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Exploring the Impact of Trade and Investment on Income Inequality: A Cross-National Sectoral Analysis of the Developed Market Economy Countries

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EXPLORING THE IMPACT OF TRADE AND INVESTMENT ON INCOME INEQUALITY: A CROSS-NATIONAL SECTORAL ANALYSIS OF THE DEVELOPED MARKET ECONOMY COUNTRIES

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ABSTRACT

EXPLORING THE IMPACT OF TRADE AND INVESTMENT ON INCOME INEQUALITY: A CROSS-NATIONAL SECTORAL ANALYSIS OF THE DEVELOPED MARKET ECONOMY COUNTRIES

The central aim of this paper is to explore the relationship between international integration and domestic inequality in the developed market economy countries in the mid-1980s and early 1990s The analysis examines two major modes of integration, trade and direct foreign investment, disaggregating each by economic sector and distinguishing between imports and exports, and inbound and outbound investment flows and stocks In measuring income inequality, extensive use is made of the detailed micro-data sets that have recently become available through the Luxembourg Income Study (LIS), which permit much more detailed and comparable estimates of income inequality than has heretofore been the case In particular, LIS data can be aggregated at the level of economic sector, allowing income distribution at the national level to be partitioned into between-sector and within-sector components, and permit the comparison of pre- and post-government income and the difference between them The study finds few significant relationships between either trade or investment and any of our indicators of sectoral income distribution The overall conclusion is that economic globalization is not a critically important factor in explaining recent trends in income inequality in the Western world

During the last decade, the substantial growth in economic interdependence that has characterized the developed countries since the early 1960s has continued unabated. This growth has been evident in the area of international trade, as developed nations' exports and imports have increased at average annual rates of 4.9% and 5.8% between 1980 and 1992, considerably faster than the 2.9% average annual growth rate of their economies as a whole (World Bank, 1994: tables 2 and 13). The increase in direct foreign investment into and out of the developed countries has been even more dramatic, as the share of investment flows in GDP in the nine largest industrial countries has approximately doubled over the decade of the 1980s (Jungnickel, 1993: 31).

A second trend has been almost as widely noted. This is the increase in income inequality that has occurred in much of the developed world The pattern is evident in a recent examination of trends in inequality over the 1980s. Of 16 industrial countries surveyed by Smeeding and Gottschalk (1995: 16), pre-tax and -transfer income inequality increased in all but three In a number of countries these increases have been offset by public social benefits, although this has frequently placed social programs in a precarious budgetary situation Even after adjusting for public sector activities, however, income inequality increased in 9 of the 16 countries surveyed.

The central aim of this paper is to explore the relationship between international integration and domestic inequality in the developed market economy countries The analysis will examine the two major modes of international integration, trade and direct foreign investment, disaggregating each by economic sector. In measuring income inequality, extensive use will be made of micro-data on income distribution that have recently become available through the Luxembourg Income Study (LIS), which are much more detailed and

definitionally consistent than the best available data of only a few years ago In particular, the LIS permits, for the first time, the measurement of income distribution within and between economic sectors for more than one point in time for a relatively wide range of countries.[1]

THE LITERATURE

Is there a systematic relationship between international economic integration and domestic inequality in the developed countries? A number of commentators have argued that this is manifestly the case (see, e.g., Wood, 1994; Greider, 1997; Kapstein, 1996; and Hurrell and Woods, 1995) These observers have claimed that the rapidly growing movement of goods, services and capital throughout the world has forced workers into a ruthless global competition, jeopardizing wages, benefits and job security that had been extracted from employers over many decades. While globalization has increased profits of large corporations, critics continue, it has eroded their stake in their own regional and national economies, undermining the security of workers whose geographical mobility is limited and whose skills are not easily transferable (Goldsmith, 1996) In particular, it is claimed that the rapid expansion of trade and investment has undermined the economic position of less skilled manufacturing workers, with implications not only for their individual well-being but also for their ability to organize politically to pursue their interests in the national political arena. Reich (1992), for example, depicts a workplace increasingly polarized between a small group of "symbolic analysts" whose standing is enhanced by globalization, and a larger number of "ordinary production workers" who suffer from it.

More formally, critics of economic globalization often cite the Stolper-Samuelson theorem and the closely related Factor Price Equalization hypothesis in arguing that international ties have an inegalitarian effect.[2] The essential argument of Stolper and Samuelson (1941) was that groups owning relatively abundant factors of production will benefit from free trade while those holding scarce factors will suffer from it Since in the developed countries unskilled labor is scarce and skilled labor abundant relative to the rest of the world, the implication is that a growing premium will be placed on workplace skill (Rogowski, 1989: 177-78) Consistent with Stolper-Samuelson, the Factor Price Equalization theorem posits that the relative prices of factors of production, the most relevant of which for these purposes is labor, will tend to equalize globally, a process which is seen as undermining the position of low-skilled workers in the developed world The increasing vulnerability of low-skilled workers has, it is argued, been manifested both in growing income inequality within the workforce and in higher levels of unemployment and underemployment among prospective workers, particularly new entrants into the labor force.

Supporters of global liberalism have been skeptical of critics' claim that economic globalization has been a major cause of growing inequality in the developed world Economic liberals argue that the Stolper-Samuelson and Factor Price Equalization approaches are unrealistic when applied to real-world settings Among the reasons for this are their failure to account for gains from economies of scale, diversification and technological innovation resulting from global integration, which serve as powerful engines of productivity growth--to the ultimate benefit of all income groups (Bhagwati and Dehejia, 1994: 42-46; Baily et al., 1993: 174-197) Moreover, critics continue, the lower prices encouraged by

global competition have been of particular benefit to low-income groups, who consume a larger share of their income than high-income groups Finally, global integration is said to contribute to the dissolution of entrenched domestic distributive coalitions whose "rent-seeking" activities retard economic growth and solidify social stratification (Krueger, 1974).

