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Agriculture and The “Oil Syndrome”: The Role of Public Policy in Developing Petroleum Economies

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Abstract: Oil syndrome theory suggests that macroeconomic distortions resulting from petroleum exports will seriously constrain agricultural development. This paper reviews the 1973-82 record of six important oil exporting countries—Algeria, Indonesia, Iran, Mexico, Nigeria, and Venezuela—among which agricultural performance differed markedly. Average annual growth in production per capita was zero or negative in Algeria, Iran, and Nigeria, modestly positive in Mexico (which reversed an earlier trend of declining food production) and Venezuela, and unprecedentedly high in Indonesia. Macroeconomic management was less important in determining agricultural performance than the pattern of distribution of public oil revenues through pricing and investment policies affecting overall rural-urban terms of trade. Indonesia's macroeconomic management was quite good, Venezuela's indifferent, and Mexico's very poor. But Mexico and (especially) Indonesia made smallholder-based agricultural development a national priority, with high levels of rural investment, trade protection, and broadly distributed input subsidies. With few smallholders and no trade protection, agricultural growth in Venezuela depended on extraordinarily high subsidies to commercial agricultural producers. Algeria, Iran, and Nigeria followed investment and pricing policies sharply biased against mass agriculture, while attempting (without success) to meet rising food demand with heavily subsidized, capital intensive enclaves.

Introduction

As oil prices increased in the 1970s, petroleum production and exports rose sharply in nearly 30 developing countries. But, despite initial hopes, the huge revenues earned during 1973-82 by some exporters largely failed to generate broad-based economic growth. Of special concern in populous agrarian nations was the typical response of the agricultural sector—high rural emigration, high food imports, declining agricultural exports, and high food prices (Scherr, 1985). This paper analyzes public policy and agricultural performance during 1973-81 in Indonesia, Mexico, and Nigeria and the lessons they provide for agricultural development in a boom economy.

Recent analyses of the “oil syndrome” (or “Dutch disease”) have attempted to explain the decline of non-oil sectors. The “booming” sector draws foreign exchange into the economy, raises domestic demand, and creates inflationary pressures on domestic prices. New demand for goods that are traded internationally (“tradeables,” like wheat or steel) can be met through imports, moderating price increases. For goods that are not traded (“non-tradeables,” such as skilled labour, concrete, transport, or commerce) increased demand leads to price increases. Thus, the relative prices of tradeable goods tend to decline, drawing productive factors away from those sectors. Furthermore, with inflation higher in the oil-exporting country than in its trading partners, the real value of its currency tends to appreciate. If the nominal rate of exchange is fixed, the currency will become overvalued; i.e., domestic goods priced at the nominal exchange rate will seem expensive to the international market, reducing demand for the country's exports, and foreign goods will appear cheap, raising demand for imports (Corden and Neary, 1982; and Oyejide, 1983).

The sectoral price effects of “Dutch disease” are influenced markedly, however, by public policies. Since almost all oil revenues are rents, payments accrue to governments—whose economic role is expanded—rather than to domestic factors of production. Government expenditure policy becomes an important determinant of both the pattern of rent distribution in the economy and of total demand for products from different sectors and regions (Ul-Haque, 1982). Incomes policy and direct government employment influence relative wages; trade policies influence relative prices for agricultural commodities (Scherr, 1985). Agricultural development programmes influence costs of production and marketing, productivity, and factor composition. The agricultural economy will retain productive factors only if rural capitalists, peasants, and farm workers can earn as much in agriculture as in alternative activities.

Indonesia

Indonesia is the oil exporters' success story. Through disciplined macroeconomic policy, pro-rural expenditure bias, well-designed smallholder development programmes, and a labour surplus economy that minimized farm labour constraints, the country achieved steady growth in agricultural production and exports during 1975-80.

Eighty percent of Indonesia's population is rural, and incomes are low (US\$585 per capita in

1982). Population density is high, though the growth rate is only 2.3 percent per year. Before the oil boom, nearly half of national income came from agriculture. By 1982, oil comprised three quarters of exports, and 14 percent of GNP (World Bank, 1983). But "oil syndrome" pressures were contained by macroeconomic policies that reduced inflation: a public budget surplus in most years, low foreign borrowing, and use of oil revenues to repay petroleum company debts abroad (Glassburner, 1984). The exchange rate appreciated rapidly after both oil shocks (1973 and 1979). But while a policy of continued small devaluations might have been preferable, a large "protective" devaluation in 1978 served at least temporarily to alter relative prices in favour of tradeable goods (Warr, 1984).

