

Hardrock Mining Royalty Issues

prepared for
Nevada Policy Research Institute

by
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In May of 1993, John Dobra was requested to testify before Congress to defend the Mining Act of 1872. NPRI has produced this testimony as a public service to policy makers and the mining industry.

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John Dobra, Associate Professor of Economics at the University of Nevada, Reno, received his Ph.D from Virginia Poly Technic Institute in 1980. He has written monographs for several professional journals on the subjects of public choice, public finance, industrial organization and public policy. He resides in Reno with his wife Joy, daughter Jessica and son Matt.

News

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DOBRA TESTIFIES BEFORE U.S CONGRESS ON WHAT MINING WILL LOOK LIKE IN YEAR 2000

As the U. S. Senate contemplates an 8% royalty on mining (bills proposed by Senator Dale Bumpers of West Virginia), Dr. John Dobra, Senior Research Fellow for Nevada Policy Research Institute, was called to testify before the Senate Committee on Mineral Resources Development and Production. Dobra testified on the effects of mining royalties on jobs, profitability and their impact on resources. Dobra criticized the May 16,1993 Congressional Budget Office testimony for taking a short term perspective on the matter. "As a result of both the gradual"wasting" of current reserves and the disincentive to develop new reserves on public lands, it is very misleading to take current levels of production reduced by a modest factor as suggested in the CBO testimony, and project long term royalty revenues at that level." In essence, reserves which can be mined at a profit will be significantly reduced between now and the year 2000 from approximately 52 million ounces to approximately 20 million ounces. Production will move to private lands in the U.S. or to foreign countries with more reasonable royalties that are tied to profitability.

- more -

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In light of this Dr. Dobra made a strong case for royalties related to profitability and ability to pay. Royalties from mining operators to pay for reclamation programs will generate no net jobs. These funds, if not used to pay royalties, would be used to finance exploration and development; in other words, the creation of wealth not redistribution of wealth. The way royalties are commonly negotiated with private parties and, in many cases, with foreign governments, a royalty holder is, in effect a partner who shares in the success of an enterprise. This is because royalties are commonly based on ability to pay or profitability. On general principles, Congress will maximize the return to the Treasury from royalties on hardrock minerals if it follows this example and acts as a partner. Reap the benefits in the good times, but allow the industry to survive the bad.

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Testimony

of

John L. Dobra, Ph.D., Senior Research Fellow, Nevada Policy Research Institute

Director, Natural Resource Industry Institute

and

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College of Business Administration
University of Nevada, Reno

Before

The United States Senate

Committee on Energy and Natural Resources

Subcommittee on Mineral Resources Development and Production

on

Hardrock Mining Royalty Issues

and

S.775 The Hardrock Mining Reform Act of 1993

May 4, 1993

Hard Rock Mining Royalty Issues

I. Background

The letter from the Subcommittee Chairman requesting testimony contained a fairly lengthy list of topics in which the subcommittee is interested. Because of time constraints and subsequent discussions with staff, I have been asked to focus this testimony on the more technical aspects of royalties. Specifically, how different types of royalties compare in terms of their impacts on reserves, jobs, and profitability. I will try, at least in the written testimony, to touch on all of the issues requested but, because of overlap with other witnesses, my focus will be on these more technical aspects of royalties.

One such topic that I will only touch on briefly concerns the overall, or macro, implications of royalty proposals for federal revenues. I would like to touch on this issue at the onset because I think it may help provide some perspective on the types of information that the subcommittee is receiving.

In 1989, Paul Thomas, of the University of Colorado, and I began our first joint study of the U.S. gold industry. The research was published in early 1991 and really focused on the growth of the industry during the 1980s, in terms of production increases, jobs created, and taxes paid. The methodology employed in that study and our more recent, 1992, study involved canvassing the entire industry and building long term financial models of individual mines as the basis for estimating costs and future production. The key point, however, is that we used "micro" mine level data and that we have a very complete data base. In our 1992 study, we collected this mine level data on fifty individual gold mines with plans to produce 8.315 million ounces in 1992. This was 86 percent of total U.S. gold production in that year and 96 percent of primary gold production. Consequently, we feel we have the best mine level data base on the gold industry and we are quite confident in our ability to estimate the implications of changes in public policy on these gold operations.

Other studies that have come out more recently have relied on different methodologies. For example, the 1992 study conducted by Alfery and Graff concerned the impacts of mining law reform on all hardrock minerals and also used an extensive data base to make projections. In addition, Alfery and Graff collected data on land holdings which enabled them to consider impacts of holding fees on exploration and development. The 1992 Alfery and Graff study, like their recently released 1993 study, also takes a more macro view of mining law reform which allows them to address issues like the overall impact of reform on federal revenues from all direct and indirect sources.

A third study, by Michael Evans, presented in testimony in the Senate March 15, 1993, had still another methodological approach. Mr. Evans relied almost exclusively on secondary data and used an econometric model to estimate impacts statistically.

Hence, we have seen three different sets of studies, each using a different methodology. More importantly, however, it should be noted that in areas where the scope of these studies overlap, there is significant consistency in findings.

It should also be pointed out, that in instances where others have offered contrary opinions or findings, such as the March 16, 1993 testimony of Mr. Acton from the Congressional Budget Office before this subcommittee, it is my belief that differences are, in large part, based on whether one takes a long term or short term perspective on the matter. For example, I tend to agree with the CBO testimony on the point that the impact of an eight percent royalty on production will be smaller in **the short run**, as I testified in the House on March 11, 1993. However, the impact of a royalty on exploration and projects approaching feasibility will be immediate, which I think, is the thrust of Alfer's and Graff's work.