From the liberal perspective, any increases in income inequality that have occurred in the developed world during the last decade have been the product of domestic rather than international factors. Among the most commonly cited are demographic changes, particularly the simultaneous growth of single-parent and two-income households (Krugman, 1994: 23-30); institutional factors, including central bank policies, tax laws or minimum wage guarantees (Danziger and Gottschalk, 1995: 128-130); partisan political effects, such as the ascendance of conservative political coalitions and the decline in the size and power of labor unions (Freeman, 1993; Hicks and Swank, 1992); and technological advances that enhance the standing of skilled workers relative to that of less skilled workers (Gottschalk and Joyce, 1995)

Finally, a third perspective, sometimes called the democratic corporatist approach, begins with the Stolper-Samuelson view that the domestic impact of trade will occur along class-like lines. It goes on, however, to argue that any inegalitarian effects of globalization can be modified if public social welfare mechanisms are constructed that provide a vehicle for trade winners to redistribute some of their gains to trade losers, in an effort to dampen their opposition to further liberalization. The possibility that this might occur was, in fact, contemplated by Stolper and Samuelson (1941: 73), who suggested that "it is always possible to bribe [a] suffering factor by subsidy or other redistributive devices so as to leave all

factors better off as a result of trade As Rogowski (1989: 173) goes on to say, compensation of this sort can in turn discourage opposition to liberalization: "One way of blunting protectionism [is] the elaborate social insurance systems and the extensive social welfare expenditures of the most trade-dependent states By making compensation automatic and universal, they reduce fears of adjustment [and] remove issues of compensation from the arena of partisan and pressure-group politics

Consistent with the sharp division in the theoretical literature on the distributive impact of international integration, empirical analyses have showed mixed results. On the one hand, several studies by economists have found that international competition has indeed resulted in greater inequality in the incomes of wage earners in the developed world Murphy and Welch (1991: 43), for example, find that "the evolving pattern of international trade is perhaps a primary cause of recent wage changes [in the U.S.]." Similarly, Gottschalk and Joyce (1995) conclude that international trade was an important, if not the only, cause of the increase in earnings inequality in seven industrialized countries over the last decade, while Wood (1994: 1) argues that global integration "has hurt unskilled workers in the North, reducing their wages and pushing them out of jobs

On the other hand, a larger number of studies by economists have found no systematic relationship between global integration and income inequality Thus, Lawrence and Slaughter (1993: 208; see also Lawrence, 1996: 14) conclude, on the basis of a detailed analysis of U.S. wages, that "trade has not been the major contributor to the performance of U.S. average and relative wages in the 1980s , cast[ing] doubt on those who invoke a Stolper-Samuelson process as the source of poor average wage performance." Similarly,

Bhagwati and Dehejia (1994: 71) argue that not only are the assumptions of the Factor Price Equalization theorem implausible but "the *empirical* evidence to date fails to put the burden of the explanation for the observed decline in real wages of the unskilled on freer trade . while Davis et al. (1996: 49) conclude from their extensive empirical analysis of U.S. industry that "on balance, the evidence is highly unfavorable to the view that international trade exposure systematically reduces job security."[3]

Finally, there is a large body of empirical literature, mostly by political scientists, lending support to the democratic corporatist perspective Cameron (1978) and Katzenstein (1985) have, for example, found that the most extensive welfare programs in the developed world tend to exist in countries that are highly dependent on trade. Since extensive social protection is in turn associated with a more egalitarian distribution of income (Gottschalk, 1993; Atkinson et al., 1995), it is argued that any inegalitarian impact of globalization can, and often will, be systematically ameliorated by state intervention It has, indeed, been argued by Ruggie (1982) that the entire liberal regime of the post-World War II period was "embedded" in states' commitment to minimize any domestic adjustment costs arising from international integration.[4]

Whatever the relative merits of these studies, they can take us only part of the way in assessing the international sources of income inequality in the developed world. There are several reasons for this. First, the vast majority of the work on the topic, particularly that by economists, has examined a single country, the United States. The U.S. is, however somewhat atypical in both its domestic and its international political economy, and much can be learned by broadening the focus of analysis to include a wider range of developed

countries The analysis reported here will examine the developed market economy countries for which data on income distribution by sector are now available through the LIS

Second, theory and research alike on the distributive consequences of international integration have dealt primarily with trade. Surprisingly little attention has been devoted to direct foreign investment, despite the fact that investment flows have been growing faster than trade and in many cases constitute an alternative to it, leaving the distributional consequences of foreign investment, in the words of Caves (1996: 115), "a strictly unsettled issue As has been indicated, the analysis reported here will explore the impact of investment in some detail, distinguishing between inbound and outbound investment, disaggregating by sector, and measuring both investment flows and investment stocks.

Third, much of the literature in this area (particularly work in the Stolper-Samuelson tradition), explores the distributive impact of globalization not because of an interest in income distribution per se but rather because of its implications for a nation's trade policy (see, e.g., Rogowski, 1989; Midford, 1993; Goodman et al., 1996; and Keohane and Milner, 1996) This emphasis colors the way in which internal social groups are defined, which is often designed to capture not so much individuals' level of well-being as the resources they can bring to bear in the debate between free traders and protectionists.[5] In addressing these issues, this study will focus specifically on household income shares between and within economic sectors, offering a more precise analysis of income inequality than is permitted in the classical Stolper-Samuelson formulation

Fourth, most analyses of the distributive impact of globalization in the United States have examined pre-tax and -transfer earnings, while most broader cross-national studies have

focused on post-government income. Because of data limitations, few studies have directly compared pre- and post-government income shares in an effort to explore more directly the democratic corporatist hypothesis. With the availability of comparable micro-data on public and private income sources from the LIS, however, it is now possible to examine whether internationalized sectors receive a larger share of the income redistributed by the state and whether, as a result, any relationship between trade or investment and market income disappears when the effect of taxes and public transfers is taken into account.

Fifth, because comparable estimates of changes in income inequality over time have heretofore been available for only a tiny handful of countries, most previous broad cross-national studies of the distributive consequences of economic integration have of necessity been cross-sectional. Moreover, most have utilized data that were at least a decade old, thus did not cover the arguably critical decade of the 1980s, which has been characterized as the time of a "Great U-Turn" in which there was a reversal of the gradual equalization in incomes of the previous fifty years (Wilterdink, 1995: 5; Nielsen and Alderson, 1997). study will offer both cross-sectional analyses of the mid-1980s and the early 1990s and an analysis of change over that period.

Finally, and most importantly, most of the relatively few broad cross-national analyses of the international sources of income inequality have operated at the level of nations as a whole. Even detailed single-country studies have often offered only a breakdown between, say, workers in the manufacturing and service sectors or workers with and without college degrees (Bound and Johnson, 1992; Lawrence and Slaughter, 1993). This study will offer a more detailed analysis than has typically been the case by

disaggregating national-level figures for trade and investment to the level of economic sectors and relating them to sectoral income data that have recently become available through the LIS

MEASUREMENT

Trade and Investment. As has been indicated, the basic aim of the empirical analysis offered in this study is to explore the relationship between international economic integration and the size distribution of household income in the developed market economy countries. The first set of independent variables measures the relative importance of merchandise trade in various sectors of a country's economy

In most previous studies, trade penetration has been measured as the ratio of total trade to gross domestic product. There is, however, reason to believe that the impact of imports and exports on domestic distribution will differ

Critics of trade liberalism are especially wary of extensive foreign access to local markets, since imports represent direct competition to the products of domestic workers Supporters of trade liberalism, of course, respond that the competition represented by imports encourages lower domestic consumer prices, affording the greatest benefit to low-income groups

Since much of the partisan debate over trade has focused on imports, the expected effect of exports on internal distribution is not as clear. Even the strongest critics of unrestrained free trade tend to concede, however, that--at least to the extent that they produce local jobs--their impact on distribution is more benign than that of imports

Finally, it is useful to examine a third variable, the ratio of imports to exports, since it is possible that any inegalitarian effects of trade will be the product not of the level of imports or exports per se but rather of a trade ratio in which the former exceed the latter. It may, for example, be the case that imports have an inegalitarian effect only to the extent that their effect on income distribution is not compensated by the benign impact of exports.

