though the Japanese share has been declining, in 1988 Japanese affiliates in the United States still shipped around 36 percent of their exports to Japan back to their parent companies (mainly trading companies). Indeed U.S. affiliates in Japan imported from their parent companies only 17 percent of all Japanese imports from the United States.⁴⁷ Since these numbers omit the value of U.S. exports sold to unaffiliated Japanese distributors, they understate the role of Japanese distributors in selling U.S. products.

Price Evidence

Unit-value trade data also help illuminate the issue of distribution efficiency and world trading prices. I randomly selected a sample of 40 three-digit, SIC-code export unit values for U.S. exports to Germany and Japan in 1987 and for German exports to the United States and Japan in the same year. An average of these data, weighted by export values, indicates that American goods were almost identically priced when sold to either Germany or Japan. Similarly the average unit value of German goods exported to Japan was just 14 percent higher than the average unit value sold to the United States. This suggests that by and large exporters are not charging higher prices when selling to Japan. Yet the surveys find that at the retail level these goods are more expensive in Japan than in the United States or Germany.

Indeed, in the SII talks, a joint survey of the U.S. and Japanese governments again found that most foreign products were much more expensive in Japan than they were in the United States. As reported in table 4, when weighted by export values the consumer goods in the survey were almost twice as expensive in Japan as in the United States. Yet the unit-value data indicate that the weighted average of the unit values of these products when sold to Japan was only 17 percent higher than when sold to Germany. Unit-value data are subject to mix effects, however, and the direction of the bias is not obvious. If this preliminary evidence is confirmed by more extensive surveys, it suggests that Cline's

47. In 1986, Japanese foreign affiliates shipped over 58 percent of U.S. exports to Japan, while U.S. affiliates in Japan imported only 13 percent of U.S. exports to Japan. As I show in Lawrence (1989), commodity mix does not explain these differences.

Table 4. Unit Values and Price Data for Selected U.S. Exports to Japan and Germany, 1989

Item	Unit value of U.S. exports (dollars per unit)		Unit value ratio, Japan/Germany	Retail price ratio, Japan/U.S.
	To Japan	To Germany		
Spark plugs	9.0	6.3	1.43	2.49
Electric shavers	18.2	10.6	1.72	2.00
Calculators (with batteries)	55.8	70.5	0.79	1.70
Color film, 16-35 mm	10.2	5.1	2.01	0.87
Prepared cereal	1.7	1.8	0.91	1.79
Filled chocolate	3.8	2.5	1.50	1.63
Jams and fruit jelly	1.7	1.3	1.38	1.26
Liquor ^a	3.0	2.5	1.19	2.79
Men's denim pants	66.5	69.9	0.95	1.74
Pens	27.6	36.6	0.75	2.23
Perfumes	3.4	14.3	0.24	1.35
Golf clubs	34.0	28.8	1.18	1.94
Golf balls	7.4	6.8	1.08	1.45
Weighted average ^b	...	...	1.17	1.99

Sources: Unit value data from the U.S. Department of Commerce, reported in the trade data base. Retail price ratio from the Joint Price Survey by MITI and U.S. Department of Commerce.

a. Whiskey, bourbon, rum, and vodka are included in the liquor category. The retail price ratio for liquor is the average of the figures for these four types of alcohol.

b. The value of U.S. exports to Japan for each item was used to calculate the weighted average of the unit value and retail price ratios.

conclusions should be reversed. Efforts to reduce the prices of imported products in Japan by reducing distribution margins would have a positive impact on import volumes and would not, on balance, hurt foreigners who are exporting to Japan.

Conclusions and Policy Implications

The cross-industry regression analysis presented here indicates that both vertical and horizontal *keiretsu* relationships tend to reduce Japanese imports. Horizontal *keiretsu* are not associated with a positive impact on export performance. Accordingly, their apparent impact is primarily through inhibiting entry rather than improving competitiveness. There is some evidence that vertical *keiretsu* do boost exports and that the impact of vertical *keiretsu* in reducing imports has diminished recently (although neither effect is statistically significant).

