

THE EFFECTS OF THE 1958 IMPORT QUOTA ON THE
UNITED STATES ZINC INDUSTRY

By

ROBERT CARLESS JONES

Bachelor of Science

Oklahoma City University

Oklahoma City, Oklahoma

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Thesis Approved:

W. Trenton

Thesis Adviser

Russell H. Baugh

Annel M. Sharp

James MacIsaac

Dean of the Graduate School

504524

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CHAPTER I

INTRODUCTION

All production of zinc in Oklahoma had stopped by October, 1959, after nearly 60 years of continuous mining operations.¹ The same is true of Missouri and Kansas which, along with Oklahoma, comprise the tri-state zinc and lead production area of the United States.² In 1947-49, the area produced 14.8 percent of the U. S. annual domestic production of zinc. In 1958, 2.1 percent was produced and today, production is zero. Industry and government sources estimate that the hundred mile square area of Southeast Kansas, Northeast Oklahoma, and Southwest Missouri still has 1,800,000 tons of known recoverable zinc and lead metal reserves.³ What has caused these mine closures? This thesis is concerned with the problem underlying the answer to this question.

The Problem of Domestic Zinc Producers

Until the end of World War II, the United States zinc industry enjoyed an advantage over foreign producers that allowed it to supply

¹U. S. Congress, House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on Mines and Mining. Declaring The Sense of Congress on The Depressed Domestic Mining and Mineral Industries Affecting Public and Other Land, Hearings, 86th Congress, 1st Session (Washington, 1959), p. 448.

²American Institute of Mining and Metallurgical Engineers. Story of the Tri-State Zinc and Lead Mining District (Joplin, Mo., 1931), p. 6.

³Hearing, 86th Congress, 1st Session, p. 132.

a vast majority of the world's demand. Although the United States remains the largest consumer of zinc, and zinc consumption shows little, if any, structural decline, mine production has fallen from 575,000 short tons of zinc content in 1946 to 417,000 tons in 1959.⁴

In the same period of 1946 to 1959, output of zinc outside the United States increased from 1,170,000 short tons of zinc content to 3,003,000 tons. Consumption of zinc outside the U. S. increased from 1,216,000 tons in 1946 to 2,074,000 tons in 1958.⁵

In brief, the United States' share of total world production of zinc fell from 29.5 percent in 1937-38, to 12.2 percent in 1959.⁶

Part of the domestic industry blamed foreign competition for its difficulties and exerted its influence toward the imposition of restrictions against the free flow of imported metal.⁷ Under present laws it is possible for a U. S. industry to seek governmental action to reduce imports when the industry is faced with foreign competition. The zinc industry sought such aid through the escape clause provisions of the Trade Agreements Extension Act as amended in 1951. In 1958, after other governmental assistance which attempted both to decrease supply and increase demand in this country had failed, the President proclaimed the imposition of import quotas, which were designed to "protect" domestic

⁴U. S. Tariff Commission. Lead and Zinc, Report to the President (1960) Under Executive Order 10401 (Washington, 1960), p. 20.

⁵U. S. Tariff Commission. Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 (Washington, 1960), Table 24

⁶Ibid.

⁷For information concerning the U. S. tariff on zinc see Appendix A.

producers from the competition of products offered on the market by foreign producers, as a direct result of an escape clause investigation.

Objective of the Study

The objective of this study is to analyze the effectiveness of this quota protection through resultant changes in output, imports, prices, inventories, employment, and other indicators of economic change. It is hoped to discover whether or not the import quotas on zinc in 1958 had any appreciable effect on the domestic zinc industry and to determine the nature of this effect. In recent years import quotas have been demanded by an increasing number of industries as a solution for their varied problems. It is hoped that this thesis will show what quotas did - or failed to do - in the case of one industry where quotas have been in operation for about three years.

The Physical Characteristics and History of Zinc

Few people have a knowledge of the growth of the importance of the zinc industry in the economy of the United States. Because of the nature of its uses, few people recognize the metal even though they regularly come in contact with it in their everyday activities. A brief discussion of the physical characteristics and history of zinc is therefore a necessary beginning for a study concerning the zinc industry.

Physical Characteristics

Zinc is a bluish-white metal widely used for its ability to control corrosion of steel and iron; for its utility in making low-cost high quality, high finish diecastings; for its alloying properties with copper

in brass, as well as in pigments and various chemicals.⁸ It does not enjoy a monopolistic claim to all of these uses, however. Aluminum is by far the chief alternative for galvanizing, and, more importantly, for diecasting, the two applications which constituted approximately 78 percent of the total U. S. zinc consumption in 1960.⁹

History

Although zinc was used in brass more than 2,000 years ago, it was not until the middle of the 18th century that it was produced commercially in Europe. Zinc was smelted in Bristol, England, from about 1740, and the first continental European smelter was erected at Liege, Belgium, in 1807. Commercial production of zinc in the United States began in 1858 when smelters were constructed at Friedensville, Pennsylvania, and La Salle, Illinois. As demand increased, additional ore bodies and new smelting works were developed, and by 1880, thirteen smelters were producing about 23,000 tons of refined zinc annually.¹⁰ Since 1909, this country has been the world's leading producer and consumer of zinc.¹¹ Today zinc stands fourth among metals with respect to new production in the U. S., being surpassed only by steel, copper, and aluminum.

Beginning with W.W.II, however, not only has the U. S. zinc industry lost much of its previous share of the world production of zinc, but

⁸U. S. Department of the Interior, Bureau of Mines. Minerals Facts and Problems (Washington, 1960), p. 8.

⁹C. H. Mathewson. Zinc, The Science and Technology of the Metal, Its Alloys and Compounds (New York, 1959), p. 24.

¹⁰Minerals Facts and Problems (Washington, 1960), p. 2.

¹¹American Zinc Institute. Zinc, A Mine to Market Outline (New York, u.d.), p. 11.

it has also lost a considerable share of the domestic market to foreign producers. Up to this period, the U. S. imported very little zinc in any form. Exports generally exceeded imports, usually by a small margin, and it was not until 1935 that the trade balance changed. The annual supply of zinc in the United States in the period 1937-39 averaged 655,000 tons (domestic production plus net imports). Ninety-four percent of this was met by domestic production, and the balance was net imports. A large percentage of the zinc imported in the prewar years was manufactured into articles for re-export with drawback of duty. Thus, although the U. S. imported more zinc than it exported, little foreign metal was actually consumed in this country.¹²

TABLE I
PRODUCTION OF SELECTED FINISHED METALS IN THE WORLD, 1959
(Short Tons)

Metals	U.S.A.	All Others	World
Aluminum	1,953,017	2,442,694	4,395,711
Copper (Smelter)	915,297	3,387,003	4,302,300
Zinc (Primary Slab)	805,110	2,376,003	3,181,113
Lead (Smelter)	364,250	2,005,985	2,420,235
Steel	93,446,132	241,646,930	335,093,062

SOURCE: American Zinc Institute, A Mine to Market Outline, p. 7.

W.W.II increased domestic consumption of zinc greatly until in 1943 it amounted to over one million tons. Imports increased to 80 percent

¹²U. S. Tariff Commission. Lead and Zinc Industries, Report No. 192 to the Congress on the Investigation Under Section 332 of the Tariff Act of 1930 (Washington, 1954), p. 162.

TABLE II

ZINC: MINE OUTPUT, AND CONSUMPTION OF PRIMARY METAL IN THE UNITED STATES, OUTSIDE THE UNITED STATES,
AND IN THE WORLD, AVERAGE 1937-38, ANNUAL 1946-59

Period	(Quantity in thousands of short tons)						Ratio of United States to World	
	Mine Output			Consumption			Mine Output	Consumption
	United States 1/	Outside United States	World 2/	United States 3/	Outside United States	World 4/		
							Percent	Percent
1937-38 average	572	1,364	1,936	514	1,216	1,730	29.5	29.7
1946	575	1,170	1,745	801	896	1,697	33.0	47.2
1947	638	1,312	1,950	786	1,055	1,841	32.7	42.7
1948	630	1,418	2,048	818	1,078	1,896	30.8	43.1
1949	593	1,512	2,105	712	1,123	1,835	28.2	38.8
1950	623	1,747	2,370	967	1,222	2,189	26.3	44.2
1951	681	1,919	2,600	934	1,338	2,272	26.2	41.1
1952	666	2,184	2,850	853	1,317	2,170	23.4	39.3
1953	547	2,393	2,940	986	1,372	2,358	18.6	41.8
1954	474	2,456	2,930	884	1,689	2,573	16.2	34.4
1955	515	2,695	3,210	1,120	1,827	2,947	16.0	38.0
1956	542	2,878	3,420	1,009	1,829	2,838	15.8	35.6
1957	532	2,978	3,510	936	1,984	2,920	15.2	32.1
1958	412	2,938	3,350	868	2,074	2,942	12.3	29.5
1959 5/	417	3,003	3,420	6/	6/	6/	12.2	6/

1/ Recoverable content of ores and concentrates produced.

2/ Partly estimated; data represent principally zinc content of ores and concentrates produced, but are in terms of recoverable zinc content for the United States and several other countries for some years, and smelter production for the U.S.S.R. and Northern Rhodesia (prior to 1951).

3/ Represents consumption of slab zinc, beginning in 1946, as reported by the U. S. Bureau of Mines.

4/ Partly estimated; includes some consumption of secondary slab zinc.

5/ U. S. mine output, preliminary; other data estimated by the U. S. Bureau of Mines.

6/ Comparable data not available.

Sources: Mine and smelter output, U.S. Bureau of Mines; consumption, American Bureau of Metal Statistics, except as noted.

of domestic production in 1943, which was the peak import year of the war. Much of the zinc entered duty free for government purchase. From 1943 up to the present a large portion of the U. S. consumption of zinc was met by foreign producers.

In 1957, the last year before the imposition of import quotas by the United States, 531,735 short tons of zinc content were mined in this country while 951,347 short tons of zinc content were imported for consumption.¹³

Methodology

This thesis is based largely on empirical information gathered by the U. S. government. U. S. Tariff Commission reports concerning the zinc industry constitute the major source of data. Other important sources include the proceedings of Congressional hearings on proposed legislation, and empirical data collected and printed by the U. S. Bureau of Mines. Information received from the American Zinc Institute was also revealing at certain points in the study. The data have been analyzed and the conclusions of this thesis reached within a framework of generally accepted theoretical principles.

Outline of the Study

The analysis of import quotas will be preceded by a brief sketch of the economic determinants of the zinc industry. The competitive structure is outlined in chapter two; consumption and substitution possibilities follow in chapter three; and price and output patterns occupy

¹³ Executive Order 10401 (Washington, 1960), p. 20.

chapter four. Chapter five analyzes the zinc quota and its results leading to brief conclusions in the final chapter of this study.

CHAPTER II

THE STRUCTURE OF THE DOMESTIC ZINC INDUSTRY

Import restrictions vary in their impact on an industry when various components of this industry find themselves in different competitive positions. The economic problems of a zinc smelter are so much at variance from the mining problems that its attitude toward imports follows some very different reasoning. In order to realize the effect of quotas, the industry structure needs a more detailed discussion.

Sequence of Production

The zinc industry consists of a series of production operations beginning with activities directed toward the production of ore and terminating with the output of metal. The production pattern follows the following steps: Ores are mined, milled (concentrated), and shipped to a smelter for reduction to metal.¹

Unmanufactured zinc articles are primarily the products of zinc mines, mills, and smelters. The term "unmanufactured zinc" refers to articles provided for in paragraphs 393 and 394 of the Tariff Act of 1930. Included in this category are: Ores, zinc metal in blocks, pigs and slabs, zinc scrap, dross, and skimmings (by-products of galvanizing

¹U. S. Tariff Commission, Report No. 192, p. 7.

and diecasting).² It was upon this category that the President placed the 1958 import quotas.

Milling is the process by which ores are ground uniformly and treated to remove excess waste matter. Mills are located at all principal mines, although a few process ores from small mines without mills.³

Transportation cost is the determining element in mill location.

...the zinc content has been increased by the concentration process from 100 pounds per ton of raw ore to about 1200 pounds per ton of concentrates. This is a concentration ratio of 12:1 which offers its own answer as to why this part of the winning of the metal must necessarily be located proximate, if not adjacent, to the source of ore.⁴

Smelting is the process by which the metal is separated from the concentrate and cast in forms ready for the consuming industries. Smelting technology differs for various types of ores which renders differing ores not fully interchangeable as alternative raw materials.

Industry Structure

When zinc mines are spoken of in this paper, the reference is to those primarily producing zinc ore.

The zinc industry of the United States consists of some 500 firms engaged in mining, milling, smelting, importing, secondary-recovery, and marketing. Despite this large number, the eight largest firms control about three-fourths of the zinc mines and smelters in the U.S.⁵

²U. S. Tariff Commission, Investigation No. 332-26, p. 14.

³Minerals Facts and Problems (Washington, 1960), p. 3.

⁴Carl H. Cotterill. Industrial Plant Location, Its Application to Zinc Smelting (St. Louis, Mo., 1950), p. 48.

⁵Minerals Facts and Problems (Washington, 1960), p. 3.

The same companies have substantial investments in other countries.

TABLE III

U. S. ZINC PRODUCERS WITH MINE INVESTMENTS IN FOREIGN COUNTRIES

Companies	Countries
American Metals Climax Company	Canada
American Smelting and Refining Company	Mexico
Eagle-Picher Company	Argentina
National Lead Company	Peru
Newmont Mining Corporation	Australia
Pend Oreille Mines and Metals Company	South-West Africa
St. Joseph Lead Company	Morocco

SOURCE: Minerals Facts and Problems, p. 3.

