

Structural Adjustment and Trade in Turkey: Investigating the Alternatives "Beyond Export-led Growth"

A. Erinc Yeldan, *Bilkent University, Ankara*

The article searches for a viable alternative for Turkey's economy to resolve its current confrontation with the dilemma of stabilization and growth. With the aid of a dynamic, computable, general equilibrium model, it is argued that an integrated, industrialization strategy that combines a domestic-demand-based, wage-goods-oriented public investment program with a selective export-promotion scheme promises to be the most appropriate one serving Turkey's long-term industrialization interests.

The model results further emphasize the pressing need for the revitalization of the domestic demand and the importance of the agricultural productivity growth in promoting Turkey's overall objectives of industrialization, income equity, and foreign trade over the Fifth and Sixth Plan periods.

1. INTRODUCTION

After 20 years of planned inward-looking industrialization experience, Turkey started, with the introduction of a wide-ranging set of economic policies on January 24, 1980, to pursue an outward-oriented growth path centered around the dynamism of manufactured exports. Both the International Monetary Fund and the World Bank provided generous support to the Turkish adjustment efforts. Over the 1980–1985 period, Turkey used SDR 1.5 billion from the IMF, in addition to the World Bank's U.S. \$1.6 billion of "structural adjustment" loans (SALs), which, in effect, has been one of the largest operations of its kind (Kopits 1987).

Address correspondence to Erinc Yeldan, Bilkent University, Faculty of Economics and Administrative Sciences, P.B. 8, Maltepe 06572, Ankara, Turkey.

The article is based on my doctoral dissertation submitted to the University of Minnesota. It has benefited from the valuable advice of Terry L. Roe and James P. Houck, my co-advisors, and of Irma Adelman, and G. Edward Schuh. I am grateful to Alexander Meeraus for his kind support on the use of the General Algebraic Modeling System (GAMS) package and to Jeffrey Lewis for invaluable access of the data base. I am also indebted to Vernon W. Ruttan, Hans Singer, John Mellor, Gerald O'Mara, Fahrettin Yagci, Eranko Milanovic and Avishay Braverman for their valuable suggestions and comments.

Received February 1988; accepted November 1988.

Stimulated mainly by a vigorous export promotion strategy that consisted of high export subsidies, competitive devaluations of the lira, and repressive attitudes toward the domestic demand, Turkey succeeded in increasing the total value of its merchandise exports fourfold within the 1980–1985 period, averaging an increase of 25 percent per annum. This high export growth, however, was not achieved without costs, nor was it free of problems. Indeed, during the period, Turkish economy was observed to be beset with a variety of structural imbalances and inconsistencies, which in turn gave rise to serious doubts about the limits to further export expansion, and the possibilities of future growth in manufacturing industries in general to sustain that expansion.

First, despite all the conscious attempts and generous incentives toward the private sector to induce more “privatization” of the economy, private investments have been observed to be stagnant, and business conditions remained sluggish since the January 1980 Reform. Together with the overall inability of the political system to create public sector resources and investment, the domestic economy experienced a sharp drop in fixed capital investments and an increase in the rate of unemployment. Furthermore, there was an observed imbalance between the structure of exports (in favor of manufactured products) and the allocation of private investment funds (away from manufacturing industries), a phenomenon that was directly in conflict with the foundations of the overall growth strategy that rests on increased manufactured exports (Yeldan 1987). Thus, in the post-Reform period, the decline in private investment and the increase in unemployment seemed to be the two “concomitants” of the Turkish export promotion efforts (World Bank 1982).

A third imbalance was yet to be found in the sectoral priorities that were severely biased against agriculture. Throughout the period 1981–1985, agricultural output growth has been slow and erratic, and it became one of the main causes of the prolonged domestic inflation through the increases in food prices.

Finally, the export promotion strategy was also observed to be coupled with a militant policy of repressing wage incomes, which led to an overall suppression of the domestic demand in the economy. Under conditions of slow growth, the repression of the domestic demand this way has been quite instrumental in generating a surplus that could be allocated to foreign markets via exports. However, contrasted with the historical importance of the domestic absorption capacity of the Turkish economy, export expansion by itself could not have produced sufficient

invigoration for economic growth, and the manufacturing industries continued to operate at subcapacity levels.¹

Table 1 presents the main indicators of the Turkish economy under the period of structural adjustment. In retrospect, one can distinguish two subperiods from that table, based on the government's stance toward the rate of growth of public investment and that of aggregate gross domestic product (GDP) in general: First is the period 1980–1984, in which, mainly due to the surge in export demand, growth in manufacturing has been quite high, but this performance does not seem to be shared by other sectors of the economy. Growth in agriculture is observed to be sluggish and erratic, and the construction sector remains virtually stagnant. It can be noted further that growth in aggregate fixed investment has been slow, given the declining rate of growth of public investment, coupled with the hesitant recovery of private investment. These observations suggest that during this first subperiod, the sources of growth came not from the domestic economy but from outside via increased export demand.

In the subperiod 1985–1986, however, we observed a switch in the government's attitude towards more investment and rapid growth. This phenomenon is especially pronounced for 1986, when—led by the 7.7 percent increase in agricultural output and a 11.6% increase in aggregate fixed investment—GDP grew by 7.1 percent. However, this rapid rate of growth could not ease the pressures of extremely high inflation rates coupled with high real interest rates, a very large public sector deficit, and an accumulating external debt burden, which mainly resulted from the persistent current account deficits (note in particular the exhaustion of the engine of export growth in 1986).

Thus, in the late 1980s, the Turkish government seems to be confronted with the trade-off between the objectives of stabilization and growth: In the coming decade, should Turkey continue with its dedication to manufactured export-led growth devoting its resources for foreign markets? Or should it reevaluate its current repressive stance towards the domestic market and make attempts to reorient its industry toward establishing stronger links with the rest of the domestic economy in an environment of rapid growth?

The analytical quest for the answer to this question constitutes the main motivation of this study. More specifically, the article calls for

¹According to TUSIAD's (1985, pp. 40–43) estimates, use of installed production capacity in private manufacturing still could not have succeeded the 70 percent mark.

