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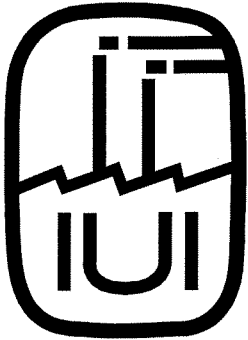
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THE RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS

WORKING PAPER No. 490, 1997

**FOREIGN DIRECT  
INVESTMENT AND  
EMPLOYMENT: Home Country  
Experience in the United  
States and Sweden**

BY MAGNUS BLOMSTRÖM, GUNNAR FORS AND  
ROBERT E. LIPSEY

FOREIGN DIRECT INVESTMENT AND EMPLOYMENT:  
HOME COUNTRY EXPERIENCE IN THE UNITED STATES  
AND SWEDEN

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ABSTRACT

We compare the relation between foreign affiliate production and parent employment in U.S. manufacturing multinationals with that in Swedish firms. U.S. multinationals appear to have allocated some of their more labor intensive operations selling in world markets to affiliates in developing countries, reducing the labor intensity in their home production. Swedish multinationals produce relatively little in developing countries and most of that has been for sale within host countries with import-substituting trade regimes. The great majority of Swedish affiliate production is in high-income countries, the U.S. and Europe, and is associated with more employment, particularly blue-collar employment, in the parent companies. The small Swedish-owned production that does take place in developing countries is also associated with more white-collar employment at home. The effects on white-collar employment within the Swedish firms have grown smaller and weaker over time.

FOREIGN DIRECT INVESTMENT AND EMPLOYMENT:  
HOME COUNTRY EXPERIENCE IN THE UNITED STATES  
AND SWEDEN\*

Magnus Blomström  
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I. Introduction

Most countries have been engaged in extensive internal debates over the role of multinational corporations (MNCs) in their economies. Inward investment has been feared as a source of foreign influence, or even control, and of competition with local entrepreneurs, but also welcomed for its promise of superior technology and employment opportunities, and the hope that it would substitute for imports and perhaps increase exports. Outward investment has been opposed in home countries as substituting for exports and reducing domestic capital investment and job creation, but it has been defended as necessary for the growth and prosperity of home-based firms in the contest for world-wide markets. The policy making of both host and home countries of multinationals, however, has suffered from uncertainty about the effects of investment.

In this paper we analyze some effects of foreign production on the demand for labor by home country parent firms as a consequence of their decisions to allocate different types of production to different types of host countries. We abstract here from any effects of foreign production on the amount of home production by displacement of or additions to exports, a subject we and others have dealt with extensively elsewhere. Controlling for the value of home

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production, we concentrate on the issue of factor proportions in home operations, asking whether production abroad tends to raise or lower the labor intensity of home production, or its skill intensity. If the home country is a high labor cost country, one could imagine that firms would seek to place in their foreign affiliates those labor-intensive operations, either products or stages of production, that are so integral to the firm's strategy that they must remain under the parent's control (Other labor-intensive products could be purchased from local firms in low labor cost countries).

We do not have much information on the skill distribution of home country employment by MNCs (none for the United States and only a breakdown into white collar and blue collar workers for Sweden), but we can try to draw some inferences from examining the association with parent employment separately for affiliates in developed and developing countries. A negative association of parent employment per unit of output with developing country production would suggest an allocation of labor intensive production to low-wage countries. A positive association would suggest either an allocation of labor-intensive production to the parent or a need for supervisory or other non-production employment at home for each addition to foreign production.

We have analyzed cross sections here, assuming in our interpretations that differences among firms, or differences among firms within industries, represent choices by firms as to how to organize their world-wide production, and not only, or mainly, differences in firm characteristics that dictate the extent of foreign production. For a government deciding whether to encourage or discourage foreign production by its country's firms, it may not matter. If foreign production is associated with, for example, less employment of unskilled workers at home for a given amount of home production, a policy of encouragement of foreign investment will tend to

shift the home demand for labor away from unskilled workers. That will be true whether the policy enlarges the role of the type of firm that invests abroad, relative to other types of firms, without causing any changes in firm allocations of production, or whether it encourages individual firms to alter the allocation of their production between home and foreign locations.