However, there are many hundreds of large and small mines and more than 60 smelters abroad that produce about two-thirds of the world's zinc and are largely if not wholly independent of U. S. corporate control.⁶

Mine and Smelter Location

In 1958, 450 mines were engaged in zinc mining in 20 states. The majority of these mines represented independent firms conducting small mining operations. Eighty-four percent of the ore output was mined by the 25 leading mines.

Mine production in the U. S. is concentrated geographically in an eastern and western area. A notable recent change in major producing

⁶ Ibid., p. 3.

TABLE IV
DOMESTIC MINING AREAS
(Zinc Content in Tons of 2,000 pounds)

State	Average 1950-54	Percentage of total in 1950-54	Total 1959	Percentage of total in 1959
Western States				
Arizona	41,923	7.7	37,325	8.8
California	6,669	1.2	78	*
Colorado	45,530	8.3	35,388	8.3
Idaho	74,802	13.7	55,699	13.1
Montana	75,328	13.8	27,848	6.5
Nevada	12,251	2.2	217	*
New Mexico	27,807	5.1	4,636	1.1
Utah	32,431	5.9	35,223	8.3
Washington	21,638	4.0	17,111	3.0
	<u>338,379</u>	<u>61.9</u>	<u>213,525</u>	<u>50.2</u>
West Central States				
Arkansas	17	*	49	*
Kansas	23,237	4.2	1,017	*
Missouri	9,768	1.8	92	*
Oklahoma	46,338	8.5	1,049	*
	<u>79,360</u>	<u>14.5</u>	<u>2,207</u>	<u>*</u>
South East of the Mississippi				
Illinois	19,311	3.5	26,815	6.3
Kentucky	1,683	*	673	*
New York	43,147	7.9	43,464	10.2
Pennsylvania	-	-	16,718	3.9
Tennessee	36,155	6.6	89,932	21.1
Virginia	13,310	2.4	20,334	4.8
Wisconsin	14,886	2.7	11,635	2.7
	<u>128,492</u>	<u>23.5</u>	<u>209,571</u>	<u>49.0</u>
Total	546,231	100.0	425,303	100.0

*Less than 1%

SOURCE: American Zinc Institute, Mine to Market Outline, p. 15.

areas in the U. S. has been the gradual disappearance of the once heavily producing west central states and, at the same time, greatly increased output from states east of the Mississippi River. The tri-state area of Oklahoma, Kansas, and Missouri, once one of the leading production areas of the nation, produced only 2,200 tons of zinc in 1959, compared with 10,100 tons in the preceding year and over 135,000 tons in 1946.⁷ In fact, all producing mines in the area had ceased operating in 1958, and remain closed today. The small production in 1959 resulted from cleanup operations in connection with the shutdowns.

The zinc smelting industry operated sixteen primary and ten secondary plants in 1959, producing the slab zinc.⁸ A primary smelter processes new concentrate while the secondary smelters process scrap and residue matter from the various systems of zinc fabrication. The five largest primary smelters in the U. S. process over forty percent of the domestic production of zinc metal.

Smelter location is largely historically determined. Most smelters were built to take advantage of existing ore deposits. When nearby mines were exhausted, it proved to be less costly in most cases to ship ore from longer distances rather than relocating the smelter.

Today, smelters in the U. S. must rely on ores shipped many hundreds of miles for capacity operation.⁹ The National Zinc Company's Bartlesville, Oklahoma smelter -- far inland in relation to other smelters -- depended on foreign sources for 90 percent of the concentrate

⁷U. S. Tariff Commission, Investigation No. 332-26, p. 26.

⁸U. S. Department of the Interior, Bureau of Mines. Minerals Yearbook (Washington, 1959), p. 7.

⁹Minerals Facts and Problems (Washington, 1960), p. 3.

processed in 1959. Imported concentrates used by the plant normally enter the United States at either New Orleans, Louisiana, or Houston, Texas.¹⁰

TABLE V
FIVE LARGEST U. S. SMELTERS BY COMPANIES AND LOCATIONS

Company	Smelter Location
American Smelting and Refining Company	Corpus Christi, Texas
American Zinc Company	Monsanto, Illinois
The Anacondo Company	Anacondo, Montana Great Falls, Montana
The Bunker Hill Company	Kellogg, Idaho

SOURCE: Minerals Facts and Problems, p. 3.

The American Metal Climax, Inc., smelter at Blackwell, Oklahoma, depends entirely on foreign sources for its concentrates. In 1959, Mexico supplied 85 percent and Africa supplied fifteen percent of its raw material.¹¹

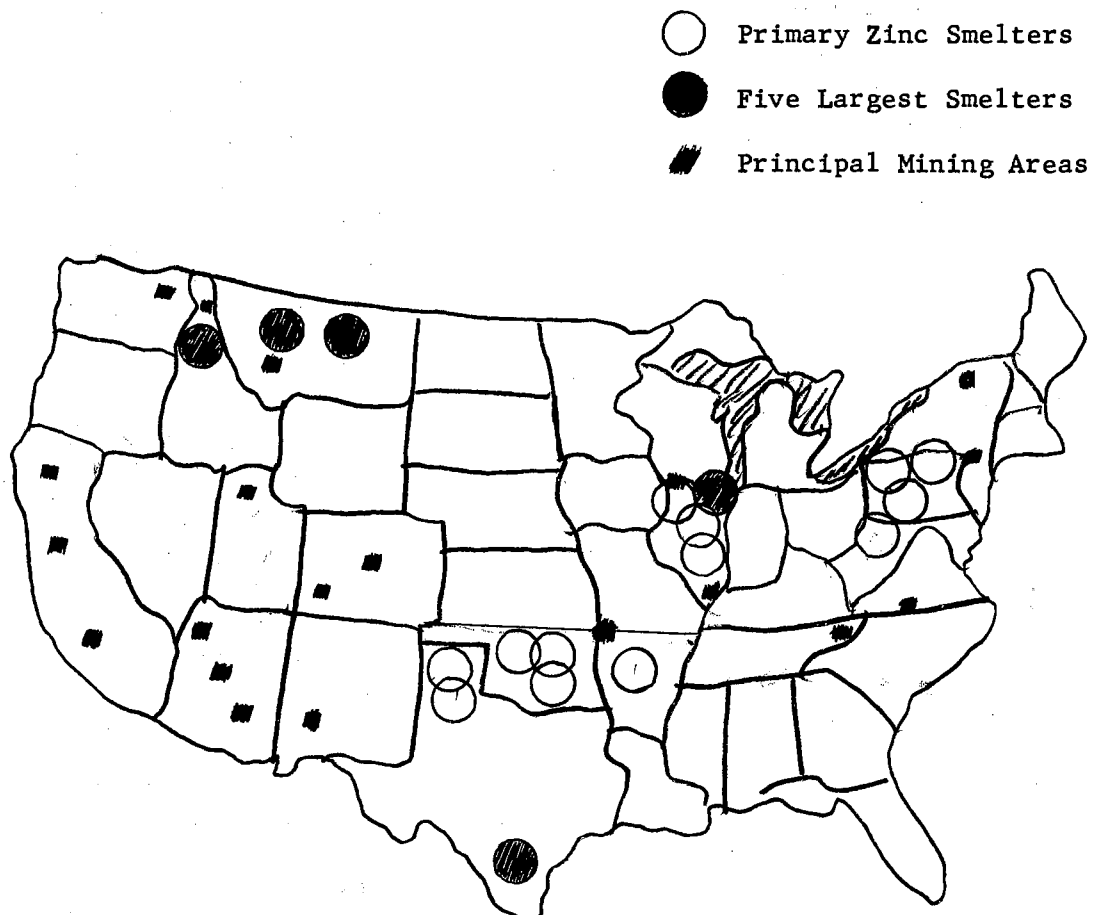
The Finished Zinc Market

Smelted Zinc is sold on the basis of refined quality which is divided into six categories shown in Table VI.

The traditional pattern of pricing zinc is a location factor in the industry. The standard price quotation in the United States is for

¹⁰ Roland Deloy Mower, "The Zinc Smelting Industry in Oklahoma" (unpub. Master's Thesis, Oklahoma State University, 1959), p. 72.

¹¹ Ibid., p. 77.



SOURCE: American Zinc Institute,
Zinc; Mine to Market Outline,
p. 12.

Figure 1. Primary Zinc Smelters and Principal Mining Areas of Zinc in the U. S.

prime western zinc which is the least pure of the six market grades of slab zinc and which is sold in greatest volume due to its use in galvanizing. East St. Louis, Illinois, has traditionally been the price-basing point for zinc in the United States, prices being quoted in cents per pound, f.o.b., East St. Louis, although relatively little zinc is delivered there. The other five market grades are integrated with the f.o.b. East St. Louis quotation for prime western zinc and usually command established premiums over this price.¹² Brass special and intermediate are sold for 1/4 and 1/2 cent, respectively, above the prime western quotation. High grade and special high grade are quoted on a delivered basis at 1-3/4 and 1-1/3 cents per pound above the East St. Louis Prime Western quotation.¹³

TABLE VI

STANDARD SPECIFICATIONS FOR SLAB ZINC; GRADES AND MAXIMUM IMPURITIES ALLOWED IN EACH

	Lead(%)	Iron(%)	Cadmium(%)	Aluminum(%)	Total
Special High Grade	0.006	0.005	0.004	none	0.010%
High Grade	0.070	0.020	0.070	none	0.100%
Intermediate	0.200	0.030	0.500	none	0.500%
Brass Special	0.600	0.030	0.500	none	1.000%
Selected	0.800	0.040	0.750	none	1.250%
Prime Western	1.600	0.080			

NOTE: Analysis is not regularly made for tin but when used for die-casting, if found by the purchaser, tin must not exceed 0.003 percent. Greater amounts may constitute cause for rejection.

SOURCE: American Zinc Institute. A Mine to Market Outline, p. 81.

¹²U. S. Tariff Commission, Report No. 192, p. 25

¹³Minerals Facts and Problems (Washington, 1960), p. 17.

U. S. prices are also quoted on an f.o.b. New York City basis. The differential between the East St. Louis price and the New York price is .5 cent and under the present practice sellers absorb freight charges in excess of this amount. The actual charge for freight and insurance from East St. Louis to New York was .83 cent per pound in 1953, of which the shipper absorbed .33 cent.

The London Metal Exchange price is the chief quotation for imported ores and concentrates. Domestic-foreign price comparisons are usually listed in terms of the New York and London markets. In 1953, the cost of transportation and insurance from the United Kingdom to New York of slightly less than .8 cent per pound plus the United States import duty of .7 cent per pound amounted to a slightly less than 1-1/2 cents differential.¹⁴ The differential had only slightly changed by the end of 1959 when the cost of transportation and insurance from London to New York City, plus U. S. import duty (.7 cent), was 1.6 cents per pound.¹⁵

The industry structure reveals a variety of interests. The consumption pattern for zinc also influences the impact of the quota as shall be seen in the following chapter.

¹⁴U. S. Tariff Commission, Report No. 192, p. 28

¹⁵U. S. Tariff Commission, Investigation No. 332-26, Table 8.

CHAPTER III

THE CONSUMPTION OF ZINC

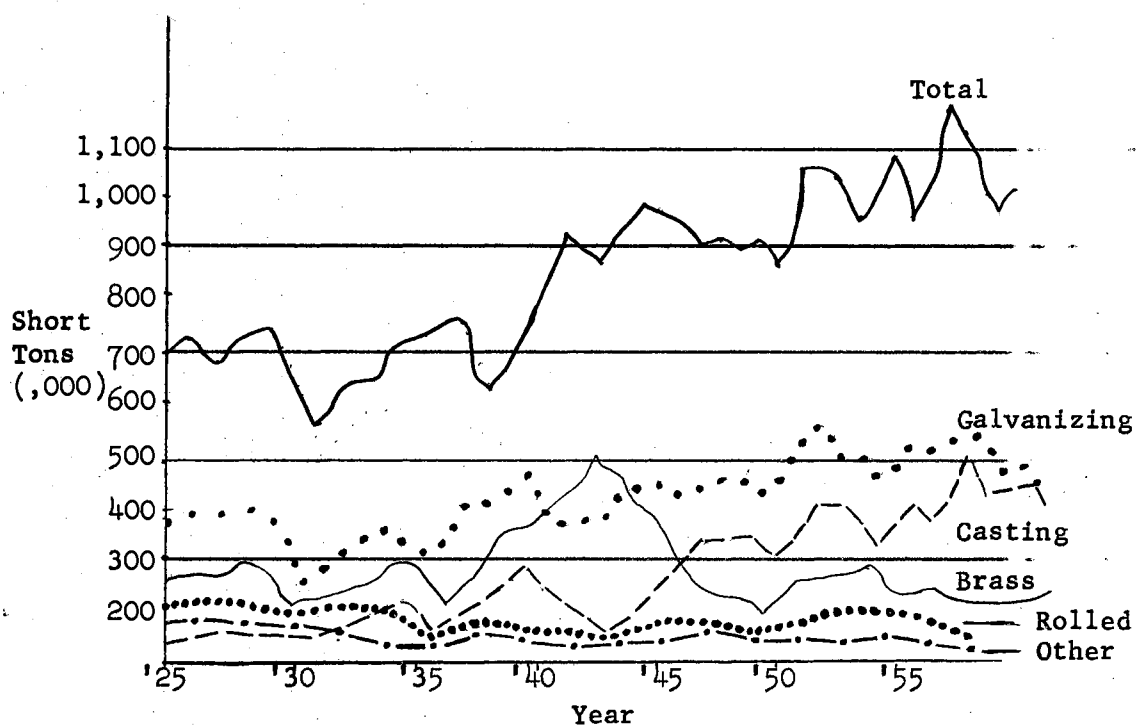
Effective import restrictions may raise domestic mine production through higher prices for the finished product. Whether or not such an objective can be achieved depends largely on the end-use of the product expressed in its demand elasticity. A discussion of the demand characteristics for zinc will clarify the conditions which permit import reductions to have their desired affect.