However, in my testimony, I focused on what the industry would look like in the year 2000 and argued that in that time frame, the impacts on production will be substantial. It is fairly obvious from the economics of the individual mines that most can maintain production near current levels for some period of time by mining higher grade materials. However, as this occurs, the overall economics of a property deteriorates as more lower grade materials become reclassified from ore to waste. Job losses do not occur the day the royalty is passed, but when ore is reclassified as waste. That may take several years to occur, but without higher prices or lower costs to compensate, it most assuredly will occur.

In addition, it should be noted that the royalty will result in a disincentive to develop additional reserves on public lands. As a result of both the gradual "wasting" of current reserves and the disincentive to develop new reserves on public lands, it is very misleading to take current levels of production reduced by a modest factor as suggested in the CBO testimony, and project long term royalty revenues at that level. Production will clearly move to private lands in the U.S. or to foreign countries with more reasonable royalties that are tied to profitability.

II. Royalties

In considering what might constitute a "reasonable" royalty, it is recommended that subcommittee members might want to first examine the practices in the industry when private royalties are negotiated. Second, the subcommittee might want to consider the Nevada Net Proceeds of Mines Tax which, although it is not technically a royalty, was designed to be like a royalty paid in lieu of a property tax on mineral

reserves. Finally, understanding these principles helps put the differences between the various royalties described in the materials provided by the subcommittee into perspective.

A. Private Royalties

Fundamental to understanding private royalties is that each and every one is negotiated, usually extensively. A common practice in the industry is for owners of mining claims to receive a "Net Smelter Royalty" which is, in effect, very close to a gross royalty. Based on this fact, it is quite easy to see how one might come to the conclusion that a gross federal royalty would only be following standard practice in the gold industry. And, in fact, one might be right if the royalty rate and other conditions of the royalty rate such as its duration, were subject to negotiation for each and every mine on the public lands just as these negotiations occur for each and every private royalty.

Private royalties for a small number of claims that are not really essential to have a successful project would likely receive minimal royalties of less than three percent. Royalties for larger claim blocks with reserves, or for claims with greater potential, will carry higher royalties. In private royalty negotiations, the royalty rate and royalty base depend on what the landowner has to sell or lease. If the landowner has found an orebody, it can negotiate a good royalty, in the five to seven percent net smelter range. If the orebody is an exploration stage, and its potential is less certain it might negotiate a one to two percent net smelter royalty or settle for a small net profit interest.

The often cited royalty paid by Newmont Gold on its Gold Quarry property is a case in point of how private royalty negotiations work. While it is true that Newmont paid an extremely high, 18 percent, royalty on part of Gold Quarry, in the same agreement it received a 275,000 acre ranch on fee land with mineral rights and no royalty. Since its acquisition, Newmont has demonstrated reserves of over 20 million ounces. In the long run, that apparently high royalty may well prove to be a bargain.

B. State Net Proceeds Taxes

The problem of designing a "royalty" that would consider the wide range of issues that go into private royalty negotiations was the subject of the first constitutional controversy in the State of Nevada. The constitution developed by the state's first constitutional convention contained a tax on the gross value of minerals in the ground. This constitution was rejected by voters in the territory.

The second constitutional convention produced a tax on the "net proceeds of mines" in lieu of a property tax on the gross value of minerals in the ground. This

constitution was approved by the voters and Nevada became a state in 1864.

Over the years, the definition of "Net" has changed somewhat and has been the subject of debate. However, the basic principle has survived in that it allows the deduction of most costs required to get the product to the point of being a salable commodity when it leaves the property. From this standpoint, the Nevada Net Proceeds of Mines Tax determines taxable value in a manner very similar to the manner that value is determined for the purposes of paying federal royalties on coal, oil, and gas.

The basic philosophy of the Net Proceeds of Mines Tax is to develop a formula that accounts for as many of the conditions considered in private royalty negotiation as possible. Fundamentally, the tax considers producers' ability to pay, but instead of accomplishing this by varying the royalty rate, **which is common practice in the industry**, it achieves sensitivity to ability to pay in the definition of taxable value.

C. Federal Royalty Proposals

In considering alternative federal royalty assessment methods, the principal objection that I have offered to the gross income royalty contained in bills offered by Senator Bumpers is that it ignores the principle of ability to pay. Mines that produce the same quantity of minerals, regardless of their cost, would pay the same.

This characteristic of gross royalties is illustrated by Charts 1 through 4 which have been developed to illustrate the impacts of various royalty proposals. Before examining these alternative types of royalties, however, we should explain the assumptions used to generate these data.

We have developed financial models for two hypothetical mines producing 100,000 ounces of gold per year on public land in Nevada. One is a medium cost producer with costs approximately equal to industry-wide averages developed in *The U.S. Gold Industry, 1992* (by John L. Dobra and Paul R. Thomas, see table 4, page 16). Average total costs for the medium cost mine are \$330 per ounce. The low cost mine has a cost structure patterned after a mine in Nevada with an average total cost of \$225 per ounce.

Using these cost assumptions, we estimate Nevada Net Proceeds of Mines Tax liabilities for both mine and federal royalties using four methods in addition to a base case of no federal royalty. In calculating the Net Proceeds of Mines Tax, it has been assumed that federal royalties, like private royalties, would be deductible. Private royalties, however, create a tax liability for the royalty recipient that is not reflected in the Charts since we are showing the impact on royalties as producers.

