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Mining and Development
Lessons from the United States

Introduction

American history, and particularly that of the West where, during the 19th and early 20th centuries, mining for gold and silver flourished, and periodically continues to do so, is based on a frontier mentality. Indeed, we in the United States of America are still not far removed from that mentality, and have our roots in exploitation based on the idea, historically, of unlimited resources. We have created a variety of myths. Myths need not be bad, but ours have not served us well. We have started to learn slowly from our mistakes and to accept, in however belated a fashion, that we should avoid repeating them. Here I try briefly to sketch some of the outcomes from our history as it relates to mining, in the hope that New Zealand will not suffer some of the same consequences as mining communities and regions have in the US.

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Minerals and mining in the development of the United States

Mining of natural resources was important in the historical development of the US, especially after the early European immigrants acquired, settled on, or stole, depending on your perspective, the land of the indigenous population. The industrial development of the US demanded resources such as minerals, precious metals or inorganic materials, many of which were in abundance (Wright, 1990; Rudzitis, 2010)

The demand for minerals resulted in the establishment of settlements built around these resources. It was a hard life, as most immigrants had only their own labour with which to extract them. Coal came from Appalachia, particularly from West Virginia and Pennsylvania, while states of the Midwest such as Michigan and Minnesota provided iron ore. The American West provided precious metals, such as gold from California and silver from Nevada and Idaho.

The mining of resources may have been important in the initial industrial development of the United States but there has been a structural change in their relative importance over time. Mining and minerals are no longer a significant part of the US economy. In part this is a result of other countries providing more of the world's supply, but, more importantly, the amount of raw material needed per unit of output has been dropping. Productivity increases also mean fewer workers, particularly blue-collar workers

who make up the majority in extractive industries such as mining (Drucker, 1986; Galston, 1992; Power, 1996).

Mining and development theory: local to global

Traditional regional development theory has consistently argued that the extractive and industrial sectors are the driving forces of economic development (Rudzitis, 1996). This logic was extended to include the importance of exporting extracted or manufactured goods. A major exponent of the export-driven model was economist Douglas North, who argued that the demand for exports drove development (North, 1955). Other economic activities were dependent on the export industry, for both growth and income levels.

In a famous exchange, economist Charles Tiebout (1956) responded to North's article, arguing that there was no reason to assume that exports are the most important factor in determining growth and income. Indeed, he argued, local non-exporting industries could be just as, or more, important in determining development of a place, region or country. North's manufacturing-export-driven model of development remains popular today, but an important alternative is offered by the experience of the American 'New West' with amenities-driven development (for a review see Rudzitis and Johnson, 2000).

This alternative approach to regional growth, more in line with Tiebout's logic, is a model based on the role of environmental amenities. Because of their tie to specific places, people usually have to migrate to attain the particular combination of amenities they desire (Harris, Tolley and Harrell, 1968; Tolley, 1974; Graves, 1979, 1983; Graves and Linneman, 1979; Diamond and Tolley, 1982; Power, 1988; Rudzitis and Streatfeild, 1993; Moss, 2006). According to this approach, sometimes called the quality of life model, people migrate and live where they do for non-economic reasons and that jobs follow people. Firms follow people to seek out high-amenity physical and sociocultural environments. Thus, amenities are important in attracting and retaining businesses. Both entrepreneurs and businesses place great importance on amenity and environmental factors in their decisions to locate or stay where they are (Johnson and Rasker, 1995). If given a choice, people and firms live and locate where they do for reasons having to do with the social, cultural and physical environment. Consequently, maintaining a place's unique character can be an important economic strategy. It puts quality of life and environmental quality at centre stage, instead of off-stage or in a peripheral and minor supporting role.

There has been increasing empirical evidence in the United States that amenities and quality of life play an important role in regional development (Von Reichert and Rudzitis, 1994; Mueser and Graves, 1995; Dearien, Rudzitis and Hintz, 2005; Schmidt and Courant, 2006; Wu and Gopinath, 2008). Partridge (2010) tested the ability of various models to explain regional growth dynamics in the US over the last 40–60 years. He found that amenity-led growth was the runaway winner im this test.