Uses of Zinc

Zinc is an important basic nonferrous metal in our economy. It has applications in many kinds of metal products and chemical compounds. When steel or iron is galvanized by the application of a thin coating of zinc, exposure to atmosphere results in the formation of an insoluble, adhering impervious layer of zinc carbonate that resists further attack. This is the primary use of zinc.

Diecasting is generally the second largest use of zinc and one which continues to grow. Molten alloys are forced into steel dies at temperatures up to 900° F and at pressures up to 2500 pounds per square inch. Diecasting permits mass production of intricate parts within slim tolerances with extremely smooth surfaces. The largest consumer of zinc for diecasting is the automobile industry.¹

¹Mineral Facts and Problems (Washington, 1960), p. 8.



SOURCE: American Zinc Institute,
A Mine to Market Outline, p. 9.

Figure 2. Consumption of Slab Zinc in the United States

Brass contains about 30 percent zinc and 40 percent copper. It is consumed in the automobile, plumbing, lighting fixtures, television, telephone, and telegraph industries among others. An important use is in the production of cartridge cases in the munitions industry.

Zinc oxide is used in rubber, paints, ceramics, pharmaceuticals, textiles, and floor coverings. Both natural and synthetic rubber contain about five percent zinc oxide.

Uses of rolled zinc include: Dry-cell batteries, weatherstrip, photoengraving plates, boilers, ship hulls, and pipelines.²

Characteristics of Industrial Consumption

Within its traditional uses, the demand for zinc is essentially a function of the over-all level of production. This correlation, however, holds only as long as zinc ores are priced low enough to render substitution by other materials impractical.

Substitution Possibilities

All efforts to reduce substitution of domestic zinc by imports are based on the assumption that no practical domestic substitutes can be found. This assumption needs further scrutiny in the case of zinc.

The best substitute for newly mined zinc ore is scrap metal. Technological differences prevent the two forms of the metal from being interchangeable. The relative share of the scrap in total output can fluctuate. During the period 1955-59, 76 percent of the total zinc production was newly mined metal, sixteen percent scrap, and eight

²Ibid., p. 9.

percent unprocessed ore. The unprocessed zinc is chiefly used in the manufacture of zinc oxide.

Aluminum is the chief competitor of zinc. It may be substituted for zinc in coating iron and steel as a corrosion preventative, but the cost to date has inhibited its use for this purpose. Sheet aluminum, although it has somewhat poorer structural qualities, is cheaper in the same gauge and is, therefore, becoming a strong competitor of galvanized (zinc-coated) steel.³

Zinc diecastings have more vigorous competitors. Aluminum diecastings, injection-molded plastics, and metal stampings are now used where the superior finish of zinc diecastings is not essential. Aluminum is 2-1/2 times lighter than zinc alloy used for diecasting (96 percent zinc and 4 percent aluminum). Therefore, although aluminum is currently a little less than twice the price of zinc on a weight basis, on a volume basis aluminum can be considerably less expensive.⁴

Aluminum has also become an effective competitor of brass products and of rolled zinc products. Aluminum sheet is being used for roofing and related products, weatherstrip, and lithographic sheet on an increasing scale. Today the quantity of aluminum used for these purposes greatly exceeds that of zinc.

Improved technology has made it possible to roll zinc in much thinner gauges. The substitution effect on the demand for ore from this

³Ibid., p. 9.

⁴U. S. Tariff Commission, Investigation No. 332-26, p. 145..

new technique is obvious.⁵

TABLE VII

ALUMINUM AND ZINC CONSUMED FOR DIECASTINGS IN THE U. S., 1952-59

Year	Consumption of slab zinc in diecastings	Net shipments of aluminum diecastings by producers
	Short tons, zinc content	Short tons
1952	225,877	84,866
1953	297,280	119,665
1954	279,676	122,645
1955	417,333	177,602
1956	349,200	188,115
1957	363,830	186,793
1958	309,408	145,138
1959	358,000	184,586

SOURCE: U. S. Tariff Commission, Lead and Zinc, Report on Investigation No. 332-26 (Supplemental) p. 145.

The consumption of some zinc pigments by the paint industry has also declined because of competition with titanium dioxide.⁶

With good substitutes available for some of the major applications of zinc, it can be concluded that above certain prices the demand for zinc is relatively elastic.⁷

⁵U. S. Tariff Commission, Zinc Sheet, Report to the President on Escape Clause Investigation No. 81 Under Section 7 of the Trade Agreements Extension Act of 1951 as Amended (Washington, 1960), p. 27.

⁶U. S. Tariff Commission, Investigation No. 332-26, pp. 145, 146.

⁷For a review of zinc consumption research see Appendix B.

CHAPTER IV

PRICE AND OUTPUT PATTERNS OF THE ZINC INDUSTRY

The price of domestic zinc (finished metal) has shown a tendency toward an equilibrium level between nine and twelve cents since 1946. The periods of higher prices can be attributed to exogenous influences in the form of war, governmental action, and strikes.

Zinc is a raw material traded on a world-wide basis. When price differentials between countries exceed the cost of transportation, insurance, and duty, such international flows will occur unless governments impose new obstacles to international trade in this metal. The broadness of the market with suppliers in many nations has a stabilizing influence on world market prices. The domestic U. S. price reflects this influence and has fluctuated around the world market price except for periods of government-imposed ceiling prices.

The London-New York Price Differential

From 1935 to the present, the London price of zinc has remained below the New York price with the exception of the period from 1946 to mid-1952. The stable foreign and domestic prices during W.W.II were the result of price ceilings in connection with the war effort. The relatively higher U. S. price beginning in 1946 resulted from high post-war domestic demand. U. S. price ceilings held the price of domestic metal at 19.5 cents per pound for a few months during the Korean Conflict

TABLE VIII

SLAB ZINC: AVERAGE MONTHLY MARKET PRICES IN THE UNITED STATES AND AT LONDON,
APRIL 1953 TO FEBRUARY 1960

(In cents per pound)

(in cents per pound)				
	Prime Western Grade			
Year and month	F.o.b. East St. Louis	Delivered New York City 1/	London Metal Exchange price 2/	Difference New York minus London price
1953:				
April-----	11.000	-	8.915	-
May-----	11.000	-	8.628	-
June-----	11.000	-	8.856	-
July-----	11.000	-	9.165	-
August-----	10.982	11.252	9.112	2.140
September-----	10.180	10.670	8.776	1.894
October-----	10.000	10.500	9.222	1.278
November-----	10.000	10.500	9.419	1.081
December-----	10.000	10.500	9.288	1.212
1954:				
January-----	9.760	10.260	9.128	1.132
February-----	9.375	9.875	9.028	.847
March-----	9.637	10.137	9.282	.855
April-----	10.250	10.750	9.956	.794
May-----	10.286	10.786	9.941	.845
June-----	10.960	11.460	9.990	1.470
July-----	11.000	11.500	9.695	1.805
August-----	11.000	11.500	9.415	2.085
September-----	11.408	11.908	10.077	1.831
October-----	11.500	12.000	10.316	1.684
November-----	11.500	12.000	10.152	1.848
December-----	11.500	12.000	10.340	1.660
1955:				
January-----	11.500	12.000	10.730	1.270
February-----	11.500	12.000	11.182	.818
March-----	11.500	12.000	11.031	.969
April-----	11.925	12.425	11.133	1.292
May-----	12.000	12.500	11.211	1.289
June-----	12.232	12.732	11.425	1.307
July-----	12.500	13.000	11.403	1.597
August-----	12.500	13.000	11.214	1.786
September-----	12.928	13.428	11.486	1.942
October-----	13.000	13.500	11.362	2.138
November-----	13.000	13.500	11.554	1.946
December-----	13.000	13.500	12.305	1.195
1956:				
January-----	13.431	13.931	12.604	1.327
February-----	13.500	14.000	12.551	1.449
March-----	13.500	14.000	12.695	1.305
April-----	13.500	14.000	12.280	1.720
May-----	13.500	14.000	11.852	2.148
June-----	13.500	14.000	11.751	2.249
July-----	13.500	14.000	11.685	2.315
August-----	13.500	14.000	11.950	2.050
September-----	13.500	14.000	12.043	1.957
October-----	13.500	14.000	11.966	2.034
November-----	13.500	14.000	12.596	1.404
December-----	13.500	14.000	12.671	1.329

TABLE VIII - CONTINUED

Year and month	Prime Western Grade		London Metal Exchange price 2/	Difference New York minus London price
	F.o.b. East St. Louis	Delivered New York City 1/		
1957:				
January-----	13.500	14.000	12.907	1.093
February-----	13.500	14.000	12.430	1.570
March-----	13.500	14.000	12.077	1.923
April-----	13.500	14.000	12.297	1.703
May-----	11.923	12.423	10.722	1.701
June-----	10.860	11.360	9.288	2.072
July-----	10.005	10.505	9.394	1.111
August-----	10.000	10.500	9.237	1.263
September-----	10.000	10.500	9.136	1.364
October-----	10.000	10.500	8.647	1.853
November-----	10.000	10.500	8.441	2.059
December-----	10.000	10.500	7.849	2.651
1958:				
January-----	10.000	10.500	7.821	2.679
February-----	10.000	10.500	7.982	2.518
March-----	10.000	10.500	7.936	2.564
April-----	10.000	10.500	7.797	2.703
May-----	10.000	10.500	7.732	2.768
June-----	10.000	10.500	8.022	2.478
July-----	10.000	10.500	7.950	2.550
August-----	10.000	10.500	7.979	2.521
September-----	10.000	10.500	8.129	2.371
October-----	10.838	11.338	8.808	2.530
November-----	11.367	11.867	9.409	2.458
December-----	11.500	12.000	9.293	2.707
1959:				
January-----	11.500	12.000	9.360	2.640
February-----	11.417	11.917	9.210	2.707
March-----	11.000	11.500	9.390	2.110
April-----	11.000	11.500	9.086	2.414
May-----	11.000	11.500	9.669	1.831
June-----	11.000	11.500	9.801	1.699
July-----	11.000	11.500	10.066	1.434
August-----	11.000	11.500	10.662	.838
September-----	11.334	11.834	10.759	1.075
October-----	12.129	12.629	11.421	1.208
November-----	12.500	13.000	11.867	1.133
December-----	12.500	13.000	11.899	1.101
1960:				
January-----	12.877	13.377	11.822	1.555
February-----	13.000	13.500	11.107	2.393

1/ Effective July 16, 1953, Prime Western zinc was also sold on a delivered basis (in addition to f.o.b. East St. Louis basis); the delivered price ranged from $\frac{1}{4}$ to $\frac{1}{2}$ cents per pound above the East St. Louis price. Beginning with October 1953, the delivered price was $\frac{1}{2}$ cent above the East St. Louis price where freight from East St. Louis exceeded $\frac{1}{2}$ cent per pound (freight from East St. Louis to New York City exceeded $\frac{1}{2}$ cent per pound).