In measuring trade (and, as will be seen, investment), economic sectors are defined according to the International Standard Industrial Classification (ISIC), Revision 2.[6] A complete list of sectors is provided in *Appendix 1*. *Imports* and *exports* are calculated as the value of a sector's imports and exports as a proportion of that sector's share of gross domestic product, while the *trade ratio* measures the ratio of imports to exports. The source of data on sectoral trade is OECD (1996b) and the source of data on sectoral GDP is OECD (1995b).

The second major set of independent variables measures direct foreign investment. As was the case for trade, the impact of investment flows into and out of a country is arguably quite different (Caves, 1996: 110-132). Outbound investment, in which local firms supply foreign markets through direct investment rather than exports, is said by critics to constitute an especially pernicious vehicle whereby domestic workers are displaced. Inbound investment, on the other hand, is commonly credited with creating local employment, and is for this reason often avidly sought by host countries. Even here, though, skeptics are suspicious that any benefits will be undermined if foreign firms reserve top decision-making positions to home-country nationals, favor home-country suppliers, discourage unionization or maintain fewer ties to local communities than domestic firms.

Although there are a few exceptions, most reporting countries define direct foreign investment as international transactions which involve control of at least ten percent of an enterprise by residents of another country (IMF, 1993: 340-41).[7] As was the case for trade, investment figures are disaggregated according to the ISIC scheme. In measuring direct foreign investment penetration, we have measured both *inbound* and *outbound flows* in a given year, and accumulated *inbound stocks* controlled by foreign investors in a domestic economy and *outbound stocks* controlled by domestic investors in foreign countries (see Jungnickel, 1993, for detailed definitions). Data on investment flows and stocks are from OECD (1995a). As was the case for trade, direct investment figures have been expressed as a proportion of sectoral GDP.

Income Distribution. During the last several years, as has been indicated, the cross-national measurement of income distribution has improved dramatically through the efforts of the Luxembourg Income Study. Among other advantages, LIS data allow consistent adjustments for household size. The need for such adjustments arises from the fact that the relevant unit in income distribution is the household, in which (except for single-person households) several persons pool their income. Since households differ in size, it is necessary to adjust gross household income to allow for comparison of "equivalent adults," recognizing that there are economies of scale in supporting progressively larger households. In practice, a common adjustment is to divide total household income by the square root of household size (Atkinson et al., 1995). This is the adjustment that is used in this analysis.

For many purposes it is useful to examine the distribution of income from all sources accruing to all members of the population. For this study, however, we are particularly

interested in the income of what Atkinson et al. (1995: 81) call "prime age workers," household heads with non-zero income who are between the ages of 25 and 54. These are the members of the population most likely to be dependent on earnings from the market and thus arguably most directly affected by economic globalization. Moreover, the income of this group is "less likely to be contaminated by changes in retirement patterns, school leaving and other demographic and social phenomena which affect the labour market attachment of other groups and hence earnings and market income distributions" (Ibid.)

In this study we will focus primarily on what the LIS calls "*earnings*," that is, income from wages and salaries or self-employment. *Earnings*, which constitute a large majority of the income of prime-aged workers in the developed world, are clearly the type of income that both critics and supporters of global liberalism have in mind when they consider the distributive effects of international integration. We have intentionally excluded the following other sources of income measured by the LIS: interest; rents and property income received on a regular basis; occupational pensions from previous employers; regular inter-household cash transfers; and court-ordered payments such as alimony and child support. In addition, *earnings* exclude income from public benefits and do not adjust for taxes.

As has been indicated, the democratic corporatist approach suggests that trade- and investment-related inequality can be overcome if those who gain from trade systematically compensate those who suffer from it through the use of public taxes and transfers. In an effort to explore this possibility, our empirical analysis will compare all findings relating to *earnings* with the corresponding findings for both *post-government income* and what we term *fiscal impact*, which is measured as the difference between our pre- and post-government

income measures. *Post-government income* is calculated by adding to *earnings* income from sick pay, disability pay, social retirement benefits, child or family allowances, unemployment compensation, maternity pay, military/veterans'/war benefits, benefits from other social insurance programs, means-tested cash benefits, and means-tested non-cash benefits; and subtracting from *earnings* mandatory employee social insurance contributions and income taxes.

Finally, as has been indicated, a major advantage of the LIS data set is that it offers information on income earners' economic sector.[9] In most cases, the national income surveys from which the LIS draws employ the same ISIC industry classification scheme we have used in our measures of trade and investment.

In disaggregating by sector, income inequality at the national level can be decomposed into two components. One is the distribution of income between economic sectors, which we measure by computing the ratio of the median income of a given sector to the median income of a country as a whole. Inter-sectoral distribution is what is usually referred to when observers argue that globalization has increased income inequality by undermining whole sectors, most often traditional heavy industries, forcing workers into less stable and well-payed employment.[10]

A second component of national-level inequality is the distribution of income within sectors. In summarizing income distribution, we will follow the usual practice of researchers using the LIS by employing "$P_{90}P_{10}$ ratios," which measure the ratio of the equivalent adult income of a household at the 90th percentile of the income scale to the equivalent adult income of a household at the 10th percentile.[11]

Growth in intra-sectoral inequality is interpreted by many economists as the product of technological advances that increase the return to workplace skill, which are often not considered a direct consequence of international factors. Kapstein (1996) points out, however, that internationalization and technological advance are in practice closely intertwined and it is difficult to sort out their independent effects. In his view, internationalization not only affects vulnerable sectors relative to less vulnerable ones but also increases the disparity of income among workers within sectors.

Much discussion has been devoted to the theoretical question of whether an increase in inequality within sectors, as opposed to between sectors, means that technological change rather than international competition is at work (see, e.g., Gottschalk and Joyce, 1995, and Blank, 1994). For our purposes, however, the sources of between- and within-sector inequality are best considered an empirical issue. A major goal of this paper is to explore whether economic globalization is associated with both, with one or the other, or with neither.