Tiebout was also prescient about the role of exports in the national US economy, which has been quite limited, ranging from just over 6% in the late 1800s to early 1900s, and dropping to about 4% up to the 1970s. Economist Thomas Power (1996) has shown how the mining industry, even during its peak output, comprised less than 4% of US income. Today it makes up 1% or less of national income or employment. Nonetheless, mining remains important in various states and regions although it does not contribute a significant amount to national income or employment.

Impact of mining on communities, states and regions

The past history of the American West is full of boom-and-bust towns. If you travel through or hike the public lands of the American West, the presence of ghost towns will be evident on the landscape (Francaviglia, 1987). Ghost towns, as well as communities that never recovered from the mining bust cycles, are part of the country's regional geography, as is the poverty in former mining areas.

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The Appalachian, the Ozark and the Four Corners regions remain today as high poverty areas. The American Midwest states of Minnesota or Michigan, the Mountain West states of Idaho, Montana or Wyoming, and the Southwest states of Arizona, Nevada or New Mexico all have communities struggling to get out of unemployment and the aftermath of mining activities. Some have been successful in making a transition. Most have not.

A study of some 100 rural communities between 1970 and 2000 that derived at least 20% of their labour income from mining found that they had done poorly compared with other rural counties (Power, 2002). Mining counties had a slower growth in aggregate income, ranging, depending on the decade, from 25% to 60% slower than the national average for rural counties. Per capita income also grew about 30% more slowly. Unemployment rates were also significantly higher, sometimes three times higher. The higher unemployment rates are a result of multiple factors which can interact with each other. The

boom-and-bust cycle and the short-term duration of many mines leaves behind unemployed workers, often with only basic skills which are not competitive in other job markets. Technological changes and increased productivity have also played a major role in mining and other extractive resource industries, such as forestry. Fewer people are needed to operate the equipment as industries become computerised and less labour-intensive.

People in resource industries are also less likely to migrate elsewhere when unemployed. Unemployed miners end up hoping that the mine will open again. Mining communities often consist of people who have strong attachments, a greater sense of place, much of which is manifested through their lifestyles. In former mining communities there is an excess supply of labour and persistent higher long-term unemployment than conventional economic models predict, since these models assume people will move to regions with lower unemployment rates and more perceived employment opportunities.

The slower economic growth, lower incomes and higher unemployment rates are accompanied by slower population growth. People are not moving to mining communities and counties (Power, 1996, 2007; Rudzitis, 1996). The exceptions are mining-based communities that have successfully transitioned or converted into skiing or other recreational amenity-based places which attract both tourists and new residents.

Waiting and hoping mining will revive or bring prosperity

Proponents of mining projects refer to the jobs that the industry will produce. In the early phase, it is argued that construction jobs will cause a multiplier effect which cascades through the local and regional economy, creating many more jobs. Such arguments may or may not be accurate.

Promoting a mining project does not mean it will happen, nor, if it does, that the prices that make such a project viable will remain high. Commodity prices vary, are subject to worldwide trends, and for precious metals like silver and gold are notoriously hard to model and predict into the future (Rudzitis, 1987).

The projections for the jobs created and income spent in local communities assume that mining companies will hire local workers. Often this is not what actually happens. The companies may bring in their own workers, or recruit workers from within the larger region. If they hire workers within the region, it may be that, as has happened in the United States, workers don't move to the mining community. Rather, they commute to their jobs daily or find temporary rental housing during the week. Workers may own a house in their home community and be willing to commute long distances rather than sell their house and move to the mining site. They may realise from experience the risk of buying a house in a mining community: that when the mine shuts down, unemployment rises and the value of their house decreases.

If workers don't settle in a mining community, deciding instead to commute on either a daily or weekly basis, the money earned from working in the mine leaks out elsewhere. Given that most of the jobs associated with mining are during the limited construction phase, many of the workers will commute. If they stay in rental housing during the construction phase, the social costs of having a large group of young males in small towns results in an increase in drinking, violence, crime and other antisocial activities.