Table 1: Main Economic Indicators: Turkey 1979-1986

	1979	1980	1981	1982	1983	1984	1985	1986
Real growth in								
Agriculture	2.8	1.7	0.1	6.4	-0.1	3.5	2.4	7.7
Mining	-16.3	-4.1	-7.3	-5.5	7.5	7.9	11.9	-1.8
Manufacture	-5.3	-6.4	9.5	5.4	8.7	10.2	5.5	10.2
Construction	4.2	0.8	0.4	0.5	0.6	1.9	2.9	8.3
Services	0.2	-0.2	3.7	3.5	3.9	5.3	4.0	6.1
Gross domestic product (FC)	-0.6	-1.0	3.6	4.5	3.9	5.8	4.2	7.1
Fixed investment	-3.6	-10.0	1.7	3.4	4.2	1.8	5.1	11.6
Public	4.6	-3.7	10.2	2.2	3.2	-0.6	4.9	10.2
Private	-11.6	-17.3	-8.7	5.3	5.7	5.4	5.4	13.5
Volume in millions U.S. \$								
Exports	2,261	2,910	4,703	5,746	5,728	7,133	7,958	7,583
Imports	5,069	7,909	8,933	8,843	9,235	10,757	11,613	10,664
Current Acc. Deficit	1,639	3,408	1,919	935	1,898	1,407	1,013	1,528
Gross External Debt	15,800	19,000	19,200	19,700	20,300	22,000	25,800	31,800
Wholesale prices ^a	63.8	107.2	36.8	25.2	30.6	52.0	44.0	28.0
Index of real wages ^b								
SII	144.9	100.0	93.2	93.9	93.1	86.9	—	—
MI	116.5	100.0	106.9	102.7	93.6	78.4	71.3	63.1
Unemployment rate	13.4	14.8	15.2	15.6	16.1	16.1	16.3	15.5

Source: State Planning Organization Annual Programs; Treasury and Foreign Trade-External Debt Department.

^aPercentage change over previous year.

^bBased on Consumer Price Index. The SII data are the average daily wages as reported by the Social Insurance Institute. The MI (Manufacturing Industry) Survey wage is calculated by dividing total payments by the number of workers engaged.

an assessment of the feasibility of manufactured, export-led growth as the major dynamic of development for the Turkish economy in the coming decade, which effectively covers the Fifth and the Sixth Five-Year Plan periods and attempts to design an economically viable alternative development strategy.

In this context, given the economic problems of the past decade and the realities of the domestic and international environments, it has to be recognized that a reversal to the previous inward-looking strategy of import-substitutionist industrialization is no longer feasible, nor is it desirable. Yet, it should be realized that the export-led development model alone does not exhaust the wide spectrum of "open" development strategies. Indeed, in her own search for the alternative styles of development that are "beyond export-led growth," Adelman (1984, p. 938) emphasizes the distinction between "an open development strategy, in which trade is an element of growth, and an export-led strategy in which trade is the major source of growth."

Thus, this study starts with the major premise that the export-led model is not the only potentially promising alternative to the closed economy strategies of development and attempts to test the applicability of an alternative "agricultural demand-led industrialization strategy as advocated by Adelman (1984) for South Korea. More explicitly, it is argued in this article that within the confines of an open trade regime, a reallocation of investment funds toward the agricultural sectors that serve the domestic market rather than the foreign markets may lead to outcomes superior to those of the export-led industrialization strategy. The arguments in favor of such a strategy would rest on the dynamic backward-forward linkages between the induced growth of the agriculture and the created mass market for the domestic industrial products that will be used as inputs in this process. Hence, effectively proposed is an "integrated" industrialization strategy, working through the agriculture-industry interlinkages by expanding the internal demand for the intermediate and final (consumption) goods that are produced by the domestic manufacturing sectors.²

That growth of agriculture can be expected to stimulate industrial growth through a variety of mechanisms is well recognized and argued for in the development literature. These mechanisms include the following: (1) the release of an agricultural labor surplus to become a

²The term *integrated industrial strategy* is due to Singer and Alizadeh (1986), who argue that in "the darkening external environment of the 1980's," a realistic option for LDCs is a trade regime consisting of a "synthesis" of old import substitution with the more recent export orientation.

source of industrial employment (Jorgenson 1961; Ranis and Fei 1961; Lewis 1954) ; (2) the provision of cheaper food production and raw materials, and, hence, lower wage costs and intermediate good prices for the inputs used by the industry (Mellor 1976); (3) the generation of resource pulls through intermediate and final demand linkages for the products produced by the industry (Adelman 1984; Hayami and Ruttan, 1985; Hirschman 1981;) and (4) the provision of an investable surplus through the transfer of agricultural savings and rents (Adams 1978; Mellor 1984; Chichilnisky and Taylor 1980).

The proposed strategy is well suited to a middle-income, developing country like Turkey, with her established agricultural base and mass domestic market. Studies by Celasun (1983) and Nishimuzu and Robinson (1984), for instance, conclude that domestic demand expansion has been the most important source of growth for Turkey in the postwar era. The call for such a strategy is especially timely for Turkey, which, in the early 1970s, had successfully completed the initial stages of industrialization, consisting of domestic production of consumer non-durables and light intermediates (Pamuk 1984; World Bank 1982). Hence, the challenge for Turkey in the next decade is the establishment of the capital goods and the basic intermediate industries, and domestic production of the associated technologies. The advocated strategy, with its emphasis on the dynamic backward and forward interlinkages across sectors, seems to be the most appropriate strategy serving Turkey's long-term industrialization interests.

To test this hypothesis analytically, the paper employs a dynamic micro-planning model that belongs to the class of price-endogenous constructs known as Computable General Equilibrium (CGE) models. The model is composed of a simultaneous system of nonlinear equations that endogenously solve for the following: relative prices, sectoral production, wages, profits, the exchange rate, imports, exports, sectoral consumption and investment, and the functional distribution of income.

The model, as applied to Turkey, distinguishes seven economic sectors, four types of labor, three consumer groups, seven social classes, and a government. In addition, it accommodates both fixed and flexible wages along with a disequilibrium mechanism of labor allocation, endogenous rural-urban migration, international trade flows with government intervention, and separate rules of allocation for the private-versus-public fixed investment.

The rest of the paper is organized as follows: The next section describes the model and its distinguishing characteristics. The simulation results are presented in the third section. The paper concludes with a general discussion in section four.

2. THE MODEL

A Computable General Equilibrium (CGE) model is a multisector, multiagent construct that is composed of a set of nonlinear, simultaneous equations that simulate the optimizing behavior of various economic actors in response to various market signals.