Although our *earnings* variable includes the income of a large majority of all households between the ages of 25 and 54 in the countries examined, it does not include those headed by the chronically unemployed. In an effort to explore the extent to which economic globalization has resulted in unemployment rather than (or in addition to) wage inequality, we have constructed a final variable, *unemployment*, which measures the proportion of all prime aged household heads in a given sector who identify themselves as "unemployed" or "seeking employment."[12]

Cross-Sectional and Panel Analyses. Until recently, as has been indicated, broad cross-national analyses of income inequality have of necessity been cross-sectional Even in the few cases in which estimates were available for more than one point in time, they were typically based on surveys that differed significantly in income coverage, household size adjustments, and the treatment of taxes and transfers. With the development of the LIS data set, however, it is possible to begin to explore changes over time in income inequality at the level of economic sectors for a reasonably wide range of countries

LIS data are available for four "Waves": Wave I, covering the late 1970s and early 1980s; Wave II, covering the mid-1980s; Wave III, covering the late 1980s and early 1990s; and Wave IV, covering the mid-1990s. Unfortunately, Wave I data disaggregated at the sectoral level are available for only a handful of countries, while Wave IV data are still in the process of being assembled and are as yet available for only a few countries. Because of these data constraints, we have focused on LIS Waves II and III, which cover the mid-1980s and the late 1980s and early 1990s (See *Appendix 2*.

In constructing our study, we have conducted three basic sets of quantitative analyses First, we have completed cross-sectional analyses in which trade and investment penetration in 1985 and 1990 are related to Wave II and Wave III inter- and intra-sectoral income inequality.[13] Next, we have conducted an analysis in which the average annual change in sectoral trade and investment between 1985 and 1990 is related to the average annual change in inter- and intra-sectoral income distribution between the Wave II and Wave III LIS surveys Finally, we have explored whether cross-sectoral variance in Wave III income

inequality, the most recent for which we have data, is related to the average annual change in trade and investment over the preceding half decade.

FINDINGS

In describing our findings, we begin with an examination of the sources of variance between and within sectors in *earnings*. The two left columns of *Table 1* offer the results of a cross-sectional analysis centering on 1985.[14] Across all indicators of economic integration and all measures of income inequality, a general pattern emerges: increased economic integration is not systematically associated with greater income inequality.[15] In fact, there is some evidence suggesting just the opposite--that integration is, in a few instances, actually associated with higher sectoral incomes or less intra-sectoral inequality.

More specifically, the relative prominence of *imports* in a sector is not significantly related either to that sector's median *earnings* relative to that of the country as a whole or to the $P_{90}P_{10}$ ratio within that sector, suggesting that import penetration was not a major factor in explaining variance in income inequality across economic sectors in the mid-1980s. Nor, for that matter, are *exports* significantly related to either of our measures of income distribution, suggesting that if imports do not appear to have the deleterious effect that is sometimes attributed to them, neither do exports have the expected benefits. Finally, the *trade ratio*, as measured by the ratio of imports to exports, is not significantly correlated in either direction with either measure of income distribution.

What of direct foreign investment? As can be seen in *Table 1*, strong relationships linking economic globalization and income inequality are again scarce. There does not

appear to be a systematic process whereby foreign investment penetration drives down earnings in a sector relative to other sectors or increases earnings inequality within that sector: neither *inbound flows* nor *inbound stocks* (accumulated domestic investment stocks held by foreigners) is significantly related to either measure of income distribution. For outbound investment, a single significant relationship, between *outbound investment flows* and the intra-sectoral $P_{90}P_{10}$ ratio, is in evidence. As it happens, however, sectors that generate extensive outbound direct foreign investment actually have $P_{90}P_{10}$ ratios that are on average *lower* (i.e., more egalitarian) than those of sectors generating less foreign investment.

The results for Wave III LIS data, which center on the early 1990s, mirror those for Wave II. As can be seen in the first two columns of *Table 2*, there are again relatively few statistically significant correlations, and the few that do appear are in the opposite direction from that predicted by critics of economic globalization. Again, trade penetration is, with one exception, not significantly correlated in either direction with *earnings* inequality. The single exception is a finding that sectors which produce substantial exports tend to offer their workers earnings that are, on average, above rather than below the national median.

With respect to investment, both *outbound investment flows* and *outbound investment stocks* are significantly correlated--in a positive direction--with the ratio of sectoral/national median earnings. Sectors that generate substantial foreign investment appear, on average, to provide their own workers higher, not lower, average earnings than sectors that are the source of less investment.

To this point, our analysis has been cross-sectional, covering first the mid-1980s and then the late 1980s and early 1990s. We now turn to an analysis in which the average

annual change in trade and investment between 1985 and 1990 is related to the average annual change in earnings inequality between LIS Waves II and III. The advantage of a focus on temporal trends is that it allows us to control for numerous idiosyncratic national- or sectoral-level factors that are not easily included in an analysis at a single point in time. The corresponding disadvantage is that examination of a short period necessarily reflects only changes between the beginning and the end of that period, factoring out what may be larger and more important cross-sectoral variance at either point in time.

As can be seen in the first two columns of *Table 3*, change-to-change analysis reveals an almost complete lack of association between economic integration and inequality. Not a single regression coefficient is statistically significant at the .05 level. Clearly, based on these results, there is no straightforward relationship between trends in earnings inequality between or within economic sectors and trends in the trade and investment penetration experienced by those sectors.

In our next analysis, reported in *Table 4*, we ask whether the sectors that experienced the most growth in international trade and investment penetration in the second half of the 1980s demonstrated the highest levels of inequality in the early 1990s. As might be expected from the foregoing findings, the answer is again negative: there appears to be little systematic relationship in either direction between change in trade and investment penetration over the last half of the 1980s and earnings inequality between and within economic sectors at the end of the period. Finally, what of the democratic corporatist hypothesis? From this perspective, we would expect there to be a positive relationship between economic globalization and pre-government inequality that would weaken (or perhaps reverse) when

pre-tax and -transfer *earnings* are adjusted to reflect the impact of the public sector. Since the predicted inegalitarian impact of trade and investment on pre-government earnings was itself not in evidence, it is not entirely clear how to interpret relationships for post-government income. However that may be, the relationship between trade and investment and the distribution of *post-government income* is similar to that for pre-government *earnings*. The results are reported in the middle two columns of *Tables 1-4*.

A more precise focus on taxes and transfers is achieved by examining the relationship between our trade and investment variables and our *fiscal impact* variable, which measures the difference between pre- and post-government income. For example, if the median pre-government earnings of a sector rose from 0.80 to 1.20 of the national median after taxes and transfers were accounted for, the inter-sectoral *fiscal impact* would be -0.40.[16] Similarly, if the $P_{90}P_{10}$ ratio of sectoral earnings fell from 3.50 to 2.50 after taxes and transfers were taken into account, the intra-sectoral *fiscal impact* would be measured as 1.00. As can be seen in the two right columns of *Tables 1-4*, only three of 56 possible relationships linking our trade and investment variables to our fiscal impact variables are statistically significant. In each case, higher outbound sectoral investment is associated with inter-sectoral redistribution away from a given sector, which is no doubt due to the fact that these sectors have median earnings that are, on average, higher than the national median.