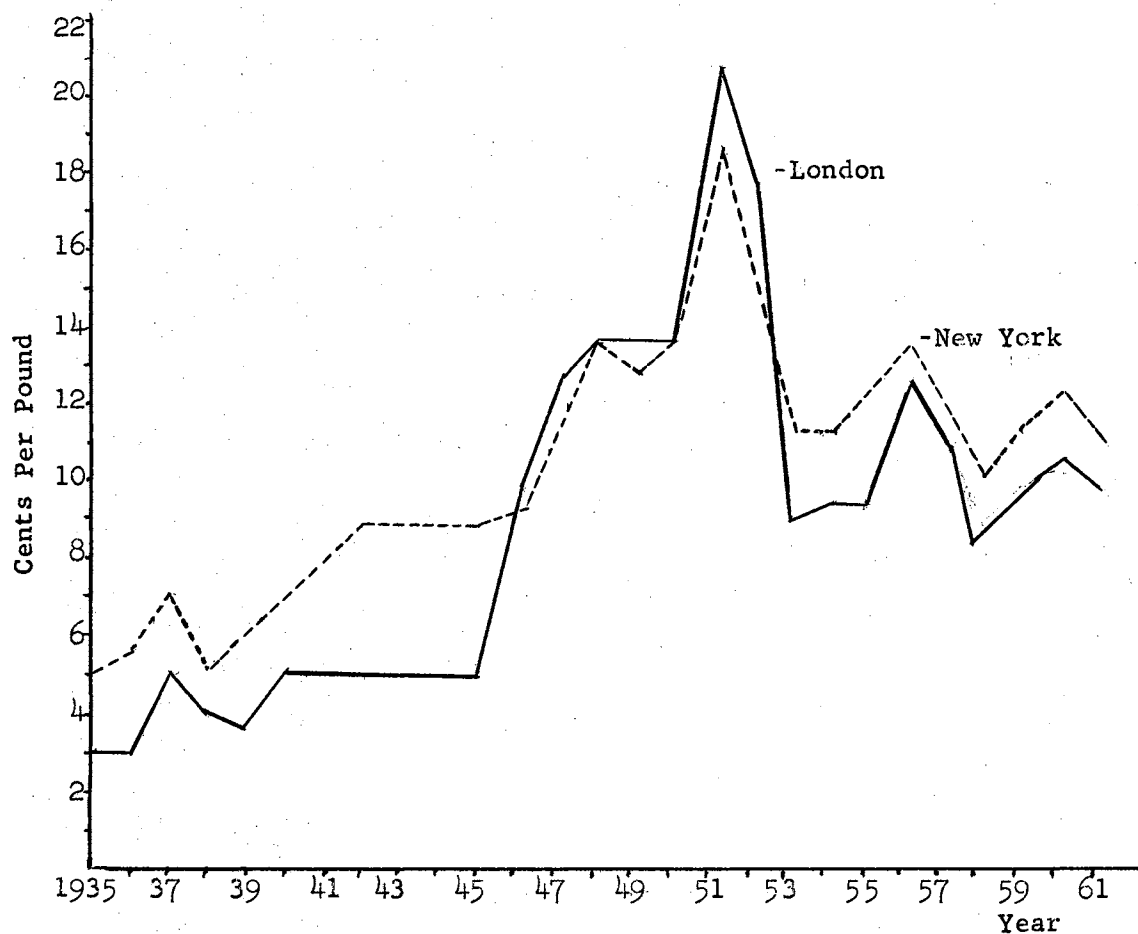
2/ Average of daily mean of bid and ask quotations for Good Ordinary brands (equivalent to U.S. Prime Western grade) per pound for prompt delivery at morning session of London Metal Exchange. Quotations in pounds sterling per long ton were converted to U.S. cents per pound, at the rate of 1 pound sterling equals \$2.80.

Source: E and M J Metal and Mineral Markets.

Note.--At the end of 1959 the cost of transportation and insurance from London to New York City, plus the U.S. import duty (7/10 cent per pound), amounted to about 1.6 cents per pound.

while strong military-induced world demand forced up the London price.¹

Following the Korean Conflict, in the period from April, 1953, to June, 1956, the U. S. price exceeded the price on the London Metal Exchange by an amount more or less equal to the U. S. import duties plus the cost of transportation and insurance from London to New York. This amount is approximately 1.6 cents per pound.



SOURCE: Engineering and Mining Journal, 1935-1961.

Figure 3. Zinc: New York and London Average Annual Prices in Cents per Pound: 1935-60.

¹ Minerals Yearbook (1959), p. 2.

During the period 1956-57, the U. S. government acquired 185,000 tons of foreign zinc by barter, equivalent to 41 percent of the total imports to the United States during January-June, 1957. The zinc was received in exchange for perishable surplus agricultural commodities under a program authorized by the Agricultural Trade Development and Assistance Act of 1954 (Public Law 480, 83rd Congress).²

The suspension of this program in 1957 was an element in the London price decline of 5.058 cents from January to December, 1957. This widened the price differential for zinc to 2.7 cents per pound - 1.1 cents above U. S. duty, cost of transportation, and insurance from London to New York. In October, 1958, the differential was only two-tenths of a cent lower.

Influences on the Domestic Price Since World War II

Following World War II, pent-up consumer demand existed along with retarded mine production resulting from deferred development and maintenance. Imports were small due to identical circumstances in other supplying countries. Under these conditions, after the removal of price ceilings in 1946, the East St. Louis price of zinc temporarily rose to 17.5 cents per pound at the end of 1948.

In order to relieve the shortage, the U. S. government continued a premium-price plan designed to encourage production from marginal mines.³ As production increased, the price fell from 17.5 cents in March, 1949,

²U. S. Tariff Commission, Report No. 65, p. 35.

³Ibid., p. 30.

TABLE IX

ZINC: QUANTITIES OF METAL OF FOREIGN ORIGIN CONTRACTED FOR BY THE COMMODITY CREDIT CORPORATION IN EXCHANGE FOR SURPLUS UNITED STATES AGRICULTURAL COMMODITIES IN THE BARTER PROGRAM, RECEIPTS OF SUCH METAL BY THE GENERAL SERVICES ADMINISTRATION FOR THE SUPPLEMENTAL STOCKPILE, AND IMPORTS FOR CONSUMPTION OF LEAD PIGS AND BAR AND SLAB ZINC ENTERED FREE OF DUTY FOR UNITED STATES GOVERNMENT USE, BY 6-MONTH PERIODS, 1956 AND 1957, AND JANUARY 1958
(In short tons)

Period	Quantities of metal contracted for by Commodity Credit Corporation (Barter)	Quantities received at General Services Administration warehouses (Stockpile)	Imports free of duty for United States Government use ^{1/}
	Zinc	Zinc	Zinc
1956:			
January-June-----	110,745	-	2,969
July-December-----	36,437	60,162	77,517
1956, total-----	147,182	60,162	80,486
1957:			
January-June-----	106,264	185,422	60,879
July-December-----	3,320	8,507	5,800
1957, total-----	109,584	193,929	66,679
1956 and 1957, total----	256,766	254,091	147,165
1958: January-----	3,192	<u>2/</u>	<u>2/</u>

^{1/} Substantial quantities of lead and zinc from foreign sources entered the United States as dutiable metal.
^{2/} Not available.

SOURCE: Data on metals contracted for by CCC, from the U. S. Department of Agriculture; data on metal received at GSA warehouses, from the General Services Administration; data on imports, from the U. S. Department of Commerce.

NOTE: "Strategic and critical materials" acquired by the CCC are held in inventory as assets of the Corporation. A reduction in storage costs is realized over agricultural commodities. These materials are stored separately from General Services Administration stockpiles. (U. S. Code, Congressional and Administrative News, p. 512).

to a monthly average of 11.97 cents in May, 1950.⁴

It remained at this general level until the acceleration of the defense program with the outbreak of hostilities in Korea boosted the price of zinc sharply to 19.5 cents per pound, the highest price in the history of the domestic industry. This price, in all probability, would have risen even further had it not been for the ceiling imposed by the Office of Price Stabilization.⁵ This is indicated by the foreign price of zinc which ranged from 25 cents per pound in February, 1951, to 29 cents in May, 1951.⁶

The high foreign prices caused diversion of the needed zinc imports from the United States and, as a result, Congress suspended all import duties on unmanufactured zinc effective February 12, 1952 (Public Laws 257 and 258, 82nd Congress).

Because of two unexpected factors the price of domestic zinc fell rapidly immediately following the duty suspension. First, foreign supplies increased rapidly while foreign consumption declined in 1952, resulting in increases in the quantity available for export to the United States. Second, industrial consumption of zinc in the U. S. declined sharply in 1952.

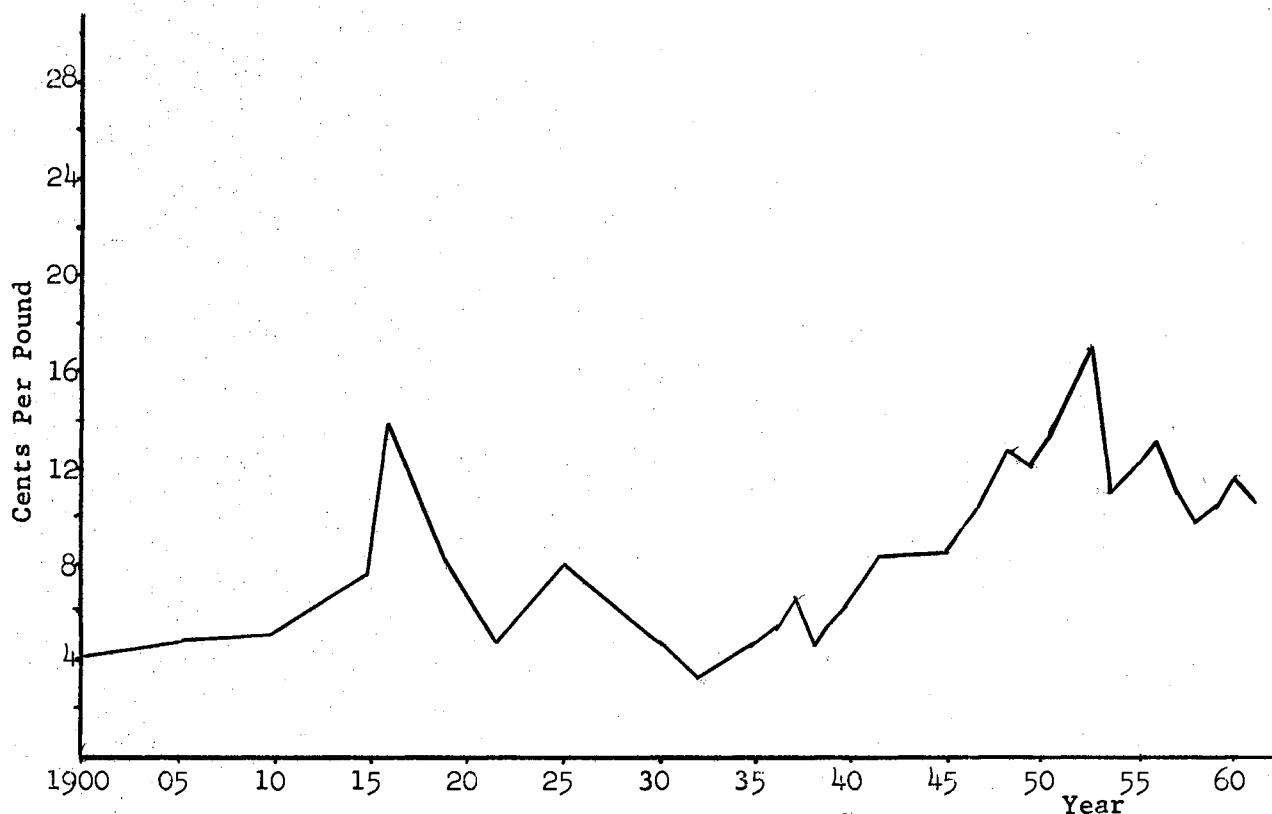
Despite government acquisition of zinc for defense in 1952, the situation resulted in sharp declines in domestic prices and accumulation of consumers' and producers' inventories. Prices dropped from 19.5 cents at the beginning of the year to a low of 12.5 cents at the end of

⁴Ibid., p. 31

⁵U. S. Tariff Commission, Investigation No. 332-26, p. 36.

⁶Charles R. Ince, "Zinc," Engineering and Mining Journal, February, 1951, p. 69.

the year. Ore concentrate imports had risen, at the same time, from 303,000 tons in 1951, to 446,000 tons in 1952.⁷ This price decline continued until a postwar low of 9.25 cents (East St. Louis) was reached February 15, 1954.⁸



SOURCE: Engineering and Mining Journal
February 1961, p. 65.

Figure 4. Domestic Price of Slab Zinc; Annual Averages,
1892-1960. (East St. Louis)

⁷Charles R. Ince, "Zinc," Ibid., February, 1953, pp. 82-83.

⁸It was this declining price plus the resulting curtailments of domestic mine production that led to the first Tariff Commission investigation of the zinc and lead industries and also the first escape clause investigation. U. S. Tariff Commission, Report No. 192. U. S. Tariff Commission. Lead and Zinc, Report to the President on Escape Clause Investigation No. 27 Under Section 7 of the Trade Agreements Extension Act of 1951, as amended. (Washington, 1954).

As a result of government action through the barter program and purchases of zinc for the strategic stockpile, plus a great increase in the private domestic demand for zinc in 1955, the domestic price of zinc had risen to 13.5 cents by January 5, 1956.⁹ The price remained at this level until May 6, 1957, when it fell to twelve cents, and by July 3 it had dropped to ten cents where it remained until October, 1958. These declines resulted from the announcement of the suspension of the barter program in April, 1957, and from decreases in domestic consumption in 1956 and 1957.¹⁰

The Quantity of Imports to the U. S.

The prevailing price level of zinc failed to maintain domestic production primarily because of high extraction costs due to lower ore content. Total U. S. consumption remained steady within the pattern of income fluctuations described before. An increasing share of this consumption was supplied by imported metals.

Table X shows the changes in domestic production and total imports over the last ten years and the ratio of total imports to domestic production.

Imports have continually risen until, in 1958, they exceeded domestic production for the first time.

Domestic Mine Closure and Curtailment

Accompanying the declining share of domestic production in the

⁹U. S. Tariff Commission, Investigation No. 332-26, p. 38.

¹⁰Ibid., p. 52.

domestic zinc market has been the closure of many U. S. marginal mines or, in some cases, curtailment of some degree in operation.¹¹

TABLE X
DOMESTIC PRODUCTION AND IMPORTS OF CONCENTRATES
(ZINC CONTENT), 1951-1960. (1,000 TONS)

Year	Domestic Production	Total Imports	Ratio (%)*
1951	681	303	43
1952	666	450	67
1953	547	513	93
1954	473	445	94
1955	515	478	93
1956	542	525	97
1957	532	526	99
1958	412	462	112
1959	425	499	117

*Total imports divided by domestic production.

SOURCE: U. S. Bureau of Mines, Minerals Yearbook: 1950-60.