The evidence here provides further support for those who have argued that Japan's trade structure is distinctive. Rather than simply testing to see if Japan is different, this paper shows that there is a relationship between Japanese industries with unusually low imports by OECD standards and those in which vertical *keiretsu* predominate. Moreover, this effect cannot simply be explained on the grounds of efficiency gains from the presence of vertical groups. Finally, the evidence suggests that by and large Japanese distributors, as opposed to foreign firms conducting their own distribution in Japan, apply unusually high markups to foreign products sold in Japan.

Some may see this evidence as thinly veiled support for managed trade. But such an approach is likely to strengthen cartel-like behavior and have numerous, unintended side effects.⁴⁸ Still others may object that *keiretsu* practices are not a legitimate topic for international negotiation since they reflect private practices rather than public policy.⁴⁹ But in all countries, the government assumes responsibility for policing private commercial behavior. In the SII agreement, both the U.S. and Japanese governments implicitly accepted the notion that competition policy should, in fact, be a topic for international negotiation.

While antitrust violations should be punished, there are cases where *keiretsu* relationships improve efficiency. As might be expected, these efficiencies tend to be associated with vertical rather than horizontal linkages. Given the complexity and pervasiveness of the vertical *keiretsu*, it is difficult to support extreme approaches that would either entirely ban these linkages or unreservedly tolerate them. Instead, vigilance and a "rule of reason" approach, which pays particular attention to horizontal linkages, seems most appropriate. There is no substitute for an intensive investigation of these practices to determine in what ways they should be emulated and in what ways they should be discouraged. There is strong evidence that policy should move beyond benign neglect.

This recommendation also holds for the case of the distribution system. The Japanese FTC has defended the granting of sole import licenses and the restrictions on certain forms of parallel imports by arguing that these practices facilitate the entry of foreign products into

48. For a more complete discussion, see Lawrence and Schultze (1990), especially the paper by Laura D'Andrea Tyson and the comments by Avinash Dixit.

49. See Komiya and Irie (1990) for example.

Japan. Economic theory, however, suggests otherwise. It predicts that a monopolist acting rationally will apply a markup that is a function of the demand elasticity. If the demand for foreign products is seen as inelastic, markups will be high and import volumes will be low. As long as this monopoly can be enforced, Japanese consumers and foreign exporters will suffer the costs. Indeed, a distribution system with high markups on foreign goods is the private sector equivalent of high tariffs. The distributors rather than the government collect the revenue. In light of this evidence, efforts to increase the channels for foreign entry into Japanese distribution are not misplaced.

Comments and Discussion

Gary R. Saxonhouse: In the continuing debate over Japan's distinctive trade structure there is an understandable tendency to want to use one unique feature of the Japanese economy to explain some other unique features of Japan's economic performance. In one important example, imported manufactured goods continue to play a small role within the Japanese economy, even though formal barriers against them are very low. In the search for other informal barriers that might account for this low level of manufactured imports, it is not at all surprising that attention might finally alight on Japan's distinctive corporate groupings, the *keiretsu*.

In thinking about the issues Robert Lawrence raises, it is important to remember that for all their distinctive characteristics there is nothing illegal about *keiretsu* (in either their vertical or horizontal guises) under current U.S. law. It is also important to remember, though, that under U.S. antitrust statutes, collusive activities by foreign competitors in foreign markets, to the extent that they have an important impact on U.S. commerce, can be prosecuted under existing legislation in U.S. courts. At least one major case of this kind, *Zenith Radio Corp. et al. v. Matsushita Electrical Industrial Co. et al.*, has been brought against Japanese firms in the U.S. courts during the past fifteen years.

The model Lawrence estimates is not presented as part of his analysis but is taken from previous work by Peter Petri. Petri's model assumes factor-price equalization across industries. This might look like an entirely conventional assumption, but the reality is otherwise. There is considerable empirical work indicating that intersectoral factor-price differences—in particular, intersectoral wage differences—can be large and can persist over time and over space.¹ While the character of these

1. Katz and Summers (1989).

wage differentials is much debated in the United States, it is clear they also exist and persist in Japan. They also appear to be correlated with the presence or absence of *keiretsu*.