To summarize, we find little systematic evidence that *imports*, which are considered the most damaging form of economic globalization by critics of liberalism, have a pernicious effect on inequality. Especially notable is the fact that sectors which experienced growing imports in the latter part of the 1980s do not appear to have become more stratified, nor do

they appear to have suffered relative to other sectors Similarly, *outbound investment flows*, considered by many critics of liberalization to be the primary vehicle whereby sectors are undermined, are actually positively correlated with intra-sectoral income equality as well as a sector's relative earnings.

It can be argued that, rather than causing lower-income workers' relative incomes to erode, global integration may be forcing them out of the workforce altogether. To explore this possibility, a final analysis examines the relationship between our investment and trade indicators and sectoral levels of *unemployment* for Wave II. (Unfortunately, data on unemployment are missing for several whole countries for Wave III, leaving too few sectors for meaningful statistical analysis.) The results are presented in *Table 5*. As can be seen, international economic integration does not appear to be associated with higher (or lower) levels of unemployment. Not a single correlation between investment and any of our indicators of economic globalization is statistically significant in either direction.[17]

DISCUSSION

While a few significant relationships (without exception in the opposite direction from that predicted by critics of globalization) were reported in the above analyses, the strong overall impression is that international integration is not a centrally important determinant of variance in inter- and intra-sectoral income distribution across the developed market economy countries

What is one to make of this? Rightly or wrongly, non-findings of this sort tend to bear a special burden of explanation. One possibility is that the paucity of significant

relationships is the result of random "noise" in the data Certainly, this was a valid objection to the very rough data that were employed by those conducting cross-national analyses in this area in past years (although significant findings were nonetheless often reported). The large micro-data sets which have recently become available through the efforts of the LIS have, however, been assembled with considerable attention to achieving comparability across surveys Similarly, the sectoral trade and investment data are from standard sources and are relatively consistent definitionally As a result, the data examined here are, if not perfect, at least as reliable as many of the other cross-national data sets whose general validity social scientists have come to take for granted Moreover, it is worth noting that the findings reported here are consistent with most, if not all, of the previous empirical work examining individual countries

It is important that the lack of systematic relationships between trade or investment and income inequality not be over-interpreted These findings do not, for example, mean that income inequality in the developed world is *never* the product of international forces Certainly there are groups, such as electronics assembly or textile workers, whose livelihoods are seriously threatened by international competition (Long, 1994) On the other hand, there are also workers with low or declining incomes in sectors such as retail sales, secretarial services or general construction, which have generally not been subject to significant international competition Similarly, there are highly internationalized sectors, such as computer software or aeronautics, whose workers have done well The same has been true, however, of some occupations that are not threatened by international trade or investment such as those of military officer, medical professional or college administrator

Nor do these findings suggest that there is no need for governments to address the adjustment costs that are undeniably borne by some workers as a result of economic globalization. The willingness of governments to bear these costs has waned in recent years throughout the industrialized world, but the long-term consequences of neglecting even a small part of the workforce can be profound. In this, we agree with Kapstein (1996), who argues that, even if economic globalization is beneficial for Western nations as a whole, it is important that governments take seriously the problems of those who are inevitably left behind. Unfortunately, the ability--let alone the will--of governments throughout the developed world to protect the incomes of vulnerable workers has become increasingly limited as tax systems have grown less progressive and an increasing share of social benefits has been directed toward households headed by persons, especially the elderly, who are no longer part of the labor force.

What does seem clear is that global trade and investment are not the critically important factor in explaining recent trends in the distribution of income in the Western world that is often depicted. As Krugman (1997 A17) has recently argued, "while global economic integration is increasing, its growth has been far outpaced by that of 'global economy' rhetoric." Krugman goes on to suggest that "many observers seem determined to blame global markets for a host of economic and social ills in their countries, even when the facts point unmistakably to mainly domestic--mostly political--causes" (Ibid.).

Certainly, there is a vast literature identifying domestic sources of trends in income distribution (see Nielsen and Alderson, 1997; Gottschalk, 1993; McFate et al., 1995; and Danziger and Gottschalk, 1993, 1995, for useful surveys). Political scientists, for their part,

have been particularly interested in the effect of partisan politics on social welfare spending The consensus of the large literature on this topic is that socialist and Christian Democratic parties have tended to spend more on social transfer programs than free-market conservative parties (Hicks and Swank, 1992; van Arnhem and Schotsman, 1982), although the largest transfers tend to represent redistribution among generations rather than income groups per se Others have cited the importance of electoral turnout, which varies considerably among the developed democracies Interestingly, a supplementary national-level analysis of the countries examined here as well as a few others for which sectoral breakdowns were not available, reveals that the proportion of the eligible electorate that voted in the national election nearest to 1990 is significantly negatively correlated with the $P_{90}P_{10}$ ratio of the disposable income of all households.[18]

Economists have tended to focus on technological change in explaining distributive trends, arguing that any adjustment costs associated with the essentially domestic process of shifting from an industrial to an information-based society are a painful but necessary part of the growth in productivity that underlies long-term improvements in economic well-being (see. e.g., Baily et al., 1993) Labor economists, for their part, have focused on trends in labor-management relations, noting the growing income divergence within many firms between top managers and ordinary workers (Freeman and Katz, 1995) and the sharp decline in the proportion of the labor force belonging to labor unions in the industrialized world (Freeman, 1993)

Finally, many sociologists have cited changes in family structure, noting the simultaneous growth in the number of two-income, two-parent households and single-income,

single-parent households in many countries (Kamerman, 1995). Others have focused on growing divergence of income among age cohorts, with the most serious declines in real earnings concentrated among young workers (Osterman, 1995) Finally, a number of sociologists have examined the impact of immigration, which has grown in importance in nearly all countries of the developed world (Portes and Zhou, 1995), arguably depressing low-end wages.[19]

Many of these domestic variables co-vary, making it very difficult to sort out the effect of individual factors. It is, in fact, not unlikely that international factors play some role in the mix of variables accounting for cross-sectional and longitudinal variance in inequality among economic sectors, probably in close conjunction with domestic variables What does seem evident, though, is that international trade and investment are not in and of themselves the all-important factors in determining domestic inequality that are portrayed in the more dogmatic literature on the topic

ENDNOTES

[1]The Luxembourg Income Study is a cooperative research project among national statistical agencies of more than 20 countries. It operates under the sponsorship of the Government of Luxembourg and the Center for Population, Poverty and Policy/International Networks for Studies in Technology, Environment, Alternatives, Development in that country, with additional support from cooperating national statistical agencies and private foundations For a detailed description of the LIS data set see Atkinson et al. (1995)

[2]In the classic Stolper-Samuelson formulation, the factors of production are the quasi-class categories land, labor and capital. In an alternative approach, the Ricardo Viner model, the key domestic formations that gain or lose from trade are industry groups. As will be seen, our analysis will examine distribution both within economic sectors, in the Stolper Samuelson tradition, and between them, in the Ricardo Viner tradition.