The model utilized in this study belongs to the class of CGE models that incorporate the international economy as well as the domestic market into analysis. As a tribute to its dynamic characteristics, it is named TURKPLAN. Its theoretical foundations stem from the now classic works of Dervis et al. (1982) and of Adelman and Robinson (1978), and they borrow elements from the earlier CGE applications to Turkey, by Dervis and Robinson (1978), Lewis and Urata (1983), and Grais et al. (1984).

Domestic output in each sector is given by a constant returns Cobb–Douglas production function, with capital and aggregate labor as acting primary inputs. Intermediate inputs are assumed to be demanded in fixed proportions to the level of output.

Labor input is offered in fixed supplies of four categories: *Agricultural labor* is employed only in agriculture and is treated as immobile. However, between periods, rural–urban migration possibility is recognized in a Harris and Todaro (1970) specification in which rural labor moves to the urban sectors in response to differences between the agricultural and the expected urban wage rates. In the urban sectors, the *organized/skilled labor* real wage rate is specified to be exogenously given. Following Dervis and Robinson (1978), the excess of organized labor wage rate adjusts freely to clear the urban labor market. Finally, the *service labor* is employed primarily in the services sector and typifies the small-scale service enterprises, self-employed family labor, etc.

On the trade side, the neoclassical hypotheses of perfect substitutability of tradables and the law of one price are dropped. Instead, following the common tradition of the previous CGE models, TURKPLAN adopts the Armingtonian composite commodity system, in which domestic goods and imports are imperfect substitutes and are aggregated in a CES function with a given elasticity of substitution. On the export side, domestic output is exhausted between exports and domestic consumption according to a Constant Elasticity of Transformation (CET) specification.

In the simulation experiments, the exchange rate was held fixed, and an endogenous deficit on the balance of payments accounts was allowed to accumulate.

The macro closure adopted for the model is neoclassical (savings

driven). Private households are assumed to save a fraction of their disposable income, given corresponding saving parameters. The government, on the other hand, is assumed to choose an exogenous fiscal ratio, expressing the desired level of public investment as a proportion of total GDP; given this ratio, it withdraws the necessary fraction of its total income as public savings, with public consumption being determined residually.

Thus, modeled in this way, the savings pool of the economy sets the limits of investment demand, and of capital formation in general. The choice of this specification was based on the fact that it would give the maximum medium term sensitivity to balance of payments accounts and the foreign trade performance of the economy, the prime focus of this study. It also makes investment growth and capital accumulation maximally sensitive to the levels of per capita income and changes in income distribution. The system of equations in algebraic form is available from the author upon request.

3. SEARCHING FOR THE ALTERNATIVES

In this section, we utilize the CGE model as a planning device in order to analyze the expected behavior of the economy under the guidance of alternative development strategies.

As was noted in the introduction, during the 1980–1984 period Turkish policymakers tried to lay the foundations of a development strategy that found its dynamic in increased manufactured exports and in the overall reallocation of domestic resources away from agriculture and toward industry. The Fifth Five-Year Development Plan (FFYP) which, in fact, was drafted in 1983 and put into effect in 1985, can be regarded as the government's most important instrument in attaining its trade objectives for the next decade. Our first policy experiment, then, is inspired by the Fifth Plan's policy stand, and it mainly simulates a growth path of the economy in which direct export subsidies to manufacturing and the reallocation of public investment away from agriculture to industry are the two main characteristics. This first experiment is named Manufacturing Export-Led Industrialization (MXLI) and is described in detail below.

As an alternative to MXLI, the simulation of a domestic-demand-and-wage-goods-oriented development strategy constitutes the second policy experiment that is to be tested in TURKPLAN. Following Adelman's seminal (1984) work, it will be referred to as "agricultural demand-led industrialization"—or in its better-known shorthand acronym, "ADLI."—strategy. I now turn to a detailed description of the two experiments.

The MXLI strategy is simulated by subsidizing manufacturing exports by 12 percent (the average subsidy rate for manufacturing in 1985) through the remaining 4 years of the Fifth Plan (1986–1989), and by 6 percent during the Sixth Plan period, with no subsidy being granted to agricultural exports. All subsidy rates are provided on an ad valorem basis and are directly paid out of the government's budget. Also, to eliminate the tariff-induced bias against exports, the tariff rates are decreased gradually from their 1985 levels, to be abolished completely in 1990.

To further reflect the positive bias towards export-oriented manufactures, the public investment shares of these sectors are increased at the expense of agriculture. More specifically, agriculture's share of the public investment fund is set at 8 percent, whereas the manufacturing sectors are allocated a sum of 43 percent (both figures are the official Fifth Plan estimates).

Finally, in order to account for the repressive policies toward labor, frequently associated with the orthodox export-oriented policy packages, the rate of growth of the organized labor wage rate is assumed to be only half of the rate observed under the alternative ADLI strategy.

As an alternative to MXLI, the ADLI strategy is implemented by shifting the investment structure toward agriculture and those sectors that have strong backward and forward linkages with agriculture, i.e., intermediates and machinery. Private investment behavior, on the other hand, is allowed to be determined endogenously, responding to sectoral deviations from the economywide average rate of return to capital, as is also the case under the MXLI experiment. Retention of this neo-classical property allows the model to move toward an intertemporal, steady-state equilibrium in which all profit rates are equilized across sectors.

It is assumed that the increase in agricultural investment will allow the factor productivity of agriculture to grow at a rate twice that of the one assumed to be achieved under the MXLI strategy (2.5 percent versus 1.2 percent during 1986–1989, and 2 percent versus 1 percent during 1990–1994). Given the prolonged neglect of the Turkish agriculture, which has especially reached to severe proportions during the 1980s, and given its vast potential of unexploited resources, the assumed ADLI rates of agricultural technical productivity growth should be considered modest. In fact, the above assumed technological progress rates are 20 percent below the rates hypothesized by Adelman (p. 941) in her simulations for Korea, where she has taken the average productivity growth rate of all developing countries during the 1970s as her estimate of the technical progress rate achievable under ADLI during the next decade.

With respect to foreign trade, direct export subsidies are equalized and tied to a timetable, which gradually reduces and abolishes all export subsidies by 1989, the last year of the FFYP. Furthermore, all tariff rates are reduced to 10 percent and equalized across all sectors, so as to remove the antiagriculture bias associated with having a differential system of incentives that grant higher levels of protection to industry.

