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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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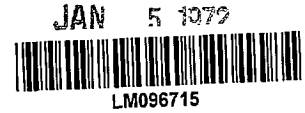
JAN 5 1972



Dear Mr. Kemp:

On February 23, 1971, you sent us information concerning a proposed machine tool production control system and asked that we determine whether Federal agencies (1) could use the system to improve their management of public funds and (2) would be forced to buy foreign-made machine tools if the U.S. machine tool industry continued to decline.

Your office agreed to refer your first question to the executive branch, specifically, the General Services Administration and the Defense Supply Agency. Concerning the need to buy foreign-made machine tools, it was agreed that we would make inquiry of the Department of Defense (DOD), since it buys more machine tools than any other Government agency, and would obtain statistics on its purchases of foreign machine tools and the effect a declining industry would have on future purchases.

According to a copy of a magazine article you sent us on June 30, 1971, the American metal-cutting industry could save billions of dollars annually if reliable machining data were available and properly applied. In an accompanying letter you asked us to consider what DOD might do to eliminate this problem, referred to as data lag.

In summary, we obtained the following information.

--DOD's machine tool purchases represented about 6 percent of domestic machine tool shipments. (See p. 3.)

--Although statistics on DOD's purchases of foreign machine tools were not available, such purchases did not appear to be extensive. (See p. 3.)

--Domestic manufacturers may stop producing certain types of machine tools. In general, DOD is not buying these types now but may have to in case of mobilization. (See pp. 2 and 3.)

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--DOD has a machinability data center in Cincinnati, Ohio, which provides machining data to the Government and to industry. (See p. 4.)

STATUS OF THE MACHINE TOOL INDUSTRY

The machine tool industry, which includes metal-cutting and metal-forming tools, has declined from record 1967 shipments (domestic consumption and exports) of $1.9 billion to an estimated $1.5 billion for 1970--a 21-percent decrease--according to the Department of Commerce. The industry's decline, officials of Commerce and the National Machine Tool Builders' Association said, was due primarily to the depressed state of the U.S. economy. They indicated that there had been a decline in the demand for machine tools by the four largest machine tool customers--aerospace, military ordnance, automotive, and durable goods industries.

Imports of machine tools had contributed to the industry's decline by competing with domestic production. As shown in exhibit A--total shipments, imports and exports, and balance-of-trade statistics for the machine tool industry--imports in recent years had greatly exceeded those of the early 1960's, and Commerce officials expect further increases.

Domestic manufacturers may stop producing certain standard general-purpose machine tools if the industry's decline and foreign competition continue, according to DOD, Commerce, and National Machine Tool Builders' Association officials. They agreed that production was most likely to be curtailed when foreign penetration (imports as a percent of consumption) was high.

Exhibit B shows that, from 1961 to 1970, foreign penetration for metal-cutting and metal-forming tools increased from 5 percent to an estimated 11.6 percent and from 4.9 percent to an estimated 6.9 percent, respectively. Exhibit B shows also the penetration of the cutting-machine market by major types of machines. A breakdown of the foreign penetration for forming machines is not available, but imports of these

machines are not as significant a problem, according to Commerce officials.

DOD PURCHASES OF MACHINE TOOLS

In fiscal years 1962 through 1969, DOD bought an average of $82.5 million worth of machine tools annually, about 6 percent of the total machine tool industry shipments. Purchases in fiscal years 1962 through 1965 averaged $53.3 million annually, although in fiscal years 1966 through 1969 they averaged $111.8 million. After fiscal year 1969 DOD had stopped accumulating summary statistics on machine tool purchases.

Defense and Commerce officials said that DOD, in general, procured more sophisticated and expensive machine tools than the standard general-purpose tools which bore the brunt of foreign competition. They indicated, however, that DOD would need to buy large quantities of general-purpose machine tools in case of mobilization. A lack of domestic producers (see p. 2) would therefore weaken DOD's industrial preparedness program. DOD is reviewing its foreign purchases of machine tools and product components of major weapons systems, excluding those produced in Canada, to determine how much DOD relies on foreign sources.

