# Economic Impacts of Proposed Changes In U.S. Mining Laws and Public Lands Regulations on Nevada

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## Contents

| | Page |
|---|---|
| Introduction | 1 |
| Nevada's Mining Industry | 2 |
| Impacts of Mining Law and Regulatory Reform | 3 |
| The Influence of Low Gold Prices | 4 |
| The Economic Impacts of the Political Risks of Mining Law Reform | 7 |
| Impacts of Nevada's Economy | 13 |
| Impacts on Local government Finance | 17 |
| Conclusion | 21 |

## Figures

| | | |
|---|---|---|
| 1. | Percentage Allocation of North American Precious Metals Exploration Expenditures to the U.S.,. 1992 – 1999 | 5 |
| 2. | Average Annual Gold Prices, 1992 – 1998 | 6 |
| 3. | Percentage Allocation of North American Precious Metals Producers' Exploration Expenditures 1996 – 9 | 8 |
| 4. | Percentage Allocation of North American Precious Metals Producers' Development Expenditures 1996 – 9 | 9 |
| 5. | Percentage Allocation of North American Precious Metals Producers' Capital Expenditures 1996 – 9 | 10 |

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## Introduction

The issues examined below relate to the impacts of proposed changes in U.S. mining laws and public lands regulations on Nevada's economy. This research has been prompted by concerns about the potential economic impacts in Nevada of proposed changes to federal surface mining regulations (43 CFR § 3809, or "3809 regulations"). As a practical matter, however, these regulatory changes cannot be viewed in isolation, but as the latest of a sequence of events over the past decade that have adversely impacted the competitiveness of Nevada and other western public lands states.

Results of surveys of major North American precious metals producers over the past decade indicate a substantial reduction in the U.S. share of investment in exploration efforts during the past five years. Since the analysis is based on the U.S. share of exploration expenditures, this decline cannot be blamed on commodity prices and, indeed, the data show that the U.S. share has declined and remained at lower levels even during periods when gold prices increased. Consequently, the reduction in the U.S. share of investment must be attributed to other factors influencing industry investment decisions. These other factors include those that decrease the attractiveness of the U.S. relative to other exploration and mine development targets, and are generally related to political risks.

The analysis below suggests that, as a result of the deterioration in the U.S. mining business environment because of increased political risks, the U.S. is already losing over $250 million per year without considering any marginal changes in the business environment that may result from modifications of 3809 regulations. The net present discounted value of this loss alone (for 10 years discounted at 3 percent) is $2.2 billion throughout the western public lands states and approximately $1.5 billion in Nevada alone. It should be further noted that these figures represent direct investment and do not include indirect impacts on state and regional output, employment, and household income. Hence, the

[*] This research was conducted under an agreement with the Nevada Department of Business and Industry, Division of Minerals by the Natural Resource Industry Institute, University of Nevada, Reno.

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economic cost to individuals and state and local governments in terms of lost jobs, incomes, and tax revenues, has already been substantial. Proposed changes in 3809 regulations, in this context, simply promise to make these losses permanent.

The discussion and analysis below also focuses on the role of Nevada's mining industry in the state's economy. Although the industry is small in terms of employment with under 14,000 employees, it is the State's second largest export industry. As a consequence, the health of the industry is critical to economic activity in the state in general and particularly for the north central and eastern parts of the state where the industry is centered. The analysis below focuses both on statewide and regional impacts of changes in the business environment for mining companies.

Overall, defenders of proposed regulatory changes and other actions that have impacted the business environment in which mining companies operate have blamed low precious metals prices for the industry's problems. Low commodity prices have an obvious impact on any commodity producing industry. However, it is necessary to get beyond the obvious and take a closer look at the data. In this case, the data suggest a very different explanation of the current state of the minerals industry in Nevada and other western public lands states.

## Nevada's Mining Industry

Nevada's mining industry produces a variety of minerals but it is the nation's leading producer of precious metals, producing approximately 70 percent of U.S. gold and 43 percent of U.S. silver. In 1997 this output was valued at $2.7 billion and generated economic impacts of increasing Gross State Product by $4.9 billion, inducing a total of 51,700 jobs, and added $1.5 billion to Nevadans' personal incomes. Overall, precious metal mining in Nevada and its indirect economic impacts accounted for 9 percent of Gross State Product in 1997.[1]

Precious metal mining's economic significance in Nevada is much greater in rural parts of the State where mining activities are centered. For example, Elko, Eureka, and Lander counties, in the northeast corner of the state, produced 5.6 million ounces of gold in 1998, or about 68 percent of Nevada production. During much of the 1990's precious metals production has accounted for almost one third of total employment and over half of personal income in these counties. Similarly, in Humboldt and Pershing counties in north central Nevada, 1998 gold output in the two counties totaled over 1.5 million ounces (19 percent of total state production) and mining and mine development has also accounted for over one third of total employment and almost one half of total personal income in these counties.

[1] John L. Dobra, *The U.S. Gold Industry, 1998*, Nevada Bureau of Mines and Geology, Special Publication 25, Mackay School of Mines, University of Nevada, Reno, 1999.

Consequently, the health of the precious metals industry and the mining industry in general is critical to the economic health of this region of the state and the thousands of people who live there.

**Impacts of Mining Law and Regulatory Reform**

Attempts to reform U.S. mining laws by environmental groups have been underway for the past decade. In the late 1980's, Representative Rahall in the U.S. House of Representatives and Senator Bumpers in the U.S. Senate introduced bills that would have, among other things, imposed royalties and restricted access to public lands for mineral entry.

Having generally failed in these efforts in Congress, the Clinton administration's Department of the Interior has more recently been attempting to achieve through reform of 43 CFR § 3809 surface mining regulations some of the measures that Congress has expressly refused to pass. However, as noted, regulatory reform should not be viewed in isolation but in the context of a string of events over the past decade that have adversely impacted the industry. We would suggest that the events or factors impacting the industry increasing the political risks of operating in the U.S. have included:

- Threats of production royalties in federal legislation noted above,
- A moratorium on the issuance of patents on mining lands,
- The imposition of a $100 per year per claim holding fee which raises the cost of holding land for exploration purposes and which resulted in the abandonment of a very significant percentage of mining claims in the U.S.,
- Threats of elimination of the percentage depletion allowance on U.S. mining lands acquired under the provisions of the "Mining Law of 1872" while keeping it for foreign production,
- Increasing delays in approving permits for mine development under existing 3809 regulations,
- Threats of increased delays in approving permits for exploration as well as mine development under proposed changes to 3809 regulations,
- Threats of up to 38 percent increases in the costs of exploration, according to the BLM's 3809 DEIS.

Generally, the proposed changes in the 3809 regulations would bring about certain proposed changes in the mining laws (except the royalty provisions) that have been rejected by Congress. The BLM's Draft Environmental Impact Statement[2] (DEIS) prepared on the proposed regulatory

[2] Bureau of Land Management, U.S. Department of the Interior, *Surface Management Regulations for Locatable Mineral Operations (43 CFR § 3809), Draft Environmental Impact Statement.* Washington, D.C., February 1999.

changes states that one of the impacts of its Proposed Action will be to reduce mining activity by 5 percent. There is no apparent justification for this estimate provided by the BLM and it has been widely criticized.

We believe the impacts of the Proposed Action need to be viewed in the longer term and broader context including what has occurred since the current administration began its efforts in 1993. This period is critical to understanding the impacts of the administration's Proposed Action because, as noted above, it pursues the objectives of a failed legislative agenda.