## II. Earlier Work on Home-Country Effects

Probably the most extensively studied aspect of home-country effects has been whether production by foreign affiliates of a home country's firms is a "substitute" or a "complement" to home country production by the parent firms or by other home-country firms (see Blomström and Kokko, 1994 for a survey). The difficulty in these studies is the lack of convincing counterfactual situations. What would have happened in the absence of affiliate production? Would the parent have supplied, by exporting, the markets now served by affiliates? Or would the markets now served by affiliates' production or by some combination of affiliate and home-country production have been lost to the parent firm, as was assumed in the Reddaway (1967 and 1968) reports for the United Kingdom?

Evidence from studies of US trade has suggested either a positive relationship or no relationship between US-owned production in a market and exports to that market by the parent firms and by US firms in general (see e.g. Blomström, *et al.*, 1988). It also has found negative relationships between US-owned production and exports to the host country from other sources. A positive relation was found across firms between production abroad and firm exports to the world, suggesting that such production had not been at the expense of firm exports to third countries (Lipsev and Weiss, 1981 and 1984).

Studies of Swedish firms have reported some more mixed results, with a long period of findings of positive relationships (see e.g. Swedenborg, 1979) and some more recent reports of negative ones, particularly in third-country markets (Svensson, 1996).

The main reason for positive relationships is the role of FDI in the rivalry for markets. The reason for the ambiguity of the results of most of these studies is that they do not take account of a firm's most important motivation for producing in a market: the chance to increase its market share or even the size of the market itself or to defend its existing market share. Such a study would require data on the size of particular product markets in host countries, a difficult enterprise that has been undertaken for only a few products and countries.

Other aspects of home-country effects that have been studied include the competition between home and foreign markets for an MNC's capital resources, internal or financed from outside, the extent to which expansion of offshore production by U.S. multinationals reduces labor demand at home, and the relation of foreign production to home-country wage levels. On the first topic, a study for a few US firms indicated that home and foreign investment were not independent, and that an increase in plant and equipment investment in foreign operation caused a decrease at home because it raised the firm's cost of capital (Stevens and Lipsey, 1992). Brainard and Riker (1997) have recently concluded that foreign affiliate employment by U.S. multinationals only modestly substitutes for U.S. parent employment at the margin. They find a much stronger substitution among workers in U.S. foreign affiliates located in different low wage host countries. Finally, U.S. wage studies have suggested a positive relationship across firms between foreign activity and home-country wage levels (Kravis and Lipsey, 1988). That relationship may reflect an allocation of low-skill activities to foreign operations, but it is difficult to disentangle that effect from the influence in the opposite direction

of high parent-firm skill levels in permitting the firm to operate abroad or in making such operations profitable.

### III. Foreign Production and Parent Employment

#### *Results for US firms*

We present here some simple descriptive equations showing the relationship, within manufacturing firms, between foreign production (proxied by affiliate net sales) and employment in the parent firms, given the level of parent production.<sup>1</sup> This relationship, for the United States in 1989, is described in equation 1 (t-values in parentheses).

$$(1) \text{ PEMP} = 1,455 + 6.00 \text{ PNS} - 1.16 \text{ ANS} \quad \bar{R}^2 = .87$$

(5.2) (52.3) (6.1)                      No. obs = 1,104

where:        PEMP=Employment in parent firm *i*,  
                   PNS=sales of parent firm *i* minus imports from its foreign affiliates  
                   ANS=sales of all foreign affiliates of parent firm *i* minus affiliate imports from the United States

The estimation results for equation 1, relating absolute amounts of foreign output to absolute numbers of employees, suggest that more foreign output means fewer employees at home for a given level of home output. Our interpretation of this result is that larger foreign affiliate production is associated with an allocation of the more labor intensive portions of the firm's output to the foreign operations, and more capital-intensive portions to home operations.

