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Soybeans, Poverty and Inequality in the Brazilian Amazon

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Summary. — Using a mixed-method approach of econometric and ethnographic field research, this article examines the social and economic costs and benefits of increases in soybean production in the Brazilian Amazon. Statistical analysis suggests that increased soy production both reduces poverty indicators and raises median rural incomes, but is also associated with increased measures of inequality. Qualitative fieldwork sheds light on the wider political and social causes and consequences of this increasing inequality, pointing to ethnic differences between large soy farmers and local populations that raise long standing prejudices and tensions.

Key words — agriculture, poverty, soybeans, Brazil, Amazonia

1. INTRODUCTION

Since the 1960s, Brazil's national and regional governments have invested large sums in the development of soybean production both directly, through research and agricultural grants, and indirectly, through the large-scale infrastructural projects needed to make the enterprise profitable. Soybean products are currently one of Brazil's most valuable agricultural exports, and a key component of the nation's continued economic development. With continuing investment in major infrastructure projects, particularly in the Amazon region, their importance shows little sign of diminishing.

Observers, however, remain divided about the social and environmental effects of this development. On one side many researchers fear that the large scale of this plantation crop will both increase deforestation and displace small farmers, increasing inequality and poverty (Carvalho, 1999; Fearnside, 2001). Other researchers, however, argue that most new soybean production takes place on land converted from pasture, rather than from forest, and that the growth of supporting enterprises that accompany large soybean production creates jobs and reduces poverty (Brandão, de Rezende, & da Costa Marques, 2005). While all interlocutors are aware that any decisions concerning Brazil's economic and developmental future and its land use involve trade-offs between economic, social, political, and environmental outcomes, the debate at all levels of society can be extremely impassioned. These arguments are often played out in public forums both in the areas most directly affected by soybean expansion as well as at the governmental level and in the national and international media, and this domestic political debate has had real consequences in the pattern of Brazilian agricultural expansion. Thus an understanding of the economic consequences of particular agricultural land use patterns is incomplete without a complementary understanding of how that land use pattern impacts the political discourse.

This article contributes to this debate by focussing on the socio-economic impacts of soy cultivation in the Amazon. While work has been done on the rural poverty effects of the more general increase in Brazil's agricultural production (e.g., da Silva, Sergio Gómez, & Rodrigo Castañeda, 2009[1]) neither side of this debate has been able to offer much quantitative empirical evidence specifically related to soy expansion. Some localized studies have been done on the environmental impacts of this industry (see Fearnside, 2001; Kaimowitz & Smith, 2001), but few recent studies have presented detailed evaluations of the claims of increased local inequality and poverty rates. As Fearnside has noted, in order for countries like Brazil to take informed decisions regarding soybean expansion, "what is needed is an honest weighing of costs and benefits of expanding soybean cultivation, including all social and environmental costs" (2001, p. 35).

This article thus presents new empirical evidence on the relationship between soy expansion and poverty. However, we seek not only to measure the impact of the introduction of soy production on socio-economic outcomes, but also to better understand the political impact of this new development and the sources of some of the bitter local debates that surround the issue. In the process we attempt to reconcile the results of the statistical work with the political debate on the ground; to the extent that we find robust evidence that soy production does not increase poverty (and strongly suggestive evidence that it reduces it), how can we explain the continuing strong local political resistance to soy cultivation on the grounds of its socio-economic impact? Thus we combine an econometric analysis of the data with qualitative fieldwork to identify how the economic impacts of soy link to the continued political debates over its impact.

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2. BACKGROUND

Soy was first grown in significant quantities in Brazil in the 1940s and 50s slowly becoming commercially important in the southern states of Rio Grande do Sul, Santa Catarina and Paraná (Brown, Koeppe, Coles, & Price, 2005, p. 462). Gradually the Brazilian government, through The Brazilian Agricultural Research Corporation (EMBRAPA), was instrumental in developing strains of soy that could be grown in other, more northerly, regions of Brazil: first in the *cerrado* and then in forested areas [2] (Andersen, Granger, Reis, Weinhold, & Wunder, 2002, p. 78; Brown, 2004, p. 159; Mueller, 2003, p. 14). Production then spread steadily north into the Legal Amazon region, particularly in the northern areas of Mato Grosso (Fearnside, 2001; Mueller, 2003) where relatively low land prices, soil quality, mechanization-friendly topography, and gradually improving (though often still very precarious) transportation infrastructure made production competitive in international markets (Vera-Diaz, del, Kaufmann, Nepstad, & Schlesinger, 2008). As this process accelerated over the past 10 years, the rapid growth was further spurred by the increasing price of soy in both local and international markets (de Souza, De Oliveira, & De Barros Pinto, 2010). Figure 1 illustrates the growth of soy in Brazil and in the Legal Amazon from 1973 to 2010.

