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AFFILIATE ACTIVITY IN JAPANESE AND U.S. MULTINATIONALS AND JAPANESE EXPORTS, 1986-1995

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ABSTRACT

This study examines the relationship between Japan's manufactured exports to individual markets and the economic activities of foreign manufacturing affiliates of Japanese multinational corporations (MNCs) and U.S. MNCs in those markets. First, the relationships between Japanese export levels and employment in foreign affiliates of Japanese MNCs are analyzed in the context of a typical gravity model explaining the cross-country variation of Japan's manufacturing exports. Second, the paper examines the effects of the presence of affiliates of U.S. MNCs on Japanese export levels. And third, it analyzes the relation of changes in Japanese exports to levels of and changes in employment in Japanese and U.S. MNC affiliates.

The level of Japan's manufactured exports to a country is almost always positively related to employment in foreign manufacturing affiliates of Japanese MNCs there. There is no evidence that Japanese-owned host country production replaces Japanese exports. However, production by U.S. MNC affiliates in a country often tends to reduce Japanese exports to that market.

In some industries and periods, the initial level of Japanese affiliate employment, or changes in Japanese affiliate employment, are positively and significantly correlated with changes in Japan's exports, and there are no cases of significant negative relationships. The predominant effect of U.S. affiliates' presence on changes in Japanese exports to a country is negative, but the evidence for that effect is not strong.

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1. Introduction

This purpose of this study is to examine the relationship between Japanese manufactured exports to individual markets and economic activity in foreign manufacturing affiliates of Japanese and U.S. multinational corporations (MNCs) in those markets. The relationship between home country exports and economic activities of foreign affiliates of home-based MNCs has long been a topic of interest to policy makers and academic economists alike. The most detailed studies of this relationship use firm-level data and have focused primarily on the United States and Sweden, because those are the countries that have published the most data on their firms' foreign operations and permitted the analysis of individual firm data. Recently, access to the firm-level data underlying surveys of Japan's MNCs by MITI (Ministry of International Trade and Industry, various years and 1998), has facilitated similarly detailed studies of the relationship between exports by Japanese MNC parents and economic activities in affiliates of those MNCs (e.g., Amano, Fukao, and Toyonaga 1998; Fukao and Chong 1997; Lipsey, Ramstetter, and Blomström 1999, 2000b).[1] However, it is also of great interest from a public policy point of view to ask how production abroad is related to a home country's aggregate exports, rather than only the exports of parents. Such production might have an impact on the country's non-multinational firms different from that on the parent firms. For example, foreign production might favor exporting by parents at the expense of exporting by non-multinational Japanese firms. As pointed out in Lipsey, Ramstetter, and Blomström (1999, 2000b), there are as yet no studies for Japan that relate all

[1] Belderbos and Sleuwagen (1994) and Ramstetter (1997) are some other studies of firm-level data based on more limited samples from other sources.

home country exports, including exports of non-MNCs, to the economic activities of foreign affiliates, as in studies of Sweden and the United States (e.g., Blomström, Lipsey, and Kulchycky 1988). This study tries to fill this gap in the literature by presenting evidence on this relationship for Japanese manufacturing industries in 1986, 1989, 1992, and 1995 and the periods bounded by these years.

To do this, section 2 first examines the relationship between the level of Japanese exports to a country and the level of Japanese affiliate employment there, in relatively large samples of 96-98 trading partners. Section 3, for smaller samples of 41-48 trading partners, introduces the possibility that Japanese exports to a country are adversely affected by the activity of competing MNCs from the United States. That would seem likely if the activity of U.S. affiliates in a host country encouraged imports from the United States, as has been found in many studies. Section 4 then examines the effects of initial year employment or changes in employment of Japanese affiliates on changes in Japanese exports and Section 5 adds initial employment or changes in employment of U.S. manufacturing affiliates to this analysis. Finally, section 6 offers some concluding remarks.

2. Japan's Manufactured Exports and Employment in Japanese Manufacturing Affiliates

As in previous studies of this nature, a typical gravity model is taken as the basis for explaining the variation of Japan's manufacturing exports across countries.[2] Explanatory country variables include its size,

[2] Manufactured exports and manufacturing affiliates are defined here to exclude oil and coal products, except for Japanese affiliates. In the case of Japanese affiliates, revised estimates of affiliate employment from the panel data underlying Fukao,

measured by real gross domestic product (GDP), per capita GDP, and its distance from Japan. The sign of the coefficient on the GDP variable is expected to be positive, reflecting the positive influence of larger size on the demand for imports in a given country. Conversely, the sign of the coefficient on the distance variable is expected to be negative as the distance variable is thought to be positively correlated with transactions costs incurred in trade between Japan and a given country. As discussed in Blomström, Lipsey, and Kulchycky (1988), the sign of the coefficient on per capita GDP is indeterminate a priori. Generally, one would expect a positive coefficient when the income elasticity of demand is high and a negative coefficient when income elasticity is low. However, there are also supply-side effects that this variable could represent. For example, high per capita GDP could also be correlated with a strong comparative advantage in skill-intensive products and thus low import demand for these products. If this influence is dominant, coefficients could be negative even in the presence of high income elasticity of demand.

To this basic gravity model, a measure of employment in Japanese manufacturing affiliates in the partner country is added to see if there is any relationship between employment in Japanese affiliates and Japan's exports to that country, after the standard gravity effects have been accounted for. In this paper, we use revised estimates of affiliate employment from Fukao, Yuan, and Sakishita (1999) to measure affiliate activity. Estimates of affiliate employment and sales from this source are the most comprehensive and consistent

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Yuan, and Sakishita (1999) include some oil and coal product manufacturing affiliates in chemicals and other manufacturing. However, these affiliates are relatively small in the Japanese case (see Lipsey, Ramstetter, and Blomström 2000a, Table 1).

A more troublesome aspect of the focus on manufacturing affiliates is the implicit assumption that the effects of trading affiliates are negligible, or at least that they do not obscure the effects of manufacturing affiliates.

estimates of Japanese affiliate activity available. Affiliate employment should be more correlated with affiliate production than affiliate sales, because sales might include resales of products from the parent firm.[3]

The resulting equation is:

(1a) JXH = f1a(GDPH, GDPPH, DISTH, AERH)

where:

JXH = exports by Japan in industry i to country h (million yen, translated from US dollars at period average exchange rates)[4],

GDPH = real GDP in current international prices of country h (million yen, translated from international dollars at PPP exchange rates),

GDPPH = real GDP per capita in current international prices of country h (million yen, translated from international dollars at PPP exchange rates)[5],

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[3] Affiliate value added is closer to the idea of affiliate production. However, as detailed elsewhere (e.g., Lipsey, Ramstetter, and Blomström (1999; 2000b), one of the biggest problems encountered when using MITI's MNC survey data (Ministry of International Trade and Industry, various years, 2000) is the fact that the coverage of the MITI surveys varies greatly from year to year and from variable to variable within single years. The revised estimates of affiliate employment and sales from Fukao, Yuan, and Sakishita (1999) include estimates for non-replying firms, resulting in much larger estimates of affiliate employment. For example, employment of affiliates reporting value added was only 47-89 percent of employment for all reporting affiliates and only 32-51 percent of revised employment estimates in 1986, 1989, 1992, and 1995 (Lipsey, Ramstetter, and Blomström (2000a, Table 1). The compilations of revised employment estimates used in this study differ slightly from the published results Fukao, Yuan, and Sakishita (1999) in some industries. The cause of these differences is unknown but these differences are very small.

[4] Japanese export data are calculated from Statistics Canada (1999), using the concordance given in Feenstra, Lipsey, and Bowen, 1997, pp. 45-60, modified to include chemical fibers in textiles, not chemicals.

[5] Per capita GDP data 1986-1992 are generally taken from Penn World Tables (1995) and 1995 figures are usually estimated by multiplying the 1992 figure from this source and growth rates (in current international dollars) for 1992-1995 from World Bank (1999). Some missing values are approximated by taking ratios to U.S. per capita GDP from World Bank (1999) or from adjacent years and multiplying them by U.S. estimates for the missing year. Total GDP is then

DISTH = distance of country h from Japan[6],

AERH = revised employment estimates for Japanese affiliates calculated from panel data compiled by Fukao, Yuan, and Sakishita (1999) and provided by Ministry of International Trade and Industry (2000).

Although employment is closely correlated with production, there are differences between distributions of value added across host countries and distributions of employment. In addition to differences in survey coverage, these result from differences in average labor productivity across countries and differences in labor intensity across industries. For example, North American and European economies tend to be larger in terms of value added than in terms of employment because they are characterized by relatively high average labor productivity. Chemical industries tend to be larger in terms of value added because they are relatively capital-intensive. However, in various papers in which we have used both affiliate value added and affiliate employment (Lipsey, Ramstetter, and Blomström 1999, 2000a, 2000b; Ramstetter 2001), the results were qualitatively similar regardless of the measure used.

Equation (1a) is estimated in cross sections of Japan's trading partners for 1986, 1989, 1992, and 1995, and coefficients on affiliate employment, their significance levels, and the adjusted R-squared values from OLS

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estimated as per capita GDP multiplied by total population taken from World Bank (1999). Data for Taiwan are approximated using real growth rates and exchange rates from International Centre for the Study of East Asian Development (2000). See Lipsey, Ramstetter, and Blomström (1999, Appendix Table B1) for further details.