[3]Other sources have been less definitive, concluding that international factors have played some role in rising wage inequality, but only as one of several explanations. See, for example, Richardson (1995: 51).

[4]Ruggie (1995; 1996: 107-156) has recently expressed fears that this "embedded liberalism" has begun to unravel during the last decade.

[5]A particularly ambitious effort to extend Stolper-Samuelson is that of Edward Leamer (1984; see also Midford, 1993), who employs no fewer than eleven factors, including three types of labor (professional, semi-skilled and unskilled), four types of land (tropical, temperate, dry and forested) and three natural resource industries (coal, minerals and oil). Even here, though, there is little emphasis on income groups per se.

[6]Although countries generally adhere closely to the ISIC scheme, there are some national differences in industrial classifications. See OECD (1996b: 3 and 1995a: 316) for detailed discussions.

[7]The exceptions include Australia, which employed a 25% threshold in 1985; and Germany and the United Kingdom, which employed 20% thresholds in 1985 and 1990. See OECD (1995a: 288-345) for details.

[8]For purposes of comparison, we have also conducted all analyses for what the LIS

calls "disposable income," which includes the sources of income excluded from our *earnings* variable and adjusts for the effect of income taxes and mandatory social insurance contributions The results were similar to those for our *post-government income* variable

[9]LIS micro-data sets are very large, generally numbering in the tens of thousands of respondents. As a result, the number of cases remaining when the complete data sets are disaggregated by sector remains large enough that random sampling error is unlikely to pose a major problem. The number of survey respondents in the average sector is several thousand, and only a handful of the smallest sectors include fewer than 100 respondents.

[10]Inter-sectoral inequality is consistent with the Ricardo Viner model of the domestic consequences of international trade (Mussa, 1974; Frieden and Rogowski, 1996) in that the key domestic formations that gain or lose from trade are not quasi-class groups, as in Stolper Samuelson, but rather industry groups.

[11]Percentile ratios are especially useful in summarizing LIS data because they are not affected by the fact that, for reasons of confidentiality, many national income surveys round off the very highest incomes at some arbitrary maximum value

[12]In measuring unemployment, we have, for obvious reasons, included LIS survey respondents who report zero *earnings*.

[13]In practice, this means that income distribution figures are sometimes a year or two removed from the date of figures for trade and investment, and that average annual change figures for income distribution are sometimes calculated over a slightly longer or shorter period than the 5-year period over which changes in trade and investment are calculated While this is obviously not optimal, the alternative of measuring trade and investment for the

precise date of each LIS survey seemed to us less desirable since it would have meant that these figures, which tend to be more volatile than income distribution figures, would have been measured at different points on the business cycle.

[14]The unit of analysis in our study is the economic sector. A possible objection to this is that it neglects national-level factors that may operate separately from those at the sectoral level. We have several responses to this At the broadest level, we would argue that it is more appropriate to focus on sectors, which vary considerably within nations on both our independent and dependent variables, than on whole nations, which represent an averaging of what may be diverse groups of sectors. (At the least, any national-level theory that did not also operate at the level of economic sectors would not be very convincing.) More practically, we have included country-level dummy variables in all of the equations reported here to determine whether they had an important effect on sectoral-level relationships Although there were a few minor differences from the results reported here, it continued to be the case that not a single statistically significant relationship was in evidence linking any of our trade or investment variables to any of our income variables in the direction predicted by critics of globalization

[15]Autocorrelation is uncommon, but not impossible, in cross-sectional and change-to-change analyses of the sort we have conducted In addressing this issue, we have computed Durbin-Watson statistics for all equations and found only a tiny handful of potentially problematic equations (i.e., in the Durbin-Watson indeterminate region). Each of these has been re-computed using a Generalized Least Squares equation. No changes in the identity or direction of significant relationships were in evidence

[16]The value is negative because our fiscal impact variable is expressed as pre- minus post-government median income levels.

[17]Our cross-sectoral analysis examines a data set that is, of necessity, rather small (although larger than the 20 or so cases that have been the subject of numerous national-level analyses). Problems of influential cases are a possible concern (although matters are helped by the fact that investment, trade and income inequality are expressed relative to GDP rather than in absolute terms). In exploring this possibility, we have computed Cook's Distances for all equations. In the vast majority, no Cook's value was significant according to the $p < .50$ criterion proposed by Weisberg (1985: 120). In the relatively few instances in which Cook's distances exceeded the criterion, we recalculated the equations without the influential case or cases. Although findings differed somewhat from those reported here, in no instance did we find a statistically significant relationship in the direction predicted by critics of globalization between any of our indicators of trade and investment and any of our indicators of income inequality.

[18]Turnout figures are from Mackie and Rose (1991). The supplementary analysis examined the most recent available LIS data for the distribution of all income after taxes and transfers for all population groups

[19]Immigration is, of course, a global phenomenon, but one that is obviously quite different from the trade and investment variables examined here

Table 1
International Economic Integration and Income Inequality:
Wave II

	Earnings Income		*Post-Government Income*		*Fiscal Impact*		
	Sectoral / National Median	*P90P10*	*Sectoral / National Median*	*P90P10*	*Sectoral / National Median*	*P90P10*	N
Imports	0.01 (0.53) .01	-0.00† (-1.49) .05	0.00† (0.57) .01	-0.00† (-1.19) .03	0.00† (0.18) .00†	-0.00† (-1.11) .03	45
Exports	0.04 (1.11) .03	-0.01 (-1.99) .09	0.06* (2.08) .10	-0.01** (-4.83) .36	-0.00† (-0.16) .00†	0.00† (0.36) .00†	43
Trade Ratio	-1.42 (-1.27) .04	0.04 (0.41) .00†	-1.44 (-1.64) .06	0.10 (1.83) .08	0.02 (0.03) .00†	-0.06 (-0.93) .02	43
Inbound Investment Flows	4.07 (1.06) .03	-0.39 (-0.99) .02	1.19 (0.39) .00†	-0.04 (-0.19) .00†	2.88 (1.65) .06	-0.35 (-1.41) .05	44
Inbound Investment Stocks	0.74 (1.35) .05	-0.05 (-0.92) .02	0.49 (1.18) .04	-0.05 (-1.64) .07	0.24 (0.98) .03	-0.01 (-0.16) .00†	39
Outbound Investment Flows	12.43 (1.86) .09	-1.84** (-2.96) .19	12.87* (2.51) .15	-0.99** (-2.85) .18	-0.45 (-0.16) .00†	-0.85 (-1.99) .10	39
Outbound Investment Stocks	0.68 (1.40) .05	-0.07 (-1.38) .05	0.52 (1.41) .05	-0.06* (-2.31) .12	0.16 (0.73) .01	-0.01 (-0.37) .00†	41

* significant at .05 ** significant at .01 (two-tailed test)
† value is smaller than .01 or -.01.
Top numbers in the cells are unstandardized regression coefficients, middle numbers (in parentheses) are t values, and bottom numbers are R^2 values.