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<sup>1</sup> Data on U.S. multinationals are from the individual firm reports underlying U.S. Department of Commerce (1992), which is a census of U.S. foreign direct investment in 1989. Since these data are confidential, the calculations reported here were carried out within the Bureau of Economic Analysis of the U.S. Department of Commerce.



Therefore, a given amount of home production will involve lower home employment, the larger is the amount of the firm's foreign output.

Given the crudeness of the parent employment-sales relationship, we worried that the apparent effect of affiliate production might be spurious. That could happen if there were an association of affiliate production with residuals from the parent relationship. If, for example, additions to production for large parents had lower labor requirements than those for small parents, because there were scale economies, and if larger parents also owned more foreign production than smaller ones, there would be a negative correlation between affiliate production and parent employment, but we would be attributing the effects of scale-economies to the foreign production. To test for this possibility, we added a squared parent net sales, or scale, coefficient to the equation, as in Equation 2.

$$(2) \text{ PEMP} = 1,400 + 6.05 \text{ PNS} - .000012 (\text{PNS})^2 - 1.15 \text{ ANS} \quad \bar{R}^2 = .86$$

(4.57) (40.3) (0.6) (5.9) No.obs. = 1,104

There is only an indication of scale economies, but the squared PNS term is not significant and the coefficient for affiliate net sales is hardly affected.

If the negative coefficient for affiliate employment represents allocation of labor-intensive production to low-wage countries, it should be production in such countries that affects parent employment. When we divide foreign production into production in developed (DC) and developing (LDC) countries, we have the results in equation 3 below.

$$(3) \text{ PEMP} = 1,594 + 6.18 \text{ PNS} - 0.184 \text{ ANSDC} - 12.1 \text{ ANSLDC} \quad \bar{R}^2 = .87$$

(5.6) (54.2) (0.8) (8.6) No.obs. = 1,104

where: ANSDC=Affiliate net sales in developed countries.  
ANSLDC=Affiliate net sales in developing countries.

These results confirm that the negative effect on parent employment comes from the allocation of labor-intensive production stages to affiliates located in developing countries.

We can summarize the US results as saying that each additional million dollars of parent net sales adds about six employees to the parent labor force but, given the parent sales level, each additional million dollars of affiliate net sales is associated with firms having one fewer employee. However, affiliate production in developing countries has a much stronger effect on parent employment. Substituting a million dollars of affiliate net sales in developing countries for a million dollars in parent sales is associated with a reduction in parent employment by 18. Even adding a million dollars of output at home and a similar amount in developing countries would be associated with a decline in home employment.

### *Results for Swedish firms*

For Sweden, we have access to the individual firm reports from six surveys of Swedish foreign direct investment,<sup>2</sup> spanning the period 1970-1994. Thus, here we are also able to compare the results over time.

The Swedish experience seems to differ from that of the United States. In the cross-section regressions for Swedish MNCs, the coefficients for ANS are positive and significantly different from zero for each separate year (see Table 1). This suggests that, given the level of

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<sup>2</sup> The Swedish data are from the Industriens Utredningsinstitut (IUI) of Stockholm. The IUI has completed six surveys of Swedish firms' activities abroad. These surveys cover virtually all Swedish multinationals in manufacturing and are in general comparable to the U.S. data.

sales by the parent, MNCs with more sales abroad will also have higher employment in the parent company. This may indicate that MNCs with more activities abroad need, e.g., additional supervisory, management, marketing and R&D personnel in the parent company, in order to coordinate and support the activities in foreign affiliates. In 1990, for example, the estimated coefficient for ANS equals 0.18, suggesting that an increase in affiliate net sales of around 5 to 6 million SEK (approximately 1 million US\$) is associated with having one more employee in the parent company.<sup>3</sup> Thus, there is no evidence that production abroad by Swedish firms involves the allocation of labor-intensive operations to affiliates.