[6] Distance data come from Edward W. Sweetman Co. (1965) and U.S. Navy Department (1943); see Lipsey, Ramstetter, and Blomström (1999, Appendix Table B1) for further details.

estimation of equation (1a) are reported in Table 1.[7] In general, gravity models performed in accordance with expectations, though coefficients were not always significant (see Appendix Table A1 for details). The explanatory power of many of the gravity equations was quite high for cross section analysis as evidenced by the relatively high values of the adjusted R-squared.

The vast majority of the 36 coefficients on employment in Japanese affiliates are positive, and a large number of them are statistically significant at the 5 percent level or better (Table 1). Only in wood, furniture, and paper, an insignificant Japanese export industry, were there no significant coefficients on affiliate employment. All but one of the coefficients for the machinery industries are positive and significant. In these industries, which accounted for over three-fourths of Japan's manufactured exports,[8] Japanese exports are larger to countries with a relatively large Japanese affiliate presence. The story is similar in chemicals, another relatively large export industry. In the other relatively large export industry, metals, the results are more mixed with fewer significant coefficients and negative, though insignificant, coefficients in 1986.

3. Japan's Manufactured Exports and Employment in U.S. Manufacturing Affiliates

[7] Detailed estimation results for this and other specifications using affiliate value added and alternate estimates of affiliate employment are reported in Lipsey, Ramstetter, and Blomström (2000a, Appendix Table A1). Here and in subsequent regressions, White's heteroscedasticity- consistent variance-covariance matrix is used to calculate standard errors when White's F-test for heteroscedasticity is significant at the 5 percent level or better (White 1980).

[8] Machinery categories combined to account for 77 percent of all non-oil manufacturing exports in 1986, 78 percent in 1989, 79 percent in 1992, and 78 percent in 1995. Chemicals (5 percent of the total in 1986, 6 percent in 1989 and 1992, and 7 percent in 1995) and metals (9 percent in 1986, 8 percent in 1989, 6 percent in 1992, and 7 percent in 1995) were the other relatively large export industries (calculations from Statistics Canada 1999 using the concordance given in Feenstra, Lipsey, and Bowen 1997, pp. 45-60 modified to include chemical fibers in textiles, not chemicals).

If the activities of Japanese affiliates are positively associated with Japanese exports, it is reasonable to expect that the activity of affiliates from other countries promotes those countries' exports to the host countries. Unless the additional exports come entirely from the enlargement of markets or the displacement of host country suppliers, some could be at the expense of Japanese exporters. To investigate this possibility, we add employment of majority-owned U.S. affiliates to equation (1a), as follows:

(2a) JXH = f2d(GDPH, GDPPH, DISTH, AERH, UEH)

where

UEH=employment (number) in majority-owned nonbank affiliates of nonbank U.S. parents (data from U.S. Bureau of Economic Analysis, 1992, 1998),

and all other notation is as defined in equation (1a) above.

In general, economic activity in affiliates of competing U.S. MNCs is expected to be negatively related to Japanese export levels, so we expect the coefficients on UEH to be negative.

Equation (2a) is estimated only for 1989 and 1995. As in the previous section, Table 2 reports coefficients on employment in Japanese and U.S. affiliates, the significance levels of these coefficients, and the adjusted R-squared values for OLS estimates of equations (see Appendix Table A2 for details). U.S. affiliate variables are available for relatively small samples (41-48 countries), but the difference in sample size does not seem to have a substantial effect on the coefficients, probably because the additional countries in the larger

sample are mostly insignificant with respect to both exports and affiliate employment.[9] It is possible to estimate equation (2a) for only 5 industries instead of 9. Despite these differences, the addition of the U.S. affiliate variable in equation (2a) does not affect the direction of the relationship between Japanese exports and economic activity in Japanese affiliates, although some of the coefficients are smaller.

More specifically, in equation (2a), coefficients on Japanese affiliate employment are positive in all cases and statistically significant in most (Table 2). The coefficients on U.S. affiliate employment are generally negative, suggesting that U.S. affiliate production in a market competes with Japanese exports, while Japanese affiliate production does not at least on net balance. This relationship is similar to that found among U.S. affiliate production in a country and imports by that country from the United States and from other countries in Lipsey and Weiss (1981).

The negative coefficients for U.S. affiliate employment here are significant in metals for both years and in chemicals in 1989. However, negative U.S. affiliate coefficients in the other industries are not statistically significant. The coefficient on U.S. employment in transportation equipment is positive and significant in 1989, contrary to expectations, but that relationship mostly disappeared by 1995. Perhaps a greater presence of U.S. assembly affiliates in 1989 created a market for Japanese parts and other products. Another possibility is that the coefficients for this industry may be affected by the fact that some reported U.S.-owned production may be by

[9] Lipsey, Ramstetter, and Blomström, (2000b, Appendix Table A2) also estimate equations (1a) to (1c) using these smaller samples and the results are very similar to results obtained in the larger samples and reported above.

U.S. affiliates of Japanese parents and some Japanese exports may be by U.S.-owned Japanese firms.

4. Changes in Japanese export levels

It is now possible to perform much more reliable analyses of the relationship between changes in exports during a given period and affiliate activity by using the revised employment estimates based on the panel data underlying Fukao, Yuan, and Sakishita (1999). This is because the panel data underlying Fukao, Yuan, and Sakishita (1999) correct many of the coverage problems present in the original MITI data, where survey response rates vary greatly over time. Following Blomström, Lipsey, and Kulchycky (1988), two relationships are examined in this respect. One is the relationship between changes in Japanese exports during a period and foreign affiliate activity in the initial year of the period. The possibility explored in that case is that a larger affiliate presence discourages the growth of parent exports, even if it is associated with a higher level of parent exports. The other is the relationship between changes in Japanese exports and changes in foreign affiliate activity during a period.

When examining these relationships, the effects of three other factors that may influence changes in exports are included. The first is the change in partner economy GDP, the second is the level of Japanese exports to the partner in the initial year, and the third is the change in the ratio of Japanese export prices to the GDP deflator in the partner economy. The resulting equations are as follows:

(1b) JXHy2-JXHy1 = f1e(GDPHy2-GDPHy1, JXHy1, gPXJPH, AERHy1)

(1c) JXHy2-JXHy1 = f1f(GDPHy2-GDPHy1, JXHy1, gPXJPH, AERHy2-AERHy1)

where

gPXJPH = the percentage change in the ratio of Japanese export prices (in yen) to the GDP deflator of the partner economy (in yen, translated from partner currency at annual average exchange rates; calculated from International Monetary Fund 2000, International Centre for the Study of East Asian Development 2000, World Bank 1999),

y2 = postscript indicating year 2,

y1 = postscript indicating year 1,

and all other notation is as defined for equation (1a) above.

In general, the coefficients on the change in partner GDP and on initial exports are expected to be positive. Estimation results (see Appendix Tables A3 and A4 for details) are mixed in this respect, however. Coefficients on the change in partner GDP are often insignificant, while coefficients on initial exports are negative and significant in several cases. In other words, the change in Japanese exports has generally been smaller in countries where Japanese exports were larger in the initial year. Coefficients on the price variable are more in line with expectations, being negative in most cases and significant in several equations.

Table 3 summarizes the most important results of these equations, showing coefficients on measures of initial Japanese affiliate activity and changes in activity. The relationship between changes in Japanese exports and affiliate employment in the initial year (equation (1b)) was most often statistically insignificant, but

the seven statistically significant coefficients were all positive, as were almost all the other coefficients. Changes in Japanese affiliate employment were positively related to changes in Japanese exports more consistently (equation (1c)). Half the coefficients were statistically significant and all of those were positive. Thus there is no evidence that greater affiliate activity or faster growth in affiliate activity competes with the growth of Japanese exports.

A potential problem with the OLS estimates of equations (1a), (1b), and (1c) is the possibility that Japan's exports and the economic activities of Japanese affiliates are jointly determined. This is possible partially because a large portion of Japan's exports are from Japanese MNC parents (e.g., Lipsey, Ramstetter, and Blomström, 1999, Appendix Table C1) and decisions by Japanese MNCs about the level of exports from Japan and the level of affiliate activity are likely to be interdependent. Accordingly, in previous research, Swedenborg (1979) and Blomström, Lipsey, and Kulchycky (1988) used two-stage least squares (2SLS) to estimate similar equations. We have attempted similar 2SLS estimates of equations (1a), (1b), and (1c). Unfortunately, we have been unable to find a suitable set of instruments. Thus, the 2SLS results were thus very poor and are not reported here.[10]

[10] For additional instruments not included in the equations already, we tried some of the governance indicators from Kaufman, Kraay, and Zoido-Lobatón, (1999).

5. The Growth of Japan's Manufacturing Exports and Affiliates of Competing MNCs

Just as the greater presence of U.S. affiliates tended to reduce Japanese exports to a host country, it might also diminish possibilities for Japanese export growth, and more rapid growth of U.S. affiliates might have the same effect. These possibilities are tested in equations (2b) and (2c) for the one available period, 1989-1995.