Table 2
International Economic Integration and Income Inequality:
Wave III

	Earnings Income		*Post-Government Income*		*Fiscal Impact*		
	Sectoral / National Median	*P90P10*	*Sectoral / National Median*	*P90P10*	*Sectoral / National Median*	*P90P10*	N
Imports	0.02 (1.44) .06	-0.00† (-1.85) .09	0.01 (0.65) .01	-0.00† (-0.66) .01	0.02 (1.61) .07	-0.00† (-1.94) .10	37
Exports	0.08* (2.36) .14	-0.01 (-1.60) .07	0.05* (2.24) .13	-0.00†* (-2.16) .12	0.03 (1.29) .05	-0.01 (-1.29) .05	36
Trade Ratio	-0.46 (-1.12) .04	-0.02 (-0.43) .01	-0.31 (-1.16) .04	0.01 (0.83) .02	-0.15 (-0.55) .01	-0.03 (-0.69) .01	36
Inbound Investment Flows	1.10 (1.20) .05	-0.04 (-0.71) .02	1.27 (1.80) .10	-0.05 (-1.52) .08	-0.17 (-0.38) .01	-0.00† (-0.06) .00†	31
Inbound Investment Stocks	0.75 (2.05) .16	-0.01 (0.38) .01	0.64* (2.33) .20	-0.01 (-0.46) .01	0.12 (0.53) .01	0.01 (0.54) .01	24
Outbound Investment Flows	2.65* (2.38) .16	-0.09 (-1.12) .04	1.22 (1.33) .06	-0.04 (-0.76) .02	1.42* (2.63) .19	-0.06 (-1.01) .03	32
Outbound Investment Stocks	1.26** (3.70) .38	-0.03 (-1.20) .06	0.75* (2.63) .24	-0.03* (-2.27) .20	0.51* (2.20) .18	-0.01 (-0.40) .01	24

* significant at .05 ** significant at .01 (two-tailed test)
† value is smaller than .01 or -.01.
Top numbers in the cells are unstandardized regression coefficients, middle numbers (in parentheses) are t values, and bottom numbers are R^2 values.

Table 3
International Economic Integration and Income Inequality
Changes Between Wave II and Wave III

	Earnings Income		*Post-Government Income*		*Fiscal Impact*		
	Sectoral / National Median	*P90P10*	*Sectoral / National Median*	*P90P10*	*Sectoral / National Median*	*P90P10*	N
Imports	0.02 (1.33) .05	-0.00† (-0.71) .01	-0.00† (-0.02) .00†	0.00† (0.30) .00†	0.02 (1.31) .05	0.00† (-0.75) .02	37
Exports	0.01 (0.16) .00†	-0.01 (-0.77) .02	-0.05 (-1.04) .03	-0.00† (-0.28) .00†	0.05 (0.84) .02	-0.01 (-0.63) .01	35
Trade Ratio	-0.33 (-0.23) .00†	-0.15 (-0.67) .01	1.23 (0.98) .03	-0.04 (-0.79) .02	-1.55 (-1.06) .03	-.11 (-0.44) .01	35
Inbound Investment Flows	0.63 (0.59) .01	0.02 (0.14) .00†	3.48* (2.24) .16	-0.07 (-1.22) .05	0.70 (0.41) .01	0.08 (0.88) .03	29
Inbound Investment Stocks	-0.09 (-0.27) .00†	0.03 (1.29) .07	0.33 (1.04) .05	0.01 (1.30) .07	-0.28 (-0.56) .02	0.01 (0.77) .03	23
Outbound Investment Flows	0.60 (1.37) .09	0.05 (0.77) .03	-0.15 (-0.15) .00†	0.03 (0.92) .04	0.91 (1.76) .13	0.04 (0.70) .02	22
Outbound Investment Stocks	0.14 (0.93) .04	0.00† (0.32) .01	0.17 (1.15) .06	-0.00† (-0.68) .02	0.18 (0.79) .03	0.00† (0.58) .02	24

* significant at .05 ** significant at .01 (two-tailed test)
† value is smaller than .01 or -.01.
Top numbers in the cells are unstandardized regression coefficients, middle numbers (in parentheses) are t values, and bottom numbers are R^2 values.

Table 4

International Economic Integration and Income Inequality:
Changes in Investment and Trade Between Wave II and Wave III Related to Levels of Inequality and Fiscal Impact in Wave III

	Earnings Income		*Post-Government Income*		*Fiscal Impact*		
	Sectoral / National Median	*P90P10*	*Sectoral / National Median*	*P90P10*	*Sectoral / National Median*	*P90P10*	N
Imports	0.05 (0.51) .01	0.01 (0.70) .01	0.01 (0.14) .00†	-0.00† (-0.12) .00†	0.04 (0.67) .01	0.01 (0.83) .02	37
Exports	0.19 (0.43) .01	-0.02 (-0.45) .01	0.09 (0.32) .00†	0.00† (0.01) .00†	0.10 (0.36) .00†	-0.02 (-0.52) .01	35
Trade Ratio	0.54 (0.05) .00†	0.79 (0.65) .01	-1.27 (-0.19) .00†	0.04 (0.15) .00†	1.81 (0.28) .00†	0.75 (0.71) .02	35
Inbound Investment Flows	20.39 (1.76) .10	0.24 (0.31) .00†	18.73* (2.10) .14	-0.33 (-0.74) .02	1.66 (0.28) .00†	0.16 (0.27) .00†	29
Inbound Investment Stocks	4.97 (1.61) .11	-0.06 (-0.31) .00†	4.32 (1.89) .15	-0.01 (-0.12) .00†	0.65 (0.36) .01	-0.07 (-0.51) .01	23
Outbound Investment Flows	9.62 (1.65) .12	-0.38 (-0.88) .04	2.46 (0.50) .01	-0.05 (-0.24) .00†	7.16** (3.14) .33	-0.32 (-0.98) .05	22
Outbound Investment Stocks	2.22 (1.76) .12	-0.08 (-1.02) .05	1.03 (1.04) .05	-0.07 (-1.49) .09	1.19 (1.57) .10	-0.03 (-0.49) .01	24

* significant at .05 ** significant at .01 (two-tailed test)

† value is smaller than .01 or -.01.

Top numbers in the cells are unstandardized regression coefficients, middle numbers (in parentheses) are t values, and bottom numbers are R^2 values.