## The Influence of Low Gold Prices

We also believe it necessary to distinguish between the impacts of mining law and regulatory reform and the impacts of low gold prices. The latter, it has been claimed by some proponents of the reforms, are to be entirely blamed for the reduction in exploration activity on public lands in Nevada and the rest of the western U.S. Figures 1 and 2 suggest otherwise.

Figure 1 shows the percentage share of major North American precious metals producers' exploration spent in the U.S. from 1992 to 1998.[3] As the figure indicates, in 1992 and 1993, over half of exploration spending by North American producers was spent in the U.S. and much of that in Nevada. This situation, however, changed radically after 1994. After 1994, the U.S. share of these companies' exploration budgets shrank to half of the 1992 and 1993 levels.

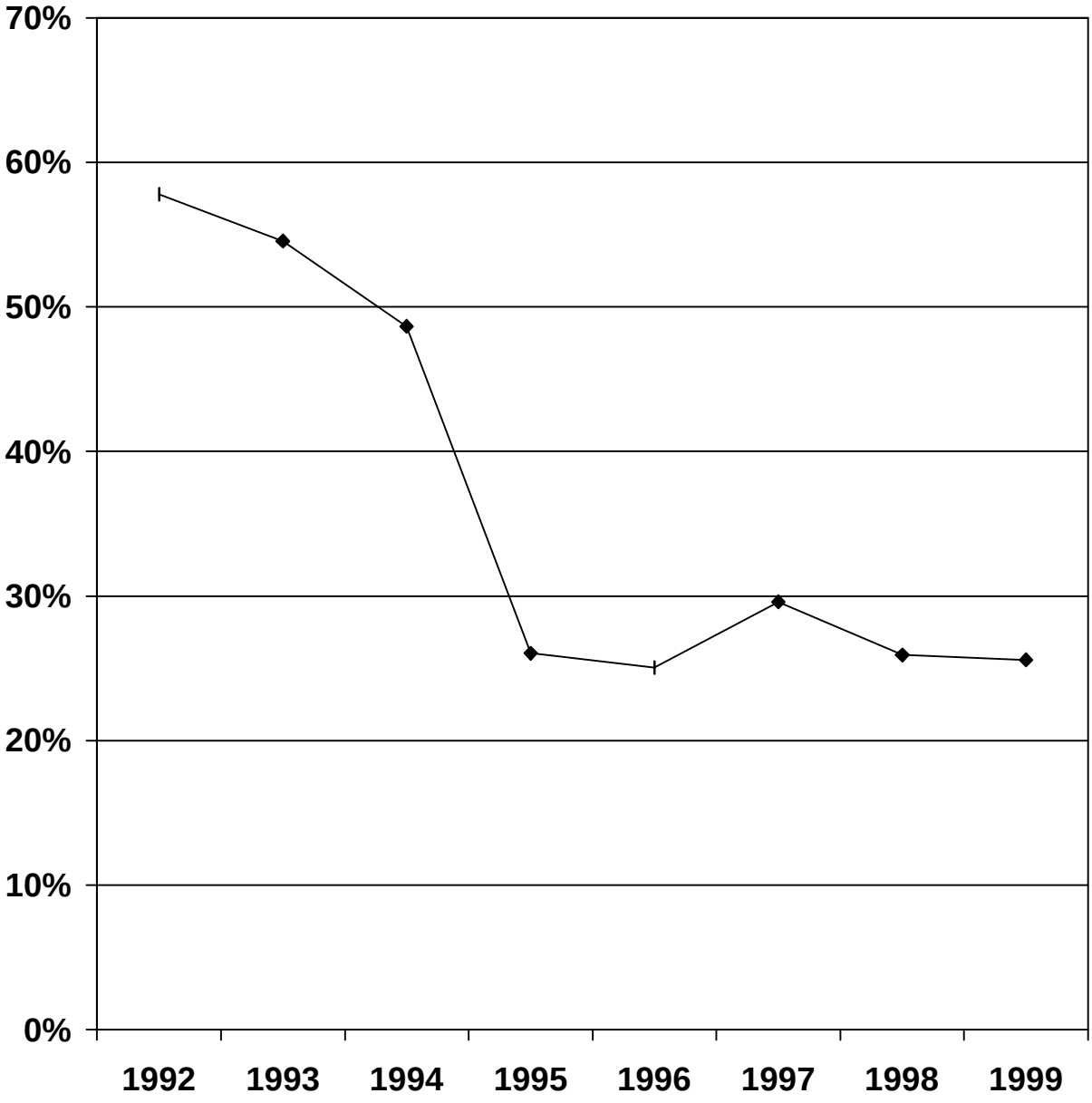
Since Figure 1 shows the U.S. <u>percentage</u> <u>share</u> of exploration spending, the price of gold is irrelevant to the discussion. While it is true that mineral company exploration budgets shrink when commodity prices fall, Figure 1 indicates that because of other factors, the U.S. share of these expenditures, regardless of their level, has been halved.

If the above is not sufficient to dispel the notion that the U.S. precious metals industry's current problems are solely due to low gold prices, then Figure 1 should be considered with Figure 2, which shows annual average gold prices over the same period. The figures indicate that the U.S. share of exploration expenditures by North American precious metals producers (Figure 1) declined when gold prices (Figure 2) were **increasing** during 1993 and 1994.

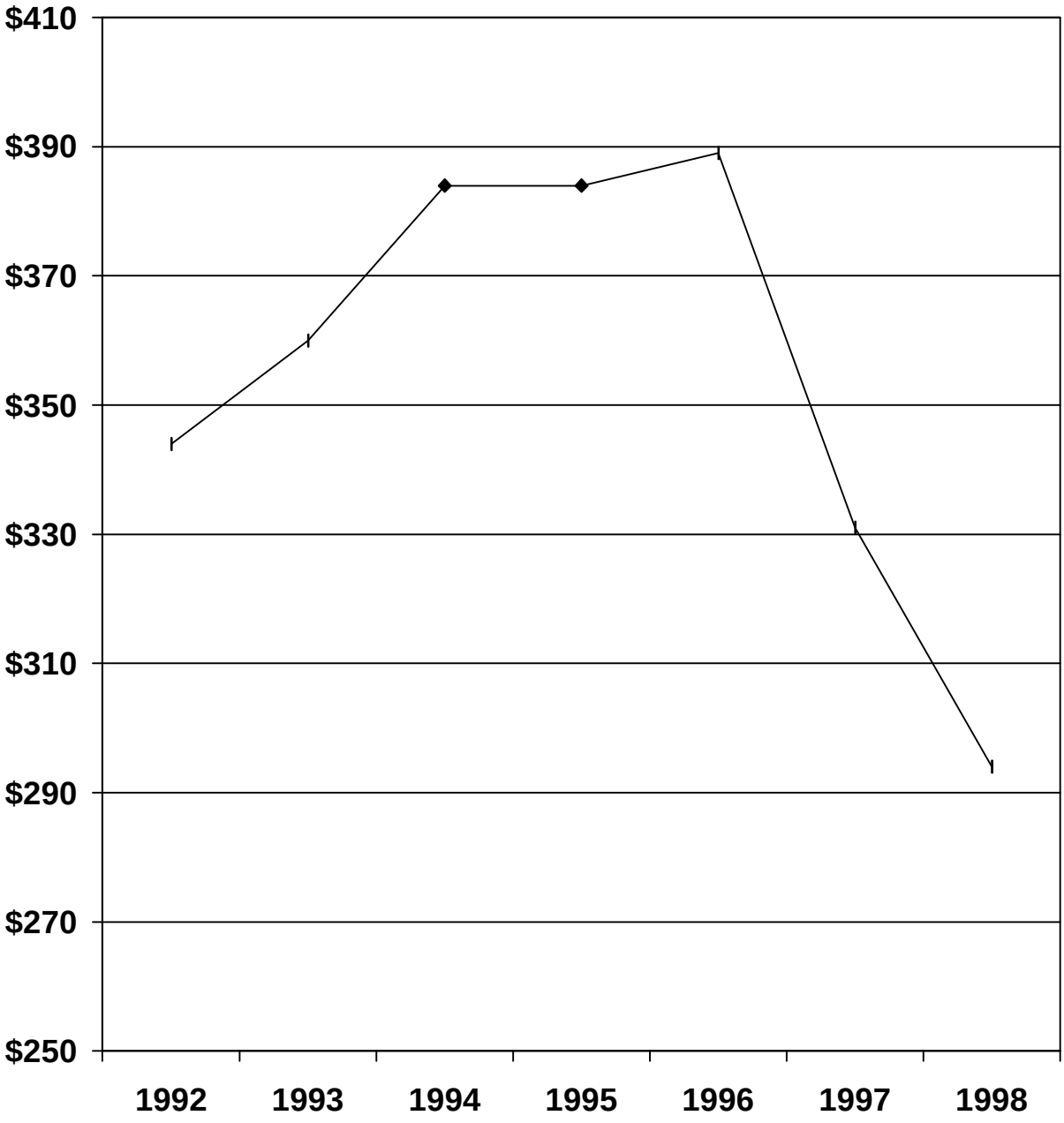
Since 1992, annual average gold prices have fallen from $344 to $294 in 1998, or 14.5 percent. Over the same period, the U.S. share of North American producers' exploration budgets has fallen 49.7 percent. Low gold prices are