As Warnken argues, however, the Brazilian soybean industry has been pulled not only by the rapid expansion in world demand for soybean products, but also pushed by public policy (Warnken, 1999, p. 3). In the past the crop played an important role on the national stage in helping Brazil to increase export earnings for development purposes. Although Brazil has now evolved economically beyond the days of worrying much about the IMF and international debt payments, some commentators still see the crop in these terms. For example, Steward (2007) notes that the Brazilian government still "supports soy production to generate revenue for paying down its debt and efficiently utilizing its land area" and that "soybean farmers believe they are national heroes" (Steward, 2007, p. 111).

Soybean production, like agriculture generally, requires access to credit, so it is not surprising that a number of national and international banks have become involved. [3] For example BNDES (The Brazilian Development Bank) started a program in 2000 that significantly increased credit for agricultural machinery. While recent work has emphasized that soy can be produced profitably on smaller sized "family farms", the majority of soy is grown on larger farms (Bickel & Dros, 2003); Zanon, Saes, Corrar, & Macedo, 2010, p. 10 have noted how large agricultural enterprises such as the Maggi group in Mato Grosso have been financed by international banks (2003, p. 19). Multinationals, and particularly Cargill and Bunge in Brazil, also provide soy growers with credit, usually in the form of seed, fertilizer, and chemicals in return for the soy harvested (Greenpeace, 2006, p. 2).

Most of this political and economic support for the soybean industry has been based on its relatively clear profitability and growth potential. Meanwhile, the impact of soy production on the structure of local economies has received less attention (cf. Warnken, 1999, p. 6). The need for such work is particularly important given the numerous criticisms of the soybean industry made by many researchers, activists, and local populations. The main emphasis here has been on the argument that the large scale of this plantation displaces small farmers, increasing inequality and poverty and, in turn, pushes such individuals to claim new land, often through deforestation (Carvalho, 1999; Fearnside, 2001, p. 27).

The basic premise of this argument is that large-scale mechanized agriculture uses less labor per hectare than small-scale farming techniques. [4] Diegues (1992) describes the effect of the move from coffee farming to soybean cultivation in the southern Brazilian states in the 1970s that was precipitated by a number of problems including "soil depletion, plant diseases, over-production and lower producer prices" as well as a systematic government-sponsored coffee eradication program:

> Between 1970 and 1980 in Parana, the number of farms smaller than 50 hectares fell by 109,000 units with a combined loss of 890,000 hectares in this category. In contrast, farms larger than 1,000 hectares increased by 450 units with a gain of more than 1,000,000 hectares... Many agricultural laborers, especially sharecroppers and other tenants, lost their only source of income. As a result, net migration from the rural areas of Parana reached 2.5 million during the 1970s compared with a net gain of 170,000 in the previous decade (Diegues, 1992, p. 12).

Kaimowitz and Smith note that during the same period Rio Grande do Sul lost some 300,000 farms (2001, p. 202). They further argue that while "the majority of migrants moved to urban areas... a significant number went to the Amazon and cleared forest to grow crops" (2001, p. 202). [5]

However others have argued that this kind of reasoning misses the dynamic argument that, in the long run, large scale mechanized agriculture increases overall productivity and avoids vicious cycles of rural poverty and population growth associated with low productivity smallholdings and deforestation. In addition, wealth generated by large-scale soybean

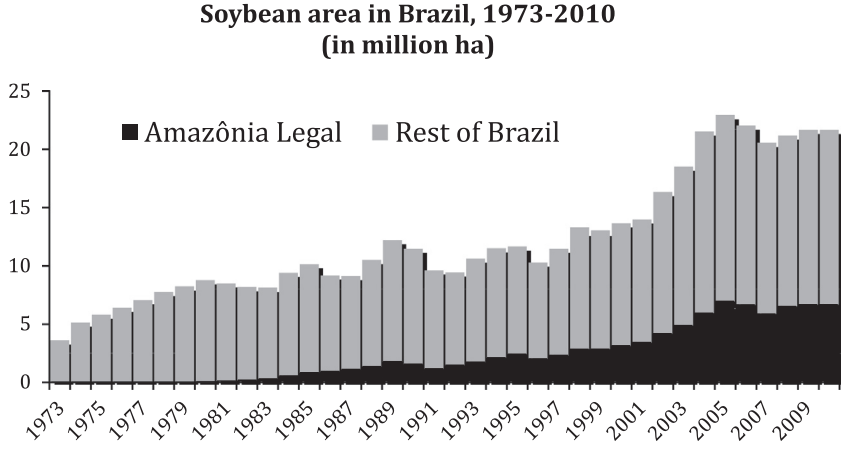

Figure 1. *Soybean area, 1973–2010.*