The simplification and rationalization of the Turkish system of trade incentives is in fact one of the main recommendations of the World Bank's 1982 Balassa mission, which has concluded that the system of protection in Turkey has traditionally discriminated against agriculture, with protection rates lower than industry on the average of 28 percent. Similar conclusions have been reached by the Yagci (1984) and Milanovic (1986) studies as well, where the authors repeatedly stressed the need for the gradual narrowing and eventual elimination of the wide variation in protection rates. In particular, Milanovic (p. 75) argued that the Turkish export encouragement scheme for the 1980–1984 period was not uniform toward all sectors nor toward all producers, and that "it consistently favored producers of capital goods over consumer and intermediate goods industries and, in addition, gave special incentives to large exporters."

If we turn back to the macro side, the model's closure rule requires that the government investment/GDP ratio be specified exogenously. To assume comparability among the model-runs, this ratio has been fixed at the path projected by the Fifth Plan (except for the third experiment, yet to be described below). The Plan projects for a slow-paced rise in the ratio of public investment to the GDP, which is predicted to stabilize around 11.6 percent by 1990. Assuming that this particular ratio reveals the Turkish authorities' desired rate of public investment in the medium run, the government's investment fund is kept at 11.6 percent of the nominal GDP for the entire Sixth Plan period as well. Furthermore, again to assure comparability, the nominal exchange rate is adjusted each year so as to offset any differential between the domestic and the world inflation rates.

Finally, as was also mentioned under the discussion of the MXLI experiment, the ADLI rate of growth of the organized labor-real-wage rate is assumed to be 50 percent higher than the one envisaged for the MXLI. This assumption, in part, reflects the expected salient character ADLI toward labor as well as its democratic orientation. However, these assumed political attributes should not be taken as the identifying institutional characteristics of the above distinguished experimental economic regimes. Certainly, one can count numerous other factors in addition to government's sectoral priorities in investment and trade

that may affect the evolution of the Turkish sociopolitical structure in the next decade, a full investigation of which is surely beyond the scope of this article. What needs to be stressed here is the wages-goods orientation of the ADLI strategy, which calls for building a strong domestic, mass-consumption market that puts primary emphasis on the satisfaction of the domestic wants. And it is this particular nature of ADLI that is likely to raise the factor remunerations of workers, in order to generate the foundations of the strong domestic "mass-consumption market." The MXLI, on the other hand, seeks its source of demand in foreign markets and tends to observe the wage bill only as a "cost item"; hence, the need for suppressing the real wages.

We now turn to the analysis of the experiment results. As can be seen in Table 2, on the basis of domestic macro performance, ADLI's results fare substantially better than those of the MXLI. Both the real GDP and real consumption have consistently higher growth rates under the ADLI experiment. Mainly as a result of the faster economic growth, real private savings and capital accumulation are higher with the ADLI strategy as well. Furthermore, we observe that the higher growth of the organized labor real wage rate does not strain the ADLI economy; on the contrary, more labor is able to find employment at the higher organized labor-wage rate. This suggests that in the ADLI economy, labor productivity rises faster, and, in effect, this "permits" the manufacturing real wages to grow at a rate higher than the one observed in the MXLI economy.

A closer look at the growth rates of the real manufacturing wages further illustrates this point. In addition to the slower rate of growth of the organized real wage rate, both the unskilled and the service labor categories experience lagging wage incomes under MXLI experiment. In fact, with MXLI, the unskilled labor-real-wage rate averages minus 0.3 percent per annum. This comes on top of the observed severe decline in the manufacturing wages during the 1980-1985 period. Clearly, the MXLI strategy continues to impose a very harsh pressure on urban real wages, and it raises doubts about whether it would be possible to restrict the rate of growth of those wages to a very slow—or even to a declining—growth path throughout the whole 15-year period.

On the rural side, however, the MXLI results indicate that the rate of growth of the agricultural real wage is more rapid than its counterpart under ADLI. This result, of course, comes as no surprise, especially when it is considered in relation to the movements of the agricultural terms of trade across the two experiments. Under the MXLI experi-

Table 2: Experiment Results

	MXLI	ADLI	ADLI-SEL
Results in final year (1994)			
Real gross domestic product (GDP) ^a	11412.5	12787.8	12530.2
Real private consumption ^b	8041.4	8771.7	8574.4
Real private savings ^b	1038.5	1194.1	1148.2
Aggregate real investment ^c	3010.1	3505.2	3243.6
Average profit rate (%)	24.1	21.7	21.6
Organized labor employment ^d	3390.7	3688.4	3435.4
Agricultural terms of trade ^e	128.9	95.5	94.9
Merchandise exports ^f	19.8	17.4	18.5
Merchandise imports ^f	25.5	26.1	24.3
Balance of payments deficit ^f	-0.4	3.0	-0.1
Growth rates to final year (Annual percent)			
Agriculture	3.7	6.2	6.2
Food processing	3.9	5.6	5.6
Textiles, clothing	10.1	6.6	6.7
Intermediates	7.2	7.5	7.6
Machinery	8.2	8.9	8.5
Social overhead	6.5	7.7	7.1
Services	5.5	5.5	5.3
Real GDF	4.9	6.2	6.0
Real private consumption	4.5	5.5	5.3
Aggregate real investment	7.3	9.1	8.2
Merchandise exports (nominal)	11.5	10.0	10.7
Merchandise imports (nominal)	9.5	9.7	8.9
Growth rates of real wages (annual percent)			
Rural labor	3.4	2.9	2.8
Organized labor	2.0	3.0	3.5
Unskilled labor	-0.3	1.1	0.5
Service labor	2.7	4.0	3.8
Index of real absorption in 1994 (1985 = 100)			
Agriculture	142.5	171.3	169.9
Food processing	143.8	163.3	160.0
Textiles, clothing	209.6	180.7	176.0
Intermediates	177.9	185.2	181.8
Machinery	183.0	195.9	183.4
Social overhead	176.8	195.3	186.1
Services	164.7	165.8	162.1

Table 2 (continued)

	MXLI ^a	ADLI	ADLI-SEL
Index of physical capital stocks in 1994 (1985 = 100)			
Agriculture	162.8	210.6	211.0
Food processing	264.4	206.2	200.3
Textiles, clothing	335.8	233.8	215.3
Intermediates	149.6	163.2	168.8
Machinery	269.4	312.1	325.3
Social overhead	146.5	141.8	142.9
Services	120.4	118.6	116.6

^aValued at market prices, 1981 base.