(2b) JXHy2-JXHy1 = f2e(GDPHy2-GDPHy1, JXHy1, gPXJPH, AERHy1, UEHy1)

(2c) JXHy2-JXHy1 = f2f(GDPHy2-GDPHy1, JXHy1, gPXJPH, AERHy2-AERHy1, UEHy2-UEHy1)

In equation (2b) explaining the relationship between changes in Japanese exports and initial year employment, coefficients were all positive for Japanese affiliate initial employment and negative for U.S. affiliate initial employment (Table 4). Only one of the positive coefficients for Japanese affiliate employment was significant (electric machinery). However, the negative coefficients for U.S. affiliate employment were significant in 3 of the 5 industries. Results from estimating the relationship between changes in Japanese exports and changes in affiliate employment in equation (2c) were consistent in that coefficients on changes in Japanese affiliate employment were all positive again, but only one was statistically significant at the conventional 5 percent level. In contrast, coefficients on changes in U.S. affiliate employment were never significant or close to it. Thus, although relatively large levels of U.S. affiliate activity often appear negatively correlated with Japanese export levels and changes in Japanese exports, changes in U.S. affiliate activity appear largely unrelated to changes in Japanese exports.

6. Conclusions

The evidence here is strong that greater activity of Japanese MNCs in a host country, as represented by affiliate employment, is associated with larger exports to that country from Japan. That is true aside from standard gravity model influences on exports such as importing country size, per capita income, and distance from Japan. We are inclined to interpret this relationship as indicating that affiliate production, which is one aspect of the contest among exporting countries and their firms for foreign markets, raises home country exports.

The usual objection to interpreting this positive relationship in this way is that there are always omitted country characteristics, such as openness, good government, or legal institutions, which simultaneously encourage inward investment and imports. If that were the main explanation for the positive relationship between Japanese affiliate activity and Japanese exports, Japanese exports should also be positively related to U.S. affiliate activity. However, Japanese exports are negatively related to U.S. affiliate employment. That fact suggests that it is the international rivalry for markets, rather than simultaneity problems, that accounts for the positive relationship between Japanese affiliate production and Japanese exports, a relationship found in many studies for the U.S. and Sweden, and other countries as well.

A positive relation to Japanese affiliate employment is found also for changes in Japanese exports to a country, and a negative relation to U.S. affiliate employment, confirming the idea that international rivalry for markets is the cause. Growth in Japanese affiliate employment is positively associated with growth in Japanese

exports to a country. However, in the one period for which data on the growth of U.S. affiliate employment are available, we find no relation of Japanese export growth to U.S. affiliate employment growth.

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Table 1: Coefficients on Employment in Japanese Manufacturing Affiliates (AERH) and Adjusted R-squared from OLS Regressions Explaining Japanese Exports by Country (Equation (1a), Large Sample (96-98 countries)

	1986 (98 countries)			1989 (98 countries)			1992 (98 countries)			1995 (96 countries)		
Equation, Industry	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared
Food, beverages, tobacco	2.142	26%	0.66	1.644	1%	0.48	1.276	0%	0.51	0.822	1%	0.50
Textiles, apparel, leather	1.072	14%	0.62	1.104	15%	0.56	1.846	2%	0.57	2.039	0%	0.81
Wood, furniture, paper	-1.025	19%	0.62	0.436	67%	0.61	0.654	50%	0.55	0.315	69%	0.57
Chemicals	12.024	4%	0.72	9.705	0%	0.70	9.863	0%	0.73	10.759	0%	0.74
Metals	-0.784	78%	0.74	4.345	20%	0.74	6.594	2%	0.74	7.097	0%	0.72
General & precision machinery	40.643	5%	0.87	51.212	0%	0.88	40.915	0%	0.89	25.652	0%	0.84
Electric machinery	7.935	1%	0.77	8.694	0%	0.82	6.179	0%	0.78	4.231	0%	0.73
Transportation machinery	11.733	53%	0.70	26.733	4%	0.76	16.725	4%	0.78	11.945	1%	0.74
Other manufacturing	6.671	2%	0.77	5.911	0%	0.94	4.734	0%	0.88	3.026	0%	0.82

Significance levels are calculated from t-statistics; calculations use heteroscedasticity-consistent standard errors if the White F-test for heteroscedasticity is significant at the 5% level or less; see Appendix Table A1 for detailed results and notes.

Table 2: Coefficients on Employment in Japanese and U.S. Manufacturing Affiliates (AERH and UEH) and Adjusted R-squared from OLS Regressions Explaining Japanese Exports by Country (Equation (2a), Small Sample (41-49 countries)

	1989 (41-48 countries)					1995 (49 countries)				
	Japanese Affiliates		U.S. Affiliates			Japanese Affiliates		U.S. Affiliates		
Equation, Industry	Coeffi-cients	Signifi-cance level	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared
Food, beverages, tobacco	0.649	22%	-0.076	47%	0.31	0.561	6%	-0.130	12%	0.49
Chemicals	12.956	2%	-0.800	5%	0.63	8.891	2%	-0.132	82%	0.62
Metals	4.523	2%	-3.527	2%	0.63	6.499	0%	-3.116	3%	0.75
Electric machinery	5.429	0%	0.248	83%	0.70	4.290	0%	-0.078	87%	0.67
Transportation machinery	2.571	34%	1.738	1%	0.45	4.918	2%	0.250	73%	0.24

Significance levels are calculated from t-statistics; calculations use heteroscedasticity-consistent standard errors if the White F-test for heteroscedasticity is significant at the 5% level or less; see Appendix Table A2 for detailed results and notes.
For 1989, samples consisted of 48 countries each for food, beverages, tobacco and for chemicals, 44 countries for metals, 47 countries for electric machinery and 41 countries for transportation machinery.

Table 3: Coefficients on Initial Employment and Changes in Employment of Japanese Manufacturing Affiliates and Adjusted R-squared from OLS Regressions Explaining Changes in Japanese Exports by Country, Large Sample (88-93 countries)

	1986-1989 (93 countries)			1989-1992 (90 countries)			1992-1995 (88 countries)		
Equation, Industry	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared
Coefficients on initial employment of affiliates (=AERHy1) from equation (1b)									
Food, beverages, tobacco	0.256	61%	0.36	0.556	20%	0.03	-0.150	42%	0.54
Textiles, apparel, leather	0.633	1%	0.73	0.503	6%	0.23	0.490	28%	0.63
Wood, furniture, paper	0.643	13%	0.04	-0.367	51%	0.12	0.750	2%	0.81
Chemicals	3.531	11%	0.75	0.245	75%	0.60	-0.155	84%	0.67
Metals	2.696	21%	0.31	1.142	24%	0.63	-1.487	26%	0.08
General & precision machinery	10.553	16%	0.74	12.673	9%	0.40	9.595	0%	0.44
Electric machinery	4.036	0%	0.69	2.606	0%	0.26	2.923	0%	0.46
Transportation machinery	5.643	3%	0.93	0.152	91%	0.49	2.434	18%	0.71
Other manufacturing	2.281	7%	0.28	-0.645	59%	0.10	0.555	25%	0.38
Coefficients on the change in employment of affiliates (=AERHy2-AERHy1) from equation (1c)									
Food, beverages, tobacco	-0.996	56%	0.37	0.722	14%	0.01	0.555	20%	0.55
Textiles, apparel, leather	0.366	81%	0.66	2.693	0%	0.74	2.314	0%	0.90
Wood, furniture, paper	3.567	11%	0.17	1.719	0%	0.15	-0.157	80%	0.75
Chemicals	0.757	70%	0.69	2.038	30%	0.61	3.657	0%	0.75
Metals	12.153	3%	0.39	4.026	31%	0.63	6.223	11%	0.16
General & precision machinery	26.639	0%	0.80	7.807	1%	0.19	6.512	27%	0.30
Electric machinery	2.907	0%	0.36	3.102	8%	0.16	4.956	0%	0.40
Transportation machinery	12.105	0%	0.94	2.774	20%	0.50	8.593	2%	0.72
Other manufacturing	-1.268	19%	0.11	4.150	0%	0.38	1.101	17%	0.39

Significance levels are calculated from t-statistics; calculations use heteroscedasticity-consistent standard errors if the White F-test for heteroscedasticity is significant at the 5% level or less; see Appendix Table A3 for detailed results and notes.

Table 4: Coefficients on Initial Employment and Changes in Employment of Japanese and U.S. Manufacturing Affiliates and Adjusted R-squared from OLS Regressions Explaining Changes in Japanese Exports by Country, 1989-1995, Small Sample (41-48 countries)

	Japanese Affiliates		U.S. Affiliates		
Equation, Industry	Coeffi-cients	Signifi-cance level	Coeffi-cients	Signifi-cance level	Adjus-ted R-squared
Coefficients on initial revised employment of affiliates (=AERHy1, UEHy1) from equation (2b)					
Food, beverages, tobacco (48 countries)	0.902	17%	-0.122	3%	0.37
Chemicals (48 countries)	2.799	21%	-0.279	1%	0.60
Metals (43 countries)	1.468	13%	-0.417	14%	0.35
Electric machinery (47 countries)	5.148	3%	-0.673	54%	0.45
Transportation machinery (41 countries)	3.201	13%	-1.491	1%	0.14
Coefficients on the change in revised employment of affiliates (=AERHy2-AERHy1, UEHy2-UEHy1) from equation (2c)					
Food, beverages, tobacco (48 countries)	0.417	18%	-0.049	58%	0.21
Chemicals (48 countries)	3.107	6%	0.537	28%	0.58
Metals (43 countries)	3.171	13%	-1.131	42%	0.40
Electric machinery (47 countries)	3.323	2%	0.605	54%	0.48
Transportation machinery (41 countries)	3.683	11%	2.265	30%	0.07

Significance levels are calculated from t-statistics; calculations use heteroscedasticity-consistent standard errors if the White F-test for heteroscedasticity is significant at the 5% level or less; see Appendix Table A4 for detailed results and notes.