Although the coefficient for ANS is positive and significant each year in the Swedish regressions, the results indicate that the slope of the relationship between parent employment and affiliate sales has decreased since the 1970s. The coefficient for ANS was 0.35 in 1970 compared with 0.04 in 1994. Thus, it appears that foreign expansion in more recent times does not require the same extent of support functions in the parent company as before. Another explanation for the change over time may be that the positive association between PEMP and ANS has more recently been offset by negative reallocation effects of foreign expansion on parent employment. It is, of course, possible that we have both positive and negative effects of foreign expansion on PEMP at the same time, and that the net effect, which has been positive during the entire period 1970-94, is now close to zero.

In sharp contrast to the U.S. multinationals, production by Swedish MNCs in both developed and developing countries seems to have a positive effect on parent employment (see Table 1). Both affiliate net sales in developed countries (ANSDC) and affiliate net sales in less developed countries (ANSLDC) are positively related to parent employment throughout the

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<sup>3</sup> The addition of a squared PNS term in the Swedish regressions did not change the results with respect to ANS.

period. The changes over time that we found for the overall effect of foreign sales become less clear when we separate between DCs and LDCs, although the non-significant coefficient for ANSDC might indicate a smaller association between parent employment and DC affiliate sales in more recent times.

Apparently, the decrease in the ANS coefficient is related to the affiliate sales in developed countries (where the Swedish MNCs have most of their affiliate sales). The estimated coefficient for ANSLDC is at a much higher level than that of ANSDC for each year, suggesting that, on the margin, an increase in affiliate net sales in LDCs is associated with a larger addition to parent employment than a corresponding increase in affiliate net sales in a developed country.

#### *White- and blue-collar parent employment*

In addition to the overall effect of foreign production on home country labor, foreign activities by MNCs may also have effects on the composition of labor at home. The Swedish data allow us to break parent employment into white-collar and blue-collar workers, which we will use as proxies for skilled and unskilled workers, respectively. While this is far from an exact measure of skill levels, its rough usefulness is confirmed by the fact that the average wage for white collar employees in Swedish manufacturing is 50 per cent higher than the average for blue-collar workers. Furthermore, while we have no data on wages for blue and white collar workers in Swedish multinationals, the IUI data show that the wage level in parent companies is strongly and positively related to the share of white collar workers in the companies. This analysis is not possible with the US data.

Table 2 reports the results from the Swedish regressions using white-collar parent employment (WPEMP) as the dependent variable, and Table 3 the results using blue-collar parent

employment (BPEMP) as the dependent variable. Our findings suggest that Swedish firms' foreign activities are positively and significantly related only to parent blue-collar employment. In the case of white-collar parent employment we find a weak positive association in 1970 and 1974, but no effect after that. This seems somewhat paradoxical, since it is reasonable to expect that it is the demand for skilled labor (supervision, management, marketing, and R&D) that should increase in the parent company as MNCs expand abroad, rather than unskilled labor. However, although it is not possible to impose any causal relationship here, the results indicate that those Swedish MNCs that expanded abroad, also increased the number of blue-collar workers at home, while not changing white-collar employment. This could be an indication that skilled based production stages in Swedish multinationals are increasingly located abroad, while the unskilled production stages are retained and expanded in Sweden.

The different effects on white- and blue-collar workers came out more clearly when we separated affiliate net sales by the location of affiliates (see Tables 2 and 3). In the blue-collar equation, the estimated coefficients for ANSDC are positive and strongly significant for every year, while in the white-collar regressions, the coefficients for ANSDC are negative for all years, although only significantly different from zero for 1974 and 1978. This suggests that foreign expansion by Swedish MNCs in developed countries is positively associated with the parents' employment of blue-collar workers, and negatively associated with (or not associated with) the number of white-collar workers in the parent. On the other hand, the coefficients for ANSLDC are positive and significant in both the white- and blue-collar regressions, suggesting that expansion in LDCs are associated with increases in both kinds of employment in the parent company. Hence, in the case of affiliates located in LDCs, there seem to be some support for the

proposition that more white-collar workers are required in the parent company to co-ordinate and support the MNCs' activities.