^bDeflated by CPI, 1981 base.

^cDeflated by the Capital Price Index, 1981 base.

^d1,000 × man years.

^eRatio of the agricultural to the nonagricultural sectors' producer prices (1985 = 100)

^fCurrent billion U.S. \$.

ment, the agricultural terms of trade index reaches to 128.9 (with 1985 = 100), whereas with ADLI, it registers a slight fall (to 95.5).

This reveals that, under ADLI, if one takes both price and income effects into account, the rate of increase in agricultural productivity is faster than the rate of increase in agricultural prices. In the absence of any negating market restrictions, the relative abundance of the agricultural good exerts downward pressure in its price and relatively reduces the rate of growth of farmers' incomes. Yet, strictly speaking, occurrence of this phenomenon may run counter to the objectives of the ADLI strategy, which puts primary emphasis on the dynamic rural-industrial demand linkages. This point, in fact, is strongly stressed in Adelman (p. 945), who argues that "the appropriate dynamic incentives (which this policy aims at fostering) will not materialize if shifts in domestic terms of trade against agriculture are allowed to negate the income benefits of productivity improvement," and that "a continued stream of technological improvements can only be expected from farmers if they experience continuing improvements in their incomes." What is needed—along with the productivity-improving effects of the ADLI strategy—then, is a "terms of trade policy" that will guarantee that the fruits of the increased agricultural productivity will be equally shared by both farmers and the urban consumers.

The elements of this policy are plentiful and do not necessarily call for the government's regulation of agricultural prices through price floors, etc. However, they certainly include the elimination of the

biased trade policies that distort incentives against agriculture and impose implicit taxes on agricultural exports. The asymmetric treatment of agriculture, which is often implicit in many developing nations' trade regimes, causes agriculture to seem relatively less profitable, with the end result that economic resources are diverted away from that sector to heavy industries, where domestic resource costs are high and dynamic linkages with the rest of the economy are limited. International trade policy, therefore, should constitute an important part of any policy package, the prime objective of which is to improve rural incomes. Adelman, in fact, recognizes this point and states that it is possible to implement the terms of trade policy "... indirectly through international trade rather than through price control and subsidies (by) following an open-economy policy of letting the world market prices set the internal terms of trade" (p. 945). The ADLI strategy, by imposing a uniform tariff rate of merchandise imports, does not discriminate against any sector and allows both agriculture and industry to exploit their full economic potential.

As a matter of fact, the simulation results indicate that after 10 years of the ADLI experience, the relative lag in the rural incomes, as compared to the MXLI alternative, is modest indeed. Also, compared with the MXLI results, one can see that the difference in the rural incomes between the two experiments is much smaller than the observed difference in the urban incomes. One factor that explains this outcome is the migration possibilities recognized in the model. Rural migration, as attracted by the differential in the agricultural and the average urban wage rates, releases most of the pressures on agricultural labor that are imposed by the falling output prices.

Thus, the experiment results suggest that, given the migratory possibilities, negative terms of trade effects of the ADLI strategy are not likely to be severe. In principle, they be counterweighed by appropriate social policies that are designed to improve the material welfare of farmers, such as more investment in human capital, improved education, and better health facilities.

A case can also be made for dispersing the industrial activities more evenly (in the geographical sense) by making the industrial capital more mobile across regions. This policy option, in fact is strongly advocated by Schuh (1976), who states that policies that aim at more decentralization of the industrial activities would result in "more efficient factor markets serving agriculture, (which) in turn, would serve for a reduction in the disparity in per capita incomes between the agricultural and non-agricultural sectors" (p. 57).

Such a policy would also induce "a more optimal rate of investment

in human capital (by increasing) the rate of return on investment in agricultural research and extension (and by allowing) . . . the rural communities to capture the returns to such investment'' (pp. 56–57).

If we turn our attention to the international trade, we observe that the overall performance of ADLI is not as strong and convincing as in the previous macro indicators. The average rate of growth of the nominal value of merchandise exports cannot exceed the 10 percent mark and poorly contrasts with MXLI's average rate of 11.5 percent. The BOP deficit, if valued in domestic currency, comprises about 9.5 percent of the total savings generated in the ADLI economy and raises serious doubts about the feasibility of the favorable results achieved in other macro categories. Thus, if we conceptualize the behavior of the Turkish economy of the period 1985–1986 as a crude portrayal of an ADLI-oriented strategy, the model results indicate that reliance on such a strategy is likely to allow the domestic economy to reach its historical growth rate of 6–7 percent, with increased capital accumulation and higher private incomes. However, in terms of self-reliance and economic dependence, its prospects are very gloomy, as the economy still remains dependent on foreign borrowing and on the exogenous flows of workers' remittances.

Thus, the overall conclusion that emerges from the model results is clear: If Turkey attempts to solve her balance of payments problems solely through a foreign trade policy of heavy export subsidies, coupled with a persistent emphasis on manufacturing orientation that does not take into account the dynamic agriculture–industry interlinkages or the needs of the domestic markets, the end result will be a slow-growing economy, with suppressed wage-incomes and a hesitant domestic demand recovery. On the other hand, a primarily domestic demand-oriented, wage-goods strategy that focuses exclusively on developing the domestic production network of sectoral interlinkages seems to achieve the objectives of more rapid growth, higher per capita incomes, and rationalization of the economic structure. Yet it fails to create a self-reliant economy that will not be constrained by the availability of foreign funds.

The best strategy, therefore, is a mixed one, which entails the positive elements of both of the previous two alternatives but attempts to minimize on their adverse consequences. More specifically, what is required is an economically viable alternative that (1) is capable of generating sufficiently high-economic growth and of raising the rate of investment, (2) gives sufficient emphasis to the needs of the domestic demands as well as the domestic savings, (3) recognizes the need for achieving a more rational production structure where intermediate and

final demand linkages across sectors are taken into account and none of the sectors is discriminated, and (4) is capable of generating sufficient export revenues so that it will not likely be hampered by the binding foreign exchange constraints.