Wage differentials are not the only long-standing intersectoral factor-price differentials in Japan that are correlated with *keiretsu*. Historically speaking, *keiretsu*, particularly the so-called horizontal *keiretsu*, are about nothing if they are not about cost-of-capital differentials. While wage differentials are positively correlated with the presence of *keiretsu*, cost-of-capital differentials are negatively correlated. Because factor intensity, in effect, enters Lawrence's export and import regressions normalized relative to labor, these differentials, rather than canceling out, actually magnify each other. Overall, these specification errors could be highly negatively correlated with the *keiretsu* variables, and they might easily impart considerable negative bias when the coefficient on the *keiretsu* variable is estimated.

Assuming factor prices constant is not the only specification problem with this model. To mention just one more, Lawrence implicitly assumes that the substitution elasticity between domestic production and imports is the same across all industries. This assumption is at variance with most notions of comparative advantage. Once again, the error associated with this assumption is likely to be correlated with the right-hand-side variables used in this analysis.

There are problems more fundamental with Lawrence's analysis than just specification error. Lawrence gets off on the wrong track when he chooses to use a cross-industry model of trade structure to study the impact of *keiretsu*. Looking only at the relative trade performance of Japanese industries cannot yield any inference about whether Japan or even any Japanese industry is importing too little or too much from the perspective of global welfare. This is a point that Petri, among others, has made when using this model. The relative performances of all the Japanese sectors are jointly determined. Lawrence has no independent observations in his sample at all. In addition, most of Lawrence's right-hand-side variables are determined simultaneously with trade performance.

The finding of a negative association of the *keiretsu* variable with import levels may indicate little except that this is the mechanism that Japan uses to reach the prescribed level of imports. To take a simple example, comparative advantage might dictate whether a Japanese

assembler will use a local supplier or whether components will be imported. By Lawrence's definitions, *keiretsu* include vertical relationships. If comparative advantage results in an assembler using domestic suppliers, by the definitions Lawrence is using, the assembler will be at the center of a *keiretsu*. By contrast, if comparative advantage dictates that an assembler use imported supplies, a vertical *keiretsu* is unlikely to appear. In this example, *keiretsu*, rather than interfering with comparative advantage, are actually defined by it. This is the way Japan gets to import the right amount. And this right amount is defined not by Japanese monopoly power, but by global welfare.

Lawrence thinks there may be an antitrust issue here not just because *keiretsu* might be import inhibiting but because they might be import inhibiting without being export promoting. If *keiretsu* are primarily devices to improve efficiency and improve both Japanese welfare and global welfare, the strong negative association with imports ought to be complemented by a strong positive association with exports. Unfortunately, foreign barriers against Japanese exports, particularly against exports of such *keiretsu*-dominated industries as automobiles and steel, make overseas performance a flawed standard. This same problem dogged Lawrence's earlier work on import behavior.² Moreover, 1985, the year Lawrence uses for his analysis, is probably just when the mid-1980s undervaluation of yen combined with widespread quantitative restraints on Japanese exports to diminish the differentials in overseas performance among Japanese industries. The efficiency-promoting consequences of *keiretsu* may be masked so that even if the import side of his analysis were correct Lawrence might still wrongly conclude that there is a significant antitrust issue at stake here.

Many economists in Japan, as Lawrence has noted, get frustrated with analyses of this sort because they doubt *keiretsu* are a serious analytical category. There is merit in this criticism. Definitions of *keiretsu* do vary so widely that it is often difficult to say who is in and who is out of a *keiretsu*. The Dodwell classification that Lawrence uses is just one of a number of *keiretsu* classification systems available from Japanese sources. These sources can differ widely, and any particular classificatory scheme may not be consistent over time. According to Lawrence, the 1986 edition of Dodwell classifies firms according to membership in

2. Saxonhouse (1989).

17 major *keiretsu*. Just three years later, in 1989, Dodwell redefines whole new industries as *keiretsu* dominated and finds that suddenly there are no fewer than 47 major *keiretsu*. By contrast, the Toyo Keizai data bank lists 46 *keiretsu* for 1989, but only 23 of these *keiretsu* overlap with the Dodwell *keiretsu*.³

Quite apart from arbitrary classification, Japanese firms do change their affiliations far more frequently than is generally believed. Between the mid-1970s and the early 1980s no less than 25 percent of the firms listed on the first section of the Tokyo Stock Exchange changed their main bank affiliation.⁴ With the growth of equity financing and with the equalizing of the terms of access to capital between *keiretsu* and non-*keiretsu* firms, one of the main props of the *keiretsu* system is coming undone. An acceleration of *keiretsu* hopping and disaffiliation can be expected in the future.