Lead and zinc mine statistics are combined by the Tariff Commission when mine closures and curtailments are considered. The data are well

¹¹ The term "marginal mine" should be explored for a clear understanding of the closure and curtailment situation. It is important to note that many of these smaller or marginal operations were not closed after many years of continuous operation. Some were mines apparently opened as a direct result of increased demand resulting from unusual circumstances, i.e., the effects of World War II and the Korean Conflict on foreign and domestic supply and demand. These were operations that had been closed at some previous time because they could not meet costs at the then existing price levels. War prices rose above the minimum operating costs of some of these units and they were subsequently reopened.

representative of the situation in the zinc industry because of a close kinship between the two metals.

The Commission reported that, in 1956, a total of 544 lead and zinc mines produced at least some recoverable lead and zinc. The number had fallen from a total of 912 mines in 1952. Many of this number were exceedingly small with limited financial resources, with high costs, and small or low grade ore reserves.

In 1957, the Commission received reports from 413 mines which in the previous year had accounted for 99 percent of the total lead and zinc production. By April, 1957 - even before the drop in price of 2-1/2 cents (Table VIII) - 119 of these mines had ceased all activity and had no employees. "These were extremely small operations, hardly entitled to be called mines." The remaining 294 mines had at least some employees in April, 1957, but by the end of October, the last month covered by the reports, almost half of these mines had either suspended operations entirely or had instituted major curtailments in operations.¹²

By the end of October, 1957, nearly all the mines in the tri-state area, about 30 percent of the mines in the western states, and a few of the mines in the states east of the Mississippi River were inactive. Closures were not entirely limited to the small and medium size mines; operations were also completely suspended in five of the 34 largest lead and zinc mines in 1956.

Since November, 1957, additional mine closures or curtailments have been reported, including operations in Missouri, New York, and Idaho.¹³

¹²U. S. Tariff Commission, Report No. 65, p. 52

¹³Ibid., p. 53.

For the cause of mine closings at a time when others remain profitable a comparison of mine costs will prove to be revealing.

Mining Costs

The cost of a ton of zinc concentrate is a function of the absolute hourly wage rate and the productivity of mine labor. The major determinant of labor productivity is the ore content of the mined rock. Other cost elements are less important. We shall now discuss these various factors in turn.

Labor Cost

The largest single cost in the mining and milling of zinc is labor.¹⁴ It is estimated by the Tariff Commission to be approximately 50 percent of total cost. The general trend of this cost element in the domestic industry can be seen through average wages paid to production workers. Average hourly wages paid to such workers in lead and zinc mining and milling have risen as indicated in Table XI.

To provide information on zinc mining and milling in foreign countries comparable to that for the U. S., the Tariff Commission asked a number of important foreign producers to supply cost data in 1953. Reports were received from leading producers in Canada, Mexico, and Australia. Reports received from Canada covered the four largest mines and mills which accounted for 61 percent of the recoverable zinc produced in that country in 1952. Reports from Mexico covered fifteen mines and twelve mills which accounted for 45 percent of that country's zinc

¹⁴Ibid., p. 254.

production in 1952, and the data received from Australia covered four companies which accounted for 68 percent of their zinc production in the same year.¹⁵ The information received was on a confidential basis so only relative magnitudes were published.

TABLE XI
AVERAGE HOURLY WAGES PAID LEAD AND ZINC MINE
PRODUCTION WORKERS IN THE U. S.; 1952-1959

Year	Average Hourly Wages (dollars)
1952	1.95
1956	2.19
1957	2.27
1958	2.33
1959	2.38

SOURCE: Tariff Commission: Invest. #65, p. 46
Rpt. 10401, p. 4.

The average labor costs per ton of crude ore mined by the three Canadian and two Mexican companies that reported were somewhat higher than the average for the United States companies as a whole due to relatively higher levels of technology in the U. S. The hourly earnings of workers at Canadian and Australian mines and mills, taken as a group, were only slightly less than the average for the United States. The average hourly earnings of the Mexican workers were very much smaller than those of workers in the U. S., Canada, or Australia. It should be

¹⁵ Ibid., p. 252.

mentioned that Australian workers are paid, in part, on a bonus basis figured on current metal prices. The bonus thus provides the Australian producers some flexibility in wage costs.¹⁶

Metal Content of Ore

The basic advantage possessed by these three countries, which supply the U. S. with the bulk of its zinc imports, is the much higher grade of zinc-bearing ores mined, compared with the grade of the ores mined in the United States. The average zinc content was almost twice as large as that mined in the United States in 1952. Also, the ores mined in the foreign countries principally for their zinc content had an appreciably higher content of silver.¹⁷

The average grade of ore mined in the United States in 1956 was about the same as that of the ore mined in 1952, and the same general difference between the grade of ore mined in foreign countries as compared with that of ore mined in the United States still prevailed.¹⁸

In contrast to the quality of U. S. deposits, some mines in Canada produce ore containing over ten percent combined lead and zinc content. The mines of Mexico produce zinc-bearing ores averaging about seven to ten percent zinc and six to seven percent lead. Both Canadian and Mexican ores contain large amounts of gold and silver. Australian zinc ores are yet richer. The Broken Hills group of mines produce ores

¹⁶ Ibid., p. 254

¹⁷ Ibid., pp. 252-253.

¹⁸ U. S. Tariff Commission, Report No. 65, p. 18.

TABLE XII

LEAD AND ZINC: ESTIMATED GRADE OF MEASURED AND
INDICATED ORE RESERVES, AS OF JANUARY 1, 1950

Country	Average Grade of Ore Reserves				
	Lead Content (per- cent)	Zinc Content (per- cent)	Copper Content (per- cent)	Silver Content (Fine ounces per ton)	Gold Content (Fine ounces per ton)
Canada and Newfoundland	6.3	6.8	0.2	2.85	.001
Mexico	6-7	7-10		9-12	
Peru	5.9	12.		5.39	
Australia	12.2	13.5		4.02	
Yugoslavia	7.1	4.8		2.92	
Average, 5 countries	7.7	9.4	.2	3.51	.001
United States	1.4	2.5	.1	.73	.006

SOURCE: Grade of ore reserves, compiled from Annex to the U. S. Bureau of Mines 1950 Materials Survey, Zinc, prepared for the National Security Resources Board in cooperation with the U. S. Geological Survey (March, 1951); mine output of lead and zinc, U. S. Bureau of Mines. U. S. figures taken from Tariff Commission Report 332-26, Table 29.

averaging 11.2 percent zinc and 12.6 percent lead.¹⁹

All sections of the U. S. do not share the general characteristic of low ore quality. Table XIII shows the ore quality of the three general regions of zinc production in the country along with the annual production of each region from 1939 to 1958. There is a direct correlation between changes in ore quality and changes in annual production in the west central states (basically the tri-state area) and the western states. The lack of a direct correlation in the states east of the Mississippi River is the result of deposits being adaptable to advancing technology. The situation is unique in Tennessee, the largest zinc producing state, not only in this area, but in the nation as a whole. Although the zinc content of ore is quite low, the deposits are large, which makes high volume, highly mechanized mining possible.²⁰

Other Cost Factors

Costs of supplies, materials, and fuels are equal to about half that of labor and are the second greatest cost. Data on increases in these costs in the U. S. are available up to 1957. In the period 1953 through 1957, average wholesale prices of explosives increased 13.2 percent, prices of steel mill shapes and forms 33 percent, and prices of various fuels increased six to fourteen percent. Wholesale prices of the necessary machinery and equipment in 1957 were 32 percent above the prices of comparable articles in 1953-54.²¹

¹⁹Minerals Facts and Problems, (Washington, 1960), p. 5.

²⁰American Zinc Institute, Zinc, A Mine to Market Outline (New York, u.d.), p. 13.

²¹U. S. Tariff Commission, Report No. 65, p. 47.

TABLE XIII

LEAD AND ZINC: GRADE OF ORE MINED IN THE UNITED STATES IN TERMS OF RECOVERABLE
METAL CONTENT IN SPECIFIED REGIONS, SPECIFIED YEARS 1939 TO 1958

Region and Year	Crude ore sold or treated	Recoverable metal content				
		Lead	Zinc	Silver	Gold	Copper
		<u>Percent</u>	<u>Percent</u>	<u>Fine ounces per ton</u>	<u>Fine ounces per ton</u>	<u>Percent</u>
	<u>1,000 short tons</u>					
United States, total:						
1939	16,317	2.2	2.8	0.71	0.004	1/
1942	25,469	1.8	2.8	.71	.004	1/
1952	25,086	1.4	2.5	.73	.006	0.1
1954	18,624	1.6	2.3	.84	.006	.1
1956	21,403	1.5	2.4	.73	.005	.1
1958	14,898	1.7	2.5	.80	.006	.1
States east of the Mississippi River						
1939	2,893	.2	6.5	.02	-	-
1942	3,600	.2	6.0	.01	1/	1/
1952	3,963	.2	4.5	.01	-	-
1954	3,469	.2	3.1	1/	-	-
1956	4,199	.2	3.9	.02	-	-
1958	4,135	.1	4.1	.02	-	-
West Central States:						
1939	10,630	1.8	1.4	-	-	-
1942	16,452	1.4	1.3	1/	-	1/
1952	12,289	1.1	.7	.04	-	1/
1954	10,201	1.3	.6	.03	-	1/
1956	10,426	1.3	.6	.03	-	1/
1958	6,558	1.8	.1	.04	-	1/
Western States:						
1939	2,792	6.0	4.5	4.10	.022	.2
1942	5,412	4.3	5.1	3.30	.020	.1
1952	8,834	2.4	4.1	2.02	.016	.2
1954	4,954	3.3	4.3	3.07	.023	.2
1956	6,778	2.7	4.2	2.25	.017	.2
1958	4,205	3.2	4.8	2.75	.022	.2

1/ Less than one-half of the smallest decimal fraction shown in this column.

Sources: Data for 1939 and 1954 from the Census of Mineral Industries for those years (after small adjustments by the Tariff Commission to exclude materials other than crude ore); data for 1942, 1952, 1956, and 1958 compiled from data supplied by the U. S. Bureau of Mines.

The average cost of supplies and materials per ton of crude ore mined at United States operations was somewhat higher than that for the three Canadian operations, and was much lower than that for the two Mexican companies reporting to the Tariff Commission.²² Comparative data for the minor costs of mining are insufficient for exact evaluation. Any possible difference does not appear to be of a magnitude to influence appreciably the relative competitive position. The decisive factor in the cost picture is the far higher metal content of the ore produced in the competing countries, a factor which is the result of many years of mining, and the consequent depletion of the higher grade ores in the United States.²³

The Domestic Smelter

The shift from domestic to foreign ores leaves the smelter unaffected. Domestic smelters obtained a steadily increasing proportion of their raw materials from foreign sources. In 1952, about 36 percent of the total U. S. production of slab zinc was produced from foreign ores. The proportion of total output from foreign ores increased to 46 percent in 1953 and 52 percent in 1954. By 1959, the proportion was 61 percent.²⁴

Table XIV gives the relative employment figures for lead-zinc smelting and lead-zinc mining and milling. The general economic impact of

²² U. S. Tariff Commission, Report No. 192, p. 70.

²³ A logical question at this point might concern the arguments used by proponents of protection for marginal domestic mines. For a brief discussion of these arguments see Appendix D.

²⁴ U. S. Tariff Commission, Investigation No. 332-26, p. 82.

the changing ratio of domestic-foreign ore supply due to lower foreign prices has clearly been primarily on the mining and milling segment of the industry. In the periods covered in the table, employment in the mining and milling segment decreased 65 percent while employment in the smelting segment decreased only 25 percent. It should be noted that no adjustment has been made in these figures for employment changes directly or indirectly due to changes in technology.

TABLE XIV

AVERAGE NUMBER OF ALL EMPLOYEES AT LEAD AND ZINC MINES AND MILLS, AND AT PRIMARY LEAD AND ZINC SMELTERS AND REFINERIES IN THE UNITED STATES, 1952-1959
(Average number on the payroll in the pay period ending nearest to the 15th of each month)

Period	Total	Mines and Mills	Primary Smelters		
			Total	Lead	Zinc
January-September Average:					
1952	42,705	24,777	17,928	4,759	13,169
1953	37,589	20,035	17,554	4,563	12,991
1954	(*)	16,640	(*)	(*)	(*)
1956	33,706	16,737	16,969	4,830	12,139
1957	33,197	15,874	17,323	4,830	12,493
1958	24,624	10,768	13,856	3,838	10,018
1959	22,752	9,769	12,983	3,117	9,866

*Comparable data not available.

SOURCE: Data for 1952, 1953, and 1956-59, from reports to the U. S. Tariff Commission by companies engaged in the mining, milling, and primary smelting and refining of lead and zinc; data for 1954, from the 1954 Census of Mineral Industries.

The Impact of Price Fluctuations on the Domestic Industry

The impact of world price fluctuations will be reflected almost entirely in the price of crude ore. The smelters do not need to absorb price cuts except for some rare cases.²⁵ They are facing a demand curve which is elastic only in a price range where other metals will become more competitive for some important consumption purposes.