[3] The figure is based on data collected in three surveys of major North American precious metals producers with U.S. production for studies of the U.S. gold industry by John L. Dobra. The studies were published by the Nevada Bureau of Mines and Geology, Mackay School of Mines, University of Nevada, Reno in 1995, 1997 and 1999. Although the number of companies responding to the survey varied from year to year because of factors like mergers and acquisitions, the respondents generally accounted for 85 to 95 percent of U.S. domestic gold production.

**Figure 1 - Percentage Allocation of North American Precious Metals Exploration Expenditures to the U.S., 1992-1999**



## Figure 2 - Average Annual Gold Prices, 1992-1998



clearly a problem for the industry, but it is equally clear that they are not the reason that the industry has turned its focus outside of the U.S. and Nevada.

It should also be pointed out that the flight of North American mining industry capital from the U.S. and Nevada is not, as it has been argued by some, because the industry has succeeded in finding all of the precious metals deposits. For practical reasons, precious metals exploration focuses on areas of the world where current production occurs. Nevada's production relative to its area is higher than, or comparable to, that of other major producing areas in the world making it a prime exploration target on geological grounds.[4]

## The Economic Impacts of the Political Risks of Mining Law and Regulatory Reform

As noted, the BLM's DEIS projects a 5 percent decrease in mining activity because of the proposed 3809 regulations. Their analysis of the economic impacts of this reduction indicates that this would result in a $90.8 million per year economic loss, 70 percent of which would presumably be borne by Nevada in line with Nevada's share of U.S. production. Over a 10 year period, the net present value of this cost to Nevada would be $542.2 million (at a 3 percent discount rate), or 70 percent of the loss projected by the BLM.

It is suggested, however, that this estimate reflects a very naïve view of how the mining industry works. The BLM has assumed that the proposed regulations will reduce current mine production by 5 percent. We do not believe that the proposed regulations will have much, if any effect on **currently permitted** mining activity. The effect will be on **future** activity. That is, by further discouraging current exploration activity on public lands, which includes 86 percent of Nevada, the probability of significant gold discoveries in Nevada are also reduced. This, in turn, implies lower levels of future investment in Nevada for development of new mines and lower levels of capital spending at future operating mines. Consequently, the impacts are expected to lag behind changes in policy that affect perceived political risks.

Figures 3, 4 and 5 further illustrate the nature and magnitude of the problem. Figure 3 shows the percentage allocation of North American precious metals industry exploration by region from 1996 to projected 1999.[5] Data for the U.S. are the same as the last four years shown on Figure 1. Note that in 1998, the U.S.'s 24 percent share of these expenditures amounted to $89.2 million. Since, as indicated above, the current U.S. share of North American producers' exploration expenditures is half of its 1992 levels, this would imply that the U.S. is **currently** incurring a loss of approximately $90 million per year in foregone

[4] Jonathan Price, in *The Nevada Mineral Industry 1997*, Nevada Bureau of Mines and Geology Special Publication MI-97, University of Nevada, Reno, 1998.

[5] Figures 3, 4 and 5 are based on data collected on a 1998 survey, Dobra 1999, op. Cit.