Appendix Table A1: OLS Regressions Explaining Japanese Exports to a Country by Employment of Japanese Manufacturing Affiliates and Other Variables (Equation (1a), Large Sample (96-98 countries)

	1986 (98 countries)			1989 (98 countries)			1992 (98 countries)			1995 (96 countries)		
Dependent variable, independent variables, equation statistics	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Food, beverages, tobacco												
Constant (thousands)	3.202	0.077	0.274	5.329	0.006	0.119	4.684	0.016	0.101	4.832	0.005	0.064
GDPH	0.050	0.000	0.019	0.011	0.101	0.177	0.007	0.263	0.423	0.001	0.885	0.917
GDPPH	1.562	0.009	0.015	1.432	0.010	0.029	1.777	0.001	0.065	1.427	0.001	0.033
DISTH	-0.594	0.003	0.077	-0.738	0.000	0.069	-0.717	0.001	0.065	-0.691	0.000	0.033
AERH	2.142	0.011	0.257	1.644	0.001	0.011	1.276	0.000	0.005	0.822	0.001	0.014
F-statistic	47.041	0.000	0.000	23.307	0.000	0.000	26.184	0.000	0.000	24.924	0.000	0.000
F-White (Hetero.)	17.425	0.000	0.000	3.630	0.001	0.001	4.604	0.000	0.000	6.188	0.000	0.000
Adjusted R-squared	0.655	-	-	0.479	-	-	0.509	-	-	0.502	-	-
Textiles, apparel, leather												
Constant (thousands)	23.090	0.001	0.005	21.290	0.000	0.008	20.466	0.004	0.010	6.932	0.112	0.089
GDPH	0.160	0.000	0.000	0.077	0.000	0.000	0.052	0.003	0.008	0.025	0.012	0.026
GDPPH	6.499	0.002	0.022	5.336	0.001	0.033	6.191	0.001	0.048	3.069	0.003	0.025
DISTH	-3.199	0.000	0.003	-2.856	0.000	0.006	-2.934	0.000	0.010	-1.175	0.009	0.025
AERH	1.072	0.025	0.140	1.104	0.008	0.154	1.846	0.000	0.018	2.039	0.000	0.000
F-statistic	40.605	0.000	0.000	31.655	0.000	0.000	32.999	0.000	0.000	102.630	0.000	0.000
F-White (Hetero.)	3.800	0.001	0.001	3.057	0.004	0.004	5.239	0.000	0.000	52.539	0.000	0.000
Adjusted R-squared	0.620	-	-	0.558	-	-	0.569	-	-	0.811	-	-
Wood, furniture, paper												
Constant (thousands)	8.288	0.000	0.002	6.680	0.000	0.024	9.791	0.000	0.008	8.368	0.000	0.006
GDPH	0.042	0.000	0.000	0.039	0.000	0.006	0.034	0.000	0.001	0.023	0.000	0.003
GDPPH	1.200	0.017	0.074	1.980	0.000	0.016	2.317	0.000	0.041	1.783	0.000	0.019
DISTH	-1.030	0.000	0.001	-0.978	0.000	0.008	-1.351	0.000	0.005	-1.123	0.000	0.003
AERH	-1.025	0.248	0.190	0.436	0.545	0.668	0.654	0.478	0.503	0.315	0.599	0.688
F-statistic	40.575	0.000	0.000	38.702	0.000	0.000	31.084	0.000	0.000	33.001	0.000	0.000
F-White (Hetero.)	4.155	0.000	0.000	3.966	0.000	0.000	4.670	0.000	0.000	6.596	0.000	0.000
Adjusted R-squared	0.620	-	-	0.609	-	-	0.554	-	-	0.574	-	-
Chemicals												
Constant (thousands)	27.966	0.001	0.021	39.318	0.000	0.013	41.868	0.000	0.016	43.846	0.002	0.045
GDPH	0.169	0.000	0.003	0.031	0.469	0.720	0.006	0.900	0.947	-0.011	0.827	0.915
GDPPH	4.998	0.055	0.021	6.345	0.032	0.005	8.710	0.005	0.005	10.965	0.001	0.005
DISTH	-3.667	0.000	0.005	-4.702	0.000	0.005	-5.346	0.000	0.006	-5.950	0.000	0.018
AERH	12.024	0.000	0.042	9.705	0.000	0.002	9.863	0.000	0.001	10.759	0.000	0.003
F-statistic	62.206	0.000	0.000	57.598	0.000	0.000	66.514	0.000	0.000	67.039	0.000	0.000
F-White (Hetero.)	12.655	0.000	0.000	9.393	0.000	0.000	11.167	0.000	0.000	9.573	0.000	0.000
Adjusted R-squared	0.716	-	-	0.700	-	-	0.730	-	-	0.735	-	-
Metals												
Constant (thousands)	90.226	0.000	0.007	79.874	0.000	0.002	61.255	0.000	0.004	63.376	0.000	0.006
GDPH	0.737	0.000	0.000	0.397	0.000	0.000	0.158	0.000	0.028	0.046	0.249	0.470
GDPPH	-3.061	0.568	0.632	3.949	0.342	0.343	7.477	0.024	0.040	8.241	0.011	0.029
DISTH	-9.755	0.000	0.002	-9.418	0.000	0.001	-7.567	0.000	0.003	-7.748	0.000	0.003
AERH	-0.784	0.611	0.784	4.345	0.001	0.200	6.594	0.000	0.018	7.097	0.000	0.000
F-statistic	69.344	0.000	0.000	70.979	0.000	0.000	69.864	0.000	0.000	63.283	0.000	0.000
F-White (Hetero.)	9.897	0.000	0.000	14.350	0.000	0.000	6.063	0.000	0.000	16.856	0.000	0.000
Adjusted R-squared	0.738	-	-	0.743	-	-	0.740	-	-	0.724	-	-

Table A1 (continued, 2/2)

Dependent variable, independent variables, equation statistics	1986 (98 observations)			1989 (98 observations)			1992 (98 observations)			1995 (96 observations)		
	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
All machinery (general, electric, tranportation, and precision) combined												
Constant (thousands)	-231.961	0.257	0.348	-390.292	0.026	0.113	-248.330	0.138	0.286	-129.782	0.476	0.530
GDPH	8.437	0.000	0.005	5.120	0.000	0.014	4.803	0.000	0.007	4.305	0.000	0.008
GDPPH	93.754	0.143	0.052	93.970	0.048	0.007	125.569	0.003	0.003	133.970	0.001	0.012
DISTH	-2.377	0.914	0.928	17.962	0.340	0.466	1.375	0.938	0.951	-12.012	0.526	0.524
AERH	16.887	0.001	0.081	20.096	0.000	0.006	13.433	0.000	0.004	7.370	0.000	0.001
F-statistic	82.278	0.000	0.000	108.768	0.000	0.000	110.685	0.000	0.000	88.580	0.000	0.000
F-White (Hetero.)	56.195	0.000	0.000	71.438	0.000	0.000	86.634	0.000	0.000	61.169	0.000	0.000
Adjusted R-squared	0.770	-	-	0.816	-	-	0.819	-	-	0.787	-	-
General & precision machinery												
Constant (thousands)	8.839	0.807	0.857	-45.269	0.301	0.511	-40.890	0.335	0.490	-10.744	0.843	0.892
GDPH	1.601	0.000	0.007	1.285	0.000	0.017	1.125	0.000	0.021	1.351	0.000	0.006
GDPPH	23.204	0.061	0.038	22.415	0.087	0.090	33.548	0.004	0.005	35.513	0.007	0.020
DISTH	-6.198	0.119	0.374	-0.936	0.844	0.918	-1.875	0.682	0.776	-6.382	0.269	0.422
AERH	40.643	0.000	0.051	51.212	0.000	0.004	40.915	0.000	0.002	25.652	0.000	0.002
F-statistic	170.041	0.000	0.000	182.863	0.000	0.000	199.520	0.000	0.000	127.568	0.000	0.000
F-White (Hetero.)	22.498	0.000	0.000	15.849	0.000	0.000	29.940	0.000	0.000	37.646	0.000	0.000
Adjusted R-squared	0.875	-	-	0.882	-	-	0.891	-	-	0.842	-	-
Electric machinery												
Constant (thousands)	-41.359	0.434	0.512	-62.763	0.166	0.261	-16.478	0.739	0.786	15.158	0.804	0.808
GDPH	2.188	0.000	0.004	1.397	0.000	0.006	1.291	0.000	0.006	1.136	0.000	0.015
GDPPH	32.108	0.054	0.020	34.475	0.005	0.002	45.158	0.000	0.005	54.735	0.000	0.011
DISTH	-3.070	0.591	0.661	-0.189	0.969	0.974	-6.447	0.221	0.331	-10.955	0.086	0.123
AERH	7.935	0.000	0.006	8.694	0.000	0.000	6.179	0.000	0.003	4.231	0.000	0.001
F-statistic	83.938	0.000	0.000	110.731	0.000	0.000	88.520	0.000	0.000	66.286	0.000	0.000
F-White (Hetero.)	48.809	0.000	0.000	40.013	0.000	0.000	35.315	0.000	0.000	26.597	0.000	0.000
Adjusted R-squared	0.774	-	-	0.819	-	-	0.783	-	-	0.733	-	-
Transportation machinery												
Constant (thousands)	-101.981	0.372	0.448	-201.183	0.012	0.056	-163.245	0.023	0.113	-178.510	0.012	0.124
GDPH	4.436	0.000	0.010	1.981	0.000	0.042	1.807	0.000	0.021	1.214	0.000	0.073
GDPPH	40.882	0.245	0.136	31.387	0.152	0.055	42.965	0.018	0.008	34.910	0.026	0.048
DISTH	-2.617	0.829	0.849	11.904	0.161	0.230	8.500	0.258	0.366	11.495	0.113	0.259
AERH	11.733	0.317	0.533	26.733	0.000	0.041	16.725	0.000	0.037	11.945	0.000	0.009
F-statistic	58.768	0.000	0.000	78.582	0.000	0.000	86.229	0.000	0.000	70.117	0.000	0.000
F-White (Hetero.)	82.010	0.000	0.000	108.748	0.000	0.000	89.554	0.000	0.000	40.083	0.000	0.000
Adjusted R-squared	0.704	-	-	0.762	-	-	0.778	-	-	0.744	-	-
Other manufacturing												
Constant (thousands)	-2.653	0.789	0.829	1.919	0.679	0.770	4.325	0.502	0.627	10.814	0.166	0.386
GDPH	0.379	0.000	0.006	0.052	0.018	0.049	0.088	0.002	0.081	0.111	0.000	0.062
GDPPH	6.840	0.027	0.007	6.891	0.000	0.000	9.419	0.000	0.000	8.215	0.000	0.003
DISTH	-1.153	0.283	0.358	-0.955	0.062	0.194	-1.576	0.025	0.131	-2.321	0.005	0.094
AERH	6.671	0.000	0.019	5.911	0.000	0.000	4.734	0.000	0.000	3.026	0.000	0.001
F-statistic	81.325	0.000	0.000	371.150	0.000	0.000	181.448	0.000	0.000	112.928	0.000	0.000
F-White (Hetero.)	77.145	0.000	0.000	7.613	0.000	0.000	9.687	0.000	0.000	16.160	0.000	0.000
Adjusted R-squared	0.768	-	-	0.939	-	-	0.882	-	-	0.825	-	-