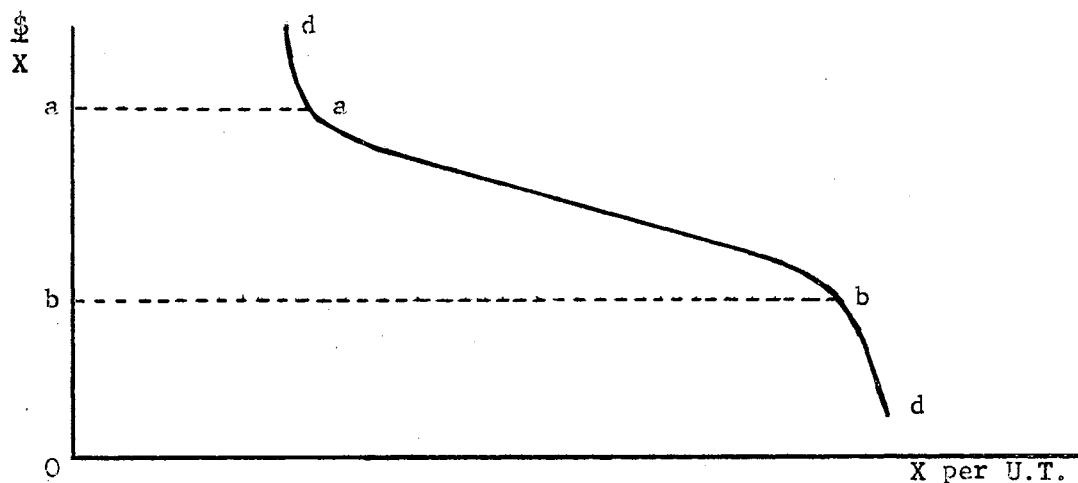


Figure 5. Demand Curve for Finished Metal

As long as the price to the consumer remains below "b", the price elasticity is negligible and any price increase will be passed on to the consumer. When a further price moves into the "a-b" range, curtailment of consumption will create a surplus and return the raw material to the lower price bracket in which it can be used and smelted profitably. The demand curve above the price "a" refers to that small part of zinc consumption for which substitution is impractical.

The situation of the zinc mines is quite different. The supply

²⁵U. S. Tariff Commission, Report No. 192, p. 217.

offered by each mine is highly inelastic and is limited by the shut-down point represented by the variable cost. This variable cost level per pound differs sharply between mines, due primarily to the ore content which can be extracted from each mine. Within each mine, costs vary little because the ore strata are quite uniform. With high prices, less productive shafts can be utilized, but the big difference is between mines, not within them. The demand curve faced by the individual mine is perfectly elastic. No single mine is large enough to influence the market price by itself.

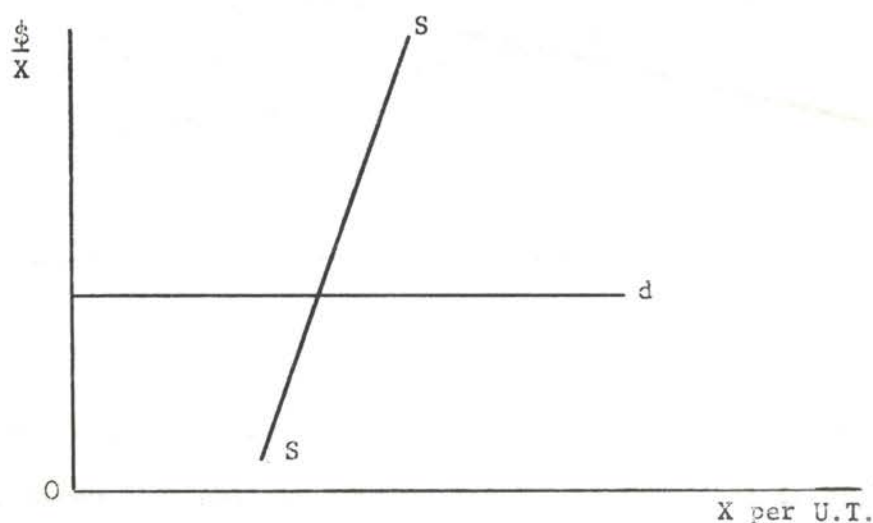


Figure 6. Single Mine Demand and Supply

What is the price situation for the whole domestic mining industry? The demand for domestic ore in general is, of course, not as perfectly elastic as the demand for the ore of an individual mine. But the existence of a world market with numerous foreign countries offering zinc at the market price reduces any attempts for market control to virtual ineffectiveness as long as foreign supplies enter without hindrance. The demand curve may not be perfectly elastic, but almost so.

The domestic industry supply situation differs sharply from the

June 25, 1959. Mr. Kiser said, in discussing proposed protective legislation:

We have been told by several Members of Congress that, "Industry will have to get together on legislation for lead and zinc." To me, that is impossible so long as we have domestic mining companies, mining and smelting companies and international smelting companies in the same group.²⁶

²⁶U. S. Congress, House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on Mines and Mining. 86th Congress, 1st Session (Washington, 1959), p. 132.

CHAPTER V

THE EFFECTS OF THE IMPORT QUOTA ON THE DOMESTIC INDUSTRY¹

The Quota Proclamation of September 22, 1958

By Proclamation Number 3257 of September 22, 1958, effective October 1, 1958, the President of the United States limited imports of unmanufactured lead and zinc to an annual quantity equal to 80 percent of the average annual imports during the five-year period 1953-57. The quota was subdivided by calendar quarters and by tariff schedule classifications.²

The proclamation states that when imports of zinc-bearing ores or concentrates, or zinc in blocks, pigs, or slab

...are determined by the Secretary of the Treasury of the United States to have reached the aggregate quantity specified for such country, no zinc-bearing ores [concentrate, or metal] the product of such country may be entered, or withdrawn from warehouse, for consumption during the remainder of such period...³

The Effects of the Quota on Imports and World Markets

Effects on Imports

The quotas specified in the President's proclamation have, for all

¹For a summary of prequota governmental assistance see Appendix C.

²U. S. Tariff Commission, Investigation No. 332-26, p. 13.

³Charles R. Ince, "Zinc," Engineering and Mining Journal, February, 1951, p. 5.

practical purposes, been regularly filled. The over-all reduction that the quotas effected in the import of zinc metal and concentrate into the United States has been approximately 30 percent. Table XVI (p. 48) shows percentage changes in imports from foreign countries using average monthly imports in 1957 and the first six months of 1958 as base periods.⁴ Notice also that the quotas are stated in monthly terms in the table.

TABLE XV
QUARTERLY QUOTAS ESTABLISHED UNDER THE 1958 QUOTA ON ZINC
IMPORTS INTO THE UNITED STATES (SHORT TONS)

Country	Quarterly Quota (Zinc Content)
Zinc ore and concentrate:	
Mexico	33,240
Canada	33,240
Peru	17,560
All Other	8,920
Zinc Metal:	
Canada	18,920
Belgium and Luxembourg	3,760
Mexico	3,160
Belgian Congo	2,720
Peru	1,880
Italy	1,800
All Other	3,040

SOURCE: President's Proclamation, pp. 5, 6.

⁴ With a quota on the importing of unmanufactured zinc, a shift to manufactured zinc products might be expected from foreign importers. In 1958, the zinc content of the imports of manufactured articles represented one percent, and in 1959, 1.5 percent of the total zinc content of imports of both manufactured and unmanufactured zinc articles. This increase in the import of manufactured zinc articles, although obviously important to producers of comparable articles in the U. S., has not been sufficiently large to have any appreciable effect on the total volume of imports of zinc in all forms. U. S. Tariff Commission Investigation No. 81, p. 2; U. S. Tariff Commission, Investigation No. 332-26, p. 38.

TABLE XVI

COMPARISON OF AVERAGE MONTHLY IMPORTS BEFORE QUOTA FOR 1957, AND FIRST 6 MONTHS OF 1958; WITH THE MAXIMUM PERMISSIBLE IMPORTS AFTER QUOTA IMPOSITION

Country	Average Month 1957	Average Month 1st 6 Months, 1958	Permitted Monthly Quota	Maximum Per-cent Allowed of 1957	Maximum Per-cent Allowed of 1958
(Ore and Concentrate)					
Mexico	16,043	15,570	11,747	-27	-25
Canada	13,185	13,637	11,060	-16	-19
Peru	9,898	9,425	5,653	+41	-40
Other	4,686	5,601	2,973	-37	-47
(Metal)					
Canada	8,330	5,181	6,307	-24.4	+22
Bel-Lux.	2,343	1,296	1,252	-46.5	-3
Mexico	1,150	1,619	1,053	-8.4	-35
Bel. Congo	2,107	2,049	907	-56.8	-61
Peru	1,396	1,059	627	-55	-41
Italy	528	376	600	+13.6	+60
Other	1,008	1,001	1,013	*	*

*Less than 1% increase

SOURCE: Engineering and Mining Journal, February, 1959, p. 108.

The quota's purpose is to reduce imports, thereby forcing the substitution of domestic output. This increase in domestic output can be furnished by the low cost suppliers at the old price or by the marginal producers after a price rise. The pressure for quotas came largely from areas representing marginal mines, apparently with the assumption that the higher grade ores in the eastern districts would not be able or willing to increase the output at the world determined price.⁵

⁵ Pressure from the tri-state area, for example, is strongly evident in all attempts to stimulate domestic mining. Hearings, 86th Congress, 1st Session (Washington, 1959), p. 132. U. S. Congress, Senate, Committee on Finance, S. 2376, A Bill to Amend The Internal Revenue Code of 1954 To Improve Import Taxes on Lead and Zinc, Hearings, 85th Congress, 1st Session (Washington, 1957), p. 72.

Foreign-domestic price differential

For eight months following the introduction of the quotas, the price differential remained above the 1.6 cents cost of transportation, insurance, and duty. In June, 1959, the differential fell to 1.4 cents as a result of an increase in the London price. This increase basically resulted from the increased European consumption of zinc.⁶

The London price remained between 10.9 and 11.9 cents from November, 1959, through November, 1960. During the same period, the domestic price remained between 13 and 13.5 cents as a result of a domestic supply reduction. During this period of a relatively higher domestic price and a relatively stable foreign price, the differential was above 1.6 cents during eight of the twelve months.

The fall in the domestic price during the first eight months of 1961, which was due to domestic smelter strike settlements, put the differential well below 1.6 cents. A fall in European consumption levels resulting in a London price drop of .8 cent from January through August, 1961, again, however, placed the differential above 1.6 cents beginning in June and remaining through August, 1961, the last month for which information is available.

The Effects of the Quota on Domestic Price

If the quota were going to effect a shift to domestic marginal producers a rise in the domestic price of finished metal would be essential. This price rise would be a result of a lag between the initial

⁶Charles R. Ince, "Zinc," Engineering and Mining Journal, February, 1961, pp. 82, 84.

reduction in the total supply of concentrate available to the smelter and an expansion in domestic mining sufficient to meet this shortage of raw material.

The New York price stood at 10.5 cents from January, 1958, through September, 1958. When the quotas became effective in October, 1958, the New York price was 11.3 cents. After slight fluctuations within a 3/4 cent margin, the price firmed at 11.5 cents where it remained from March through August, 1959 (See Table VIII, page 24).

The 1959 average New York price was 11.948 cents which was a little over one cent above the 1958 average price of 10.809 cents. This rise was a result of an eleven percent rise in domestic consumption; at the same time, prolonged strikes reduced the domestic production of finished zinc.⁷ The price rise to thirteen cents in November, 1959, was a result of early purchases of zinc by the automobile industry to be used for producing the 1960 models. The price firmed at this level and remained here for a full year as a result of the continuance of strikes in the zinc industry.

The Bunker Hill Smelter at Kellogg, Idaho, one of the five largest smelters in the country with a 75,000-ton annual production, was struck early in May, 1959. The strike was not settled until late in December.⁸ In July, 1959, New Jersey Zinc Company's smelters at Palmerton, Pennsylvania, and Depue, Illinois were struck, together representing 10,000 tons per month capacity.⁹ This strike was not settled until late in November.

⁷ Ibid., February, 1960, p. 115.

⁸ Ibid., December, 1959, p. 26.

⁹ Ibid., August, 1960, p. 26.

TABLE XVII

NEW YORK AND LONDON PRICES OF SLAB ZINC: OCTOBER 1958
THROUGH AUGUST 1961. (PRICES DIFFERENTIALLY
INDICATED) (CENTS PER POUND)

Date	New York*	London	Differential
1958:			
September	10.500	8.1	2.400
October	11.338	8.8	2.538
November	11.867	9.4	2.467
December	12.000	9.3	2.700
1959:			
January	12.000	9.4	2.600
February	11.917	9.2	2.717
March	11.500	9.4	2.100
April	11.500	9.1	2.400
May	11.500	9.7	1.800
June	11.500	9.8	1.700
July	11.500	10.1	1.400
August	11.500	10.7	.800
September	11.834	10.8	1.034
October	12.629	11.4	1.229
November	13.000	11.9	1.100
December	13.000	11.9	1.100
1960:			
January	13.377	11.8	1.577
February	13.500	11.1	2.400
March	13.000	11.2	1.800
April	13.000	11.5	1.500
May	13.000	11.5	1.500
June	13.000	11.2	1.800
July	13.000	11.2	1.800
August	13.000	10.9	2.100
September	13.000	10.9	2.100
October	13.000	10.9	2.100
November	13.000	10.9	2.100
December	12.090	10.3	1.790
1961:			
January	12.118	10.3	1.818
February	11.500	10.3	1.200
March	11.500	10.6	.900
April	11.500	10.5	1.000
May	11.500	10.3	1.200
June	11.500	9.8	1.700
July	11.500	9.7	1.800
August	11.500	9.5	2.000

*New York price minus East St. Louis price equals .5 cent.

SOURCE: Report 332-26, Table 8.

Engineering and Mining Journal, April 1960 -
September 1961.

