

Bureau of the Census Statistical Brief

Export Manufacturers Compete Successfully in Pay, Productivity, and Presence

Research documenting the role of U.S. export manufacturers from 1976-1987 confirms that plants that produce and sell products for export are larger, more capital intensive, more productive, and pay higher wages and salaries than plants that do not export. Also, exporters demonstrate "shrink resistance" as the manufacturing sector shrinks in total number of workers.

This research uses newly available data on the U.S. manufacturing sector. These data link information on exporters to the Longitudinal Research Database (LRD) housed at the Center for Economic Studies of the U.S. Census Bureau.

Export Manufacturers Surpass Non-exporters in Productivity and Pay

A consensus exists that a manufacturing plant is competitive to the degree that:

- It has a high rate of productivity.
- It provides well-paying jobs for workers.

Research on U.S. export manufacturers verifies that — on both

counts - exporting plants surpass non-export manufacturing plants, annually averaging over \$14,000 more in value added (productivity) per worker and \$3,700 more in pay.

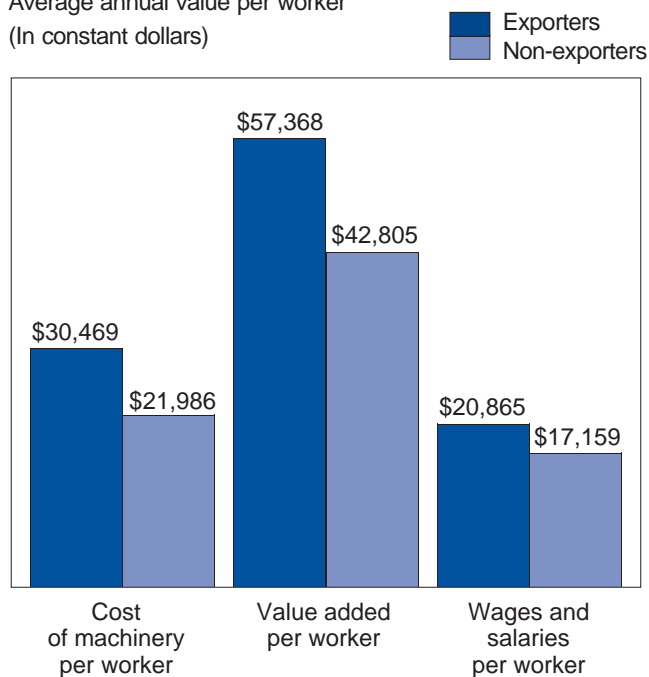
Exporting Plants Are More Capital Intensive

In an average year, 1976-1987, exporters have machinery worth

\$8,483 more per worker than non-export manufacturers have in their plants. This makes exporting plants more "capital intensive." Capital intensive plants —i.e., those whose workers are using highly sophisticated machinery or, simply, more machinery —typically produce more per worker (higher productivity), and this, as a rule, translates into higher pay.

Exporters vs. Non-exporters, 1976-1987

Average annual value per worker
(In constant dollars)



Export manufacturers surpassed non-export manufacturers in pay, productivity, and capital intensity per worker from 1976-1987.



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**Everything Else Equal,
Exporters Pay More**

Previous economic research has shown that - in general — manufacturing plants that are larger, more capital intensive, and more productive, pay their workers more than manufacturers that are smaller, less capital intensive, and less productive.

Since exporting plants are larger (averaging 263 employees per plant to the non-exporters' 67 employees per plant in 1987), more capital intensive, and more productive than non-export manufacturing plants,

one might assume that these three-characteristics alone account for the higher earnings that exporting plants offer their employees.

However, even when comparing export and non-export manufacturers of equal size, equal capital intensity, and equal productivity, manufacturers whose products are for export still pay more —on average, \$3,247 more in annual earnings than non-exporters. This phenomenon is not well understood at present and is the subject of investigation by economists.