Charts 1 and 2 show the various royalties at a \$350 gold price, charts 3 and 4

use an assumed price of \$400. No hedging gains are included in gross income because it is assumed that, as is common practice, these mines are operating companies that sell their production at spot to a parent corporation which may or may not engage in hedging.

The five cases illustrated on the charts include:

- 1) The "Base Case," has no federal royalty, and the mine only pays the Nevada Net Proceeds of Mines Tax. Note, however, the sensitivity of the Net Proceeds of Mines Tax to profitability. The low cost mine pays approximately twice the tax as the medium cost mine.
- 2) The "8 percent gross royalty" case shows the effects of the type of royalty in S.257 sponsored by Senator Bumpers. Note that both the medium cost and low cost mines pay the same federal royalty. The difference in overall burden is because of the Nevada Net Proceeds of Mines Tax.
- 3) The "8 percent gross royalty with restructuring" case assumes that the mining companies split their assets and restructure into two entities, one that mine ore and pays taxes and royalties, and one that simply processes ore. It has been assumed that revenues for the mining company reflect a transfer price between companies that allows the mining company to share in the profitability of both companies. In this case, the transfer price for ore between the mining and milling company is assumed to be equal to mining costs as a proportion to total costs as specified in S. 775. The split of profits resulting from this transfer price is, as a result, arbitrary and a lower transfer price would, of course, reduce tax and royalty liabilities.

This restructuring results in a substantially lower royalty liability because, in effect, all costs other than extraction would effectively be deducted for the purposes of determining the royalty. The point of the transfer of the ownership of the ore would determine which costs would be excluded. For example, does the ore transfer ownership when it is scooped up in a shovel, or when it is dumped into the bed of a truck for transport to a crusher, or when it is placed on a leach pad or fed into a mill circuit? In general, the sooner ownership is transferred, the more of the value added from handling and treatment that is excluded from determination of the royalty, and the lower the royalty.

- 4) The "8 percent net proceeds royalty" assumes a federal net proceeds royalty patterned after the Nevada Tax. This formulation allows for deduction of all costs required to bring the raw material to a salable state, it avoids questions of point of transfer, and provides a reasonable estimate of the value of the *in situ* resource except for the cost of finding it.

- 5) The "2 percent S.775 royalty" case uses the calculation method prescribed in the Crag bill. Several points need to be made with respect to this type of royalty.

First, some have referred to this type of royalty as a "mine youth" royalty because (I assume) the proportion of the value of the final product subject to royalty is equal to the proportion of total costs required to bring the product to the "mouth of the mine," i.e., extraction cost. This has a logic to it, because it incorporates a major principle used in determining private royalties: it considers extraction costs.

A second point is that comparing a "2 percent S.775 royalty" with 8 percent of other types is a bit like comparing "apples and oranges." Consequently, Chart 2 shows an "8 percent S.775 royalty." This chart shows the liabilities of the various types of royalties at equivalent rates.

Charts 3 and 4 show the results of the same models at a \$400 per ounce gold price. In comparing the charts, note the difference in the scales, which go from \$0 to \$3.5 million on charts 3 and 4. The effect of changes in commodity prices is key since royalties tied to costs like the net proceeds and the S.775 royalties, are much more sensitive to commodity prices. They allow the royalty recipient to share in the benefit or windfall of rising prices but do not punish the producer for price decreases.

Key to understanding royalties is that there is no "right" or "wrong" way to develop a royalty. There are only more or less "reasonable" royalties. In the case of private royalties, the test of reasonableness is whether parties agree to a net smelter rate that reflects the grade, risk, and costs of development; in short, all that is known about a claim or claims. Since a government cannot negotiate a rate on every claim - and would find itself at a significant bargaining disadvantage if it tried - the test of reasonableness comes in determining the value to be assessed at a standardized royalty rate.