In November, 1959, the zinc price of thirteen cents was still firmly backed by the smelter strikes. The smelters announced that they considered their stocks of concentrate at safe levels and "more than ample for months ahead" when five Eagle Picher mines in Illinois and Wisconsin were struck in mid-October.¹⁰

The half cent drop in March, 1960, reflected the settlement of the two major strikes at the end of 1959 - New Jersey Zinc Company's late in November, and Bunker Hill Company's in December. By February, 1961, the price had fallen to 11.5 cents.

The price rise to 13 cents represents one consequence of a reduction in the output of domestic low cost producers due to strikes and the impossibility of substituting the missing output from foreign sources due to the quota. As soon as the strikes came to an end, the prices of the domestic market dropped to their previous level.

Beginning in December, 1960, the industry took action to stimulate the price, this time by voluntary supply reduction. American Zinc Company led by cutting output of zinc by 10 percent (1,200 tons per month). St. Joseph Lead followed, cutting output of metal and oxide fifteen percent (1,800 tons per month) and also reducing production at its mining and milling operation in northern New York. Finally, the New Jersey Zinc Company announced a cutback of fifteen percent in slab production at its Palmerton, Pennsylvania, and Depue, Illinois, smelter, plus the suspension of production at its Flat Gap mine in Treadway, Tennessee.¹¹ Up to August, 1961, the price was still firm at 11.5 cents,

¹⁰ Ibid., November, 1960, p. 28.

¹¹ Ibid., May, 1961, p. 22.

less than 1/2 cent above the price prevailing at the time the quotas became effective.

The effort of the domestic producers to reduce the supply by individual cuts in output would most likely not have occurred as long as the broad competition of suppliers on the world market were in a position to nullify any possible price advantage of such an effort.

Post-quota Domestic Mine Output

Mine output declined from 532,000 tons in 1957 to 412,000 tons in 1958. Production in 1959 was 425,000 tons, three percent higher than that in 1958; but production in both of these years was lower than in any earlier year since the depression of the early 1930's.¹²

The increase in production in 1959 was well below the eleven percent increase in total domestic consumption of zinc. Because of an inventory surplus of 155,000 tons in 1958,¹³ smelters absorbed much of the 95,000 ton consumption increase with existing stocks.¹⁴ Little benefit, therefore, returned to mine output through increased orders for concentrate.

Production in the western states continued to decrease steadily from 1958 through 1960, with a total decrease of 37 percent. Mine production in the tri-state area remained zero, with the exception of nominal amounts of concentrate which were produced from tailings (residue from previous milling). This production amounted to eighteen percent of

¹² Executive Order 10401 (Washington, 1960), p. 3.

¹³ Charles R. Ince, Engineering and Mining Journal, February, 1961, p. 107.

¹⁴ Ibid., p. 114.

the 1957 level. The only area recording any increase in production from 1957 to 1960 was the low-cost area east of the Mississippi River. Production in this area in 1960 was nine percent above the 1957 level.¹⁵

The Effect of the Quota on the Domestic Smelter

With the foreign and domestic prices remaining relatively stable, those custom smelters who have access to foreign and domestic ores have not been severely affected by the quota on ores and concentrates. General inventory levels indicate that even with domestic strikes and quota restrictions on concentrate imports, smelters, in general, have been able to meet the domestic demand for finished metal with little change in production levels.

Total U. S. smelter production has remained comparatively stable up to the present time. Table XVIII shows, in fact, a slight increase in U. S. smelter production from 1958, through 1960.

Increased Smelter Costs

Smelters which utilize both domestic and foreign supplies of concentrate, however, have been forced to adjust to the quota system. A practice has been developed whereby inventories of imported ores and concentrate are accumulated in bonded warehouses before the beginning of each new quota period. Such accumulations, depending upon their size and the particular country quota considered, provide each owner with a greater ability to obtain a share of the new quarterly quota at the

¹⁵J. L. Kimberley, A Review of the Zinc Industry in the United States During 1960, American Zinc Institute (New York, 1961), p. 13.

beginning of each quota period. Zinc content of foreign ores and concentrate held in bond by domestic smelters increased from about 20,000 tons on September 30, 1958, to 76,000 tons on September 30, 1959, and to about 119,000 tons on June 30, 1960.¹⁶

TABLE XVIII
U. S. PRODUCTION OF SLAB ZINC ACCORDING TO GRADES
(SHORT TONS)

Grade	1958	1959	1960
Special High Grade	298,442	331,312	353,858
High Grade	86,859	71,792	59,651
Intermediate	19,388	17,493	12,294
Brass Special	81,841	75,305	442,099
Select	1,300	1,414	
Prime Western	<u>340,021</u>	<u>359,168</u>	
	827,851	856,484	867,629

SOURCE: A.Z.I., A Review of the Zinc Industry, 1960, p. 14.

These inventories enable smelters to bid more successfully for limited amounts permitted entry under the quota, but not without cost and financial risk. In building the inventories, importers incur otherwise unnecessary storage costs and suffer immobilization of capital.¹⁷ Moreover, they stand to lose if the price of zinc should fall before they are permitted to withdraw and market the resultant metal.

¹⁶ Executive Order 10401 (Washington, 1960), p. 11.

¹⁷ U. S. Tariff Commission, Investigation No. 332-26, p. 101.

It is not possible to state the amount of this increased smelter cost arising from the quota. However, since the maximum increase in the domestic price resulting from the quota can be safely stated to be no more than 1/2 cent per pound, it can be concluded that the direct cost plus the risk involved in importing through bonded warehouses may well be reflected in some part of this 1/2 cent price increase.

The new slab export business

The smelters which have most felt the quota restrictions have been those which depend exclusively or almost exclusively on foreign ore. American Metal Climax Corporation's smelter at Blackwell, Oklahoma, for example, depends presently on imported ores, chiefly from Mexico.¹⁸ The quota reduced the foreign concentrate available to them for smelting for the domestic market by 33-1/3 percent. To avoid any reductions in production, however, what are termed "exquota purchases" (purchases above the quota allotment) are made abroad. The government allows such smelters to purchase "exquota" if all resultant slab is sold in the foreign market for export. In 1960, 40,000 tons of a 100,000 ton total production (approximate) at one smelter was sold on the foreign market.¹⁹

It would be difficult to discover exactly how much of the approximately 900 percent increase in exports of finished zinc from the U. S. from October, 1958, to June, 1960, was directly attributable to "exquota" smelting. With the foreign price remaining below the domestic price,

¹⁸American Metal Climax, Inc., 1960 Annual Report American Metal Climax, Inc., (New York, 1961), p. 17.

¹⁹Blackwell Zinc Company, Blackwell, Oklahoma. Personal interview with Marvin L. Hughen, Manager, October 7, 1961.

indications are that a substantial percentage of the increase, if not all of it, is due to this cause.

TABLE XIX
U. S. EXPORTS OF SLAB ZINC, 1957-1960
(SHORT TONS)

Period	Domestic Exports
1957:	
January-March	3,594
April-June	4,467
July-September	6,350
October-December	1,851
1958:	
January-March	1,472
April-June	1,888
July-September	1,919
October-December	2,099
1959:	
January-March	2,502
April-June	1,785
July-September	8,783
October-December	9,892
1960:	
January-March	15,326
April-June	18,775

SOURCE: U. S. Tariff Commission, Report 10401, Table 4.

The willingness of domestic smelters to make "exquota" purchases is very significant. The smelters which can be considered most likely to purchase additional domestic concentrate as a result of the quota, purchase and process superior grade foreign ore knowing they must sell the metal at the lower foreign price. The relative quality of the ore produced from the supply sources again becomes a factor.

Total Effectiveness of the Quota

Smelter year-end inventories have steadily fallen since the quota, indicating that an increase in domestic mine output may be expected.

TABLE XX

U. S. SMELTER YEAR-END INVENTORIES OF SLAB ZINC (SHORT TONS)

Year	Year-end Inventory
1958	155,000
1959	85,000
1960	32,000

SOURCE: Engineering and Mining Journal,
1959-61.

The reason for permitting the inventories to be depleted may be found in the apparent conviction of the domestic low cost mines that the quota restrictions will not be sufficient to permit marginal mines to re-enter production on a significant scale. Under the circumstances, the small number of efficient mines find their degree of control of the domestic output increasing.²⁰

The slight price increases which have accompanied the restrictive system are welcomed by these mines as long as they are not of a nature

²⁰ Thomas Kiser, president of the Tri-State Zinc and Lead Ore Producers Association, recognized this trend in a statement before the House Subcommittee on Mines and Mining when he said: "It is a well acknowledged fact that the quota system we have not hasn't worked and to continue the present policy will only serve to eliminate domestic production and to leave the international companies to compete among themselves." Hearings Before Subcommittee on Mines and Mining - House - 86th Congress, 1st Session, p. 135.

to encourage new domestic competitors. The continuing shift of production toward the leading mine operators in the eastern zone indicates that the quotas have, if anything, supported the position of the leading firms and have failed to stem the further deterioration of the high cost mines. The dissatisfaction of the marginal miners with the result of the quota is verified by their support of the 1961 subsidization bill.²¹

²¹See Appendix E for a discussion of this bill.

CHAPTER VI

CONCLUSION

The quota was imposed with the hope that its restrictions would cause a shift from the purchase of foreign ore and concentrate to the greater purchase of domestic output. This shift would have resulted in the reopening of marginal U. S. mines if a rise had been effected in the domestic price, thus allowing these less efficient producers to operate profitably despite their poorer quality ores.

These hopes have proved unwarranted. The quota has not resulted in substantial price rises and it has, therefore, not stemmed the continued closures and curtailments of the domestic marginal mines. The actual effect of the quota has been to accelerate the trend toward greater smelter purchase of raw material from the more efficient producers, primarily in the eastern U. S. mining area, and away from the U. S. marginal mines. It has, however, caused the leading smelters to exercise an influence over the domestic market which would have been less likely under conditions more closely approaching perfect competition which prevailed in the zinc industry as long as it formed a part of the world market.

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APPENDICES

APPENDIX A

THE TARIFF ON ZINC

Zinc slab was dutiable at $1\frac{3}{4}$ cents per pound under the Tariff Act of 1930 which contains the most "Favored Nation" clause as required by the Reciprocal Trade Agreements Act. Due to a trade agreement with Canada in 1939, the rate was reduced to $1\frac{2}{5}$ cents. In 1943, pursuant to a trade agreement with Mexico, the rate was further reduced to $\frac{7}{8}$ cent per pound, and a similar concession was provided in the General Agreement on Tariffs and Trade (G.A.T.T.-Geneva), effective January 1, 1948. On June 6, 1951, pursuant to a concession negotiated in G.A.T.T. (Torquay), the rate was reduced to $\frac{7}{10}$ cent per pound, the rate now in effect.

Zinc scrap, zinc dross, and zinc skimmings, originally dutiable at $1\frac{1}{2}$ cents per pound (not on zinc content as for ore) were reduced to $\frac{3}{4}$ cent per pound by the 1943 agreement with Mexico. In 1948, G.A.T.T. established the rate set in the Mexican agreement, Mexico not being a member of the organization.

Zinc-bearing ores were originally dutiable at $1\frac{1}{2}$ cents per pound of zinc content. In 1939, pursuant to the trade agreement with Canada, the rate was reduced to 1 cent per pound of zinc content. The 1943 agreement with Mexico reduced the rate to $\frac{3}{4}$ cent, and a similar concession was provided in G.A.T.T., effective January 1, 1948. At the Torquay Conference, G.A.T.T. further reduced the rate to $\frac{6}{10}$ cent per

pound, the rate now in effect.¹

As indicated, the present rates of duty applicable to zinc imports are subject to tariff commitments under the General Agreements on Tariffs and Trade. Changes in tariff treatment need to take into consideration the provisions of the agreement.

There are two provisions in G.A.T.T. for changes in tariff treatment. Action can be taken under the standard "escape clause" provision of the agreement (article XIX).² In addition, article XXI provides that any contracting party may take

...any action which it considers necessary for the protection of its essential security interests... taken in time of war or other emergency in international relations.³

¹U. S. Tariff Commission, Report No. 192, p. 15.

²U. S. Council of The International Chamber of Commerce, G.A.T.T., An Analysis and Appraisal of The General Agreement on Tariffs and Trade. New York: U. S. Council of The International Chamber of Commerce, p. 26.

³U. S. Trade Commission, Report No. 192, p. 18.

TABLE I

UNMANUFACTURED ZINC: U. S. RATES OF DUTY UNDER THE TARIFF ACT OF 1930 - THE STATUORY RATE
STILL IN EFFECT; AND THE REDUCED RATE IN EFFECT ON JANUARY 1, 1960

Tariff Paragraph:	Description	Statutory Rate (per pd.)	Reduced Rate Effective January 1, 1960 Rate (per pd.)	Date Effective
Paragraph 394:				
	Zinc in blocks, pigs, or slabs	1-3/4¢	7/10¢ (under quota)	June 6, 1951
	Old zinc fit only to be remanufactured	1-1/2¢	3/4¢ (under quota)	January 1, 1948
	Zinc Dust	1-3/4¢	7/10¢	June 6, 1951
	Zinc in Sheets:			
	Coated or plated with other metal (except gold, platinum, or silver) or solutions	2-1/4¢	1-1/8¢	January 1, 1948
	Zinc-bearing ores and concentrate	1-1/2¢	6/10¢	June 6, 1951

SOURCE: U. S. Tariff Commission, Investigation No. 332-26, Table 2.