#### IV. Conclusions

We have found that in US firms, larger foreign production is associated with smaller parent employment, given the size of parent production. When the variable measuring foreign production is divided between developed and developing countries, the impact on parent employment is traced to the production in developing countries. Our interpretation of these relationships is that the implied lower labor intensity of home production in the presence of higher foreign production reflects a strategy on the part of investing firms of allocating labor-intensive portions of their output or labor-intensive stages of production to affiliates in low-wage countries. The affiliates then supply such products or such elements of the final product to the United States and, mostly, to the rest of the world. The alternative interpretation of these relationships, that it reflects the tendency of the most efficient firms at home to invest the most abroad, would not explain why it is the production in developing countries, and not that in developed countries, that is associated with lower employment for a given level of home production.<sup>4</sup> We attribute the strategy mainly to the high price of unskilled labor in the United States, reflecting nominal wage levels and, possibly, more restrictive labor standards than in developing host countries.

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<sup>4</sup> Our cross-section analysis does not, of course, prove causality, in the sense that, of two identical firms, one assigned by chance to produce only at home and the other assigned to produce one million dollars of goods abroad, the one producing abroad will end up with fewer home employees (the U.S.) or more home employees (Sweden). A limited test of the opposite causation, that the firms that are more efficient at home, or more capital intensive at home, tend to invest more abroad, is performed at the industry level by including industry dummies in the Swedish equations without obliterating the relationship. The possibility remains that there are such effects within industries, at the firm level.

Swedish parents, on the other hand, employ more labor at home, given the size of home production, when they produce more abroad, and that effect is particularly large for production in developing countries. It, thus, appears that there is little allocation of labor-intensive production to low wage countries within the Swedish firms, and that the labor effect we observe reflects the need for supervisory and other auxiliary employment within the parent associated with production abroad, especially in developing countries.

The contrast between the two countries' firms suggests a difference in investment strategy, and that explanation is supported by the evidence. US firms produce much more of their foreign output in developing countries, about 20 per cent in 1994, compared with only 7 per cent among Swedish firms. The geographical distribution in LDCs is also different, with the US firms producing much more in Asia and the Swedish firms mainly in Latin America. While the Swedish affiliates located in developing countries appear to be largely import substituting, exporting hardly any of their output, US affiliates are considerably more oriented towards world markets, exporting a third of their production in 1994. Thus, the US affiliates in developing countries appear to be much more a part of an allocation of the MNCs' production for world-wide markets to take advantage of factor price differences.

When we divide the Swedish parent employment into white collar and blue collar employees we find that additions to total parent employment associated with foreign production are mainly among blue collar workers. However, if we distinguish between affiliate production in developed and developing countries, we find the latter associated with higher parent white collar employment, as we would expect from the hypothesis that developing country operations require parent supervision.

Blue collar employment is positively related to both developed and developing country production. The association with developed country production seems to imply an allocation of blue collar employment to Sweden and of white collar employment to foreign affiliates, perhaps partly reflecting the extensive acquisitions by Swedish firms in the United States and Europe where blue collar workers are expensive. However, that hypothesis leaves unexplained the high positive coefficients for developing country affiliate production in equations for Swedish parent blue collar employment. The reason for these results may not be substantive, but may be a reflection of the small numbers of Swedish firms with developing country affiliates.

A possible explanation of the difference in strategies between Swedish and U.S. multinationals is that it reflects the difference in comparative advantage between the two home locations, as revealed by the composition of their trade with each other. More than half of Sweden's imports from the United States are from R&D-intensive sectors and only a quarter from sectors intensive in skilled labor, while almost 60 per cent of Sweden's exports to the United States are from skilled-labor-intensive sectors, with large employment of technicians and skilled manual workers, and only 17 per cent from R&D-intensive sectors. If the country specializations run that way, it would be logical for Swedish multinationals to place the skilled-labor-intensive parts of their production at home and the R&D-intensive parts in the United States or other countries more suited than Sweden to such production. The same logic would persuade U.S. multinationals to concentrate their R&D-intensive production at home (Blomström, Lipsey, and Ohlsson, 1990).