Notes: Chemical fibers are included in textiles as is the practice in MITI publications.
Other manufacturing includes some oil and coal products; chemicals includes some oil products.
OLS=significance levels from ordinary least squares regressions.
White=significance levels use White's heteroscedasticity-consistent standard errors and covariances.
F-White (Hetero.) is the F-statistic from a regression of the squares of residuals from an OLS regression on all independent variables and their squares (no cross terms included).
See Lipsey, Ramstetter, and Blomström (2000b, Appendix Table A1) for comparisons with specifications using alternate measures of Japanese affiliate employment or Japanese affiliate value added instead of AERH.

Appendix Table A2: OLS Regressions Explaining Japanese Exports to a Country by Employment of Japanese and U.S. Manufacturing Affiliates and Other Variables (Equations (1a, 2a), Small Sample (41-49 countries)

	1989 (Equation (1a)			1989 (Equation (2a)			1995 (Equation (1a)			1995 (Equation (2a)		
Dependent variable, independent variables, equation statistics	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Food, beverages, tobacco (48 countries for 1989, 49 countries for 1995)												
Constant (thousands)	12.322	0.002	0.045	12.016	0.003	0.046	9.958	0.002	0.019	10.062	0.002	0.017
GDPH	-0.014	0.397	0.279	-0.010	0.585	0.422	-0.015	0.184	0.083	-0.010	0.384	0.190
GDPPH	2.197	0.029	0.029	2.327	0.026	0.024	2.073	0.004	0.031	2.218	0.002	0.022
DISTH	-1.593	0.000	0.027	-1.561	0.000	0.028	-1.424	0.000	0.010	-1.399	0.000	0.009
AERH	0.564	0.458	0.231	0.649	0.407	0.219	0.588	0.081	0.057	0.561	0.093	0.056
UEH	-	-	-	-0.076	0.587	0.472	-	-	-	-0.130	0.167	0.117
F-statistic	6.681	0.000	0.000	5.318	0.001	0.001	11.943	0.000	0.000	10.162	0.000	0.000
F-White (Hetero.)	2.836	0.014	0.014	2.382	0.027	0.027	5.308	0.000	0.000	3.438	0.003	0.003
Adjusted R-squared	0.326	-	-	0.315	-	-	0.477	-	-	0.488	-	-
Chemicals (48 countries for 1989, 49 countries for 1995)												
Constant (thousands)	51.243	0.013	0.006	42.452	0.044	0.015	82.265	0.004	0.023	81.230	0.006	0.027
GDPH	0.109	0.244	0.072	0.215	0.068	0.002	-0.051	0.555	0.543	-0.041	0.697	0.657
GDPPH	9.444	0.066	0.015	11.760	0.028	0.001	16.413	0.007	0.005	16.824	0.010	0.004
DISTH	-7.501	0.000	0.001	-6.756	0.002	0.001	-11.698	0.000	0.006	-11.600	0.000	0.007
AERH	12.515	0.000	0.024	12.956	0.000	0.021	8.939	0.000	0.014	8.891	0.000	0.016
UEH	-	-	-	-0.800	0.136	0.048	-	-	-	-0.132	0.850	0.825
F-statistic	20.036	0.000	0.000	16.980	0.000	0.000	21.637	0.000	0.000	16.938	0.000	0.000
F-White (Hetero.)	11.152	0.000	0.000	9.323	0.000	0.000	6.997	0.000	0.000	5.241	0.000	0.000
Adjusted R-squared	0.618	-	-	0.630	-	-	0.632	-	-	0.624	-	-
Metals (44 countries for 1989, 49 countries for 1995)												
Constant (thousands)	144.254	0.000	0.000	118.976	0.000	0.000	99.004	0.000	0.003	86.400	0.001	0.003
GDPH	0.269	0.042	0.270	0.405	0.004	0.111	0.073	0.323	0.486	0.137	0.071	0.140
GDPPH	5.760	0.452	0.446	13.621	0.089	0.035	13.876	0.012	0.008	18.371	0.001	0.000
DISTH	-16.758	0.000	0.000	-15.461	0.000	0.000	-13.752	0.000	0.000	-12.923	0.000	0.000
AERH	2.440	0.208	0.315	4.523	0.028	0.024	6.157	0.000	0.001	6.499	0.000	0.000
UEH	-	-	-	-3.527	0.018	0.016	-	-	-	-3.116	0.018	0.028
F-statistic	15.971	0.000	0.000	15.693	0.000	0.000	31.248	0.000	0.000	29.081	0.000	0.000
F-White (Hetero.)	8.608	0.000	0.000	4.950	0.000	0.000	8.371	0.000	0.000	5.270	0.000	0.000
Adjusted R-squared	0.582	-	-	0.631	-	-	0.716	-	-	0.745	-	-
Electric machinery (47 countries for 1989, 49 countries for 1995)												
Constant (thousands)	29.252	0.560	0.673	30.690	0.548	0.647	167.441	0.034	0.061	167.165	0.037	0.064
GDPH	0.373	0.052	0.122	0.357	0.078	0.087	-0.261	0.251	0.180	-0.258	0.266	0.182
GDPPH	54.557	0.000	0.000	53.979	0.000	0.000	72.759	0.000	0.002	72.938	0.000	0.002
DISTH	-11.329	0.028	0.137	-11.442	0.028	0.129	-29.503	0.000	0.011	-29.473	0.000	0.012
AERH	5.530	0.000	0.001	5.429	0.000	0.001	4.255	0.000	0.000	4.290	0.000	0.000
UEH	-	-	-	0.248	0.780	0.834	-	-	-	-0.078	0.931	0.869
F-statistic	28.961	0.000	0.000	22.677	0.000	0.000	26.645	0.000	0.000	20.837	0.000	0.000
F-White (Hetero.)	3.309	0.006	0.006	3.269	0.004	0.004	10.521	0.000	0.000	8.150	0.000	0.000
Adjusted R-squared	0.709	-	-	0.702	-	-	0.681	-	-	0.674	-	-
Transportation machinery (41 countries for 1989, 49 countries for 1995)												
Constant (thousands)	26.603	0.598	0.627	64.543	0.181	0.157	69.532	0.264	0.348	74.375	0.249	0.314
GDPH	0.114	0.605	0.589	-0.076	0.719	0.641	-0.247	0.194	0.034	-0.255	0.187	0.035
GDPPH	51.182	0.000	0.003	37.869	0.004	0.013	27.246	0.027	0.048	26.001	0.044	0.075
DISTH	-6.740	0.191	0.245	-8.415	0.078	0.051	-6.595	0.252	0.158	-6.928	0.240	0.114
AERH	4.803	0.092	0.145	2.571	0.336	0.453	5.087	0.013	0.019	4.918	0.020	0.023
UEH	-	-	-	1.738	0.006	0.017	-	-	-	0.250	0.732	0.770
F-statistic	6.006	0.001	0.001	7.520	0.000	0.000	5.060	0.002	0.002	3.991	0.005	0.005
F-White (Hetero.)	0.633	0.744	0.744	1.670	0.135	0.135	0.138	0.997	0.997	0.168	0.998	0.998
Adjusted R-squared	0.334	-	-	0.449	-	-	0.253	-	-	0.238	-	-

Notes: Industries and terminology are as defined in the notes to Appendix Table A1.
See Lipsey, Ramstetter, and Blomstrom (2000b, Appendix Table A2) for comparisions with specifications using alternate measures of Japanese affiliate employment or Japanese affiliate value added instead of AERH.