**Figure 3 - Percentage Allocation of North American Precious Metals Producers' Exploration Expenditures 1996-9**

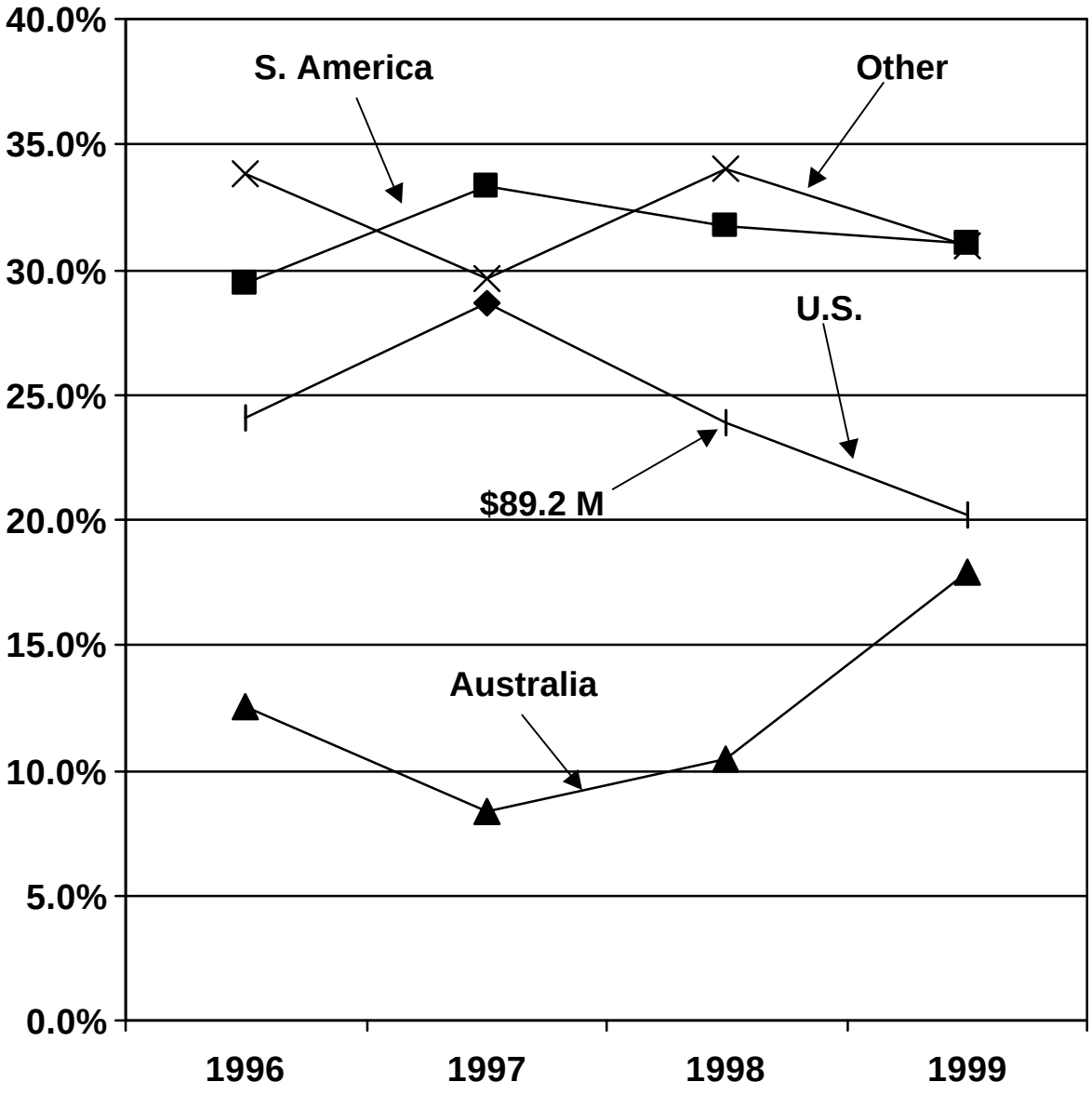
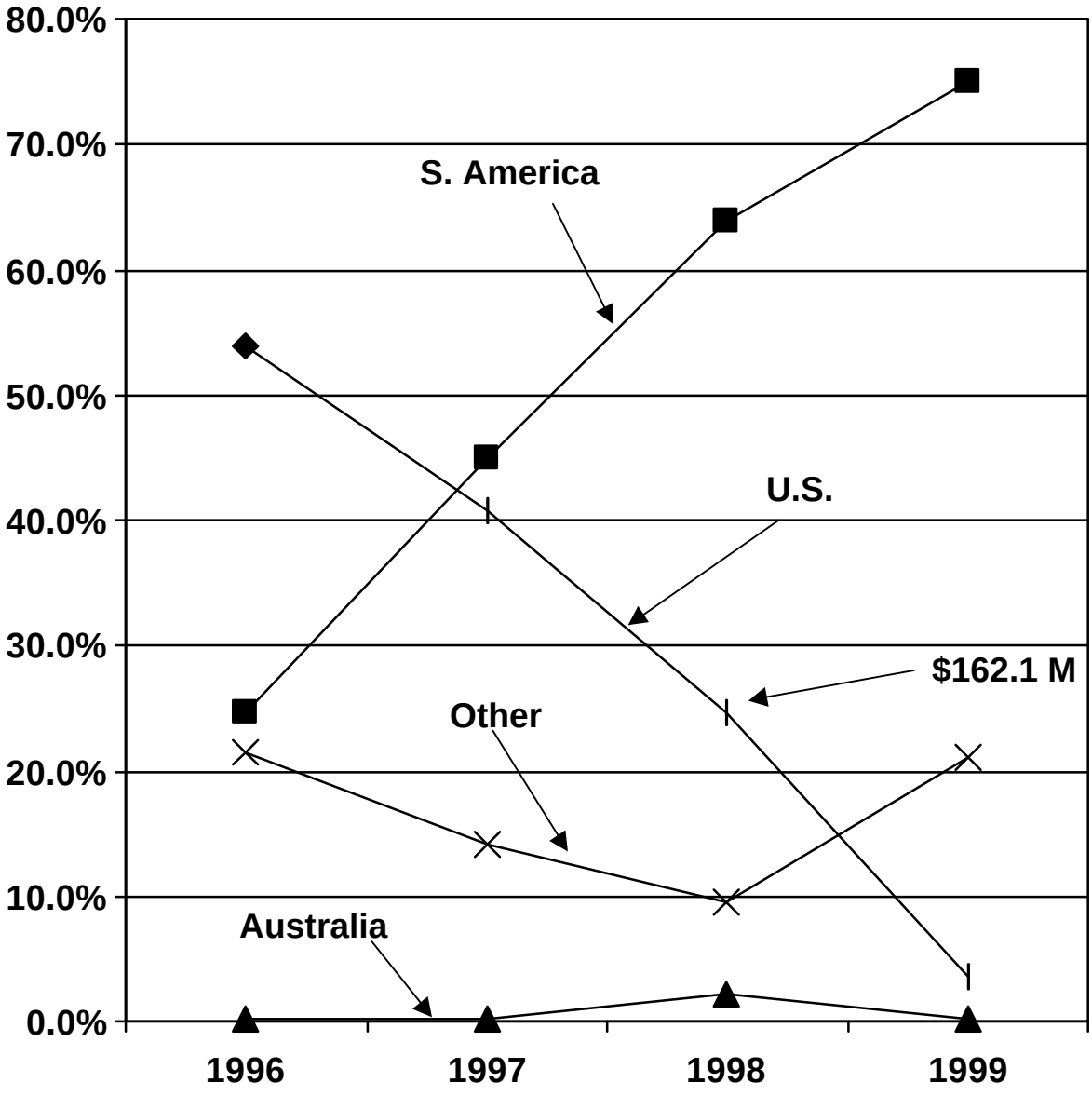
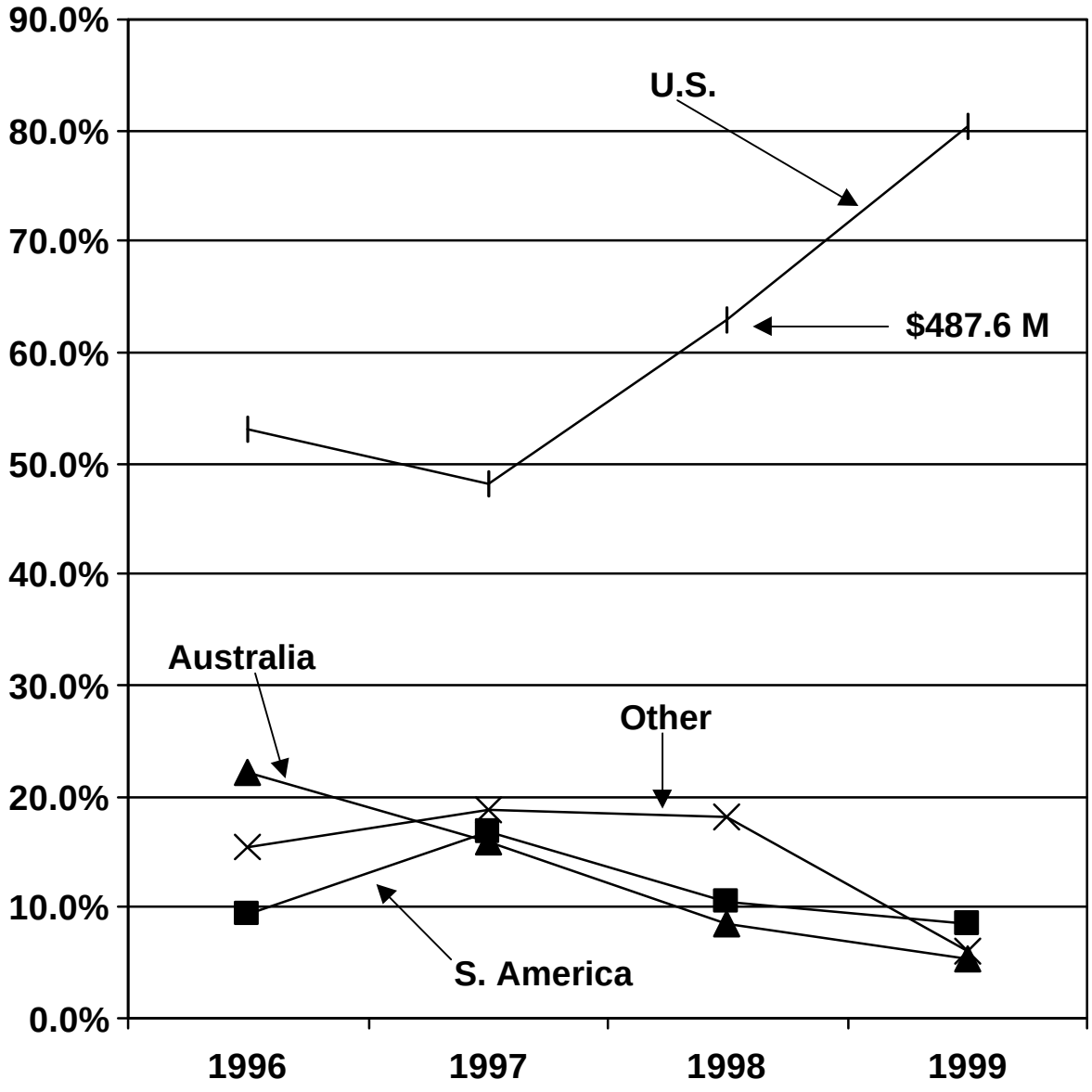