In response to conceptual criticism of his cross-industrial analysis of Japanese import behavior, Lawrence has also attempted to study *keiretsu* influence with a cross-national model. In this effort, Lawrence takes the estimated coefficients on Japanese dummy variables from his 1987 model of cross-national import performance and regresses them on his *keiretsu* variables.⁵ While setting his analysis in a cross-national context clearly makes sense, there are special problems here. In Lawrence's 1987 model, Japanese sectoral export shares are said to explain Japanese sectoral import shares. This is highly improbable. Sectoral shares of imports and exports are almost certainly simultaneously determined and Lawrence's estimated coefficients are almost certainly biased. The new use of these estimated coefficients as observations on a dependent variable in a regression, however, compounds simultaneity with heteroscedasticity.⁶ In consequence, Lawrence's estimates of his *keiretsu* coefficients will be inefficient and the statistical tests he presents will be biased toward rejecting the hypothesis that his estimated coefficients are insignificantly different from zero.

The simultaneity problem in Lawrence's 1987 paper is not difficult to resolve. The Helpman-Krugman model which inspired Lawrence's work can be solved such that national differences in import shares and export

3. Toyo Keizai Shinposha (1989).

4. Horiuchi, Packer, and Fukuda (1988).

5. Lawrence (1987).

6. Saxonhouse (1977).

shares can both be explained by national differences in factor endowments. When the residuals from this estimated reduced-form version of the Helpman-Krugman model are regressed on Lawrence-style horizontal and vertical *keiretsu* variables for the eighteen industries for which comparable data are available, a new picture emerges.⁷ The estimated coefficients on the *keiretsu* variables are both negative. The horizontal *keiretsu* is significantly different from zero, however, only at the 65.3 percent level, while the vertical *keiretsu* is significantly different from zero only at the 54.2 percent level. Neither result provides any support for the view that *keiretsu* are distorting Japanese trade structure.

In the final substantive section of this paper, Lawrence looks at Japan's distribution system and finds that Japanese distributors and not American producers appear to be responsible for the relatively high retail prices of goods in Japan. While price surveys are ambiguous about whether there is much of a price differential between Japanese goods at home and abroad, the results on American goods are clear. The prices of American goods are much higher in Japan than in the United States. At the same time, the unit values of their shipments to Japan are only slightly higher than the unit values of their shipments to Germany. From this Lawrence concludes that Japanese distributors, while not making excess returns on Japanese-made goods, do earn substantial rents on their distribution of American goods. Before Lawrence can draw such a conclusion, he must assume that American companies have no direct role in the Japanese distribution of the rather special products included in these price surveys. One missing piece of evidence also needs to be examined. What is the level of retail prices of representative U.S. goods in Germany? If retail prices of representative U.S. goods in Germany approach Japanese levels, American producers, and not Japanese distributors, may yet be collecting substantial rents.

Notwithstanding the absence of a full complement of comparable German price data, most economists in Japan and the United States would not be particularly surprised to find that the historical barriers to entry into the Japanese distribution sector have had some impact on the prices of foreign products in Japan. In this connection, U.S. strategy during the first round of the Structural Impediments Initiative (SII) talks should be recalled. There was a clear decision to make the liberalization

7. Saxonhouse (1989).

of Japan's distribution system, through the reform of Japan's Large Scale Retail Store Law, the first American priority. Part of this decision was due to the relative complexity of the distribution sector issues versus *keiretsu* issues. There was also, however, a more systematic rationale.

Much of the political energy behind the *keiretsu* issues seems concerned with vertical *keiretsu*. The vast majority of the *keiretsu*-related anecdotes are about discriminatory vertical relationships. In economics, there is a vast analytical literature on vertical relationships.⁸ It is difficult to summarize all this work, but two broad conclusions are instructive. First, it is widely recognized that many discriminatory vertical relationships, which otherwise might run afoul of U.S. antitrust statutes, are considered innocuous if practiced between two entities that are fully vertically integrated with each other. The level of formal vertical integration in the United States is much higher than the level of formal vertical integration in Japan. For example, General Motors buys 45 percent of its components from outside suppliers compared with Toyota's outside purchases of more than 75 percent.⁹ Is it really very interesting for U.S. and Japanese trade negotiators to be arguing about practices that could be resolved legally with simply more vertical integration in Japan? Why is formal vertical integration in the United States better than informal vertical integration in Japan?