APPENDIX B

ZINC CONSUMPTION RESEARCH

The American Zinc Institute, a cooperative association of zinc producers founded in 1918, in coordination with the Lead Industries Association, sponsors research programs to extend present uses of zinc and to search for new applications. At present, such a program - The Expanded Research Program (E.R.P.) - is under way. Study is being done on improved methods of diecasting and galvanizing as well as on better alloys for lithographing and other uses.¹

Carleton C. Long, president of The Metallurgical Society, The American Institute of Mining, and The Metallurgical and Petroleum Engineers writes:

I believe you can see the zinc industry has entered a new era of forward-looking thinking. [referring in part to the program discussed above] The zinc industry's dynamic research approach is certain to strengthen the competitive position of zinc and to expand the future uses.²

Along the same line, however, J. L. Kimberley, executive vice president of the American Zinc Institute writes in the closing lines of his "Review of the Zinc Industry in the United States During 1960:"

¹American Zinc Institute and Lead Industries Association, Expanded Research Program Quarterly Report Number 7, American Zinc Institute and Lead Industries Association (New York, 1961), p. 37.

²Carleton C. Long, Trade Associations Promote Progress in The Use of Lead, Zinc, and Copper, The Metallurgical Society (New York, 1960), p. 7.

The zinc industry is not geared - nor is it equipped - to compete on a dollar basis with the multimillion dollar promotional programs of certain of its competitors. The programs of zinc's competitors in both promotional and technical fields will continue to create the impression of success insofar as inroads into important segments of zinc's major outlets are concerned. Any basic material will - over the long term - find its fields of application in direct proportion to its economy, general usefulness, and unique properties. [Emphasis by writer]³

³ J. L. Kimberley, A Review of the Zinc Industry in the United States During 1960, American Zinc Institute (New York, 1961), p. 12.

APPENDIX C

PRE-QUOTA GOVERNMENTAL ASSISTANCE

On September 14, 1953, the lead-zinc industries petitioned the Tariff Commission for "escape clause" relief under section 7 of the Trade Agreements Extension Act of 1951. The Commission, after its investigation, unanimously decided that "serious injury" was being done to the industries and recommended maximum increases in duty.¹

President Eisenhower did not implement the recommended tariff increases for two reasons: he believed the recommended tariff increases would have only a minor effect on the price of lead and zinc, and he believed that such increases in tariff would be detrimental to our international relations with the trading countries concerned.²

Instead of the recommended tariff increases, the President initiated the stockpile purchases and barter acquisitions that were discussed in connection with domestic price fluctuations in chapter two.³

On May 28, 1957, however, the Department of Agriculture suspended barter, and on August 1, 1957, the Office of Defense Mobilization

¹This would be 50% above the rate existing on January 1, 1945, or 1-4/5 cents per pound of zinc content on ore, concentrate, and scrap, and 2-1/10 cent on slab zinc. U. S. Tariff Commission, Report No. 192, Table 1.

²U. S. Tariff Commission, Investigation No. 332-26, p. 8.

³See Table IX, p. 28.

announced defense stockpile goals were nearly met. The O.D.M. ceased zinc purchases in April, 1958.

On September 27, 1957, the lead and zinc industries again petitioned the Tariff Commission for "escape clause" action. On April 24, 1958, for the second time the Tariff Commission unanimously concluded that the domestic lead and zinc industries were "suffering serious injury." Three Commissioners recommended reimposition of the 1930 rates of duty, and three recommended the same thing plus a quota system.

Four days after the Commission's second finding, Secretary of the Interior Seaton proposed a domestic minerals stabilization plan to the Senate Interior Committee with the target of stabilizing domestic mine production of lead at 350,000 tons per year and zinc at 550,000 tons per year. The stabilization prices were 15-1/2 cents for lead and 13-1/2 cents for zinc; plus an additional stabilization payment for small mines.⁴

Fulfilling the requirement under law to report to the Ways and Means Committee of the House of Representatives and Senate Finance Committee within 60 days after a Tariff Commission recommendation, the President announced that he was suspending consideration of the Tariff Commission's recommendations pending Congressional consideration of the Seaton Plan.

Although favorably reported out of the House Interior Committee, this stabilization plan was rejected by the House 182 to 158 on August 21, 1958. Western miners considered the rejection a victory for

⁴Hearings, 86th Congress, 1st Session, p. 9.

eastern miners who had opposed the subsidy.⁵

On September 22, 1958, the President imposed the quotas.

⁵U. S. Tariff Commission, Investigation No. 332-26, Table 2.

APPENDIX D

ARGUMENTS FOR AID FOR DOMESTIC MINING

There have been two basic arguments for action to aid the domestic mining industry, both of which run throughout the attempts to achieve governmental action. The first deals with national defense and the role of the lead and zinc industries in the mobilization requirements of the nation. The second approach is basically a welfare argument pointing to the small towns that have been dependent on the industries in the past for the employment of a considerable percentage of their citizens.

The important consideration, as far as national defense is concerned, is the proximity of the foreign sources of supply. The United States' two chief import sources of lead and zinc, Canada and Mexico, are also the two closest neighbors and two historical allies. Each country's ore supplies are connected by rail with U. S. smelters and are often as close to these smelters as are U. S. mines. Approximately two-fifths of the ore and concentrate entering the U. S. from Mexico comes from mines in which United States concerns have major interests. The percentage for Canada is approximately one-fifth.¹

On February 12, 1960, Franklin Folote, then Administrator of the General Services Administration, sent a letter to Wayne N. Aspinall, Chairman of the Committee on Interior and Insular Affairs of the House

¹U. S. Tariff Commission, Report No. 192, pp. 250, 251.

of Representatives. Mr. Folioete wrote:

The national stockpile inventories of lead and zinc exceed the present maximum stockpile objectives for these materials, and we have no information indicating that additional lead and zinc is required to meet any defense need.²

Leo A. Hoegh of the Office of Defense Mobilization wrote in a letter to Mr. Aspinall on the same date:

Since the mobilization position in lead and zinc is excellent, no defense justification can be established for the proposed legislation.³

Again, on July 25, 1961, the Office of Defense Mobilization advised Mr. Aspinall's committee that "no defense justification can be established for the proposed legislation."⁴

The second argument which concerns the welfare of unemployed miners and their families is a social and political question which is well beyond the stated scope of this thesis. This is also true - perhaps to a somewhat lesser degree - of the argument concerning national defense. These arguments are important, however, because they present the suggested justifications for the legislation that has been proposed and the subsidy law which has been passed since the 1958 quota attempt.

²U. S. Congress, House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on Mines and Mining, H. R. 8860, Bill to Stabilize the Mining of Lead and Zinc, Hearings, 86th Congress, 2nd Session (Washington, 1960), p. 6.

³Ibid.

⁴Hearing, 86th Congress, 1st Session, p. 9.

APPENDIX E

GOVERNMENT ASSISTANCE SINCE 1958

The first legislative attempt after the 1958 quota was made on June 25, 1959, when House Concurrent Resolution number 177 was sent to the President. In the resolution the President was requested:

- (a) To have reviews made at once of the existing programs of the departments and agencies of the executive branch with the purpose of using them more effectively to provide for increased production and employment in critically depressed domestic mining and mineral industries:
- (b) To advise the Congress at the earliest possible date as to the actions taken or proposed to be taken in this end; and
- (c) To submit any reorganization plans or recommendations for legislation that may be necessary to accomplish this objective.¹

When the Subcommittee on Mines and Mining of the 86th Congress, second session, convened on March 28, 1960, no action had yet been taken by the President.² Ed Edmondson, Representative from Oklahoma, proposed House Resolution 8860 on the proposed grounds that

...the administration [had] not come forward with a program and decisions and did not accept the responsibility on its own initiative to move into this area and do something constructive to meet it.³

The proposed legislation was for a sliding-scale subsidy for small

¹Hearing, 86th Congress, 1st Session, p. 2.

²Hearing, 86th Congress, 2nd Session, p. 9.

³Ibid., p. 4.

domestic lead and zinc mines. Marginal mines were to be paid by the Secretary of the Interior an amount sufficient, with any existing East St. Louis price, to guarantee a constant 14-1/2 cents per pound return. To qualify for aid under the bill, a mine was not to have produced more than 5,000 tons of lead and zinc combined during any previous twelve-month period.⁴

The bill was passed by both House and Senate, but was pocket-vetoed by President Eisenhower on September 2, 1960.⁵

The 1961 Stabilization Act

House Resolution 84, again introduced by Representative Ed Edmondson, was presented to the first session of the 87th Congress, passed by both houses, and signed into law by President Kennedy on October 7, 1961. An appropriation has not yet been made for the 16.4 million dollar cost of the program, but a supplemental appropriation will be sought by supporters of the bill during the second session.⁶

The subsidy grants of this act are considerably less than those proposed in Resolution 8860. Payments will be made by the Secretary of the Interior sufficient to make up 55 percent of the "difference between 14-1/2 cents per pound and the average market price for the month in

⁴Hearing, 86th Congress, 1st Session, p. 2

⁵U. S. Congress, House of Representatives, Report No. 899, Stabilizing The Mining of Lead and Zinc By Small Domestic Producers, (To accompany H. R. 84), 87th Congress, 1st Session (Washington, 1961), p. 4.

⁶"Zinc," American Metal Market, October 5, 1961, pp. 1-2.

which the sale occurred as determined by the Secretary."⁷

The bill defines a small domestic producer as one who has actually been engaged in producing ores within the United States or its possessions but has not produced or sold more than 3,000 tons of lead and zinc combined during any twelve-month period between January 1, 1956, and the first day for which he seeks payment. In order to assure further the benefits for the intended producer, the bill includes the following additional limitations:

The maximum production available for subsidization payments is 1,500 tons of each metal during calendar year 1962; 1,200 tons...1963; 900 tons...1964; and 600 tons...1965.

No producer can be paid in any calendar year for tonnage in excess of his maximum production during any calendar year between January 1, 1950 and December 31, 1960.⁸ No payments will be made to any unit not in operation between January 1, 1956, and August 1, 1961.⁹

A gradual reduction in the total annual amount of payments to mines is included in the act. These reductions are indicated in Table II (p. 79).

It is not possible to evaluate empirically the effectiveness of the new act. It is possible, however, to apply some of the findings in this thesis to the provisions and aims of the Edmondson bill.

⁷Report No. 899, 87th Congress, 1st Session, p. 1

⁸U. S. Congress, House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on Mines and Mining, H. R. 84, Bill to Stabilize the Mining of Lead and Zinc, Hearings, 87th Congress, 1st Session (Washington, 1961), p. 3.

⁹Ibid., p. 4.

TABLE II

MAXIMUM ANNUAL TOTAL PAYMENTS PERMITTED PURSUANT TO
THE 1961 MINE STABILIZATION ACT

Year	Maximum Amount (dollars)
1962	4,500,000
1963	4,500,000
1964	4,000,000
1965	3,500,000

SOURCE: H. R. 84, 87th Congress, pp. 2, 3.

The Expected Results of the 1961 Stabilization Act

The primary purpose of the bill is to reopen marginal mines and stimulate those on the verge of closing or curtailing operations.¹⁰ Some mines may resume operation with the hope that the subsidy will make profitable operation possible. For this reason, initial mine openings may not be indicative of the real effectiveness of the subsidy. The basic question here is: Will marginal mines be able to resume and sustain operation on a profitable basis as a result of the subsidy program?

The bill will not affect the price paid by the domestic smelter for concentrate he purchases from the marginal domestic mine. Increases in the quantity of concentrate taken by the smelter will be slight. The subsidy will reduce, in effect, the cost of the qualifying marginal producer. But, since domestic demand is being met with the present

¹⁰ Report No. 899, 87th Congress, 1st Session, p. 3.

quantities of concentrate the domestic smelters are purchasing, the only possible way for an increase to occur in the output of marginally produced ore would seem to be through a reduction in the output of ore from the more efficient domestic producers.

Why did the mining industry support the passage of the bill? Neither the smelters nor the efficient miners seem to have anything to gain. Perhaps the answer to this question is that the more efficient mining regions do not believe that the provisions of the subsidy bill will effect such a shift in smelter purchases. Some of the support for the bill came from one of the largest smelters, which hoped that the bill's passage would remove some of the political pressure for import restriction by the marginal mining states.¹¹

Prospects for marginal mine reopening, therefore, do not seem to have been improved. In the broader interest of national efficiency and a competitive industrial operation, the attempt of the subsidy bill most likely is innocuous due to its lack of effectiveness.

¹¹ This is the official position of American Metal Climax Corp., Interview with Marvin L. Huguen, October 12, 1961.

VITA

Robert Carless Jones

Candidate for the Degree of

Master of Science

Thesis: THE EFFECTS OF THE 1958 IMPORT QUOTA ON THE UNITED STATES
ZINC INDUSTRY

Major Field: Economics

Biographical:

Personal Data: Born in Detroit, Michigan, June 15, 1938, the son
of Richard J. and Dorothy Winnifred Jones.

Education: Attended grade school in Oklahoma City, Oklahoma;
graduated from Northwest Classen High School, Oklahoma City,
in 1956; received the Bachelor of Science degree from
Oklahoma City University, with a major in Economics, in May,
1960; completed requirements for the Master of Science degree
in May, 1962.

Professional experience: Part-time sales employee of the Pittsburgh
Plate Glass Company, Oklahoma City branch, from 1953 through
1960; Graduate Assistant in the Department of Economics,
Oklahoma State University, for the academic year 1960-1961.