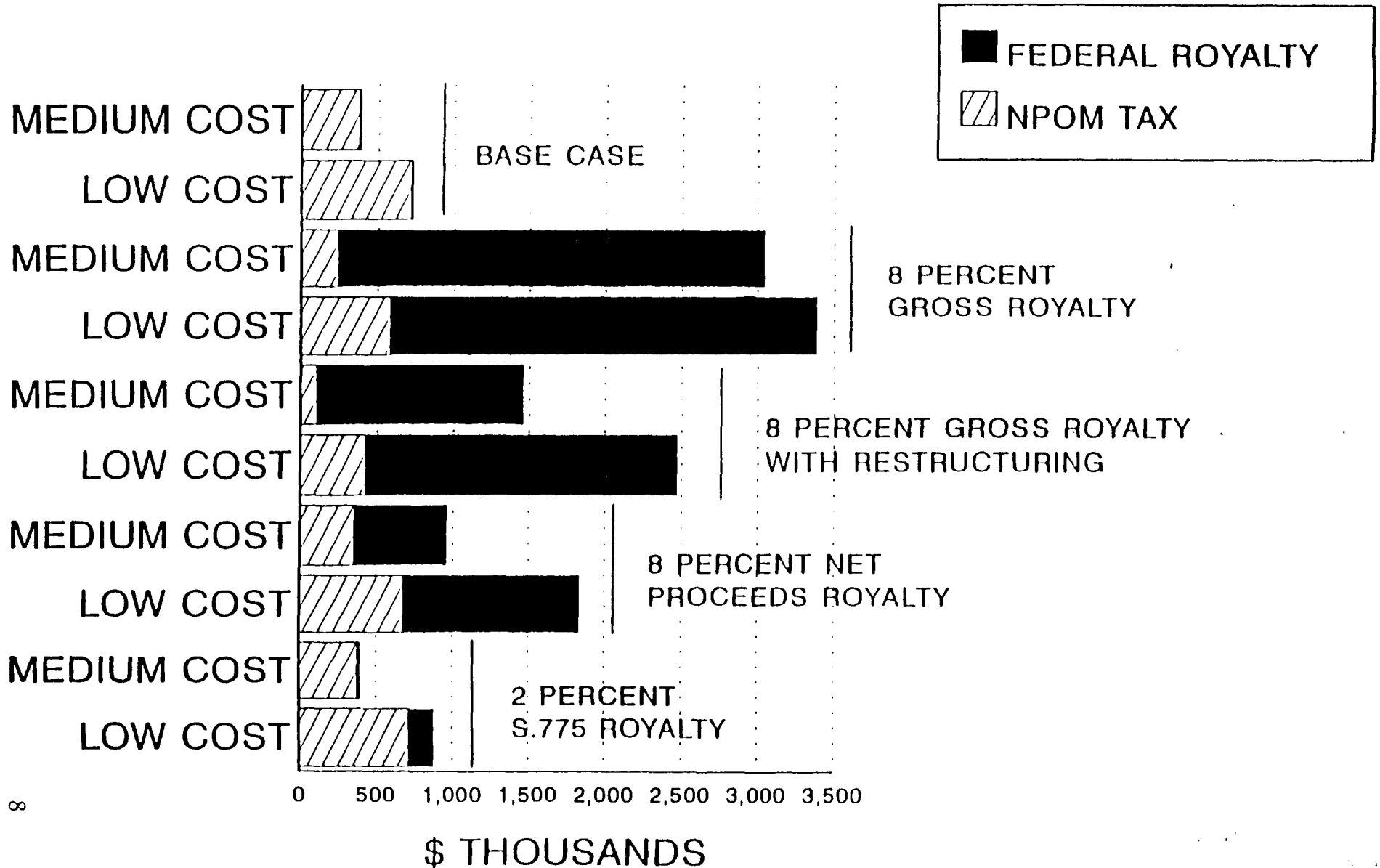
In principle, the value that should be assessed is the value of the mineral in the ground less the cost of discovering, developing, mining, and processing it into a salable product. That is fair market value of the government's property interests because that is what the government owns: undiscovered and undeveloped mineral lands.

The S.775 royalty is fundamentally reasonable because it is based on ability to pay: if total costs are greater than gross income, no royalty would be owed. On the other hand, under S.775, two properties could have equal costs to discover, extract, and process minerals, but the one with higher extraction costs would pay a higher royalty.

One could find fault with virtually any formulation, however. For example, the Nevada Net Proceeds Tax does not allow deduction of exploration expenditures in Nevada. These are clearly costs of development and cannot be considered part of the value of the mineral in the ground. In addition, the state benefits with jobs created and taxes paid from mineral development and has an interest in encouraging exploration. One way Congress could avoid this flaw in the Nevada formulation of value is to include exploration on U.S. public lands in the denominator or the fraction developed in S.775.