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With the boom phase of the operation come new challenges. Construction workers who do move to a mining community with young families present another host of problems. New schools to accommodate the influx of young children put a burden on the tax base. Roads, parks, libraries and the need for public services also put additional strains on the community. The money coming in from taxes often does not cover the additional costs of providing these services. Tax revenues need to keep pace with the costs of and the demand for public services (Power, 2007). This was a common problem during energy booms, especially in states such as Montana and Wyoming.

When the construction phase is over, the demand for public services diminishes as the workers leave. The smaller workforce of the mine has a diminished economic impact on the local community, especially if part of that workforce is commuting or not setting down roots in the community. The impact of any economic local multiplier effect is much diminished.

What happens after mining activities end?

The US Environmental Protection Agency has ranked the metal mining industry as the country's number one polluter (Ferrara, 2006). The big mining states of Arizona, Nevada, Montana and New Mexico are afflicted with a host of pollution problems, ranging from air and water pollution and waste disposal to high levels of arsenic and lead in people's homes. This comes about because many companies try to avoid the costs of clean-up and reclamation despite the laws in place requiring them to be responsible for it.

International mining companies may buy up smaller local mining companies, or create new subsidiaries before they commence mining. When mining operations cease they may declare bankruptcy. This leaves the state or federal government with huge environmental clean-up costs.

In order to try and stop such practices, the Clinton administration in 2000 put into effect a rule that required the companies to take out a bond equal to

the estimated costs of cleaning up a site in case a company left and did not undertake the clean-up. The Bush administration later weakened this rule. Consequently, what bonds the federal government or the states have required have often been too small. It is not unusual to have an unsecured bond of several million dollars while the actual clean-up costs are larger by order of a magnitude of ten times or more.

Among the top ten offenders who have not paid for clean-up costs or who have declared bankruptcy are two mines in Nevada owned by Newmont Mining which cost taxpayers an estimated $1 billion, while bringing in almost $9 billion in revenues to Newmont. Other familiar international mining companies include ASARCO, BHP, Kennecot and Phelps-Dodge. These companies since 1970 made revenues of over $48 billion, but cost taxpayers almost $6 billion in estimated clean-up costs. The environmental damage includes surface and water contamination from acid mine drainage; lead and arsenic pollution; toxic dust from mine tailings; toxic tailing ponds; and high levels of mercury, uranium and other substances.

Efforts to make mining companies pay clean-up costs continue. Lawsuits have been filed in Western states such as Nevada, Idaho and New Mexico to close loopholes which allow mining companies to avoid clean-up by declaring bankruptcy. One estimate is that taxpayers in the 11 states with major mining operations could end up paying more than $12 billion in clean-up costs if the companies either did not pay those costs or declared bankruptcy (Ferrara, 2006). The costs to taxpayers when clean-up is shifted to them represent a hidden form of subsidy to the mining companies.

Can governments regulate mining adequately?

One important lesson from the United States is that adequate funding to cover clean-up and reclamation when mines close is often not available, especially if companies abandon mines or declare bankruptcy, leaving the clean-up bill to taxpayers. The current banking crisis further highlights the problem, since in such an environment it may prove more difficult in the foreseeable future to find companies that will post financial bonds. Allowing companies to issue corporate bonds or give guarantees, as some states in the United States do, only passes the risk of default to the taxpayer, since there is not an established market of insurance companies willing to bear the risk. The recent Gulf Coast oil spill further diminishes the likelihood of outside companies insuring or bearing the risk of companies defaulting on clean-up bonds, given the uncertain and often high costs of mine clean-ups.

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If New Zealand develops its mining further, whether in national parks or other conservation lands, it is likely to be dependent on these companies. This raises the question of whether similar practices would be common in New Zealand. If companies legally challenge governmental agency clean-up costs or declare bankruptcy of their subsidiaries in the US, would they not do the same in New Zealand, especially since environmental regulation in the United States is stricter?

In the US there are almost 100 mines or smelters listed as Superfund sites. Some of these will require hundreds of millions of taxpayer dollars for remediation. The Silver Valley just north of where I live in Idaho has a Superfund site that alone will cost almost $1 billion dollars to clean up. These are costs that must be factored in, since the so-called worst-case scenario of companies abdicating their clean-up responsibilities is one that continues up to the present.

What road will New Zealand choose to take?