Foreign purchases of machine tools

DOD did not maintain summary statistics on purchases of foreign machine tools. Some information on such purchases could be obtained, however, from machine tool acquisitions reported for inventory purposes by DOD components to the Defense Supply Agency. These statistics indicated that DOD's purchases of foreign-made machine tools were not extensive. Only $5.6 million, or 1.7 percent, of the $329 million worth of 1966-70 machine tool acquisitions reported to the Defense Supply Agency through June 30, 1971, were foreign made. DOD could not estimate what its future purchases of foreign machine tools would be.

Contracts awarded to foreign manufacturers

The Buy American Act requires, with some exceptions, that Federal agencies purchase only domestic products--ones in which over 50 percent of the cost of the components are mined, produced, or manufactured in the United States. The Armed Services Procurement Regulation states that the act does not apply to Canadian products or to those which are nonavailable in the United States.

To determine why DOD was buying foreign-made machine tools and whether it was complying with the Buy American Act, we reviewed the procurement files of 19 contracts for foreign-made machine tools, valued at $1 million, which were awarded during fiscal years 1968 through the first half of 1971. Of the 19 contracts, 12 contracts for Canadian machine tools, valued at $592,000, were awarded competitively to Canadian firms because they had underbid domestic or other foreign competitors. The remaining seven contracts, valued at $411,000, were subcontracted or awarded noncompetitively to manufacturers of foreign machine tools because a domestic source could not fulfill the requirement (exhibit C).

DATA LAG

The reference in the magazine article you submitted is a presentation by an official of Metcut Research Association, Inc., in Cincinnati in which he asserts that a machining problem, referred to as data lag, is costing the U.S. metal-cutting industry from $2 billion to $10 billion annually. Data lag occurs when the machine operator is not provided with sufficient information to select the most efficient machine feeds and speeds.

The Air Force has contracted with Metcut Research Association, Inc., to operate a machinability data center for collecting, evaluating, storing, and disseminating material removal information--how fast and deep metal can be cut--for the benefit of Government and industry. It has a file of over 27,000 documents pertaining to all phases of material

removal technology and, in the year ended September 30, 1970, answered 1,038 inquiries.

We have discussed the above information with DOD officials but did not obtain their written comments. We will not distribute this report further unless copies are requested and we obtain your agreement or unless you publicly announce its contents.

Sincerely yours,

Deputy

Comptroller General
of the United States

The Honorable Jack F. Kemp
House of Representatives

U.S. VALUE OF MACHINE TOOL INDUSTRY

SHIPMENTS, EXPORTS, IMPORTS, AND BALANCE OF TRADE

	Shipments (note a)			Exports			Imports			Balance of trade		
	Total	Cutting	Forming	Total	Cutting	Forming	Total	Cutting	Forming	Total	Cutting	Forming
	(millions)											
1961	$ 764.4	$ 531.3	$233.1	$242.7	$162.1	$80.6	$ 27.1	$ 19.3	$ 7.8	$ 215.6	$ 142.8	$72.8
1962	867.2	626.8	240.4	268.1	168.3	99.8	30.3	23.1	7.2	237.8	145.2	92.6
1963	967.4	657.9	309.5	213.3	132.3	81.0	26.9	17.6	9.3	186.4	114.7	71.7
1964	1,209.1	874.5	334.6	285.8	189.8	96.0	36.2	30.5	5.7	249.6	159.3	90.3
1965	1,457.7	1,047.8	409.9	238.4	159.3	79.1	56.3	48.1	8.2	182.1	111.2	70.9
1966	1,712.8	1,231.9	480.9	219.2	144.8	74.4	117.8	104.7	13.1	101.4	40.1	61.3
1967	1,869.3	1,373.2	496.1	232.9	161.6	71.3	178.2	153.5	24.7	54.7	8.1	46.6
1968	1,722.9	1,309.4	413.5	221.7	140.8	80.9	163.6	142.0	21.6	58.1	-1.2	59.3
1969	1,692.2	1,242.6	449.6	248.2	159.2	89.0	156.1	132.8	23.3	92.1	26.4	65.7
1970	1,462.0[b]	1,011.0[b]	451.0[b]	297.6	213.2	84.4	131.9	104.7	27.2	165.7	108.5	57.2
1971[b]	1,521.0	1,066.0	455.0	286.0	200.0	86.0	141.0	110.0	31.0	145.0	90.0	55.0
1972[b]	1,625.0	1,150.0	475.0	279.0	195.0	84.0	165.0	131.0	34.0	114.0	64.0	50.0
1973[b]	1,790.0	1,275.0	515.0	261.0	180.0	81.0	194.0	155.0	39.0	67.0	25.0	42.0
1974[b]	1,955.0	1,400.0	555.0	248.0	170.0	78.0	218.0	175.0	43.0	30.0	-5.0	35.0
1975[b]	2,110.0	1,515.0	595.0	240.0	165.0	75.0	243.0	195.0	48.0	-3.0	-30.0	27.0
1980[b]	2,750.0	2,000.0	750.0	213.0	145.0	68.0	347.0	280.0	67.0	-134.0	135.0	1.0

