

Food Versus Fuel: Extractive Industries, Insecure Land Tenure, and Gaps in World Food Production

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Summary. — Corporations now go “to the ends of the earth” to extract natural resources like oil and diamonds from the earth at the same time that farmers, investors, and development experts try to expand the supply of food, sometimes through large land acquisitions in remote regions. These two processes of globalization interact in important ways. Cross-national analyses indicate that oil and mineral dependent nations with neo-patrimonial elites have lower than expected areas under cultivation and yields from cereal crops. Booms in extractive sectors and neo-patrimonial practices in governance have debilitated agricultural enterprises within nations and conceivably throughout the globe.

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1. INTRODUCTION

Seismic shifts in world food markets and environmental policymaking since 2000 have intensified competition between people who would use lands in rural areas of the developing world differently.¹ After nearly a century of declines in the prices of agricultural products relative to manufactured goods, these trends reversed during 2000–05. Global food prices began to rise faster than the prices for other goods and services. During 2003–10 global food prices increased by almost 50% in real terms at the same time as the volatility of food prices increased significantly (OECD, 2011). These price trends prompted executives in corporations and officials in sovereign wealth funds to begin buying up large tracks of land in poor nations of the developing world in order to produce foodstuffs for consumers in more affluent countries.²

In this context the projected increases in the world population to approximately 9 billion people in 2050, coupled with recurrent crop failures and increasing numbers of people adopting protein rich diets, has raised alarming questions about how the world’s farmers might meet the additional demands for foodstuffs. Where are the additional lands that might be brought into cultivation? What are the possibilities for further agricultural intensification in different parts of the world? How do societies cope with the now more pressing questions of food sovereignty and food security?

Under these circumstances it seems important to inquire about possible interaction effects between global scale efforts to feed human populations and fuel human activities. This question about agriculture occurs in a global context marked by ever more insistent searches by multi-national corporations for new deposits of valuable natural resources like oil, natural gas, and metal bearing ores from mines.³ Because these corporations, historically headquartered in either Europe or North America, explored areas in their own countries first and only later regions in the developing world, their focus for oil, gas, and mineral exploration has increasingly turned to the same poor countries that, with the world’s largest gaps between actual and potential yields, might be expected to contribute the most to future increases in global food production (Tilman, Balzer, Hill, & Befort, 2011). How, then, do these efforts inter-

act? In particular how do agricultural producers and markets change as revenues from extractive industries transform the larger political economic context in which they work?

For two decades economists have argued that farmers leave agriculture when oil, gas, and mineral booms transform the national economies of poor producer states (Corden & Neary, 1982). In a comparative study of eight tropical countries Wunder (2004) demonstrated that most oil producing countries experienced relatively little tropical deforestation during the latter part of the 20th century because the agricultural sectors of their economies shrank. This paper extends Wunder’s analysis, using a modified version of the “Dutch disease” theoretical apparatus, supplemented by neo-patrimonial theories of the state, to explain in part the global agricultural stagnation that has contributed to the recent, worldwide surge in the prices of foodstuffs.

A new Geographic Information System (GIS) has simplified this analytic task by making it possible to assess the social and economic causes for variations in agricultural productivity while controlling for variations in the soils, climate, and topography of cultivated areas. The Food and Agricultural Organization of the United Nations (FAO), working with the International Institute for Applied Systems Analysis (IIASA), created the GAEZ (Global Agro-Ecological Zone) GIS. It can identify places where, controlling for the extent of lands unsuitable for agriculture, cultivated areas seem small and places where, controlling for the constraints of soil and climate, large gaps exist between actual and potential crop yields (IIASA, 2011). Understanding the social and economic conditions that have contributed to agricultural underproduction in these places would be an important preliminary step in crafting a strategy for expanding or intensifying agricultural production to meet growing human demands for food. The Dutch disease argument, outlined above and supplemented

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by a theory of new states, offers one possible explanation for these variations in agricultural production.

The article begins with a theoretical discussion that revises Dutch disease theory and pairs it with neo-patrimonial understandings of public expenditures in order to explain how the growth of oil and mineral sectors has affected agriculture in the developing world. This discussion links extractive activities with government expenditures, labor migration, and rural land tenure. Brief descriptions of the quantitative methods and results follow. A subsequent discussion specifies the link between insecure land tenure and agricultural production. The paper ends with a consideration of what the depletion of oil and mineral deposits might mean for agriculture in countries with depleted deposits.