Appendix Table A3: OLS Regressions Explaining Changes in Japanese Exports to a Country by Initial Employment (Equation (1b) or Changes in Employment (Equation (1c) of Japanese Manufacturing Affiliates and Other Variables, Large Sample (88-93 countries)

	1986-1989 (93 countries)			1989-1992 (90 countries)			1992-1995 (88 countries)		
Dependent variable, independent variables, equation statistics	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Food, beverages, tobacco (Equation (1b)									
Constant (thousands)	0.930	0.039	0.055	0.053	0.870	0.731	0.063	0.782	0.699
GDPHy2-GDPHy1	-0.185	0.000	0.127	-0.031	0.289	0.496	0.034	0.001	0.011
JXHy1	-0.054	0.438	0.811	-0.081	0.071	0.709	-0.200	0.000	0.003
gPXJPH	-6.493	0.399	0.222	-4.031	0.686	0.202	-4.565	0.649	0.357
AERHy1	0.256	0.659	0.609	0.556	0.015	0.197	-0.150	0.124	0.422
F-statistic	13.851	0.000	0.000	1.735	0.150	0.150	27.000	0.000	0.000
F-White (Hetero.)	6.256	0.000	0.000	20.951	0.000	0.000	5.918	0.000	0.000
Adjusted R-squared	0.358	-	-	0.032	-	-	0.544	-	-
Food, beverages, tobacco (Equation (1c)									
Constant (thousands)	0.943	0.033	0.037	0.110	0.735	0.352	0.073	0.747	0.658
GDPHy2-GDPHy1	-0.159	0.001	0.121	-0.026	0.383	0.555	-0.008	0.701	0.806
JXHy1	0.015	0.857	0.959	-0.051	0.223	0.804	-0.221	0.000	0.000
gPXJPH	-7.048	0.355	0.210	-2.481	0.805	0.339	-1.793	0.857	0.749
AERHy2-AERHy1	-0.996	0.183	0.555	0.722	0.048	0.137	0.555	0.084	0.204
F-statistic	14.506	0.000	0.000	1.200	0.317	0.317	27.357	0.000	0.000
F-White (Hetero.)	7.176	0.000	0.000	24.500	0.000	0.000	5.586	0.000	0.000
Adjusted R-squared	0.370	-	-	0.009	-	-	0.548	-	-
Textiles, apparel, leather (Equation (1b)									
Constant (thousands)	0.455	0.473	0.374	-0.623	0.536	0.479	-2.007	0.071	0.033
GDPHy2-GDPHy1	-0.254	0.000	0.100	0.076	0.400	0.834	0.470	0.000	0.039
JXHy1	-0.192	0.000	0.000	0.105	0.027	0.234	-0.430	0.000	0.000
gPXJPH	-9.554	0.370	0.167	11.353	0.965	0.930	110.440	0.829	0.643
AERHy1	0.633	0.000	0.007	0.503	0.017	0.059	0.490	0.006	0.279
F-statistic	64.289	0.000	0.000	7.813	0.000	0.000	38.085	0.000	0.000
F-White (Hetero.)	26.819	0.000	0.000	34.459	0.000	0.000	82.130	0.000	0.000
Adjusted R-squared	0.733	-	-	0.234	-	-	0.630	-	-
Textiles, apparel, leather (Equation (1c)									
Constant (thousands)	1.188	0.092	0.080	0.244	0.674	0.630	0.580	0.312	0.192
GDPHy2-GDPHy1	-0.316	0.000	0.106	-0.302	0.000	0.037	0.129	0.001	0.203
JXHy1	-0.144	0.000	0.016	0.156	0.000	0.000	-0.462	0.000	0.000
gPXJPH	-15.698	0.194	0.096	-8.478	0.634	0.265	-24.816	0.315	0.093
AERHy2-AERHy1	0.366	0.439	0.808	2.693	0.000	0.000	2.314	0.000	0.000
F-statistic	45.119	0.000	0.000	64.210	0.000	0.000	202.154	0.000	0.000
F-White (Hetero.)	46.655	0.000	0.000	16.612	0.000	0.000	32.575	0.000	0.000
Adjusted R-squared	0.657	-	-	0.740	-	-	0.902	-	-
Wood, furniture, paper (Equation (1b)									
Constant (thousands)	0.029	0.944	0.916	0.350	0.325	0.325	0.094	0.591	0.482
GDPHy2-GDPHy1	0.033	0.396	0.655	-0.005	0.885	0.967	-0.021	0.005	0.040
JXHy1	0.046	0.516	0.819	0.152	0.001	0.334	-0.232	0.000	0.000
gPXJPH	-6.145	0.375	0.232	-1.182	0.913	0.763	-1.464	0.848	0.763
AERHy1	0.643	0.304	0.129	-0.367	0.309	0.505	0.750	0.000	0.017
F-statistic	2.065	0.092	0.092	4.149	0.004	0.004	91.341	0.000	0.000
F-White (Hetero.)	10.840	0.000	0.000	82.989	0.000	0.000	5.578	0.000	0.000
Adjusted R-squared	0.044	-	-	0.124	-	-	0.806	-	-

Appendix Table A3 (continued, 2/4)

Dependent variable, independent variables, equation statistics	1986-1989 (93 countries)			1989-1992 (90 countries)			1992-1995 (88 countries)		
	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Wood, furniture, paper (Equation (1c)									
Constant (thousands)	0.170	0.648	0.537	0.314	0.366	0.358	0.246	0.208	0.096
GDPHy2-GDPHy1	-0.051	0.236	0.502	-0.020	0.528	0.864	-0.012	0.229	0.477
JXHy1	0.041	0.542	0.835	0.149	0.001	0.352	-0.212	0.000	0.000
gPXJPH	-6.399	0.319	0.180	-1.587	0.882	0.674	-5.313	0.537	0.220
AERHy2-AERHy1	3.567	0.000	0.113	1.719	0.067	0.002	-0.157	0.739	0.802
F-statistic	5.795	0.000	0.000	4.854	0.001	0.001	67.231	0.000	0.000
F-White (Hetero.)	15.507	0.000	0.000	72.483	0.000	0.000	6.840	0.000	0.000
Adjusted R-squared	0.173	-	-	0.148	-	-	0.753	-	-
Chemicals (Equation (1b)									
Constant (thousands)	0.369	0.651	0.395	0.474	0.606	0.359	1.070	0.303	0.219
GDPHy2-GDPHy1	-0.663	0.000	0.000	0.115	0.247	0.395	0.025	0.597	0.681
JXHy1	0.286	0.000	0.000	0.129	0.000	0.184	0.159	0.000	0.000
gPXJPH	-19.229	0.170	0.030	-31.055	0.273	0.080	-84.896	0.065	0.021
AERHy1	3.531	0.000	0.110	0.245	0.545	0.749	-0.155	0.619	0.839
F-statistic	71.314	0.000	0.000	34.029	0.000	0.000	45.704	0.000	0.000
F-White (Hetero.)	11.805	0.000	0.000	16.424	0.000	0.000	22.781	0.000	0.000
Adjusted R-squared	0.754	-	-	0.597	-	-	0.673	-	-
Chemicals (Equation (1c)									
Constant (thousands)	1.187	0.202	0.172	0.382	0.673	0.456	0.509	0.576	0.434
GDPHy2-GDPHy1	-0.661	0.000	0.075	0.062	0.527	0.737	-0.117	0.015	0.098
JXHy1	0.344	0.000	0.000	0.125	0.000	0.110	0.158	0.000	0.000
gPXJPH	-25.252	0.109	0.073	-29.782	0.285	0.070	-66.725	0.097	0.044
AERHy2-AERHy1	0.757	0.215	0.696	2.038	0.089	0.299	3.657	0.000	0.000
F-statistic	51.916	0.000	0.000	35.709	0.000	0.000	66.268	0.000	0.000
F-White (Hetero.)	57.351	0.000	0.000	16.320	0.000	0.000	11.725	0.000	0.000
Adjusted R-squared	0.689	-	-	0.609	-	-	0.750	-	-
Metals (Equation (1b)									
Constant (thousands)	2.698	0.410	0.244	3.900	0.020	0.002	4.084	0.118	0.163
GDPHy2-GDPHy1	-0.037	0.928	0.962	-1.115	0.000	0.002	0.139	0.253	0.607
JXHy1	-0.219	0.000	0.213	-0.088	0.006	0.137	0.010	0.823	0.888
gPXJPH	-49.775	0.380	0.237	-80.984	0.112	0.011	-187.029	0.104	0.026
AERHy1	2.696	0.002	0.210	1.142	0.010	0.237	-1.487	0.019	0.256
F-statistic	11.460	0.000	0.000	38.509	0.000	0.000	2.830	0.030	0.030
F-White (Hetero.)	16.505	0.000	0.000	14.053	0.000	0.000	38.863	0.000	0.000
Adjusted R-squared	0.313	-	-	0.628	-	-	0.078	-	-
Metals (Equation (1c)									
Constant (thousands)	4.539	0.140	0.080	4.322	0.010	0.001	2.809	0.255	0.206
GDPHy2-GDPHy1	0.324	0.371	0.687	-1.067	0.000	0.012	-0.077	0.550	0.768
JXHy1	-0.277	0.000	0.125	-0.087	0.007	0.123	-0.097	0.005	0.424
gPXJPH	-76.877	0.150	0.179	-81.932	0.109	0.015	-99.498	0.363	0.141
AERHy2-AERHy1	12.153	0.000	0.029	4.026	0.012	0.313	6.223	0.000	0.109
F-statistic	15.658	0.000	0.000	38.195	0.000	0.000	5.076	0.001	0.001
F-White (Hetero.)	27.729	0.000	0.000	22.773	0.000	0.000	17.614	0.000	0.000
Adjusted R-squared	0.389	-	-	0.626	-	-	0.158	-	-

