

## Chapter 37

# Natural Resources and Welfare: A Study of U.S. States

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### ABSTRACT

*This chapter examines the link between natural resource intensity and welfare for U.S. states from 1980 through 2009. Previous literature has examined the relationship between resource abundance and economic growth and, ultimately, the existence of a resource curse. The vast majority of these studies have utilized international data sets and focused strictly on economic growth. This chapter utilizes a sub-national data set of U.S. states and focuses on the impact of resources on welfare and development as measured by seven indicators. The findings show a negative relationship between natural resource intensity and welfare. After disaggregating resources into point or diffuse sources, it is found that point resources are likely to be more detrimental to welfare. Two prominent transmission channels of the resource curse, education and rent seeking, are examined and are found to have significant relationships with resource intensity. Finally, Seemingly Unrelated Regression (SUR) estimation is used to explicitly identify the direct and indirect effects of resources on welfare.*

### 1. INTRODUCTION AND BACKGROUND

When a country has a significant endowment of natural resources, casual observation is likely to lead to the conclusion that the country is in a favorable situation with regard to economic growth. However, the post-World War II growth experiences of many resource-endowed economies contradict this conclusion. Several empirical

studies, led by the seminal works of Sachs and Warner (1995, 2001), have found that considerable resource endowments tend to impede economic growth. As an example, a country such as South Korea is resource poor but has experienced high levels of economic growth while Mexico, Nigeria, and the Oil States in the Gulf are resource rich and have been development failures (Papyrakis and Gerlagh, 2007). In general, this discovery has come to be known as the resource curse.

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Various theories have evolved to explain why natural resource abundance may hinder growth within a country. Sachs and Warner (2001) state, "...just as we lack a universally accepted theory of economic growth in general, we lack a universally accepted theory of the curse of natural resources" (p. 833). It is thought that natural resource abundance does not directly harm growth, but acts to crowd out productive activities that typically drive economic growth. For each identified growth catalyst, there is an accompanying theory as to how it may be crowded out by a large primary sector (Sachs and Warner, 2001). The impacts of natural resources can be seen as working through various transmission channels. Papyrakis and Gerlagh (2004) provide specific evidence on several indirect effects of natural resources and demonstrate their importance for understanding the impacts of a possible resource curse. Wick and Bulte (2009) provide a thorough overview of the resource curse literature. Causes include negative impacts on growth from large amounts of incurred debt, Dutch Disease situations (crowding out of manufacturing by the resource sector), reduced human capital development, and reduced investment and trade openness. In another survey of the literature, Frankel (2010) identifies similar aspects of the curse and closely related issues. The literature has generally identified institutional quality as a central factor connected to all of these aspects. Along with these works, Lederman and Maloney (2008), Greasley and Madsen (2010), and Van Der Ploeg (2011) provide insightful reviews of the literature and are careful to note that the impact of natural resources on economic growth is complicated and may vary considerably from country to country. A brief overview of the major transmission channels follows.

Manzano and Rigobon (2001) find evidence that resource-rich countries use their stock of natural assets as collateral for debt issuance. This can result in a debt burden that exceeds a country's ability-to-pay after the resource boom when revenues decline. They argue that credit constraints

can play an important role in explaining poor economic performance.

Dutch Disease models predict that the growth of a resource abundant economy is harmed due to a diversion of resources away from the manufacturing sector. The increased wealth from primary sector activities due to a resource boom causes an increase in the demand for both traded and non-traded goods, an increase in the price of non-traded goods, and an appreciation of the country's exchange rate. The latter effect makes non-primary exports less competitive in international markets and causes them to contract. In addition, because prices of non-traded inputs in the manufacturing sectors have risen, production costs increase (Corden 1984; Auty 2001; Sachs and Warner 2001; Torvik 2001).

Because of the tendency of natural resource based industries to require lower labor skills relative to other sectors, resource intensive economies also tend to invest less in education, with harmful effects on long run growth (Gylfason 2000, 2001). Papyrakis and Gerlagh (2004) confirm that there is a correlation between resource abundance and schooling and note that this explains a large portion of poor economic performance.

Primary sector industries that make direct use of natural resources include agriculture, forestry, fishing, mining, and oil and gas extraction. Rent seeking models assume that resource rents are easily appropriable (Sarr and Wick 2010). Special natural resource interest groups may emerge and re-direct entrepreneurial activity in the private sector away from productive endeavors to rent seeking activities. Baumol (1990) theorized that the allocation of entrepreneurial talent between productive and unproductive activities is influenced by their relative payoffs, which are partially determined by existing economic and political institutions. Entrepreneurial talent that is pulled into rent seeking activities causes large economic distortions, which harm growth (Gylfason 2000; Torvik 2002; Kolstad 2009). Empirical support for this view comes from studies (e.g., Papyrakis and

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