2. DUTCH DISEASE THEORY, DISAPPEARING MARKETS, AND INSECURE LAND TENURE

“Dutch disease” occurs when a boom in one sector of an economy cripples enterprises in other sectors of the economy. To understand how a boom in the extractive sector of an economy could transform other economic sectors, it is important to remember that these markets are embedded in larger, evolving social structures (Granovetter, 1985, 1992). Most of the new extractive sectors and associated booms have occurred in the developing world during the past 50 years, in part because, before World War II, prospectors had not looked for deposits in these areas as thoroughly as they had in the more developed countries. For this reason prospectors have made most of their new discoveries in fledgling states in which a neo-patrimonial ethos of enriching oneself at the public’s expense has prevailed among officials.⁴

During the last three decades of the 20th century this political culture gradually eroded the capacity of states to deliver services, like the titling of lands, in rural areas (Van de Walle, 2001).

The dynamics of Dutch disease would reinforce the decline in the capacity of states in rural areas. This theory, so named because the first documented episode of it occurred in the Netherlands (Corden & Neary, 1982), describes a dynamic in labor markets that appears shortly after the discovery of valuable oil or mineral deposits touches off an economic boom in that sector of a nation’s economy. Disparities in wage rates grow, with workers in the boom sector earning much higher wages than workers in other sectors. The differences in wage rates, predictably, prompt flows of workers out of the non-boom sectors and into the boom sectors. Because most of the newly discovered deposits of oil and minerals occurred in the developing world where most workers still labored in agricultural sectors, Dutch disease should induce flows of workers out of agriculture and into booming oil or mining sectors. The rapid loss of workers would create problems for farmers. If their operations were labor intensive, the loss of workers should have forced some farmers to abandon agriculture.

Currency fluctuations triggered by the boom in the oil-mineral sector would exacerbate the destructive impact of the boom on the agricultural sector. The influx of dollars and euros to purchase oil or other minerals would strengthen the local currency and make it cheaper to import goods from overseas. These goods usually would include inexpensive cereals produced overseas with government subsidies. In urban food markets the imported foodstuffs would take market share away from local farmers. So the price of labor for local farmers rises about the same time that they face more competition

in urban food markets. If farmers produce for overseas markets, the appreciating currency makes their produce more expensive relative to produce from economies with weaker currencies. These intersecting trends would compel some farmers to close down their operations. They would find more lucrative nonfarm opportunities in which to invest (Fuglie, 2008).

Despite the logic apparent in the market dynamics outlined above, Dutch disease does not appear to apply to most developing country economies because it assumes full employment labor markets, not the surplus labor market conditions that typically prevail in the developing world (Ross, 2012). In a surplus labor market, the extra demand for labor from the boom sector might have little effect on the price of labor in other sectors because the small number of jobs created by a capital intensive industry like mining or oil extraction would not change the price of labor in agriculture (Pegg, 2009; Ross, 2012). An alternative pathway for a Dutch disease dynamic might occur through government expenditures (Dunning, 2008; Pegg, 2009). Government expenditures typically represent an unusually large proportion of all economic activity in oil and mineral dependent economies (Ross, 2012). Under these circumstances oil and mineral booms alter labor dynamics, but they do so largely through their effect on government expenditures in the urban areas that house government offices. The urban focus of the boom stems from the surge in revenues that the central government receives from royalties or taxes assessed on the extracted resources (Wunder, 2004).⁵ While a few oil or mineral enriched governments like Indonesia focused their increased expenditures on rural areas (Timmer, 2007), most oil or mineral dependent governments concentrated their increased expenditures on urban areas. With increased revenues, a continuing neo-patrimonial ethos, and an urban headquarters, government agencies have typically expanded the number of employees, built more office buildings, and indirectly, through their growth in staff, spurred the construction of residential real estate for government workers. Service sector activities expanded in part because service providers did not suffer from the increases in foreign competition that afflicted farmers whose products were traded on international markets. These tendencies led to a boom in the urban real estate market and a surge in migrants from rural areas who took jobs in the construction and service sectors (Wunder, 2004). Agricultural enterprises lost workers, but to a different economic sector than envisaged in the original formulation of Dutch disease theory.

Economists have examined this dynamic extensively, usually in an effort to assess or explain the “resource curse,” the often commented upon tendency for populations in nations rich in natural resources to remain poor despite the wealth of natural resources around them (van der Ploeg, 2011). Political scientists have used the Dutch disease formulation to investigate the impact of oil or mineral extraction on the transition to democracy (Dunning, 2008). This body of work leaves largely unanswered important questions about the agro-ecological impacts of Dutch disease. I offer several preliminary answers to these questions below.

People create markets and then, when conditions change, they dismantle them (Granovetter, 1985, 1992). These dynamics are very evident when oil booms turn to busts. Ex-farm workers and their children may want to return to agriculture, only to find that the farms, markets, and jobs in agriculture no longer exist. Other circumstances make it difficult to enter or re-enter agriculture. There are few other farmers around, so the opportunities for experiential learning are not there. With

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