CHART 1

TAX AND ROYALTY LIABILITIES FOR MEDIUM AND LOW COST GOLD PRODUCERS AT \$350 GOLD



TAX AND ROYALTY LIABILITIES FOR MEDIUM AND LOW COST GOLD PRODUCERS AT \$350 GOLD

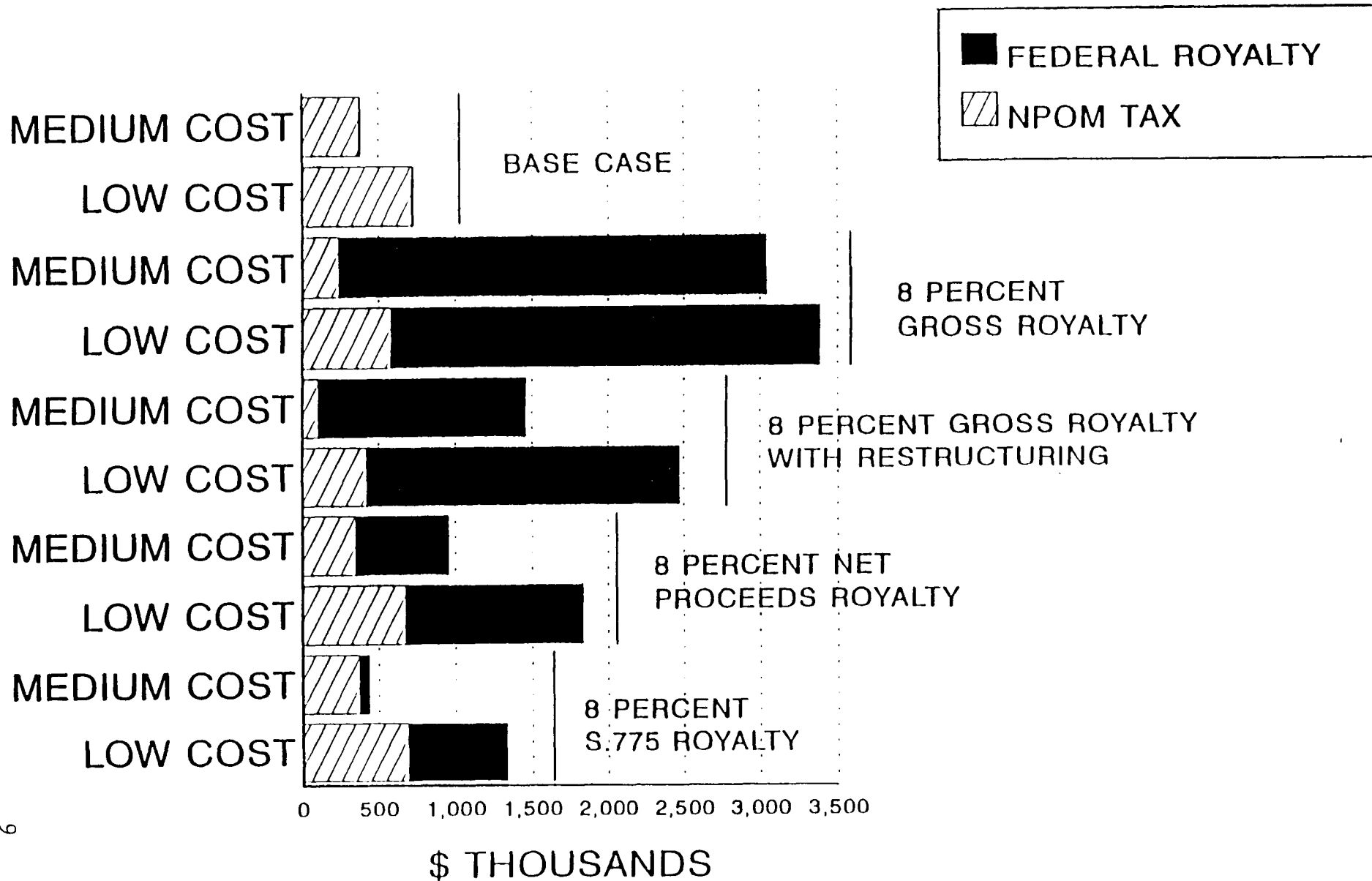
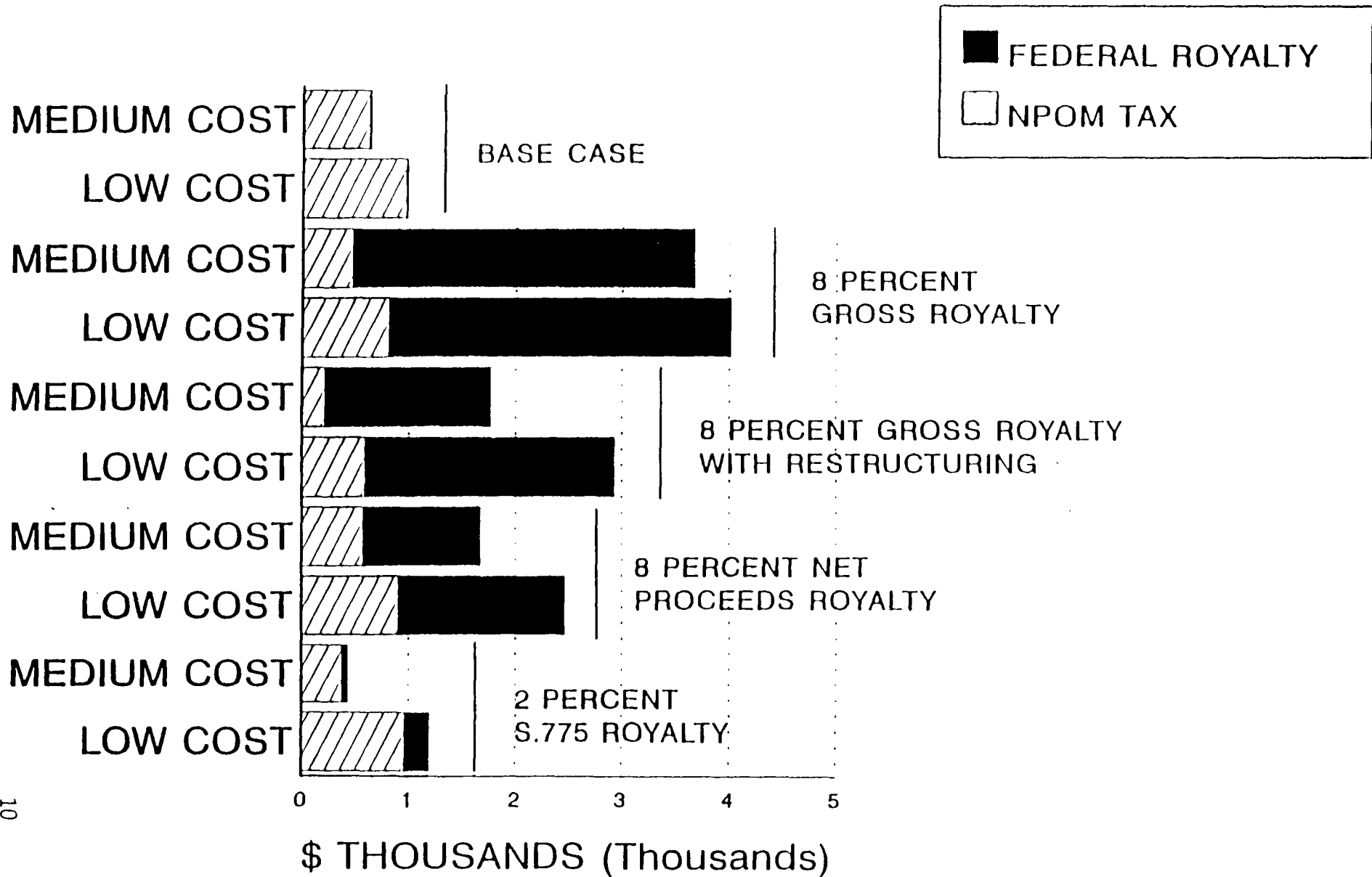
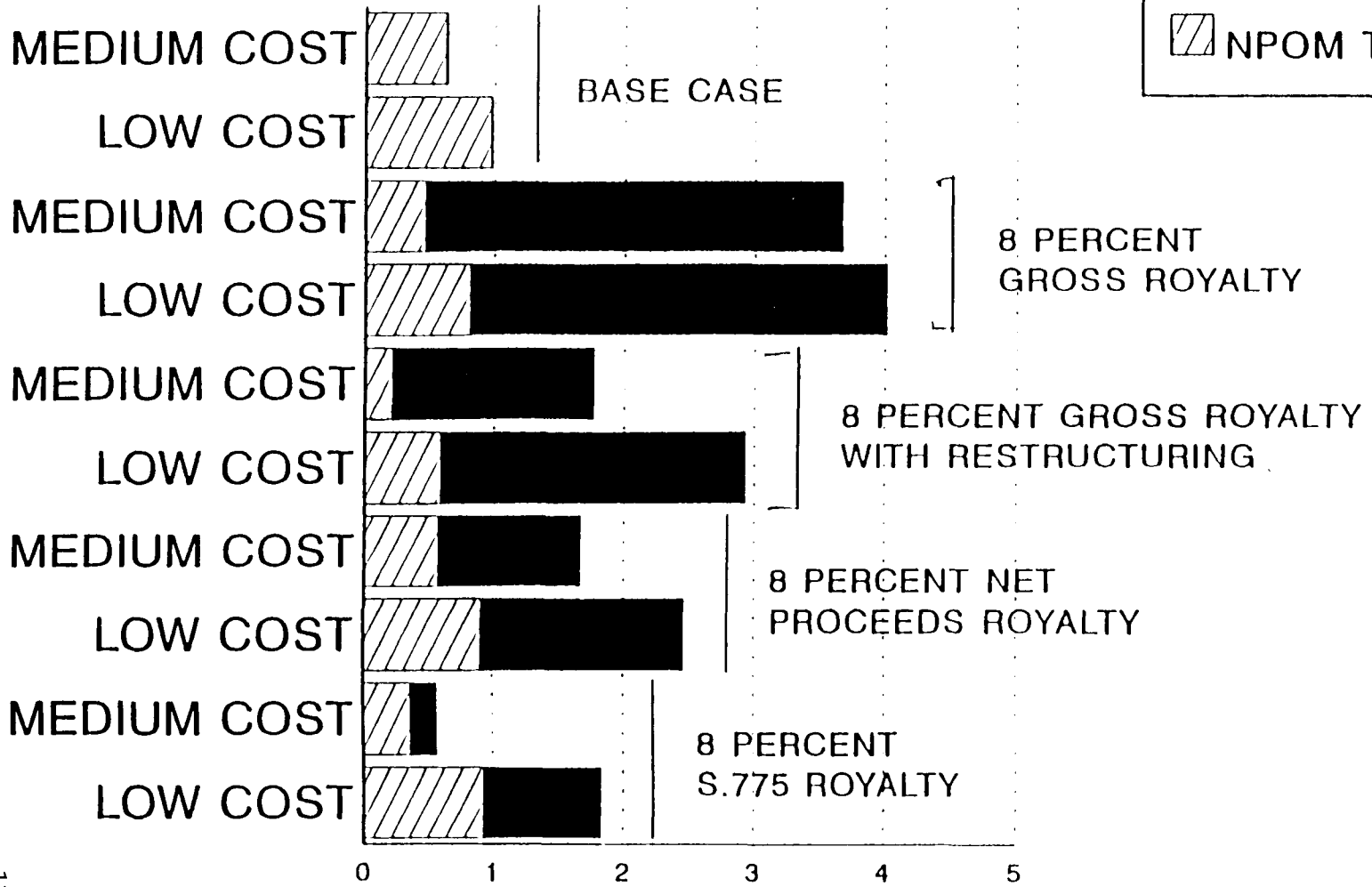
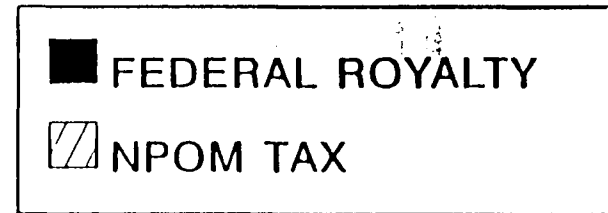