Appendix Table A3 (continued, 3/4)

Dependent variable, independent variables, equation statistics	1986-1989 (93 countries) Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	1989-1992 (90 countries) Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	1992-1995 (88 countries) Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
All machinery (general, electric, tranportation, and precision) combined (Equation (1b)									
Constant (thousands)	17.478	0.123	0.025	26.173	0.063	0.022	-9.223	0.483	0.371
GDPHy2-GDPHy1	-0.894	0.536	0.754	1.377	0.327	0.428	1.220	0.038	0.026
JXHy1	-0.126	0.000	0.000	-0.133	0.000	0.000	-0.169	0.000	0.000
gPXJPH	-192.035	0.310	0.141	-711.082	0.095	0.039	-1062.416	0.066	0.076
AERHy1	6.486	0.000	0.000	3.933	0.000	0.000	4.287	0.000	0.000
F-statistic	51.842	0.000	0.000	15.692	0.000	0.000	36.498	0.000	0.000
F-White (Hetero.)	8.500	0.000	0.000	2.372	0.024	0.024	7.981	0.000	0.000
Adjusted R-squared	0.689	-	-	0.398	-	-	0.620	-	-
All machinery (general, electric, tranportation, and precision) combined (Equation (1c)									
Constant (thousands)	29.866	0.023	0.010	36.420	0.015	0.004	8.455	0.571	0.566
GDPHy2-GDPHy1	-1.805	0.306	0.600	1.337	0.388	0.373	-1.505	0.131	0.293
JXHy1	-0.134	0.000	0.000	-0.077	0.000	0.000	-0.078	0.000	0.000
gPXJPH	-355.662	0.107	0.136	-661.258	0.147	0.023	-1297.521	0.054	0.032
AERHy2-AERHy1	9.522	0.000	0.000	4.719	0.001	0.009	6.537	0.000	0.003
F-statistic	31.784	0.000	0.000	10.869	0.000	0.000	21.563	0.000	0.000
F-White (Hetero.)	15.672	0.000	0.000	4.611	0.000	0.000	7.630	0.000	0.000
Adjusted R-squared	0.572	-	-	0.307	-	-	0.486	-	-
General & precision machinery (Equation (1b)									
Constant (thousands)	6.174	0.217	0.054	6.243	0.195	0.024	-0.144	0.979	0.975
GDPHy2-GDPHy1	-2.237	0.003	0.249	1.485	0.003	0.024	1.164	0.000	0.000
JXHy1	0.188	0.000	0.053	-0.200	0.000	0.009	-0.173	0.000	0.000
gPXJPH	-81.730	0.337	0.120	-230.928	0.115	0.070	-313.349	0.198	0.110
AERHy1	10.553	0.000	0.158	12.673	0.000	0.089	9.595	0.000	0.000
F-statistic	67.190	0.000	0.000	15.682	0.000	0.000	18.276	0.000	0.000
F-White (Hetero.)	9.085	0.000	0.000	7.229	0.000	0.000	4.587	0.000	0.000
Adjusted R-squared	0.742	-	-	0.398	-	-	0.443	-	-
General & precision machinery (Equation (1c)									
Constant (thousands)	3.421	0.442	0.367	11.533	0.038	0.014	3.031	0.617	0.521
GDPHy2-GDPHy1	-3.042	0.000	0.217	0.935	0.126	0.120	0.988	0.004	0.024
JXHy1	0.247	0.000	0.005	-0.072	0.000	0.012	-0.046	0.003	0.053
gPXJPH	-81.246	0.280	0.195	-223.143	0.189	0.043	-515.046	0.057	0.016
AERHy2-AERHy1	26.639	0.000	0.000	7.807	0.016	0.011	6.512	0.031	0.268
F-statistic	91.672	0.000	0.000	6.132	0.000	0.000	10.317	0.000	0.000
F-White (Hetero.)	47.985	0.000	0.000	3.771	0.001	0.001	10.994	0.000	0.000
Adjusted R-squared	0.798	-	-	0.187	-	-	0.300	-	-
Electric machinery (Equation (1b)									
Constant (thousands)	4.974	0.190	0.129	5.609	0.296	0.217	-3.850	0.528	0.433
GDPHy2-GDPHy1	0.174	0.715	0.794	-0.928	0.083	0.211	0.302	0.249	0.542
JXHy1	-0.167	0.000	0.000	-0.078	0.004	0.095	-0.092	0.000	0.005
gPXJPH	-41.370	0.516	0.245	-173.927	0.287	0.070	-259.703	0.332	0.294
AERHy1	4.036	0.000	0.000	2.606	0.000	0.000	2.923	0.000	0.000
F-statistic	52.543	0.000	0.000	8.838	0.000	0.000	19.815	0.000	0.000
F-White (Hetero.)	20.411	0.000	0.000	5.646	0.000	0.000	4.312	0.000	0.000
Adjusted R-squared	0.691	-	-	0.261	-	-	0.464	-	-

Appendix Table A3 (continued, 4/4)

Dependent variable, independent variables, equation statistics	1986-1989 (93 countries)			1989-1992 (90 countries)			1992-1995 (88 countries)		
	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Electric machinery (Equation (1c)									
Constant (thousands)	12.353	0.023	0.034	8.593	0.131	0.046	2.220	0.726	0.707
GDPHy2-GDPHy1	-0.349	0.618	0.694	-1.153	0.048	0.191	-1.085	0.004	0.091
JXHy1	-0.116	0.000	0.018	0.015	0.506	0.760	0.039	0.041	0.365
gPXJPH	-119.811	0.191	0.160	-143.990	0.410	0.042	-348.189	0.219	0.154
AERHy2-AERHy1	2.907	0.002	0.005	3.102	0.000	0.084	4.956	0.000	0.000
F-statistic	13.778	0.000	0.000	5.164	0.001	0.001	15.439	0.000	0.000
F-White (Hetero.)	21.219	0.000	0.000	17.324	0.000	0.000	6.069	0.000	0.000
Adjusted R-squared	0.357	-	-	0.158	-	-	0.399	-	-
Transportation machinery (Equation (1b)									
Constant (thousands)	8.923	0.060	0.010	17.393	0.002	0.002	-2.840	0.658	0.613
GDPHy2-GDPHy1	-0.372	0.528	0.743	1.314	0.020	0.002	-0.331	0.247	0.100
JXHy1	-0.237	0.000	0.000	-0.111	0.000	0.000	-0.191	0.000	0.000
gPXJPH	-85.386	0.274	0.120	-308.018	0.064	0.013	-445.747	0.115	0.100
AERHy1	5.643	0.000	0.034	0.152	0.890	0.906	2.434	0.005	0.177
F-statistic	327.002	0.000	0.000	22.309	0.000	0.000	53.043	0.000	0.000
F-White (Hetero.)	13.451	0.000	0.000	2.276	0.030	0.030	9.698	0.000	0.000
Adjusted R-squared	0.934	-	-	0.489	-	-	0.705	-	-
Transportation machinery (Equation (1c)									
Constant (thousands)	11.777	0.009	0.002	17.147	0.002	0.001	-0.536	0.930	0.910
GDPHy2-GDPHy1	-1.093	0.086	0.298	1.028	0.068	0.030	-1.458	0.002	0.020
JXHy1	-0.285	0.000	0.000	-0.114	0.000	0.000	-0.175	0.000	0.000
gPXJPH	-98.150	0.193	0.095	-292.977	0.076	0.011	-341.749	0.215	0.156
AERHy2-AERHy1	12.105	0.000	0.003	2.774	0.199	0.118	8.593	0.000	0.020
F-statistic	348.365	0.000	0.000	23.159	0.000	0.000	57.660	0.000	0.000
F-White (Hetero.)	11.980	0.000	0.000	1.436	0.194	0.194	9.365	0.000	0.000
Adjusted R-squared	0.938	-	-	0.499	-	-	0.723	-	-
Other manufacturing (Equation (1b)									
Constant (thousands)	0.632	0.393	0.284	2.698	0.029	0.007	0.665	0.503	0.410
GDPHy2-GDPHy1	-0.005	0.952	0.966	0.204	0.108	0.057	0.151	0.001	0.006
JXHy1	-0.066	0.004	0.046	0.004	0.953	0.982	-0.170	0.000	0.012
gPXJPH	-8.564	0.489	0.174	-55.216	0.142	0.020	-81.368	0.068	0.018
AERHy1	2.281	0.000	0.069	-0.645	0.173	0.593	0.555	0.022	0.249
F-statistic	10.159	0.000	0.000	3.563	0.010	0.010	14.250	0.000	0.000
F-White (Hetero.)	11.574	0.000	0.000	17.321	0.000	0.000	13.909	0.000	0.000
Adjusted R-squared	0.285	-	-	0.103	-	-	0.379	-	-
Other manufacturing (Equation (1c)									
Constant (thousands)	0.973	0.243	0.218	1.600	0.120	0.015	0.337	0.734	0.635
GDPHy2-GDPHy1	0.127	0.214	0.069	-0.115	0.291	0.395	0.068	0.261	0.413
JXHy1	0.096	0.032	0.413	0.005	0.836	0.917	-0.093	0.000	0.000
gPXJPH	-9.911	0.473	0.190	-39.926	0.200	0.016	-84.621	0.056	0.020
AERHy2-AERHy1	-1.268	0.001	0.187	4.150	0.000	0.000	1.101	0.012	0.166
F-statistic	3.924	0.006	0.006	14.895	0.000	0.000	14.719	0.000	0.000
F-White (Hetero.)	2.994	0.005	0.005	13.109	0.000	0.000	11.090	0.000	0.000
Adjusted R-squared	0.113	-	-	0.384	-	-	0.387	-	-