The second pertinent finding in the economic literature is the widely accepted rule of reason that you do not worry too much about discriminatory vertical relationships, provided that the vertical relationship operates in a market that is highly contestable. From this perspective, if the SII deals successfully with the deregulation of Japan's distribution system and if final goods markets in Japan become truly competitive, then *keiretsu* relationships should cease to be a source of economic distortion. If Japanese firms wish to handicap themselves by using inefficient suppliers, what foreign firms lose in intermediate goods markets can be made up in final goods markets. Since it is widely accepted that the Bush administration has made great progress in opening up Japan's distribution sector in the past year, perhaps it is possible to hope that *keiretsu* may well be an issue whose time is already past.

8. Perry (1989).

9. Aoki (1986).

General Discussion

Robert Lawrence responded to some of Saxonhouse's criticisms of bias in the paper's results. He did not understand why the higher wages and lower capital costs that Saxonhouse associated with *keiretsu* would not have opposite effects on imports, making any net bias in the import equation unclear. Nor did he see why the assumption of similar substitution elasticities across industries should bias the results toward finding a relationship between *keiretsu* and imports. And he argued that although the Dodwell classifications of group members could change with time and differ from other classifications, this did not imply bias in using the measure in the paper. Furthermore, the aggregate measure of sales by all *keiretsu* members, which is the variable used in the regressions, should be relatively invariant to changes in the *keiretsu* association of individual firms.

Some panelists discussed the findings of the paper from the viewpoint of U.S. trade policy and antitrust policy. William Nordhaus noted that the regression equations 1 and 2, which allowed indirectly for efficiency effects, showed that only the vertical *keiretsu* restrict Japanese imports. This implied that U.S. trade policy aimed at increasing exports to Japan should go after the behavior of vertical rather than horizontal *keiretsu*. Robert Litan observed that such a policy would run contrary to current antitrust practices in the United States, where little attention is being paid to vertical mergers. Steven Salop disagreed with this characterization of antitrust policy, noting that more recently antitrust economists and lawyers have become increasingly concerned with vertical restraints on trade, especially where they are accompanied by horizontal restraints. As vertical and horizontal *keiretsu* often coexist, there was probable cause for antitrust concerns. Lawrence observed that if antitrust policy was concerned about efficiency, it should look closely at horizontal *keiretsu* which, according to his findings, might lead to discrimination against foreign goods while not increasing efficiency.

The panelists discussed some ambiguities in the empirical results. Nordhaus noted that horizontal concentration increased imports while horizontal *keiretsu* reduced them. He also noted that the cross-OECD regressions gave opposite results from the domestic regressions for the effects of horizontal *keiretsu* on imports. William Brainard noted that

tariffs had a positive coefficient in the import equations. Salop found inconsistencies between the import and export equations. He felt that many of the variables, such as producer concentration and technological intensity, which he expected to have opposite signs in the two equations, actually had the same sign. Nordhaus reasoned that many of these inconsistencies could be resolved by the fact that almost all of the right-hand-side variables in the regressions were endogenous. Brainard agreed that endogeneity could explain the sign on the tariff variables and added that the existence of *keiretsu* could also possibly be endogenous. Nordhaus suggested that, in light of the empirical uncertainties, it would be desirable to spell out the mechanisms by which the apparent *keiretsu* effects were taking place, using industrial organization theory.

Richard Cooper emphasized that the results should not be misinterpreted to say that *keiretsu* are the source of the Japanese trade surplus with the United States. Showing that *keiretsu* reduce certain imports is insufficient to account for the trade surplus, as the overall trade balance is determined by the level of aggregate saving and investment. Because of the large amount of non-*keiretsu* imports, they may not even decrease the overall level of imports. Cooper also noted that consumer goods make up a relatively small part of U.S. exports, so that the evidence from retail prices was not very helpful in understanding the overall trading relationship.