CHART 3

TAX AND ROYALTY LIABILITIES FOR MEDIUM AND LOW COST GOLD PRODUCERS AT \$400 GOLD



TAX AND ROYALTY LIABILITIES FOR MEDIUM AND LOW COST GOLD PRODUCERS AT \$400 GOLD



\$ THOUSANDS (Thousands)

III. Jobs Created or Lost by Mining Law Reform

A. The Impact of Proposed Royalties on U.S. Gold Reserves

As noted above and in previous testimony, the impacts of proposed gross royalties will be significant but the major impacts will be felt in the long run, not immediately. An 8 percent gross royalty will result in the wasting of a significant proportion of U.S. gold reserves, reducing reserves that can be mined at a profit between now and the year 2000 from approximately 52 million ounces to approximately 20 million ounces for the 38 mines in which we have long-run micro data. While some of this gold will be produced anyway at a loss, by the end of this period, significant job losses will occur. Royalties related to profitability and ability to pay, on the other hand, will not have this type of effect. Producers have to earn something on their operations to incur a liability with a royalty tied to profitability.

B. The Implications of Reclamation Programs for Job Creation

Royalties from mining operators to pay for reclamation programs will, in general, generate no new jobs. These funds, if not used to pay royalties, would be used to finance exploration and the development of new mines. Reclaiming mine sites abandoned before reclamation laws were developed is, arguably a worthy cause. But such a program cannot be justified on the basis of job creation. At best, it is job substitution.

If Congress has an interest in creating jobs and raising tax revenues, it needs to focus on policies which create new wealth not redistribute existing wealth. This is not to suggest that reclamation creates no wealth. It probably creates some wealth by beautifying abandoned mine sites. On the other hand, Congress needs to examine what this is worth in comparison to its other objectives.

Jobs "created" by reclamation will be short term in duration. But, more importantly, if the royalty imposed to sponsor such a reclamation program leaves the industry in an untenable economic position in this country, on net, jobs are lost not created.

IV. Industry Profitability

One argument frequently advanced by proponents of federal royalties is that the mining industry is able to pay these royalties. They frequently mention the 18 percent Newmont royalty noted above as proof. There appears to be a presumption that mining, and particularly *GOLD* mining, is a fabulously profitable pursuit. *If this were true, virtually any economics professor will tell you, we would all be gold miners.*

Profits in the precious metals mining industry are highly dependent upon

price. Over the past two decades, precious metals prices, for various reasons, have been extremely volatile. Consequently, industry profits have followed these trends and demonstrated significant variability.

Chart 5 shows return on equity, a common measure of profitability, for U.S. precious metals mining, all U.S. mining, all U.S. manufacturing, and U.S. non-durable goods manufacturing from 1986 to 1992 (table 1 shows raw data in chart 5). Return on equity for the precious metals mining industry in 1992 was 2.9%. In contrast, the March 15, 1993 issue of *Business Week* presented its "Corporate Scoreboard" for 900 U.S. Corporations representing 24 industry sectors. The composite, or weighted average return on equity for *Business Week's* selected group of companies was 10 percent. In other words, in 1992, the U.S. precious metals industry was one third as profitable as the average U.S. business. Sectors like health care, which topped *Business Week's* ranking with a 23 percent return on equity, or consumer products with a 22 percent return on equity, did much better than precious metals in 1992.

The good news is that earnings in 1992 were up over 1991 when, as shown on chart 5, the industry posted a loss.

Clearly, however, industry executives do not expect to earn low profits indefinitely. They hope that eventually, with better commodity prices, they will earn higher than average profits, commensurate with their higher risks.

The discussion of profitability provides a good context for concluding this analysis of royalties. The way royalties are commonly negotiated with private parties and, in many cases, with foreign governments, a royalty holder is, in effect, a partner who shares in the success of an enterprise. This is because royalties are commonly based on ability to pay or profitability. I would argue, on general principles, that Congress will maximize the return to the Treasury from royalties on hardrock minerals if it follows this example and acts as a partner. Reap the benefits in the good times, but allow the industry to survive in the bad.