Can New Zealand have both mining and amenity-driven development? The situation in the United States is different than what is proposed in New Zealand. In the US, after the boom-and-bust cycle some mining towns have been able to reconfigure themselves as recreation- or retirement-based communities. They have been able to do so because of the natural beauty of the surrounding areas, however despoiled they may have been by mining companies. The most prominent towns, especially in the American West, have turned to skiing or other activities centred on mountain living. However, this has been a long process, sometimes taking 30 years (Johansen, 2010).

These predominantly Western communities and states also attract a large number of tourists, as well as amenity migrants who have second homes in, retire to, or move to seek jobs and to live in these states. Theoretically, it should be possible to create communities where mining and other amenity-based activities serve as complementary means of fostering growth and development. Economist Ray Rasker has studied and assisted more Western communities than probably anyone else in the United States, and yet he has found no examples of places where this co-existence of extractive mining and amenity-based development has taken place (Rasker, 2010).

In the United States, with the recent surge in extractive mineral activity communities such as Superior, Arizona, which has over recent decades converted from a mining to an amenity-based community, now have to decide whether they want to be mining communities again. The general consensus in Superior

is that it does not: people argue that after the mining is over they will once again have to rebuild their community, reinforcing Rasker's insights about the inability to have both.

Some New Zealand communities in or near conservation lands have attracted people to move there, create businesses or establish second homes. The opening of mines in or near them would not be a compatible economic development strategy if the US experience serves as any sort of guide. Moreover, the mines generally being considered for development are open-pit, often gold, mines. The US experience with such mines, unlike with underground mining, is that such communities have little chance of maintaining or attracting residents who want to live there and create non-mining jobs. This raises the question: if mining on or near conservation lands takes place, what other development is precluded? How will these communities be affected when the mine closes?

New Zealand faces several choices. If it goes ahead with mining on conservation lands, it perhaps can provide an example to the world of how mining and amenity-based development can co-exist. It can perhaps avoid the host of environmental problems that have plagued state and federal governments after mining is over and taxpayers are stuck with the clean-up costs as well as the social and economic costs created by the bust cycle. However, if New Zealand is wrong about its ability to manage and cope with the myriad of problems the United States has faced from mining, then it too will have a more polluted country and have to bear all the associated costs for a long time.

If New Zealand does not allow mining on conservation lands, then it could lose some local jobs. However, the mining activities can crowd out jobs that might have been created by people and firms who would have moved to a place because it did not have mining activities taking place there. This is a likely scenario if mining jobs and amenity-driven growth are not complementary.

There is a good case, therefore, for deferring mining development on conservation lands while watching developments elsewhere. If examples from other parts of the world were to demonstrate that places and regions can have mining that is congruent with a high-quality environment that attracts a wide variety of diversified businesses, then by opting to wait New Zealand will at worst have lost some time and protected its environment. New Zealand will have gained time and the ability to learn from other places and countries how to successfully mine and create diversified communities. It can always commence mining at a later date.

Any decision whether or not to allow mining on conservation land carries the risk of being wrong. Policy makers and the citizens of New Zealand have a choice in what kind of risk they want to take with the '100% pure' image the country is working hard to project to the world. Another consideration is a more moral one, and concerns what New Zealanders are willing to do in order to allow short-term profits for largely Australian mining corporations to drive the country's economic policies.

Open-pit mining for a precious metal such as gold raises the issue of who benefits from the production of gold, people in New Zealand or elsewhere? Is mining for gold a necessary and vital component of our increasingly interdependent world? Approximately 60% of gold is used for jewellery (Ali, 2009). Another 30% or so is used for financial investment purposes. Only about 10% of gold is used for industrial purposes, made into products that have some useful purpose beyond conspicuous personal adornment or financial speculation.

Who benefits from jewellery and gold investment is an appropriate question to ask when New Zealand's environment and citizens will bear at least part of the costs. Economist Thorsten Veblen (1904), one of the most creative social thinkers America has produced, said that in terms of material serviceability, a fresh supply of precious metals is one of the least useful forms of wealth to which industrial effort can be put. Are the people of New Zealand and their representatives willing to sell or subsidise parts of their heritage for some pieces of coin? Time will tell.

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