References

- Aoki, Masahiko, ed. 1984. *The Economic Analysis of the Japanese Firm*. Amsterdam: North Holland.
- Aoki, Masahiko. 1986. "Horizontal vs. Vertical Information Structure of the Firm." *American Economic Review* 76: 971-83.
- . 1990. "Toward a Model of the Japanese Firm." *Journal of Economic Literature* 28: 1-27.
- Balassa, Bela A., and Marcus Noland. 1988. *Japan in the World Economy*. Washington: Institute for International Economics.
- Bergsten, C. Fred, and William R. Cline. 1987. *The United States-Japan Economic Problem*. Washington: Institute for International Economics.
- Caves, Richard, and Masu Uekusa. 1976. *Industrial Organization in Japan*. Washington: Brookings.
- Cline, William R. 1990. "Japan's Trade Policies." Washington: Institute for International Economics (May).
- Dodwell Marketing Consultants. 1986. *Industrial Groupings in Japan*. Tokyo: Dodwell Marketing Consultants.
- Ferguson, Charles H. 1990. "Computers and the Coming of the U.S. *Keiretsu*." *Harvard Business Review* 68: 55-70.
- Fung, K. C. 1990. "Characteristics of Japanese Industrial Groups and Their Potential Impact on U.S.-Japan Trade." Paper prepared for National Bureau of Economic Research Conference on Empirical Studies of Commercial Policy, Cambridge, Mass., March.
- Gerlach, Michael. 1989. "*Keiretsu* Organization in the Japanese Economy." In *Politics and Productivity: The Real Story of Why Japan Works*, edited by Chalmers Johnson, Laura D'Andrea Tyson, and John Zysman. Cambridge, Mass.: Ballinger.
- Horiuchi, Akiyoshi, Frank Packer, and Shin'ichi Fukuda. 1988. "What Role Has the 'Main Bank' Played in Japan?" *Journal of the Japanese and International Economy* 2: 159-80.
- Imai, Ken-Ichi. 1990. "Japanese Business Groups and the Structural Impediments Initiative." In *Japan's Economic Structure: Should It Change?* edited by Kozo Yamamura. Seattle: Society for Japanese Studies.
- Ishida, Hideto. 1983. "Anticompetitive Practices in the Distribution of Goods and Services in Japan: The Problem of Distribution *Keiretsu*." *Journal of Japanese Studies* 9: 317-34.
- Ito, Takatoshi, and Masayoshi Maruyama. 1989. "Is the Japanese Distribution System Really Inefficient?" Paper prepared for the National Bureau of Economic Research conference, The U.S. and Japan: Trade and Investment, Cambridge, Mass., October. Forthcoming in *The U.S. and Japan: Trade and Investment*, edited by Paul R. Krugman. Cambridge, Mass.: National Bureau of Economic Research.