INDUSTRY PROFITABILITY COMPARISONS

RETURN ON EQUITY, 1986 - 1992

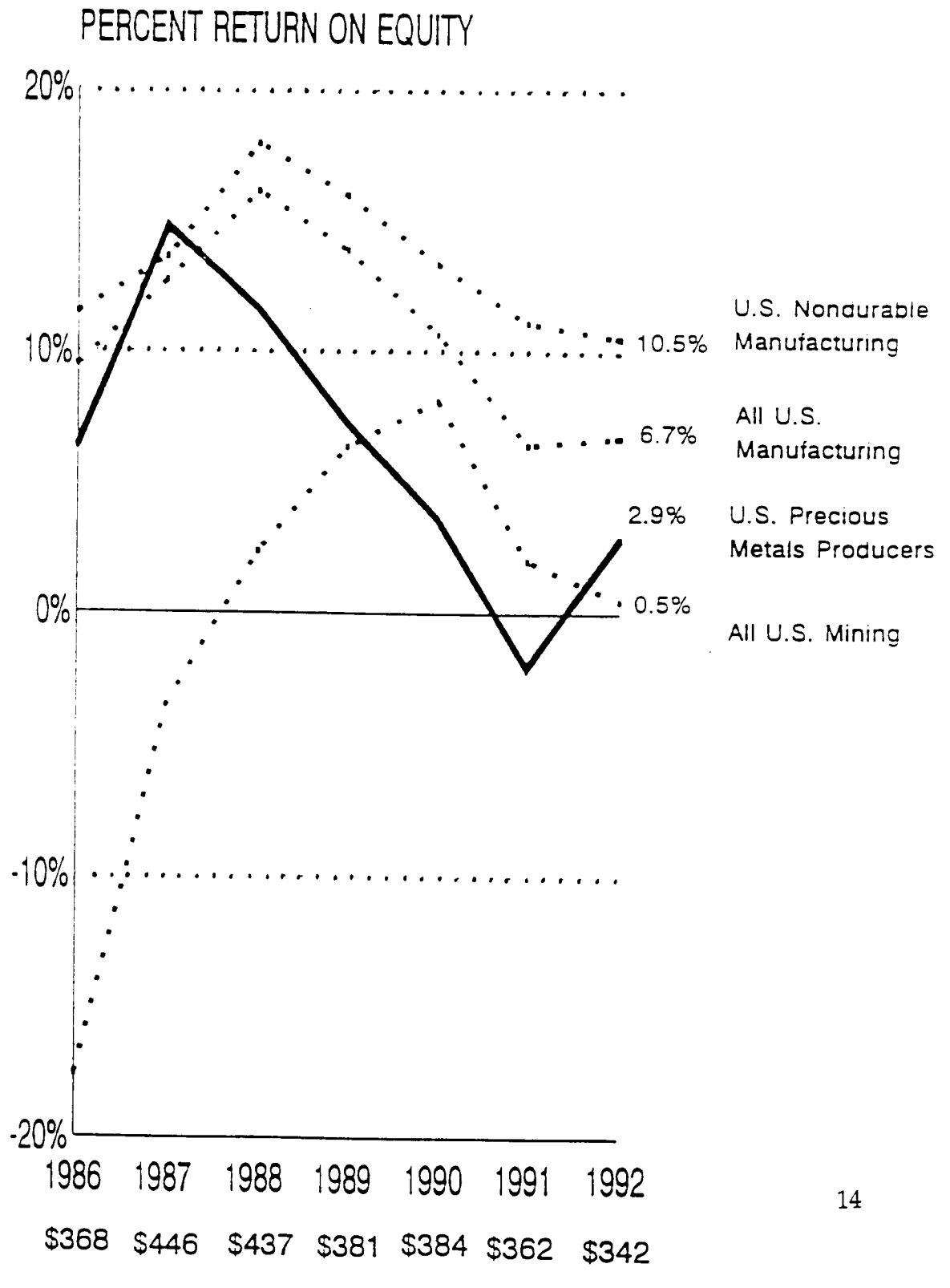


Table 1

INDUSTRY PROFITABILITY COMPARISONS

INDUSTRY	REVENUE	NET INCOME	TOTAL ASSETS	SHARE- HOLDERS EQUITY	RETURN ON EQUITY
(ALL DOLLAR FIGURES ARE IN MILLIONS)					
U.S. PRECIOUS METALS PRODUCERS					
FY 1986	\$1,799	\$142	\$5,357	\$3,034	4.69%
FY 1987	\$2,746	\$643	\$7,040	\$4,429	14.51%
FY 1988	\$3,341	\$692	\$8,786	\$5,569	12.42%
FY 1989	\$3,988	\$498	\$11,061	\$6,436	7.73%
FY 1990	\$4,670	\$171	\$11,650	\$7,063	2.42%
FY 1991	\$4,256	(\$74)	\$11,469	\$7,102	-1.04%
FY 1992	\$4,263	\$149	\$9,173	\$5,199	2.87%
ALL U.S. MINING					
FY 1986	\$33,999	(\$5,071)	\$76,308	\$28,835	-17.59%
FY 1987	\$34,718	(\$959)	\$73,767	\$27,103	-3.54%
FY 1988	\$38,316	\$635	\$72,976	\$26,728	2.38%
FY 1989	\$40,635	\$1,840	\$73,957	\$28,893	6.37%
FY 1990	\$42,738	\$2,463	\$74,464	\$30,215	8.15%
FY 1991	\$39,692	\$626	\$74,099	\$30,574	2.05%
FY 1992	\$36,575	\$145	\$73,998	\$30,298	0.48%
ALL U.S. MANUFACTURING					
FY 1986	\$2,251,786	\$84,004	\$1,978,238	\$882,411	9.52%
FY 1987	\$2,371,005	\$114,641	\$2,079,761	\$900,908	12.73%
FY 1988	\$2,591,322	\$154,307	\$2,246,788	\$955,988	16.14%
FY 1989	\$2,697,933	\$138,975	\$2,391,096	\$1,000,111	13.90%
FY 1990	\$2,683,233	\$111,411	\$2,553,610	\$1,041,735	10.69%
FY 1991	\$2,753,021	\$68,939	\$2,625,629	\$1,067,335	6.46%
FY 1992	\$2,365,082	\$67,811	\$2,517,393	\$1,005,403	6.74%
U.S. NONDURABLE MFG.					
FY 1986	\$1,109,711	\$50,875	\$1,026,503	\$441,515	11.52%
FY 1987	\$1,190,525	\$61,943	\$1,072,838	\$454,159	13.64%
FY 1988	\$1,307,538	\$87,377	\$1,160,835	\$486,991	17.94%
FY 1989	\$1,387,989	\$80,433	\$1,266,255	\$503,240	15.98%
FY 1990	\$1,449,081	\$70,570	\$1,343,353	\$527,425	13.38%
FY 1991	\$1,441,429	\$61,432	\$1,395,588	\$551,745	11.13%
FY 1992	\$1,266,220	\$57,069	\$1,362,661	\$542,505	10.52%

Data for U.S. precious metals producers comes from company reports. All other data are from U.S. Bureau of Census, *Quarterly Financial Report for Manufacturing, Mining and Trade Corporations 1986 - 1993*, U.S. Government Printing Office, Washington, D.C.