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The long-run vanity of Prudhoe Bay

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ABSTRACT

Upon the completion of the Trans-Alaska Pipeline System in 1977, Alaskan oil production surged, peaking in 1988. From 1988 onward, Alaskan oil production steadily declined. The temporal characteristics of the Alaskan oil boom make for an ideal case study of the economic effects of resource booms more generally. The boom generated significant short-run economic gains that were quickly diluted by inward migration. In the long run though, the income gains may have turned into losses. These results are robust to using a variety of comparison units, including a synthetic control.

> *Oil wealth has paid for improving our roads, water and sewer systems, building parks, renewing our cities, and improving life in our most remote villages. The riches that Alaskans have extracted from under the North Slope have also funded our schools, and helped bring our health care system into the 21st century.*—Lisa Murkowski.

1. Introduction

In 1968 the largest oil field in North America was discovered in Prudhoe Bay, Alaska. In 1974 construction began on the Trans-Alaska Pipeline System, which connected Prudhoe Bay in northern Alaska with shipping docks 800 miles away in Valdez. Following the completion of the pipeline in 1977, oil production dramatically surged and peaked in 1988 (see Fig. 1).

Conventional wisdom says that the oil boom should have generated economic gains both in the short and long run. However, some economists and political scientists believe that natural-resource booms, particularly when managed incorrectly, can lead to a so-called "resource curse"—a situation in which an economy is made poorer as a result of extracting a natural resource (Sachs and Warner, 1995; James, 2015a). However, the resource curse hypothesis has been notoriously difficult to test empirically. Early work that utilized cross-country data suffered from issues related to endogeneity and reverse causality (Brunnschweiler and Bulte, 2008; Van der Ploeg and Polhekke, 2010; Van der Ploeg, 2011). More recent work in this area has focused its attention at the sub-national level where unobserved and potentially confounding factors like institutional quality are more homogenously distributed.

The rapid increase in unconventional fossil fuel recovery in the United States motivated numerous studies of the short-run, sub-national effects of energy booms (see for example Peach and Starbuck, 2011[1]; Alcott and Keniston, 2014; Weber, 2012, 2014). This literature generally te7nds to find positive short-run effects on wages, income levels, and employment across sectors. Similar results were documented by Marchand (2012) and Fleming and Measham (2015), which examine the economic impacts of resource booms in Canada and Australia, respectively. Other related research has examined the long run effects of historical resource booms. Michaels (2011) finds that oil discoveries made in many southern U.S. counties in the 1890s "facilitated long term local economic development." Examining the energy boom of the early 1980s, Haggerty et al. (2014) find negative and significant income effects of long-run oil and gas specialization. Analyzing a panel of U.S. counties, Jacobsen and Parker (2016) find that the energy boom of the 1970s led to higher rates of unemployment and lower levels of per capita income in the long run. There is also long run evidence that the coal boom of the late 1970s elevated local poverty rates (Deaton and Niman, 2012) and decreased rates of self employment, suggesting a negative effect on entrepreneurial activity (Betz et al., 2015).

A popular explanation of a resource curse is the Dutch Disease, aptly named after the decline in the traded sector that is said to have occurred in the Netherlands after natural gas was discovered there in the 1950s. A Dutch Disease operates by appreciating the real exchange rate, making a traded (manufacturing) sector less competitive. But a Dutch Disease can operate at the local, sub-national level if factors of

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[1] While Peach and Starbuck (2011) examine the effects of oil and gas specialization in New Mexico counties over a long time frame (1960–2000) their identification strategy is ill suited to capture long-run effects.

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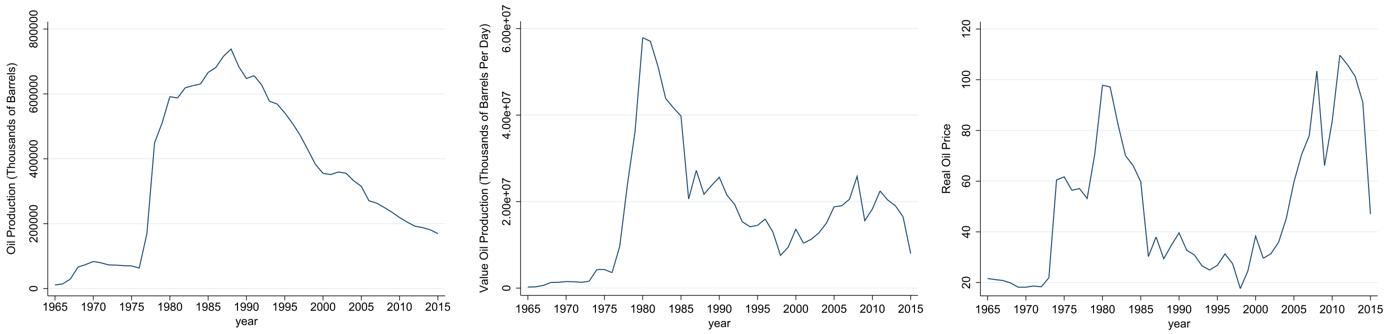

(a) Volume AK Oil Production (b) Value AK Oil Production (c) Real Oil Price

Fig. 1. Alaskan oil production and prices. *Note*: Alaskan oil production is expressed in Panel (a) as thousands of barrels per year. Peak oil is in 1988 at 738,143 (thousand) barrels per year. Panel (B) gives the value of oil produced, and reflects thousands of barrels per year. The value of Alaskan oil peaked in 1980. Oil prices reflect real imported crude prices and 2015 is the base year.

production are pulled out of the traded sector during a resource boom due to either income or labor movement effects (Corden and Neary, 1982). A Dutch Disease can propagate into a resource curse if, for some reason, the traded sector is unable to rebound after the resource boom subsides.