Some trade protection was provided for rice and intermittently for maize, and most export taxes were abolished in 1976-78; overall, the domestic agricultural terms of trade were more or less stable. Meanwhile, the government enacted an agricultural development programme unprecedented both in scale and scope. BULOG, the national food marketing agency, stabilized the price of rice received by farmers, heavy investment occurred in rural infrastructure investment, and inputs received major subsidies, particularly fertilizer. Overall, government spending on agriculture rose from 16 percent prior to the boom to a high of 22 percent in 1979/80, then on a much larger base. Furthermore, agricultural policies were sensible given conditions in Indonesia, with easily disseminated, proven technology packages oriented to the smallholders who dominated production. Average real wages in labour-surplus rural Indonesia did not increase, despite the oil boom (Glassburner, 1984).

The average annual growth rate of Indonesian agricultural production during 1970-82 was 3.8 percent in total and 1.4 percent per capita. Rice production increased by two thirds, maize by 50 percent. Cereal imports, while high in 1978-80, were a small and declining part of total consumption. During 1973-81, the value of agricultural imports averaged only 68 percent of agricultural exports. Exports of palm oil, copra, coffee, and rubber increased. The economically active population in agriculture declined by only 14 percent during 1972-82, and the rural population by 6 percent (World Bank, 1983).

Mexico

Unlike Indonesia, Mexico's macroeconomic management exacerbated oil syndrome pressures, and the mobility of rural labour in Mexico's highly urbanized economy made the agricultural sector more vulnerable. Nonetheless, an earlier trend of declining per capita production was turned around through major broad-based agricultural programmes.

Mexico, in 1980, was 67 percent urban, growing at 3.0 percent yearly; its per capita GNP was triple that of Indonesia, though that masks a highly dualistic income structure. Major oil finds were recent, and exports were not significant until 1976. By 1982, petroleum accounted for 77 percent of total exports, and petroleum revenue represented 12.5 percent of total GNP. But "Dutch disease" distortions were exacerbated by massive foreign borrowing, a high public deficit, and monetary expansion. Inflation rates after 1976 were much higher in Mexico than in Indonesia. A financial crisis in 1976 led to devaluation of the peso against the dollar, but, after 1978, the currency became increasingly overvalued until plummeting oil prices in 1981/82 forced Mexico, along with most other oil exporters (including Indonesia), to devalue again (Szekely, 1983; and Scherr, 1985).

Trade policies did not compensate the agricultural sector for oil syndrome distortions until 1980. Food prices (and farm costs) rose much more rapidly than the consumer price index. Because average incomes were already higher in Mexico than in Indonesia and new income distribution favoured the urban middle-class, new demand was concentrated on livestock products and high-value fruits and vegetables, both less "tradeable" than grains.

But government expenditures were much less urban biased. Government's role in GNP rose from 12.1 to 20.8 percent in 1972-81. The share of spending on agriculture rose from 5-6 percent in the early 1970s, to 9-10 percent in 1979/80. The 1980-82 Development Plan budgeted nearly a third for agriculture and rural development, but that goal was dashed by the 1981/82 crisis. Infrastructure, marketing, and technical assistance programmes were oriented to the large, formerly neglected smallholder sector, and, in 1980-82, especially to rainfed staple food producers (Szekely, 1983; and Scherr, 1985).

Thus, despite a negative macroenvironment, production per capita was fairly stable during the oil boom period, with rising cereal production after 1979. Long-cycle fruit, forage, and vegetable production grew rapidly. The quantity of cereals imported, though high in years of poor rainfall, was higher before than after the oil boom. Food imports were dominated by sorghum and soyabeans (for

livestock feed) and milk. Exports of fruits, vegetables, coffee, cocoa, honey, and *garbanzos* rose; the average yearly ratio of the value of imports to exports during 1973-81 was 1:1 (Scherr, 1985).

The 1970s brought major structural changes in the farm sector. The rural population declined by a third, and the economically active population, whose principal occupation was in agriculture, declined by a quarter during 1972-82 (from 45 percent to a third). Landless workers and small farmers on marginal rainfed lands emigrated *en masse* to the cities. With real rural wages and returns to capital in other activities rising during the boom, large landowners dependent on hired labour tended to decapitalize and reduce production, except for producers of high-value products near urban markets. Smallholders, on the other hand, had been active in off-farm labour markets even before the boom. The family provided most farm labour; households were concerned with returns to family labour, not returns to capital. Those with good enough land resources could both take advantage of new off-farm income sources and maintain or increase farm production (Scherr, 1985).

Nigeria

In Nigeria, macroeconomic, expenditure, and sectoral policies, as well as labour market conditions, were largely prejudicial to agricultural development during the oil boom. While per capita cereal and staple food production was fairly stable, the formerly dynamic agricultural export sector essentially collapsed.²

In 1970, Nigeria's population, growing at 2.6 percent annually, was 87 percent rural, with per capita GNP at US\$868. Its non-oil economy was far more seriously disrupted by the oil boom. Petroleum, in 1981, accounted for over 95 percent of total export earnings and 30 percent of GNP (World Bank, 1983). Foreign borrowing was low, but with government budgets dependent on fluctuating oil revenues, fiscal and monetary policies were highly erratic, leading to large budget deficits. Economic expansion, plus the bottlenecks to rapid growth of an underdeveloped economy, led to serious inflation. The Nigerian naira became and remained highly overvalued during the entire period; the currency was not even devalued after 1981 (Oyejide, 1983; and Scherr, 1985).