**Export Manufacturers Resist
"Shrinkage"**

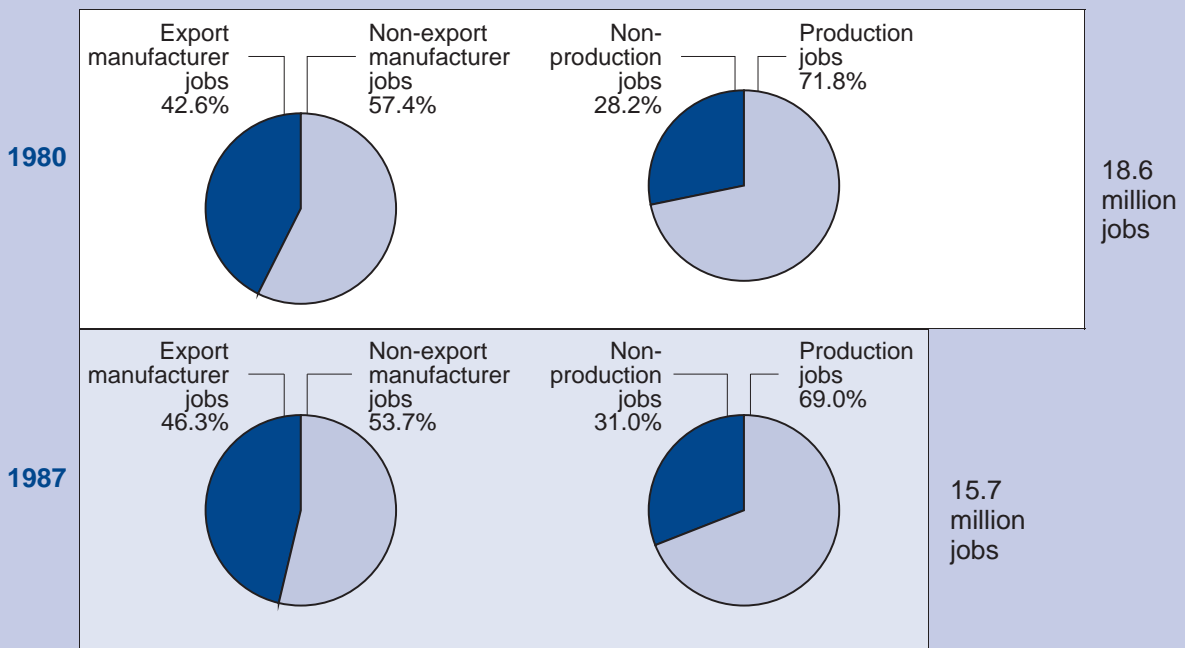
From 1980 to 1987, U.S. manufacturing employment shrank, but it did so unevenly:

- The number of jobs in the entire U.S. manufacturing sector shrank 16 percent — from 18.6 million workers to 15.7 million.
- Jobs within the export manufacturing sector declined by only 8.3 percent from 7.9 million to 7.3 million.

In resisting shrinkage, export manufacturers increased their

Total Manufacturing Sector Jobs

(In percent)



Although the U.S. manufacturing sector shrank 16 percent, jobs in export manufacturing and in non-production work increased as a share of total employment from 1980 to 1987.

proportion of total manufacturing sector employment from 42.6 percent in 1980 to 46.3 percent in 1987.

Non-production Jobs Similarly Resist "Shrinkage"

Manufacturing sector shrinkage is not uniform across job classifications.

The overall trend in U.S. manufacturing is toward the employment of relatively more non-production workers —i.e., white collar workers such as technical, professional, executive, and clerical staff—as a proportion of total manufacturing employment. From 1980 to 1987:

- Non-production worker employment rolls shrank by only 7.7 percent.
- Production worker employment rolls shrank by 19 percent.

Export Manufacturers Use More Non-production Jobs

The products and production methods of export manufacturers require more non-production workers:

- In 1987, export manufacturers employed relatively more non-production workers (34.8 percent) than non-exporters employed (only 27.8 percent).
- In the Non-electrical Machinery, Electronics, Transportation, and Instruments industries, the use of the non-production worker was intensive, comprising a full 41 percent of these industries' workforce.
- From 1980 to 1987, these four industries showed an absolute increase of 1.4 percent in their non-production worker employment rolls.

By shrinking at a slower rate than the manufacturing sector as a whole, and by using more non-production workers, export manufacturers are contributing disproportionately to the ongoing shift toward non-production workers in U.S. manufacturing from 1980 to 1987.

Export Manufacturers Exhibit Strength

Two factors stand out among the findings. Export manufacturers have favorable characteristics (higher pay and productivity) that differentiate them from other manufacturers, and they are assertively maintaining their presence within a shrinking U.S. manufacturing sector.