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Table 1. OLS Regression Results for Swedish Parent Employment.

Year	PNS	ANS	ANSDC	ANSLDG	adj. R <sup>2</sup>
1970 (n=91)	1.67*** (32.65)	0.35*** (4.63)	--	--	0.96
	1.66*** (33.39)	--	0.21** (2.26)	2.07*** (3.13)	0.96
1974 (n=105)	1.53*** (38.42)	0.38*** (5.18)	--	--	0.97
	1.51*** (40.88)	--	0.16* (1.81)	2.76*** (4.54)	0.97
1978 (n=111)	1.34*** (38.32)	0.31*** (5.32)	--	--	0.97
	1.31*** (39.03)	--	0.23*** (3.96)	1.46*** (4.71)	0.97
1986 (n=105)	0.91*** (32.36)	0.22*** (6.94)	--	--	0.98
	0.89*** (29.56)	--	0.20*** (5.82)	1.20** (2.61)	0.98
1990 (n=117)	0.86*** (22.91)	0.18*** (6.27)	--	--	0.94
	0.83*** (19.83)	--	0.17*** (5.86)	0.93** (2.38)	0.94
1994 (n=108)	0.67*** (27.65)	0.040** (2.09)	--	--	0.95
	0.61*** (25.61)	--	0.021 (1.23)	1.26*** (5.68)	0.96

Notes: t-values in parentheses. \*\*\*, \*\* and \* indicate significance at the 1, 5 and 10% significance level, respectively, using a two sided t-test. Nine different industry dummies are included in all regressions. Results for intercepts and dummies are not shown. Sales figures are in million 1990 SEK. The deflator used is Swedish manufacturing PPI.

PNS: Parent net sales (parent sales minus imports from foreign affiliates).

ANS: Affiliate net sales (affiliate sales minus imports from the Swedish parent).

ANSDC: Affiliate net sales developed countries.

ANSLDC: Affiliate net sales less developed countries.

Table 2. OLS Regression Results for Swedish White-collar Parent Employment

Year	PNS	ANS	ANSDC	ANSLDC <sub>1</sub>	adj. R <sup>2</sup>
1970 (n=91)	0.58*** (22.46)	0.067* (1.79)	--	--	0.91
	0.57*** (23.25)	--	-0.017 (-0.39)	1.09*** (3.34)	0.92
1974 (n=105)	0.52*** (25.55)	0.063* (1.68)	--	--	0.92
	0.51*** (28.89)	--	-0.086** (-2.04)	1.68*** (5.77)	0.94
1978 (n=71)	0.66*** (19.49)	-0.023 (-0.71)	--	--	0.92
	0.63*** (21.71)	--	-0.082*** (-2.86)	0.94*** (5.18)	0.95
1994 (n=106)	0.33*** (13.88)	-0.0092 (-0.49)	--	--	0.82
	0.30*** (11.61)	--	-0.020 (-1.06)	0.60** (2.51)	0.83

Notes: See Table 1.

Table 3. OLS Regression Results for Swedish Blue-collar Parent Employment

Year	PNS	ANS	ANS.DC	ANS.LDC	adj. R <sup>2</sup>
1970 (n=91)	1.10*** (30.01)	0.28*** (5.25)	--	--	0.95
	1.09*** (30.00)	--	0.22*** (3.35)	0.98** (2.03)	0.95
1974 (n=105)	1.01*** (35.49)	0.32*** (6.04)	--	--	0.96
	1.00*** (35.59)	--	0.25*** (3.66)	1.08** (2.34)	0.96
1978 (n=71)	0.85*** (11.56)	0.29*** (4.11)	--	--	0.88
	0.85*** (11.16)	--	0.29*** (3.80)	0.24 (0.50)	0.88
1994 (n=106)	0.34*** (24.00)	0.047*** (4.08)	--	--	0.94
	0.31*** (21.96)	--	0.035*** (3.34)	0.70*** (5.24)	0.95

Notes: See Table 1.