[a]Machine tool shipments represent the manufacturers' selling price, f.o.b. factory, of complete machines, as shipped, including all accessories, attachments, and numerical controls that are ordered and shipped with the machines. Shipments for exports, as well as those for domestic consumption, are included.

[b]Estimated.

Source: Department of Commerce.

EXHIBIT A

U.S. MACHINE TOOL IMPORTS

AS A PERCENT OF UNITED STATES

MACHINE TOOL CONSUMPTION

	All tools	Forming types	Cutting types	Cutting types: Boring machines	Drilling machines	Gear-cutting and finishing machines	Grinding and polishing machines	Lathes	Milling machines	Other metal-cutting machines
1961	4.9	4.9	5.0	(a)	(a)	(a)	(a)	(a)	(a)	(a)
1962	4.8	4.9	4.8	(a)	(a)	(a)	(a)	(a)	(a)	(a)
1963	3.4	3.9	3.2	4.4	1.3	2.7	2.6	4.7	1.5	4.6
1964	3.8	2.3	4.3	7.0	2.5	4.7	3.7	5.2	3.0	4.4
1965	4.4	2.4	5.1	7.0	3.0	7.7	3.6	6.3	4.3	5.4
1966	7.3	3.1	8.8	11.5	4.9	5.3	5.9	12.2	8.3	8.5
1967	9.8	5.5	11.2	16.7	6.4	8.2	6.9	13.2	12.4	11.4
1968	9.8	6.1	10.8	19.7	14.2	8.4	7.6	11.3	12.4	8.0
1969	9.8	6.1	10.9	23.5	9.4	5.7	8.2	12.5	13.3	7.1
1970[b]	10.1	6.9	11.6	31.5	6.6	10.6	8.2	11.7	12.9	6.7

[a]Not available.

[b]Estimated.

Source: Department of Commerce.

EXHIBIT B

FOREIGN-MADE MACHINE TOOLS PURCHASED

UNDER NONCOMPETITIVE CONTRACTS REVIEWED

Description	Country in which manufactured	Total contract price	Reason given by purchasing activity for not purchasing a domestic tool
Lathe and 10-horsepower motor, including controls and coolant system	Canada	$ 13,542	Extensive market survey revealed no domestic source able to meet required delivery date.
Three engine lathes, 18-in. swing, 54 in. between centers, 16 spindle speeds with standard equipment	Canada	24,816	Bids were solicited from 11 domestic firms and one Canadian firm; only the Canadian firm submitted a bid.
Two automatic bar machines with six-spindle hydraulic turrets and toolings	Switzerland	50,215	Various domestic firms were contacted, none could fulfill the requirement.
Swaging press, 2,000 ton, with operating data and tooling	Sweden	71,908	A review of domestic manufacturers revealed none could fulfill the requirement.
Horizontal deep-hole-boring and trepanning machine, including data and services to install	West Germany	236,088	Do.
Jeweler's watchmaker-type lathe having a lead-screw drive mechanism	West Germany	2,573	Do.
Shearing-nibbling, circle, contour, and copying machine, 51-in. throat depth, 0.20-in. thickness for nibbling, 0.56-in. for cutting	West Germany	11,672	Bids were solicited from 22 domestic and foreign firms; a firm offering a German tool submitted the only bid.
	Total	$410,814	

EXHIBIT C