Therefore, information of value to U.S. policymakers would revolve around these issues:

- What prompts the critical decision of a manufacturing firm to become an exporter?
- Why, exactly, do plants that export show higher ratios of non-production workers? What are the differences in production methods?
- Are the higher wages of exporting plants a result of a different skill mix within each of the production and non-production worker job

Non-production Jobs as a Percentage of Employment in the Sector and In Absolute Numbers

	All Non-export Manufacturers		All Export Manufacturers		Export Mfg. in Industries SIC 35-38*		All Manufacturers	
1980	25.3%	2,688,926	32.3%	2,551,669	37.2%	1,573,777	28.2%	5,240,595
1987	27.8%	2,338,595	34.8%	2,525,598	41.1%	1,595,833	31.0%	4,864,193

* Standard Industrial Classifications (SIC): Non-electrical Machinery (35), Electronics (36), Transportation (37), and Instruments (38). The statistics in this column are a sub-category of, and are already included within, the larger category, "All Export Manufacturers."

classifications? That is, does production for export require workers with higher skill levels than production for domestic consumption?

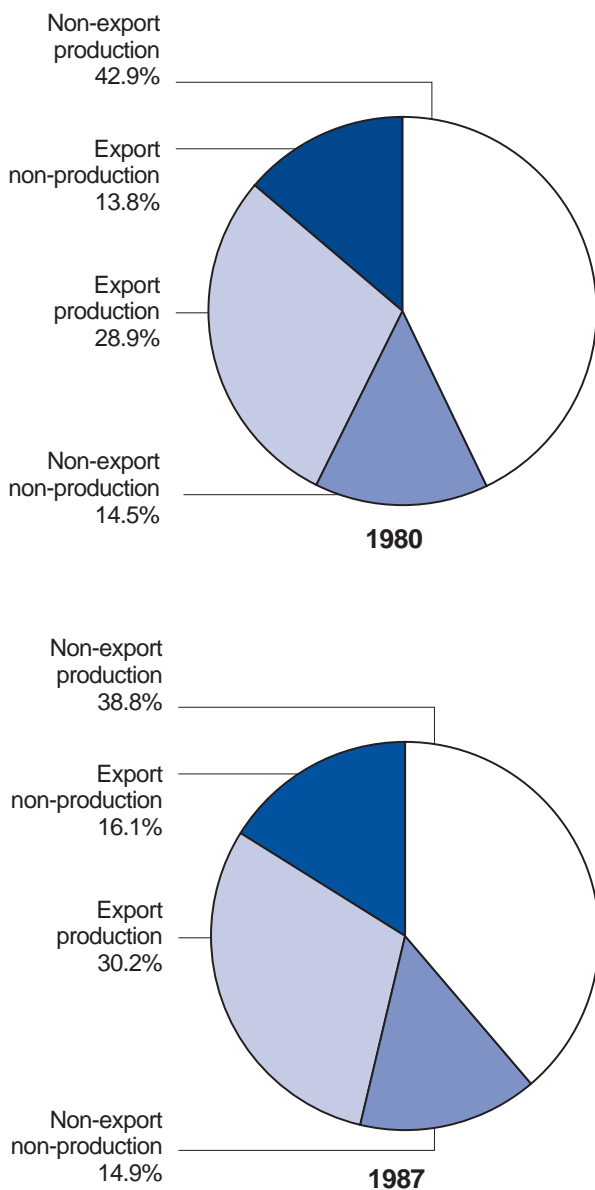
Export manufacturers are a success story in an increasingly competitive international arena. It is important to discover how exporters—or an

other manufacturers with above average contributions to the U.S. economy—have adeptly positioned themselves.

Changing Distribution of Manufacturing Sector Jobs

Production jobs at non-export manufacturers decreased as a share of total manufacturing employment by 4.1 percent from 1980 to 1987.

Non-production jobs at export manufacturers increased as a share of total manufacturing employment by 2.3 percent during the same interval.



The full research report upon which this information is based contains complete descriptions of the databases, the statistical methods used, and data limitations. See "Exporters, Skill Upgrading and the Wage Gap," by Andrew J. Bernard and J. Bradford Jensen, CES Report No. 94-13, and, by the same authors, "Exporters, Jobs and Wages in U.S. Manufacturing: 1976-1987," forthcoming in "Brookings Papers on Microeconomic Activity".

This Brief is one of a series that presents information of current interest based upon research conducted at the Center for Economic Studies (CES) of the U.S. Census Bureau. The CES houses highly specialized, longitudinal microdata files on the U.S. manufacturing sector. One of the Center's missions is to develop projects and procedures for enhancing researcher access to these files with confidentiality protection. For further information, contact Robert H. McGuckin, 301-457-1848.

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