**Figure 4 - Percentage Allocation of North American Precious Metals Producers' Development Expenditures 1996-9**



## Figure 5 - Percentage Allocation of North American Precious Metals Producers' Capital Expenditures 1996-9



exploration expenditures. Also note that this loss alone approximates the level of total losses projected by the BLM in its DEIS.

In considering these data, it is important to keep in mind that in the mining industry, exploration leads to discovery of ore bodies which, in turn, leads to development of new mines, and then to further capital spending to maintain and expand these mines during their operational phase. Figures 3, 4 and 5 illustrate this process, or the "life-cycle" of mineral projects, and the magnitudes of the economic impacts involved in each phase.

Figure 4 shows the percentage allocation of North American precious metals producers' development expenditures from 1996 through 1999. This figure graphically indicates the consequences of the drastic drop off in U.S. exploration expenditures in the early 1990's illustrated by Figure 1. The dramatic fall in the U.S. share of precious metals exploration spending in the early 1990's reflected a shift in spending from the U.S. to other places, most notably, Central and South America. Consistent with the life-cycle of mineral projects, greater levels of exploration activity in these areas in the early 1990's has led to greater levels of mine development activity in the late 1990's as indicated by Figure 4.

Figure 4 also indicates that the economic impacts of the development of new mines are an order of magnitude greater than exploration expenditures since development expenditures in 1998 were $162 million. Although speculative because the precious metals business is risky apart from the political risks addressed above, over the long run exploration success should be proportionate to effort. Consequently, it can be assumed that a 49.7 percent reduction in exploration leads to a proportionate reduction in discovery and development. Hence, the $162 million in development expenditures in 1998 represents 49.7 percent of what it would have been spent based on pre-1993 expenditure patterns. In other words, without changes in perceived political risks discussed above, the current (1998) level of development expenditures would be closer to $326 million, reflecting a current loss to the U.S. of $164 million per year at current prices.

The practical implication of Figure 4 is that in the last year, only two new mines have been put into production in Nevada. The only mine outside of Nevada that could be put into production that we are aware of is Battle Mountain Gold's Crown Jewel project in Washington. This project, however, has been tied up in a permitting process for several years, and recently had its Record of Decision to allow it to go forward revoked in a rather unusual manner by the Department of the Interior and the U.S. Forest Service. Although Congress subsequently reversed the revocation of the Crown Jewel Record of Decision, the actions of the Department of the Interior and the U.S. Forest Service in this case can only add to perceived political risks in the U.S.

The general belief in the industry is that the approval of the proposed changes in surface mining regulations will only lead to more delays, expand the BLM's ability to act in an arbitrary manner and drive even more capital overseas.

These federal agencies, of course, have sought to allay these fears in public statements. Nonetheless, perceptions of political risk in the U.S. have been and will remain significant and have practical implications indicated by Figures 1, 3 and 4: mining capital is leaving the U.S. Adding to the industry's perceptions of political risks is the potential for Congress to enact a federal royalty on top of the proposed regulatory changes. A federal royalty will exacerbate the situation by increasing producers' costs on future mining properties.

Figure 5 further illustrates the economic impacts of these trends and suggests that the magnitude of economic losses from the BLM's Proposed Action is much greater than the BLM has acknowledged. Figure 5 shows that the U.S. continues to receive the lion's share of capital expenditures at existing mines. This reflects the fact that operators must maintain their existing operations. The Figure also shows that these expenditures are another order of magnitude greater than exploration and development expenditures at $488 million in 1998.

Since most of this spending is at mines whose ore bodies were discovered prior to 1993, it is not argued that the U.S. is currently losing capital expenditures to the degree that it is currently losing exploration and development expenditures. It is clear, however, that because North American producers are currently replacing reserves being in mined in the U.S. and in Nevada by exploring for and developing reserves off-shore, that the capital expenditures represented on Figure 5 will cease to be made at the end of U.S. operations. Hence, in the long run, the expenditures represented by Figure 5 will also be lost. The question of when this will occur depends upon a wide variety of factors that are difficult to analyze in aggregate.

It must also be pointed out that these operations are depleting their reserves, which are estimated to total 118.9 million ounces, at a rate of approximately 11 million ounces per year.[6] In addition, partly because of the political risks described above, relatively little is being spent in the U.S. to replace these ounces by exploration. This implies that, regardless of what gold prices may do, the capital expenditures represented by Figure 5 will end sooner than they would if pre-1993 levels of U.S. and Nevada exploration were maintained. And this clearly does not bode well for the U.S. precious metals industry or for the local economies dependent upon the industry.

In contrast to the BLM's estimate of an adverse economic impact from the proposed regulatory on the order of $90.8 million per year and $542.2 million over ten years in Nevada, the discussion above suggests that current losses from political risks are greater than BLM projections of future losses. The analysis of the current impacts of political risks in the U.S. suggests that current policies and practices have an economic cost substantially greater than the BLM's estimate of the impacts of changes to 3809 regulations. Based on the estimates of current losses resulting from higher political risks, the U.S. is currently losing $254 million ($90 million in lost exploration and $164 million in lost development expenditures) per year, with a net present value over the next

[6] Dobra, op. Cit., 1999.

ten years of $2.2 billion. Again assuming that 70 percent of this lost activity is in Nevada, i.e., proportionate to production, the present value of current losses in Nevada would be $1.5 billion.

It should be also noted that these figures only reflect lost direct expenditures and do not include indirect economic impacts on regional and state output, employment and household earnings. For Nevada, including indirect impacts would put the total annual cost of increases in political risks at 3,380 fewer jobs, $317 million lower state product, and $98 million lower household income.