In order to test the feasibility of such an alternative, a third experiment has been conducted that, in effect, attempts to blend the ADLI strategy with a selective export promotion policy. This experiment is to be referred as the "Selective ADLI Strategy," or "ADLI-SEL" in short. In addition to the policies of the simple ADLI strategy described above, it imposes the following:

1. For the Intermediates and the Machinery sectors, instead of gradually eliminating the direct export subsidies by 1990, hold them at their 1986 levels throughout the FFYP period (1986–1989), and then start decreasing them gradually and abolish altogether by 1994.
2. Continue to follow a constant PLD real exchange rate policy throughout the FFYP; however, for the Sixth Plan period, let the parity slide down by devaluing the PLD real exchange rate by an average of 5 percent per annum.
3. To compensate for the expected loss in foreign savings because of attempts towards eliminating the Balance of Payments deficit, increase the government investment fund, bringing its nominal value to 14 percent of the GDP throughout the whole experiment period.
4. In order to finance government's investment requirements and to allow noninflationary implementation of these policies, increase household income tax rates—by 1 percent for the rural and worker households, and by 1.5 percent for the capitalist households.
5. Increase the rate of growth of the organized labor's real wage rate to an average of 3.5 percent over the whole experiment period (1.5 percent higher than the rate assumed for MXLI) to allow for the increased productivity of that labor category.

Thus, ADLI-SEL recognizes the Intermediates and the Machinery sectors as the "infant-export industries" and provides additional (yet quite modest) export incentives through the Fifth Plan period by holding their direct export subsidy rates at their 1986 level (10 percent), when, for the other sectors, the subsidies are in the process of elimination. As for the Sixth Plan period, the granted export subsidies are tied to a timetable that gradually diminishes their rates to nill by the end of the experiment period. What is implemented with this policy is, there-

fore, a typical "infant industries" program that grants certain additional incentives to selected sectors for a predetermined period of time, at the end of which the selective treatment will be eliminated. The suggestion to follow an infant manufactured-exports program has, in fact, been advocated in the previous CGE modeling study by Dervis and Robinson (1978) and also by Boratav (1984a). It is hoped, with the implementation of such a program, that the traditional light-manufacturing and primary exports orientation of the Turkish economy will be redirected toward more complex industries that, in the mean time, will be able to utilize their potential economies of scale and "deepen" the industrialization process.

The World Bank's 1982 Balassa mission to Turkey lends support to this argument as well, in stating that Turkey's comparative advantage is to be found neither in the most simple labor-intensive goods nor in the most capital-intensive products. Rather, "it lies in the large range of goods between the two extremes, and increasingly skill-intensive products"; also, "in the longer term, Turkey's comparative advantage will increasingly lie in electrical and non-electrical machinery, machine tools, and electronics" (World Bank, 1982, p. 22).

The third column in Table 1 presents the main economic indicators of the ADLI-SEL experiment. As can be observed, average rates of growth of real GDP, real private consumption, and real aggregate investment are slightly below the rates achieved under ADLI but still substantially higher than those of the MXLI. The slowdown of the engine of economic growth relative to ADLI is mainly due to the loss of extra foreign resources injected to the domestic economy by way of deficits in the balance of payments. Even so, capital accumulation remains remarkably high thanks to the increased rate of growth of real government investment.

With respect to foreign trade, we see that ADLI-SEL's results remain favorable. Nominal exports rise by an annual average rate of 10.7 percent, and, although they are below the rate achieved by the MXLI, they suffice to close the balance of payments deficit by reaching a modest surplus of U.S. \$0.1 billion in 1996.

A further macro-level comparison of the three experiments can be made using the results from the factor markets. Such a comparison indicates that the real wage growth rates of the ADLI-SEL economy follow a similar path as the one under the ADLI economy. As a matter of fact, under ADLI-SEL, the rate of growth of the average nominal manufacturing wage rate reaches 21.8 percent per annum—the highest of the three experiments. This affirms that the internal logic of the

ADLI-SEL rate of growth and export performance does not rely on suppressed wage demands that restrain the domestic demand on the otherwise exportable output, as was in the case of the MXLI strategy.

As a final inference from Table 1, we also observe that the rate of growth of the industrial capital stock is more rapid under ADLI-SEL, indicating that the linkage effects are working. Indeed, in the MXLI experiment, Food Processing and Textiles are the only manufacturing sectors that achieve higher physical capital stock indexes. Generally speaking, the heavy export emphasis of the MXLI strategy seems to be capitalized by the "export-oriented," light-manufactures such as food, textiles, clothing and leather, which, on the basis of their traditional comparative advantage, expand rapidly, and, along with Agriculture, exhaust the investable resources of the private savings pool. ADLI-SEL on the other hand, achieves what MXLI fails to do with respect to heaving manufacturing, by generating strong domestic demand pulls for those sectors, as well as by an energetic public investment program that emphasizes accumulation of capital in key linkage industries.

The foregoing discussion of the model runs suggests that, coupling a proper export incentives program with a public investment strategy that seeks a balance between the wage-goods and the capital goods industries, Turkey can attain her export targets without causing undue strain on her domestic markets. The elements of this strategy also include an income distribution and a social welfare policy geared towards the improvement of material wellbeing of rural people in order to combat the pressures of the likely negative terms of trade on their incomes.

We have further seen that government's sectoral investment decisions play a key role throughout the whole process in generating the crucial intermediate input demand pulls for the capital-investment producing sectors. The next section brings together the distinguishing elements of the alternative strategy of growth and further attempts to deduce some policy conclusions for other middle-income developing countries.

4. DISCUSSION

4.1 Elements of the New Strategy of Growth

The above analysis clearly indicated the importance of the vitalization of the domestic demand and also the key role that could be played by the domestic agriculture in promoting the industrialization

objectives of Turkey in the coming decade. The forward runs of the model suggested that by combining a selective export promotion program with a domestic demand-oriented, wage-goods strategy, which focuses primarily on the development of the domestic production network of sectoral interlinkages, Turkey can achieve a superior growth performance over the current strategy of manufactured, export-led industrialization.

In general, the superiority of a rural-development led, wage-goods-oriented industrialization strategy seems to rest on the following three distinguishing advantages: (1) expansionary increases in the national income through technological change in agriculture, along with its consequent multiplier effects on manufacturing growth through the dynamic intersectoral resource pulls; (2) a change in the level and structure of domestic production, which can be manipulated to satisfy a higher level of domestic absorption via increases in wage-goods; and (3) induced shifts in the relative demand for factors of production in favor of labor through increases in labor productivity.