Table 5
International Economic Integration and Unemployment:
Wave II

	Unemployment	N
Imports	-0.01 (-0.94) .04	26
Exports	-0.00† (-0.06) .00†	26
Trade Ratio	-0.12 (-0.35) .01	26
Inbound Investment Flows	-0.93 (-1.22) .04	37
Inbound Investment Stocks	-0.04 (-0.26) .00†	30
Outbound Investment Flows	-1.10 (-1.24) .05	32
Outbound Investment Stocks	-0.08 (-0.61) .01	30

* significant at .05 ** significant at .01 (two-tailed test)
† value is smaller than .01 or -.01.
Top numbers in the cells are unstandardized regression coefficients, middle numbers (in parentheses) are t values, and bottom numbers are R^2 values.

Appendix 1

The International Standard Industrial Classification of all economic activities, revision 2.

Division Category

For trade and investment variables

1 Agriculture, Hunting, Forestry, and Fishing
2 Mining and Quarrying
3 Manufacturing
31 Manufacture of Food, Beverages, and Tobacco
32 Textile, Wearing Apparel and Leather Industries
33 Manuf. of Wood and Wood Products
34 Manuf. of Paper and Paper Products
35 Manuf. of Chemicals, and Chemical, Petro., Coal, Rubber and Plastic Products
36 Manuf. of Non-metallic mineral products
37 Basic Metal Industries
38 Manuf. of Fabricated Metal Products, Machinery, and Equipment
39 Other Manuf. Industries

For investment variables only

4 Electricity, Gas, and Water
5 Construction
6 Wholesale and Retail Trade and Restaurants and Hotels
7 Transport, Storage, and Communications
71 Transport
72 Communications
8 Financing, Insurance, Real Estate, and Business Services
9 Community, Social, and Personal Services

Import and Export Sectors for Wave II (1985):

Country	ISIC Code Numbers
Denmark	1, 2, 31, 32, 33, 34, 35, 36, 37, 38
Finland	1, 2, 31, 32, 33, 34, 35, 37, 38
Germany	1, 2, 31, 32, (33+34), 35, 36, 38
Sweden	1, 2, 31, 32, 33, 34, 35, 36, 37, 38
U.K.	
U.S.	1, 2, 31, 32, 33, 34, 35, 37, 38

Import and Export Sectors for Wave III (1990):

Country	ISIC Code Numbers
Denmark	1, 2, 31, 32, 33, 34, 35, 36, 37, 38
Finland	1, 2, 31, 32, 33, 34, 35, 37, 38
Germany	1, 2, 31, 32, (33+34), 35, 36, 38
Sweden	1, 2, 31, 32, 33, 34, 35, 36, 37, 38

Inbound Investment Flows, Sectors for Wave II (1985):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6, 71
Canada	6
Denmark	1, 31, 32, 34, (37+38), 5, 6, 71, 8
Finland	6
Germany	1, 2, 32, 35, 37, 38, 5, 6, 8
Italy	1, 6, 7, 8
Neth.	1, 5
U.K.	1, 5, 8
U.S.	1, 2, 31, 32, 34, 36, 38, 5, 6, 71

Inbound Investment Flows, Sectors for Wave III (1990):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6, 71
Canada	6
Denmark	, 31, 32, 34, 35, 36, (37+38), 5, 6, 71, 8
Finland	6
Germany	, 2, 32, 35, 37, 38, 5, 6, 8
Italy	, 6, 7, 8
Neth.	5

Inbound Stocks, Sectors for Wave II (1985):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6, 71
Canada	5, 6
Germany	1, 2, 32, 35, 37, 38, 5, 6, 8
Italy	1, 6, 7, 8
Neth.	1, 5
Sweden	34, 6, 71
U.K.	1, 5, 8
U.S.	1, 2, 31, 32, 34, 36, 38, 5, 6, 71, 72

Inbound Stocks, Sectors for Wave III (1990):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6
Canada	5, 6
Finland	6
Germany	, 2, 32, 35, 37, 38, 5, 6, 8
Italy	, 6, 7, 8
Neth.	5
Sweden	34, 6, 71

Outbound Investment Flows, Sectors for Wave II (1985):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6, 71
Canada	6
Denmark	1, 31, 32, 34, 35, 36, (37+38), 5, 6, 71, 8
Finland	34, 6

Germany	8
Italy	6, 7, 8
Neth.	1, 5
U.K.	1, 5, 8
U.S.	1, 2, 31, 32, 34, 36, 38, 5, 6, 71, 72

Outbound Investment Flows, Sectors for Wave III (1990):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6
Canada	6
Denmark	1, 31, 32, 34, 35, 36, (37+38), 5, 6, 71, 8
Finland	34, 6
Germany	1, 2, 32, 35, 37, 38, 5, 6, 8
Italy	1, 6, 7, 8
Neth.	5

Outbound Stocks, Sectors for Wave II (1985):

Country	ISIC Code Numbers
Australia	1, 2, 5, 6, 71
Canada	5, 6
Finland	34, 6
Germany	1, 2, 32, 35, 37, 38, 5, 6, 8
Italy	1, 6, 7, 8
Neth.	1, 5
Sweden	34, 6, 71
U.K.	1, 5, 8
U.S.	1, 2, 31, 32, 34, 36, 38, 5, 6, 71, 72

Outbound Stocks, Sectors for Wave III (1990):

Country	ISIC Code Numbers
Australia	5, 6, 71
Canada	5, 6
Finland	34, 6
Germany	1, 2, 32, 35, 37, 38, 5, 6, 8
Italy	1, 6, 7, 8
Neth.	5
Sweden	34, 6, 71

NOTES: The selection of industrial sectors for inclusion in our study was limited by two factors: 1) Although the LIS encourages the use of the ISIC scheme among the national survey participants, not all employ it, and of those that do, several collapse categories or offer data that are for other reasons inconsistent or partially inconsistent with the ISIC breakdown. In a few instances we converted very similar national classification schemes to the ISIC system, but in other cases this was not possible, and cases could not be included in the analysis. 2) Of the countries that remained, several do not report ISIC sectoral breakdowns for trade, investment or sectoral GDP or reported incomplete breakdowns and thus could not be included in the analysis.

Since our trade variables focus on merchandise trade, only ISIC categories 1-3 are relevant. In a supplementary analysis we measured trade in services, but there were many gaps in the data, (particularly in LIS coverage) and the findings are not discussed.

Appendix 2 LIS Surveys

Country	LIS Wave II	LIS Wave III
Australia	1985	1989
Canada	1987	1991
Denmark	1987	1992
Finland	1987	1991
Germany	1984	1989
Italy	1986	1991
Netherlands	1987	1991
Sweden	1987	1992
United Kingdom	1986	*
United States	1986	*

* Sectoral breakdowns for head of household unavailable.

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