**Impacts on Nevada's Economy**

As noted at the outset, the minerals industry in Nevada is small in terms of its total employment with approximately 13,000 employees in April 1999, or 1.4 percent of the state's total workforce.[7] On the other hand, the value of the output generated by the industry, which was $2.7 billion in 1997, makes the mining industry the state's second largest export sector behind the gaming industry. Because virtually all of the output from the industry is exported outside the regional economy, the economic impacts of the industry far outweighs its absolute size. In 1997, the mining industry increased Gross State Product by $4.9 billion, inducing a total of 51,700 jobs, and added $1.5 billion to Nevadans' personal incomes. Overall, precious metal mining in Nevada and its indirect economic impacts accounted for 9 percent of Gross State Product in 1997.[8]

For the same reasons that this relatively small industry has a relatively large economic impact in the overall state economy, its impacts in the various local economies where mining occurs in Nevada is even greater. Table 1,[9] below, shows direct employment and income generated by the industry in Elko, Eureka and Lander counties which make up the northeast corner of the state, for 1992-6. Data for these counties are aggregated because although mining occurs in all three counties and, as noted above, produced approximately 6.9 million ounces of gold in 1998, the economic impacts are primarily felt in the city of Elko and Elko County.

As the Table indicates, in 1996 direct mining employment in these three counties (7,024 jobs) was 21.3 percent of total employment. In addition, because mining is the highest levels of employee compensation, in the same year direct income from mining employment accounted for just over 35 percent of total direct income.

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[7] State of Nevada, Department of Employment, Training and Rehabilitation website: http://www.state.nv.us/detr/detr.html.

[8] U.S. Bureau of Economic Analysis, 1998, "Gross State Product: New estimates for 1995-6 and revised estimates for 1977-94." U.S. Department of Commerce, June 2, 1998.

[9] Bureau of Economic Analysis, "Regional Economic Information System," U.S. Department of Commerce, 1998.

Table 1 Elko, Eureka & Lander Counties

| | Direct Employment | | Mining | Direct Income ($1,000) | | Mining |
|---|---|---|---|---|---|---|
| | Mining | Total | % | Mining | Total | % |
| 1992 | 6,434 | 27,598 | 23.31% | 316,442 | 874,902 | 36.17% |
| 1993 | 6,461 | 28,366 | 22.78% | 332,473 | 936,960 | 35.48% |
| 1994 | 6,132 | 30,271 | 20.26% | 331,008 | 1,007,757 | 32.85% |
| 1995 | 6,446 | 30,815 | 20.92% | 362,759 | 1,052,727 | 34.46% |
| 1996 | 7,024 | 32,951 | 21.32% | 407,948 | 1,164,224 | 35.04% |

Table 2 provides the same information for Humboldt and Pershing counties located in the north central part of the state and which produced a total of 2.7 million ounces in 1998. These two counties are aggregated because the major economic impacts of mines in these counties are focused on the city of Winnemucca in Humboldt County.

Because of lower levels of total production in Humboldt and Pershing counties both mining and total employment figures are lower than in Elko, Eureka and Lander counties. However, because of the smaller size of Winnemucca relative to Elko, direct mining employment and income are a higher percentage for the two county region. In 1996, direct mining employment accounted for just over 26 percent of total employment and over 37 percent of direct household income in the two counties.

Table 2 Humboldt & Pershing Counties

| | Direct Employment | | Mining | Direct Income ($1,000) | | Mining |
|---|---|---|---|---|---|---|
| | Mining | Total | % | Mining | Total | % |
| 1992 | 2,730 | 10,654 | 25.62% | 121,052 | 355,261 | 34.07% |
| 1993 | 2,823 | 11,108 | 25.41% | 129,732 | 381,341 | 34.02% |
| 1994 | 2,822 | 11,384 | 24.79% | 140,079 | 392,955 | 35.65% |
| 1995 | 3,063 | 11,977 | 25.57% | 152,829 | 423,408 | 36.09% |
| 1996 | 3,374 | 12,885 | 26.19% | 177,175 | 474,739 | 37.32% |

As indicated, these data reflect direct mining industry employment and income. For a variety of reasons, however, these data tend to undercount direct impacts. For example, in a number of cases mines engage contractors to conduct mining, as opposed to processing, exploration, and other technical activities. These contractors are frequently considered “construction” companies and their employment is reported and counted accordingly. In addition, in exploration and development phases, workers are frequently from out of the region and do not get counted in local employment and income data. As a consequence, data such as those in Tables 1 and 2 tend to understate the role of mining in the local economy.

In an effort to deal with the latter source of undercounting the direct impacts of mining in these regional economies, two surveys of exploration and development activity were used to generate estimated statewide exploration and development expenditures shown on Table 3. These surveys include an annual survey of exploration expenditures conducted by the State of Nevada Division of Minerals (NDOM)[10] and the surveys used in developing Figures 1, 3, 4 and 5 (NRII survey).[11]

Both of these data sources have their own unique shortcomings and benefits in current applications. The NDOM survey, for example, counts exploration expenditures, but does not include development expenditures. This survey, however, is sent to all parties that receive exploration permits from the BLM under 3809 regulations, so the survey sample is very likely close to 100 percent. In addition, the NDOM survey tracks respondents' total U.S. and worldwide exploration expenditures. In contrast, the NRII survey includes development expenditures but is only sent to major North American precious metals producers and does not distinguish U.S. from Nevada expenditures. In addition, because of its focus on precious metals, the NRII survey does not include over $300 million in development expenditures at the Robinson Copper project in White Pine county, Nevada in the 1994-6 period.

Table 3 Estimated Statewide Exploration and Development Expenditures ($1,000)

| | |
|---|---|
| 1992 | 189,963 |
| 1993 | 235,948 |
| 1994 | 319,989 |
| 1995 | 120,989 |
| 1996 | 180,340 |
| 1997 | 158,982 |
| 1998 | 121,942 |
| Total | 1,328,153 |

The data on Table 3 merges these two surveys accounting for the average percentage of the NRII survey of total U.S. exploration and then adding in Nevada's share of development expenditures. With these adjustments the data on Table 3 is used to estimate the impacts of these expenditures based on respective counties' share of Nevada gross proceeds of mines. The results probably substantially understate these impacts but are, nonetheless, useful for illustrating the impacts of mining in these local economies. For example, Table 3

[10] Doug Driesner, *Exploration Survey*, State of Nevada, Department of Business and Industry, Division of Minerals, June 1998.
[11] Op. Cit.

shows a total of $621 million in exploration and development expenditures in the 1994-96 period. However, based on the NRII survey, a total of $1.6 billion was spent during this period on development at the Cortez mine (Placer Dome U.S.), Miekle (Barrick Gold), Lone Tree (Santa Fe Pacific Gold/Newmont Mining), Mule Canyon (Santa Fe Pacific Gold/Newmont Mining), Trenton Canyon (Santa Fe Pacific Gold/Newmont Mining), Ruby Hill (Homestake Mining), Carlin (Newmont Mining), Murray (Independence Mining/AngloGold), and Turquoise Ridge (Getchell Gold/Placer Dome). And, this does not include the $300 million spent on the Robinson copper project during this period noted above. Hence, while Table 3 shows a total for exploration and development expenditures of over $1.3 billion for the 1992 – 8 period, the actual figure was probably twice as much.

With these shortcomings in mind, the indirect impacts of these expenditures were calculated using the IMPLAN[12] regional impact modeling system and added to the direct employment and income derived from precious metals mining in the two major regions of Nevada impacted by mining. The results are shown on Tables 4 and 5.