Some researchers have alternatively argued that relatively high wages offered by a booming resource sector increase the opportunity cost of going to school, and hence resource-rich economies are plagued with low levels of human capital (Black et al., 2005; Papyrakis and Gerlagh, 2007; Emery et al., 2012). Though James (2016) finds that education spending per capita in oil-rich U.S. states is relatively high.

Others have argued that a resource curse is a political consequence and not an economic one. There are a couple of theories that may explain why resource-rich economies are relatively corrupt places. First, resource-rich governments tend not to tax non-resource factors to the same extent as resource-scarce governments (Bornhost et al., 2009; James, 2015b) and taxation may be necessary for adequate political representation (Ross, 2004; Huntington, 1993). Further, natural resources may produce economic rents that give political elites the incentive to engage in rent-seeking behavior (Bulte and Damania, 2008). Whether resource-induced political corruption is something that has taken hold in Alaska is ultimately left to future research to determine. However, it is interesting to note that from 2003 to 2010, the Public Integrity Section of the U.S. Department of Justice carried out a widespread investigation of public corruption in Alaska. The investigation led to the arrest of multiple current and former state representatives who were subsequently convicted of accepting illegal bribes from the CEO of an oil services company (Burke, 2011).

Recently, a handful of papers have argued that the observed inverse relationship between economic growth and resource dependence is caused by a so-called "resource drag," and not a resource curse (Boyce and Emery, 2011; James, 2015a). A resource drag occurs when a natural-resource sector grows slower than the rest of the economy, resulting in slower aggregate growth. Referencing Fig. 2, a resource boom (modeled in year 8) immediately increases income levels—regardless of whether a resource curse exists or not. If the resource sector grows more slowly than the non-resource sector, even in the absence of a resource curse, a resource boom will be followed by a period of relatively slow growth as GDP converges to its future level of income that would have existed had the resource boom never occurred. But critically, only in the presence of a resource curse will future income levels be lower as a result of the resource boom.

The resource-drag literature highlights the importance of considering both the immediate and the long-run, posterior effects of resource booms. Using a novel approach, Mideksa (2013) estimates the effect of oil production on GDP per capita in Norway using the synthetic control

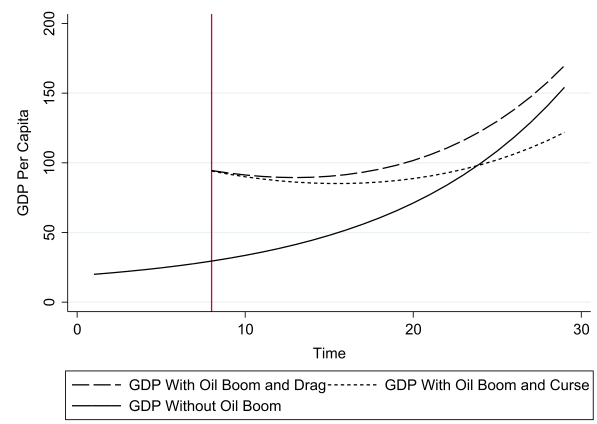

Fig. 2. A resource curse vs. resource drag. *Note*: The vertical line at year 8 marks the date of the instantaneous resource boom. The slight decrease in GDP per capita in the years immediately following the resource boom is due to assumed negative growth of the resource sector.

approach.[2] In his paper, the synthetic control (the synthetic Norway) is a mix of other countries, each assigned a unique weight. The weights are chosen to build a control that best fits pre-event predictors of Norwegian per capita income and, moving beyond the event date, serves as a robust counterfactual. Mideksa documents large, significant, and persistent income gains associated with the Norwegian oil boom. This is an important and innovative paper that clearly illustrates the significant role that oil has played in the development process of Norway. However, Norwegian oil production peaked in 2001 (Energy Information Administration) and the panel used by Mideksa ends in 2007. This makes it difficult to evaluate the posterior, long-run effect of the Norwegian oil boom. Alaskan oil production, on the other hand, peaked in 1988 and precipitously decreased thereafter. This allows for a long run, posterior analysis of the economic effects of an oil boom.

In the short run, the Alaskan oil boom generated large per capita income gains. However, these gains were diluted by significant inward migration. By the mid 1990s, the per capita income gains had largely vanished, and may have even turned into losses. These results, which are robust to using a variety of comparison units, including a synthetic control, bring into question the long-run economic benefits of resource booms that are often assumed to exist by policy makers.

[2] Also see Smith (2015) for a synthetic control analysis of the long-run consequences of oil discoveries in a broader set of countries.