The income distribution consequences of the new strategy will be complex. Generally speaking, based on the model solutions with respect to the functional distribution of income, the new strategy of growth is likely to increase markedly the relative incomes of the poor and of the urban laboring classes. This, after all, will be the logical outcome of a wage-goods-oriented strategy of development that is based on the expansion of the domestic market. With respect to the rural labor, on the other hand, the progressive distributionary effects of the alternative strategy will depend on how fast the productivity increases in agriculture can be translated into higher material incomes through movements in the domestic terms of trade. However, the matter is not only pricing issue. The government's social policies towards human capital buildup in rural areas, by way of massive public investments in health, education, transportation, and electrification, will also be equally important in improving the material welfare of the rural poor. This second point is, of course, a part of the social welfare objective, but it is equally part of the industrial growth strategy, in that it would mean additional effective demand for the products produced by the domestic industry.

The technology adaptation aspects of the proposed strategy are likely to have favorable effects for the rural poor as well. As Hayami and Ruttan (1985) painstakingly point out, agricultural "bio-technology," in contrast to "mechanical technology," is scale neutral and divisible, thus making it possible for the small-/medium-size farmers to have easy access to such technology. Furthermore, there is strong evidence

in the economic literature that small-/medium-size farmers use mostly labor intensive methods of production, are very responsive to production incentives, and tend to invest heavily in human capital formation.³ In the Turkish rural socioeconomic structure, in which small peasantry is observed to be the dominant mode of production,⁴ these hypotheses will be more likely to translate into higher adaptability and increased labor employment in agriculture.

Overall, then, the following distinguishing elements of the new strategy could be identified:

1. First, priority should be given to increasing agricultural production and securing the domestic network of sectoral linkages through a careful public investment program.

2. Based on the expected fact that the new investments will necessitate increases in capital imports, a realistic and comprehensive set of commercial policies would have to be enacted. A realistic foreign-exchange policy of currency depreciation along with a selective, time-wise, regressive export promotion scheme can be regarded as being the two most important components of the new trade regime. The proposed export promotion scheme is selective and is tied to a time schedule, and it is thought to be directed toward the basic intermediates and machine-tool industries, through which Turkey would be able to develop and exploit her comparative advantage, and in the meantime would be least likely to face protectionist measures in the foreign markets. In this context, a further case can also be made in favor of an across-the-board scheme of tariff protection, along with a discriminatory policy of domestic taxation to tap the demand for luxury imports, and to provide additional resources for the government budget in order to allow for the antiinflationary implementation of its investment policies.

3. In order to counter the likely negative effects of the falling domestic terms of prices against agriculture, a social welfare program of rural development through expanded investments in human capital should be enacted.

4. Based on the fact that agricultural development—by its nature of small-scale production units and the overall irregularity of the production process—requires a considerably decentralized administrative

³See, e.g., the World Bank (1982) *World Development Report*. New York: Oxford University Press.

⁴See, e.g., Keyder (1983), Boratav (1983, chap. 2), or Tutengil (1983). For a recent review of the Turkish agriculture and its rural class structure from a political point of view, see Seddon and Marguiles (1984).

structure (Mellor 1976), more participatory forms of government and decision making should be encouraged.

In a nutshell, then, the proposed strategy entails elements of an industrialization program, an employment program, an income distribution program, and a social community development program. Furthermore, because of its underlying economic and social structures, the new strategy of growth is expected to inherently allow (or rather to warrant) more participatory forms of government, a fact that would be very conducive in speeding up the democratization process of the civil political life in Turkey.

4.2 Policy Implications of the New Strategy for the Developing Countries

Overall, a wage-goods-oriented, agriculture-linked manufacturing growth strategy appears to be most promising for those developing countries that have a potentially large domestic market and a proven responsive agriculture, along with an established physical infrastructure and industrial base. As Adelman (1984, p. 948) attests, this would mean most of the middle-income and the large low-income countries, which have not already reached the NICs' status of proven export potential, or those that are not anticipating a sufficient rapid growth in the world demand for their nontraditional exports.

In fact, the observed stagnation of the volume of world trade in the first half of the 1980s and the rising tide of the protectionist sentiment in the developed market economies have already led a number of scholars to call for a reassessment of the feasibility of export-led growth as the major development dynamic for most LDCs in the coming decade (e.g., Cline 1982; Kaplinsky 1985; Sampson 1980; Streeten 1982).

It has to be noted in this context that, although this article shares most of the elements of the growing disenchantment in the economic literature toward the viability of an export-led growth strategy for most LDCs in the next decade, its main propositions do not necessarily hinge upon any kind of an empirically questionable argument based on export pessimism. Rather, as stated in the introductory pages, the underlying motivation of this study has been based on the observation that as there are inefficient strategies of import-substitutionist growth, there can also be inefficient styles of the export-oriented development strategy. Surely, the empirical debate on whether the Turkish economy, or the developing countries in general, will be able to sustain rapid rates of export growth in the immediate future is very important in every aspect of the new development strategy, but the point is that its

economic rationale is not conditional upon a negative attitude toward the future export potentials of the LDCs.

This brings us to yet another parable of this study, and it is the basic argument that there is no such eternal strategy that can be valid for all countries at all times. In the Turkish context, for instance, it was observed that the early import-substitutionist strategy was quite conducive in giving an original stimulus to the Turkish industry during the 1960s. However, this initial momentum was quickly exploited by the late 1970s, and that strategy has failed in its planned targets. The 1980s strategy of manufactured-export-led growth, on the other hand, has been instrumental in increasing merchandise exports and also changing their composition in favor of the manufacturing industries. Yet it could not provide sufficient invigoration to the domestic economy and raised serious concerns over the next decade if/when the export potential of the export promotion scheme has reached its limits. As we have seen in section three, over the medium run, the model runs clearly suggest the superiority of a domestic demand-based industrialization strategy that is primarily oriented toward the production of wage-goods and toward the simultaneous expansion of the intermediate industries and the overall absorption capacity of the domestic economy.

The relevance and applicability of this conclusion to the other middle-income developing countries depend, of course, on the specific structural conditions of those indigenous economies and also on the changing economic and political conditions of the global international environment.⁵ In the meantime, however, it is important to emphasize that potentially viable alternatives to export-led growth do exist, and many developing countries are likely to benefit from a careful re-evaluation of their arsenal of alternative policy options in the 1990s.