As indicated by Table 4, in 1996 employment induced by exploration and development expenditures in Elko, Eureka and Lander counties induced 2,771 jobs and resulted in $35.2 million in household income. These figures accounted for 8.4 percent of regional employment and 9.8 percent of regional income. When combined with the direct employment and income generated by mines in these counties (Table 1), mining, mineral exploration, and mine development accounted for 29.7 percent of all jobs and 44.8 percent of all income in the region. Over the five year period, mineral exploration and mine development accounted for an average of 10.4 percent of all jobs in the region and 12.8 percent of household income. Total mining activity accounted for 32.1 percent of all jobs and 47.6 percent of income over the same period.

Table 4 Elko, Eureka & Lander Counties

Economic Impacts of Exploration and New Mine Development

| | Employment Impacts | % | Mining's Total % | Income Impacts ($1,000) | % | Mining's Total % |
|---|---|---|---|---|---|---|
| 1992 | 2,615 | 9.48% | 32.79% | 107,169 | 12.25% | 48.42% |
| 1993 | 3,468 | 12.23% | 35.00% | 142,127 | 15.17% | 50.65% |
| 1994 | 4,731 | 15.63% | 35.89% | 193,856 | 19.24% | 52.08% |
| 1995 | 1,944 | 6.31% | 27.23% | 79,676 | 7.57% | 42.03% |
| 1996 | 2,771 | 8.41% | 29.73% | 113,548 | 9.75% | 44.79% |

[12] Alward, G., E. Siverts, D. Olson, J. Wagner, D. Snef and S. Lindall, *Micro IMPLAN Software Manual,* U.S. Forest Service, Colorado State University, Fort Collins, Colorado, 1989.

As indicated by Table 5, in 1996 employment induced by exploration and development expenditures in Humboldt and Pershing counties induced 765 jobs and resulted in $35.2 million in household income. These figures accounted for 5.9 percent of regional employment and 7.4 percent of regional income. When combined with the direct employment and income generated by mines in these counties (Table 2), mining, mineral exploration, and mine development accounted for 33.8 percent of all jobs and 44.7 percent of all income in the region. Over the five year period, mineral exploration and mine development accounted for an average of 8.3 percent of all jobs in the region and 10.5 percent of household income. Total mining activity accounted for 33.8 percent of all jobs and 45.9 percent of income over the same period.

Table 5 Humboldt & Pershing Counties

Economic Impacts of Exploration and New Mine Development

| | Employment Impacts | % | Mining's Total % | Income Impacts ($1,000) | % | Mining's Total % |
|---|---|---|---|---|---|---|
| 1992 | 874 | 8.20% | 33.83% | 37,938 | 10.68% | 44.75% |
| 1993 | 1,073 | 9.66% | 35.07% | 46,585 | 12.22% | 46.24% |
| 1994 | 1,518 | 13.33% | 38.12% | 65,927 | 16.78% | 52.42% |
| 1995 | 531 | 4.43% | 30.01% | 23,039 | 5.44% | 41.54% |
| 1996 | 765 | 5.94% | 32.12% | 35,213 | 7.42% | 44.74% |

In the context of the discussion above, the estimates of the employment and income impacts of exploration and development expenditures in Tables 4 and 5 for the latter years of the series reflect the decline that has already occurred. 1995 and 1996 employment and income impacts of exploration and development, although probably understated for the reasons noted above, are substantially below those in the early part of the series. Again, this cannot be blamed on low gold prices since the decline in gold prices that we are currently witnessing did not begin until late 1996. Hence, in assessing the prospective costs to Nevada of the proposed changes in 3809 regulations, we again have to conclude that much of the damage has already been done. The proposed changes in federal surface management regulations simply offer to make the damage permanent.

**Impacts on Local Government Finance**

Because of the dominance of the mining industry in the two local economies examined above, it is not surprising that local governments are also heavily dependent upon the industry for funds to provide general services. Local

government finance in Nevada depends upon two major revenue sources: local property taxes and a sales and use tax. In addition, intergovernmental transfers to and from the State government, particularly for local school finance also play a role. These transfers generally attempt to equalize resources available to local governments to provide basic services but, nonetheless, wide disparities exist and, in large part, because of tax revenues generated from the mining industry. Because of these disparities this brief analysis of local government finance will continue aggregating the five counties into the two regions that are impacted by mining in the north central and northeast part of the State.

Mineral production taxes, i.e., the Net Proceeds of Mines Tax (NPOMT), is a property tax on the net valuation of the mineral at the time of extraction. However, unlike other ad valorem property taxes which are assessed by local governments, net proceeds and mineral property taxes are centrally assessed and collected by the State Department of Taxation. The NPOMT rate is 5 percent for mines with net proceeds over $4 million. Below that threshold, the rate is determined by a sliding scale based on the ratio of net to gross proceeds.[13]

The 5 percent rate is the maximum ad valorem rate allowed by the Nevada Constitution. Local government ad valorem rates are below this rate and receive distributions of NPOMT revenues based on their rates. The balance is distributed to the State General Fund.

In addition to the NPOMT, mining companies pay sales and use taxes on purchases of taxable equipment and supplies. Since 1995 sales and use taxes paid by the industry have greatly exceeded production related NPOMT receipts. In the most recent year for which comparable data is available, 1997, sales and use taxes paid directly by mining companies (note that this does not include sales and use taxes paid by employees and suppliers) were $59.5 million statewide. This compares with $29.9 million in statewide NPOMT. Company sales and use tax liabilities are generally related to development of new mining projects since both construction materials and equipment installed at new mines are subject to these taxes. Hence, there was a surge in sales and use tax collections during the 1995-7 period associated with mine development in that period, but a decline in more current collections is expected because of the slowdown in mine development activity.

Sales and use tax collections are distributed between the State General Fund, a Distributive School fund, and other funds designed to support local governments. Aside from the 2 percent sales and use tax earmarked for the State General Fund, local governments receive most of the revenues generated by economic activities within their borders. However, because of the large revenues generated by mining activity relative to local populations in the counties examined above, four of the five counties (Elko, Eureka, Humboldt and Lander) exported approximately $4 million in sales and use tax collections to other counties in fiscal year 1996-7.

[13] Nevada Revised Statutes, Chapter 362.

In addition to sales and use and NPOMT, mining companies also pay ad valorem taxes on property and improvements at mining sites. When mining properties are developed, i.e., constructed, they are put on the local tax rolls like any other private property. With the completion of construction of a number of mines in the mid 1990's, assessed valuations of mining properties have increased substantially. In the 1991-2 fiscal year the statewide assessed valuation of mining properties was $902.8 million. In contrast, by the 1996-7 fiscal year that figure had increased 56 percent to $1.404 billion.[14] In the latter fiscal year, mining companies paid a total of $34.7 million in ad valorem property taxes.

In the same year, a total of $125.5 million in all direct taxes was paid, approximately three quarters of which went to support local governments. As a consequence of low gold prices, this figure is expected to decline in the near future as net proceeds fall and no new projects are started or are delayed in the current low price environment. These two factors have a major impact on NPOMT and sales and use taxes, respectively. However, ad valorem taxes are expected to remain relatively steady since there have been no major mine closures.

The current regulatory climate raises additional concerns, however. Gold prices have historically been cyclical. Hence, unless there is a fundamental change in this and related markets, the reasonable expectation is that NPOMT receipts will recover with prices. Unless one wishes to argue that regulatory climates are also cyclical so that a future federal administration or Congress will reverse the decline in the mining investment climate in the U.S., the trends in the U.S. share of exploration and development expenditures appears to be permanent. Moreover, adoption of the proposed surface management 3809 regulations appears likely to enhance the permanence of the current climate.