Notes: Industries and terminology are as defined in the notes to Appendix Table A1.

Appendix Table A4: OLS Regressions Explaining Changes in Japanese Exports to a Country by Initial Employment (Equation (1b, 2b) or Changes in Employment (Equations (1c, 2c) of Japanese and U.S. Manufacturing Affiliates and Other Variables, 1989-1995, Small Sample (41-48 countries)

	Equations with Initial Employment (AERHy1 & UEHy1)						Equations with Changes in Employment (AERHy2-AERHy1 & UEHy2-UEHy1)					
	Equation (1b)			Equation (2b)			Equation (1c)			Equation (2c)		
Dependent variable, independent variables, equation statistics	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White	Coeffi-cients, etc.	Signifi-cance level, OLS	Signifi-cance level, White
Food, beverages, tobacco (48 countries)												
Constant (thousands)	-0.690	0.257	0.004	0.014	0.983	0.956	-0.238	0.715	0.370	-0.195	0.772	0.516
GDPHy2-GDPHy1	0.027	0.054	0.000	0.025	0.059	0.000	0.009	0.745	0.725	0.009	0.739	0.716
JXHy1	-0.218	0.000	0.090	-0.230	0.000	0.071	-0.192	0.001	0.137	-0.193	0.001	0.137
gPXJPH	-19.114	0.496	0.230	-15.258	0.566	0.296	-16.088	0.598	0.354	-16.800	0.588	0.355
AERHy1 or AERHy2-AERHy1	0.742	0.020	0.246	0.902	0.004	0.173	0.412	0.259	0.207	0.417	0.259	0.183
UEHy1 or UEHy2-UEHy1	-	-	-	-0.122	0.018	0.035	-	-	-	-0.049	0.752	0.581
F-statistic	5.883	0.001	0.001	6.489	0.000	0.000	4.330	0.005	0.005	3.410	0.011	0.011
F-White (Heteroscedasticity)	6.611	0.000	0.000	7.376	0.000	0.000	2.809	0.015	0.015	2.205	0.040	0.040
Adjusted R-squared	0.298	-	-	0.374	-	-	0.225	-	-	0.208	-	-
Chemicals (48 countries)												
Constant (thousands)	-1.274	0.717	0.539	1.129	0.769	0.593	-0.063	0.985	0.975	-0.051	0.988	0.980
GDPHy2-GDPHy1	0.108	0.208	0.097	0.114	0.179	0.061	-0.057	0.660	0.557	-0.084	0.541	0.391
JXHy1	0.253	0.000	0.104	0.245	0.000	0.116	0.300	0.000	0.020	0.298	0.000	0.022
gPXJPH	-197.206	0.245	0.173	-174.314	0.299	0.196	-204.413	0.227	0.087	-200.217	0.240	0.084
AERHy1 or AERHy2-AERHy1	2.590	0.103	0.267	2.799	0.077	0.213	2.954	0.100	0.078	3.107	0.089	0.061
UEHy1 or UEHy2-UEHy1	-	-	-	-0.279	0.151	0.007	-	-	-	0.537	0.490	0.281
F-statistic	17.514	0.000	0.000	14.824	0.000	0.000	17.550	0.000	0.000	13.965	0.000	0.000
F-White (Heteroscedasticity)	3.393	0.005	0.005	2.926	0.009	0.009	3.923	0.002	0.002	3.016	0.007	0.007
Adjusted R-squared	0.589	-	-	0.600	-	-	0.590	-	-	0.585	-	-
Metals (43 countries)												
Constant (thousands)	-0.372	0.913	0.833	0.894	0.805	0.615	2.761	0.391	0.241	2.308	0.483	0.330
GDPHy2-GDPHy1	-0.362	0.000	0.004	-0.356	0.000	0.005	-0.461	0.000	0.002	-0.464	0.000	0.002
JXHy1	0.084	0.049	0.271	0.074	0.088	0.325	0.067	0.105	0.319	0.065	0.120	0.347
gPXJPH	-159.584	0.332	0.162	-126.806	0.448	0.266	-153.173	0.331	0.238	-161.811	0.309	0.228
AERHy1 or AERHy2-AERHy1	1.194	0.045	0.217	1.468	0.026	0.133	2.900	0.007	0.142	3.171	0.006	0.126
UEHy1 or UEHy2-UEHy1	-	-	-	-0.417	0.301	0.138	-	-	-	-1.131	0.442	0.415
F-statistic	6.658	0.000	0.000	5.560	0.001	0.001	8.086	0.000	0.000	6.522	0.000	0.000
F-White (Heteroscedasticity)	3.869	0.002	0.002	3.058	0.008	0.008	3.373	0.006	0.006	2.771	0.014	0.014
Adjusted R-squared	0.350	-	-	0.352	-	-	0.403	-	-	0.397	-	-
Electric machinery (47 countries)												
Constant (thousands)	-27.127	0.177	0.059	-23.220	0.269	0.074	-27.181	0.162	0.030	-28.477	0.151	0.022
GDPHy2-GDPHy1	0.298	0.487	0.462	0.266	0.541	0.511	-0.708	0.154	0.167	-0.697	0.165	0.182
JXHy1	0.024	0.865	0.937	0.043	0.766	0.889	0.401	0.000	0.048	0.400	0.000	0.051
gPXJPH	-1363.213	0.124	0.056	-1281.443	0.154	0.068	-994.007	0.248	0.201	-1015.136	0.243	0.197
AERHy1 or AERHy2-AERHy1	5.011	0.000	0.029	5.148	0.000	0.027	3.659	0.000	0.001	3.323	0.004	0.016
UEHy1 or UEHy2-UEHy1	-	-	-	-0.673	0.506	0.544	-	-	-	0.605	0.634	0.541
F-statistic	10.479	0.000	0.000	8.362	0.000	0.000	11.975	0.000	0.000	9.446	0.000	0.000
F-White (Heteroscedasticity)	17.337	0.000	0.000	13.080	0.000	0.000	7.458	0.000	0.000	6.114	0.000	0.000
Adjusted R-squared	0.457	-	-	0.450	-	-	0.494	-	-	0.484	-	-
Transportation machinery (41 countries)												
Constant (thousands)	5.212	0.796	0.625	3.855	0.836	0.743	12.404	0.512	0.134	5.781	0.771	0.585
GDPHy2-GDPHy1	0.097	0.784	0.279	0.017	0.960	0.904	-0.441	0.337	0.112	-0.369	0.426	0.202
JXHy1	-0.132	0.297	0.540	0.050	0.714	0.854	-0.145	0.222	0.437	-0.044	0.772	0.873
gPXJPH	-926.385	0.235	0.102	-606.791	0.404	0.276	-677.092	0.370	0.172	-697.196	0.355	0.171
AERHy1 or AERHy2-AERHy1	2.310	0.305	0.387	3.201	0.133	0.172	4.312	0.051	0.034	3.683	0.105	0.127
UEHy1 or UEHy2-UEHy1	-	-	-	-1.491	0.012	0.070	-	-	-	2.265	0.298	0.517
F-statistic	0.888	0.481	0.481	2.229	0.074	0.074	1.688	0.175	0.175	1.579	0.192	0.192
F-White (Heteroscedasticity)	1.761	0.124	0.124	1.720	0.124	0.124	1.525	0.189	0.189	1.492	0.192	0.192
Adjusted R-squared	-0.012	-	-	0.136	-	-	0.066	-	-	0.069	-	-

Notes: Industries and terminology are as defined in the notes to Appendix Table A1.