- Katz, Lawrence F., and Lawrence H. Summers. 1989. "Can Interindustry Wage Differentials Justify Strategic Trade Policy?" In *Trade Policies for International Competitiveness*, edited by Robert C. Feenstra. Chicago: University of Chicago Press, for the National Bureau of Economic Research.
- Katz, Michael L. 1989. "Vertical Contractual Relationship." In *Handbook of Industrial Organization, Volume 1*, edited by Richard Schmalensee and Robert Willig. New York: North Holland.
- Komiya, Ryutaro. 1990. *The Japanese Economy: Trade, Industry, and Government*. Tokyo: University of Tokyo Press.
- Komiya, Ryutaro, and Kazutomo Irie. 1990. "The U.S.-Japan Trade Problem: An Economic Analysis from a Japanese Viewpoint." In *Japan's Economic Structure: Should It Change?* edited by Kozo Yamamura. Seattle: Society for Japanese Studies.
- Kreinen, Mordechai E. 1988. "How Closed is Japan's Market? Additional Evidence." *World Economy* 11: 529-42.
- Krugman, Paul R. 1984. "Import Protection as Export Promotion." In *Monopolistic Competition and International Trade*, edited by Henry Kierzkowski. Oxford: Blackwell.
- Lawrence, Robert Z. 1987. "Imports in Japan: Closed Markets or Minds?" *BPEA*, 2:1987, 517-48.
- . 1989. "How Open is Japan?" Paper prepared for the National Bureau of Economic Research conference, The U.S. and Japan: Trade and Investment, Cambridge, Mass., October. Forthcoming in *The U.S. and Japan: Trade and Investment*, edited by Paul R. Krugman. Cambridge, Mass.: National Bureau of Economic Research.
- . 1990a. "An Analysis of Japanese Trade with Developing Countries." Paper prepared for United Nations Conference on Trade and Development, July.
- . 1990b. "U.S. Current Account Adjustment: An Appraisal." *BPEA*, 2:1990, 343-82.
- . 1991. "Do Keiretsu Reduce Japanese Imports?" Paper prepared for the Japanese Economic Planning Agency's Conference on External Adjustments and the Changing Trade Structure of Manufactured Goods Since 1985, Tokyo, January.
- Lawrence, Robert Z., and Charles L. Schultze, eds. 1990. *An American Trade Strategy: Options for the 1990s*. Washington: Brookings.
- Leamer, Edward E. 1987. "Measures of Openness." Paper prepared for National Bureau of Economic Research conference, Trade Policy Issues and Empirical Analysis, Cambridge, Mass., February.
- Lincoln, Edward J. 1990. *Japan's Unequal Trade*. Washington: Brookings.
- Nanto, Dick K. 1990. "Japan's Industrial Groups: The Keiretsu." CRS Report for Congress 90-609E. Washington: Library of Congress, Congressional Research Service (November).
- Okumura, Hiroshi. 1990. "Unjustifiable Rationality of 'Keiretsu'." *Ekonomisuto*, July 10, 1990.

- Organization for Economic Cooperation and Development. 1988. *OECD Economic Surveys: Japan*. Paris: Organization of Economic Cooperation and Development.
- Perry, Martin K. 1989. "Vertical Integration: Determinants and Effects." In *Handbook of Industrial Organization, Volume 1*, edited by Richard Schmalensee and Robert Willig. New York: North Holland.
- Petri, Peter A. 1989. "Japanese Trade in Transition: Hypotheses and Recent Evidence." Paper prepared for the National Bureau of Economic Research conference, The U.S. and Japan: Trade and Investment, Cambridge, Mass., October. Forthcoming in *The U.S. and Japan: Trade and Investment*, edited by Paul R. Krugman. Cambridge, Mass.: National Bureau of Economic Research.
- Prestowitz, Clyde V., Jr. 1988. *Trading Places: How We Allowed Japan to Take the Lead*. New York: Basic Books.
- Saxtonhouse, Gary R. 1977. "Regressions from Samples Having Different Characteristics." *Review of Economics and Statistics* 59: 234–37.
- . 1986. "What's Wrong with Japanese Trade Structure?" Pacific Economic Paper 137. Canberra, Australia: Australia-Japan Research Centre.
- . 1989. "Differentiated Products, Economies of Scale, and Access to the Japanese Market." In *Trade Policies for International Competitiveness*, edited by Robert C. Feenstra. Chicago: University of Chicago Press, for National Bureau of Economic Research.
- Shibayama, Kiyohiko, and Michiko Kiji. 1990. *Competition and Organization in the Distribution Sector*. Studies in International Trade and Industry 2. Tokyo: Research Institute of International Trade and Industry (March).
- Srinivasan, T. N., and Koichi Hamada. 1990. "The U.S.-Japan Problem." Yale University (March).
- Takeuchi, Kenji. 1990. "Japanese Direct Foreign Investment: A Promoter of Japanese Imports from Developing Economies?" Washington: The World Bank (May).
- Toyo Keizai Shinposha. 1989. *Kigyō Keiretsu Sōran*. Tokyo: Toyo Keizai Shinposha.
- U.S. and Japanese Governments. 1990. *Joint Report of the U.S.-Japan Working Group on the Structural Impediments Initiative*. Washington and Tokyo (June).
- Yamamura, Kozo. 1990. "Will Japan's Economic Structure Change? Confessions of a Former Optimist." In *Japan's Economic Structure: Should It Change?* edited by Kozo Yamamura. Seattle: Society for Japanese Studies.
- Yoshitomi, Masaru. 1990. "Keiretsu: An Insider's Guide to Japan's Conglomerates." *Economic Insights* 1: 10–14.