The implications of this change for local government finances, as indicated above, primarily derive from the impact of declines in development expenditures on sales and use tax collections. If the U.S. and Nevada continue to receive current reduced shares of North American producers' exploration and development budgets, revenue losses for central Nevada counties would be quite significant. Over the past three years for which data are available, 1995-7, and which coincides with the period of rapid mine development in the region, sales and use taxes averaged $64.1 million statewide. This level of revenue was approximately twice the level received by local governments in the preceding five years.[15] Hence, a reasonable estimate of lost sales and use tax revenue to Nevada local governments from deterioration of the investment climate on federal lands appears to be around $30 million per year.

There are additional losses expected in the long run, however. As North American producers replace Nevada reserves with reserves overseas, Nevada

[14] *Annual Report,* State of Nevada, Department of Taxation, Fiscal Year 1996-7.
[15] John L. Dobra, *Economic Overview of the Nevada Mining Industry, 1997*. Nevada Mining Association, Reno, Nevada, July 1998.

mines will eventually close and their assessed values will be removed from the tax rolls and their net proceeds will disappear. Note that this will not necessarily happen because there are no more minerals in Nevada, but because existing mines will eventually run out of reserves and they are being replaced with reserves overseas, where North American exploration and development investment spending is going. While it has been frequently claimed that reclamation jobs (on abandoned mine lands financed by federal royalties) will stimulate local economies, there is no corollary with respect to tax revenues. Reclamation generates no NPOMT revenues, little sales and use tax revenue, and represents a very substantial net reduction in assessed valuation.

The implications of these events for local government finance in Nevada can be illustrated by Table 6 which shows key local government financial indicators. Lines 1 and 2 show total assessed valuations for all property in the respective groups of counties and the assessed value of mining properties in the respective groups. As noted, mining properties accounted for 42.1 percent and 41.8 percent of total assessed valuation. Again, note that line 2 excludes assessed valuations of homes owned by mining company and suppliers' employees and of commercial properties supported by the mining industry. Hence, as large as these percentages are, they understate the actual percentage of total assessed valuation generated by the mining industry.

Table 6 The Mining Industry and County Finances, 1996-7 (All figures are in $1,000's except percentages)

| | Elko, Eureka & Lander | Humboldt & Pershing |
|---|---|---|
| 1. Total Assessed Valuation | $ 1,836,000 | $ 683,800 |
| 2. Mining Assessed Valuation | 773,600 | 286,000 |
| (%) | 42.1 | 41.8 |
| 3. Total Sales & Use Tax | 65,700 | 31,400 |
| 4. Mining Sales & Use Tax | 21,800 | 16,700 |
| (%) | 33.2 | 53.0 |
| 5. NPOMT Revenues | 7,200 | 1,000 |
| 6. Total Direct Mining Taxes | 45,100 | 24,700 |
| 7. Total County Ad Valorem & Sales & Use | 115,800 | 49,800 |
| 8. Mining's Share of Total (Line 6 as a % of 7) | 38.9 | 49.7 |

Similarly, lines 3 and 4 show total sales and use taxes generated in these respective groups of counties and sales and use taxes paid directly by mining companies. As indicated, direct mining company sales and use taxes paid were 33.2 and 53.0 percent of all sales and use taxes generated for the respective areas. Note that while Elko, Eureka and Lander have more mines and production than Humboldt and Pershing, Elko's economy is the largest and most diverse. Consequently, the percentage of mining sales and use taxes paid directly by mining for this group of counties is lower, though still very high.

Finally, lines 6, 7, and 8 show total direct mining taxes and total taxes generated in these respective groups of counties and the mining industry's share of these revenues. It should be noted that because of the intergovernmental transfers that occur between the counties and the State government, these percentages represent revenues generated, not revenues disbursed. Because these counties generate high levels of revenue on a per capita basis because of the mining industry, actual disbursements to these counties as a percentage of their budgets, for example, is lower. For example, 2 percent of the 7 percent sales and use tax is earmarked for the State General Fund, and percentages earmarked for school and local government support are distributed back to counties on per pupil and per capita bases.

The clear implication of the data on Table 6 is that these regions are heavily dependent for local government revenues as well as employment and income as noted above, on the mining industry. If commodity prices remain at their current low levels, local government budgets will clearly be strained. However, if the price recovers in the cyclical fashion it has followed for the past two decades, it would provide some needed relief.

Equally clearly, however, the current investment climate for mining in Nevada and other public lands states also has implications for local government finance. Without new investment, these governments stand little chance of benefiting from revenues generated by investment. Hence, they may never fully recoup what has been lost as mining capital has fled the U.S. and Nevada.

## Conclusion

The foregoing analyses suggest that the mining exploration and development investment climate in Nevada has deteriorated significantly since the early 1990's. As a result, the U.S. share of North American precious metals producers' exploration and development expenditures has fallen to approximately one half their 1992 levels. In addition, because this conclusion is based on the U.S. share of these expenditures and not their absolute levels, it dispels the argument that the current slowdown in exploration and development is purely a function of current low prices. Clearly, low commodity prices have hurt the industry in Nevada and other parts of the world, but most available information suggests that an increase in the political risks of doing business in Nevada and other public lands states relative to other places in the world has had a very significant impact.

The analysis above suggests that this increase in political risk, measured in terms of lost share of exploration and development expenditures, may cost the U.S. as much as $254 million and Nevada as much as $178 million per year under current market conditions. It should be also noted that these figures only reflect lost direct expenditures and do not include indirect economic impacts on regional and state output, employment and household earnings. For Nevada, including indirect impacts would put the total annual cost of increased political risks at 3,380 fewer jobs, $317 million lower state product, and $98 million lower household income.

Finally, the analysis highlights the degree to which the gold producing regions of the State are vulnerable to these political risks. During much of the 1990's precious metals production have accounted for almost one third of total employment and over half of personal income in Elko, Eureka and Lander counties. Similarly, in Humboldt and Pershing counties in north central Nevada, mining and mine development has also accounted for over one third of total employment and almost one half of total personal income in these counties.

As a consequence of this heavy reliance on the precious metals mining industry for an economic base, the analysis above also highlighted the vulnerability of local government finances in these regions. With mining directly paying almost 40 to 50 percent of all property and sales and use taxes generated in these regions, revenues available for schools, social services, and other basic governmental services are also at risk.

One obvious conclusion that these findings support is that these regions need to diversify their economies. Other risks, such as the current lower price of gold, can also have dire consequences for these regions. While clearly the case, the desirability of economic diversification is beside the point of the current analysis. The political risks that have already taken their toll on these regions are avoidable and largely unnecessary while the consequences of changes in the prices of commodities sold on world markets are matters that are beyond the control of the U.S. Congress and the administration.

Congress and the administration, however, can and do influence the perceived political risks of all natural resource development on western public lands. Unfortunately, the available evidence suggests that over most of the past decade, this influence has been negative. As noted above, the proposed changes in 3809 surface management regulations would attempt to achieve by regulation some of the proposals that Congress has previously rejected, specifically, legislation proposed to restrict mineral entry on federally owned lands. The proposed regulatory changes, of course, do not address royalty issues in previous proposed legislation, but the threat of a royalty remains. The foregoing analysis suggests that if a royalty were adopted on top of the proposed regulatory changes, the consequence would be that very few, if any, new mines would be developed in the Nevada in the future.