Trade protection for food was erratic, with poor coordination between product substitutes, and was thus destabilizing for farmers. Many export taxes continued until the early 1980s. Average food prices rose much faster than the consumer price index, resulting in stagnant food consumption in most rural areas (where real incomes had not increased) and substitution of imported wheat and rice for domestically produced foods in the cities. The relative decline of agriculture was exacerbated by extremely urban-biased government expenditure patterns. Government's role in the GNP rose from 10 percent in 1972 to 22 percent in 1977. But spending on agriculture and rural development averaged only 3-5 percent, rising to 9-10 percent after 1979, though rural education was expanded. Despite a smallholder-dominated economy, policies and subsidies favoured large-scale, centrally managed irrigation and mechanization projects (Scherr, 1985).

Per capita maize and rice production in Nigeria increased substantially, but per capita sorghum, millet, and root crop production probably declined. Total per capita production declined, as exports of cocoa, rubber, cotton, and groundnuts (Nigeria's mainstay in the 1960s) declined with the overvalued naira. Only protected palm oil and kernel exports increased. With skyrocketing food demand in urban areas (which had received the bulk of new oil income) and the overvalued naira, cereal imports steadily increased. Rural labour demand was stagnant, except for nonagricultural work in the coastal urban and petroleum centres. So real rural wages did not increase, though nominal wages often rose more rapidly than agricultural prices. With most rural emigration temporary or cyclical, the rural population of Nigeria declined by only 8 percent, and the economically active population working principally in agriculture declined by 18 percent (Oyejide, 1983; and Scherr, 1985).

Conclusions

Successful agricultural development during an export boom requires supportive macroeconomic, fiscal, and sectoral policies whose impacts are constrained or enhanced by internal features of the rural sector. Policies that reduce inflation—monetary restraint, fiscal surpluses, low foreign borrowing, and a slow rate of oil export growth—minimize oil syndrome distortions and pressures on the currency exchange rate. Without such restraint, devaluations can provide temporary and limited—though often essential—relief for “Dutch disease” (Warr, 1984; and Oyejide, 1983).

Where macroeconomic distortions are severe, compensatory sectoral policy is essential.

High income elasticity for food in low-income countries means that rapid economic growth will lead to unusually high levels of food demand. Imports are almost inevitable and are not themselves a sign of agricultural decline. But the specific price, quantity, and type of imports do influence agricultural output; trade policies must be carefully coordinated. The extent to which foods behave as "tradeable" or "non-tradeable" also depends on the magnitude of changes in consumer demand, product substitutability for both consumers and producers, and costs of distribution to consumers.

Government patterns of rent distribution affect not only food demand (through their impacts on income distribution) but demand for (and prices of) capital, labour, and other key inputs. Thus, high expenditures in the rural agricultural sector *per se*, relative to other sectors, are essential to offset oil syndrome pressures. A range of agricultural sector and labour policies can be used to offset relative income deterioration by providing rural amenities and reducing production costs through subsidies, marketing innovations, and productivity-increasing technology and investment.

Such programmes must be designed in response to the specific features of the agricultural sector in a given country or region. The potential capital outflow from the farm sector will be influenced by the farm size and resource structure of production and the factor intensity of farming. Labour outflow may vary with local labour supply, technological substitution possibilities, the role of hired labour in production, and opportunities for combining on- and off-farm work. Long-standing patterns of temporary, permanent, and cyclical migration may affect the availability of labour for agriculture in different regions. Countries with large rural populations should probably favour smallholders; the long-term ratio of capital/labour availability is not necessarily changed by an export boom. Private large landowners and capital-intensive state farms or collectives are more vulnerable to the high labour costs, low relative returns to capital, scarcity of managerial talent, and distribution bottlenecks of a boom economy.

The principal constraint to execution of major programmes to compensate the rural economy for "oil syndrome" distress is political. In both Indonesia and Mexico, consensus had developed *before* the oil boom on the priority of smallholder agriculture for economic development—the result of two decades of experience with and debate about alternatives. Such consensus and rural administrative experience were essential to the development of coherent programmes. As oil or other commodity exporters prepare for the next revenue boom, perhaps the history of the 1970s may serve as a sobering reminder of the pitfalls of export-led growth and help to mobilize the domestic consensus needed to successfully exploit its opportunities.

Notes

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²Note that Nigeria's performance was still far better than that of other important developing country oil-exporters (e.g., Algeria and Iran) who aggressively pursued a cheap food policy through imports, actively disrupted their rural sectors, and starved their rural sectors of resources.

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