REFERENCES

- Adams, D. W. (1978) Mobilizing Household Savings Through Rural Financial Markets, *Economic Development and Cultural Change* 26: 547–560.
- Adelman, I. (1984) Beyond Export-led Growth, *World Development* 12: 937–949.
- , and Robinson, S. (1978) *Income Distribution Policy in Developing Countries: A Case Study of Korea*. Stanford: Stanford University Press.
- Boratav, K. (1983) *Iktisat Politikaları ve Bolusum Sorunları*. Istanbul: Belge.

⁵For example, for some political scientists, the current global recession can be attributed to the disequilibrating pressures of the erosion of the nonrival hegemony of the United States in the world economy and international politics, and to the painful transitional phase toward a world system of many hegemonic states, none of which have the ultimate supreme power. For the political implications of this view, see, e.g., Keohane, R. O. (1984) *After Hegemony: Cooperation and Discord in the World Political Economy*. Princeton, N.J.: Princeton University Press.

- (1984a) İktisat Politikası Alternatifleri Üzerine Bir Deneme. In *Krizin Gelişimi ve Türkiye'nin Alternatif Sorunu* (Boratav, Keyder, and Pamuk, Eds.). Ankara: Kaynak.
- (1984b) Dünya Ekonomisi, Türkiye ve İktisat Politikaları. In *Türkiye'de ve Dünya'da Yasanan Ekonomik Bunalım* (I. Tekeli, Ed.). Ankara: Yurt.
- Celasun, M. (1983) Sources of Industrial Growth and Structural Change: The Case of Turkey. World Bank Staff Working Paper, No. 614.
- Chichilnisky, G., and Taylor, L. (1982) Agriculture and the Rest of the Economy: Macro Connections and Policy Restraints, *American Journal of Agricultural Economics*, 62: 303–309.
- Cline, W.R. (1982) Can the East Asian Model of Development be Generalized?, *World Development* 10: 81–90.
- Dervis, K., and Robinson, S. (1978) The Foreign Exchange Cap, Growth and Industrial Strategy in Turkey: 1973–1983. World Bank Staff Working Paper, No. 306.
- , de Melo, J., and Robinson, S. (1982) *General Equilibrium Models for Development Policy*. Cambridge: Cambridge University Press.
- Grais, W., de Melo, J., and Urata, S. (1984) A General Equilibrium Estimation of the Effects of Reductions in Tariffs and Quantitative Restrictions in Turkey in 1978. Development Research Department, Report No. DRD98. Washington, D.C.: The World Bank.
- Harris, J., and Todaro, M. (1970) Migration, Unemployment and Development: A Two-Sector Analysis, *American Economic Review* 60: 126–142.
- Hayami, Y., and Ruttan, V W. (1985) *Agricultural Development: An International Perspective*. Baltimore: The Johns Hopkins Press.
- Hirschman, A.O. (1981) A Generalized Linkage Approach to Development with Special Reference to Staples. In *Essays in Trespassing*. Cambridge: Cambridge University Press, pp. 59–97.
- Jorgenson, D.W. (1961) The Development of A Dual Economy, *Economic Journal* 71: 309–334.
- Kaplinsky, R. (1985) The International Context for Industrialization in the Coming Decade, *Journal of Development Studies* 27: 75–96.
- Keyder, C. (1983) Paths of Rural Transformation in Turkey, *Journal of Peasant Studies* 11: 34–49.
- Kopits, G. (1987) Structural Reform, Stabilization and Growth in Turkey, IMF Occasional Paper, No. 52, May.
- Lewis, J.D., and Urata, S. (1983) Turkey: Recent Economic Performance and Medium-Term Prospects, 1978–1990. World Bank Staff Working Paper, No. 602.
- Lewis, W.A. (1954) Economic Development with Unlimited Supplies of Labor, *Manchester School of Economics and Social Studies* 22: 139–191.
- Mellor, J. (1984) Agricultural Development and the Intersectoral Transfer of Resources. In *Agricultural Development in the Third World* (Eicher and Staats, Eds.). Baltimore: The Johns Hopkins Press, ch. 9.
- (1976) *The New Economics of Growth: A Strategy for India and the Developing World*. Ithaca: Cornell University Press.
- Milanovic, B. (1986) Export Incentives and Turkish Manufactured Exports, 1980–1984. World Bank Staff Working Paper, No. 708.
- Nishimizu, M., and Robinson, S. (1984) Trade Policies and Productivity Change in Semi-Industrialized Countries, *Journal of Development Economics* 16: 177–206.
- Pamuk, S. (1984) İthal İkamesi, Doviz Darbogazları ve Türkiye, 1947–1979. In *Krizin Gelişimi ve Türkiye'nin Alternatif Sorunu* (Boratav, Keyder, and Pamuk Eds.). Ankara: Kaynak, pp. 36–68.

- Ranis, G., and Fei, J.C.H. (1961) A Theory of Economic Development, *American Economic Review*, 51: 533–565.
- Sampson, G.P. (1980) Contemporary Protectionism and Exports of Developing Countries, *World Development* 8: 113–127.
- Schuh, G.E. (1976) Out-Migration, Rural Productivity, and the Distribution of Income. Paper presented at the World Bank Conference on Rural-Urban Labor Market Interactions, Washington, D.C. (mimeo).
- Seddon, D., and Marguiles, R. (1984) The Politics of the Agrarian Question in Turkey: Review of a Debate, *Journal of Peasant Studies* 11: 28–59.
- Singer, H., and Alizadeh, P. (1986) Import Substitution in a Darkening External Environment, *Razvoj/Development International* 1/2: 295–321.
- State Planning Organization. *Annual Program 1987* Ankara: Turkish Prime Ministry.
- Streeten, P. (1982) A Cool Look at “Outward-Looking” Strategies of Development, *The World Economy* 5: 159–169.
- TUSIAD (1985) *The Turkish Economy*. Istanbul: Turkish Industrialists and Businessmen’s Association.
- Tutengil, C.O. (1983) *Kırsal Türkiye’nin Yapısı ve Sorunları*. Istanbul: Gerçek.
- World Bank (1982) *Turkey: Industrialization and Trade Strategy*. Washington, D.C.: The World Bank.
- Yagci, F. (1984) Protection and Incentives in Turkish Manufacturing, An Evaluation of Policies and Their Impact in 1981. World Bank Staff Working Paper, No. 660.
- Yeldan, A.E. (1987) Structural Adjustment and Trade in Turkey: A General Equilibrium Analysis of the Export-led versus Domestic Demand-Led Strategies of Development. Economic Development Center Bulletin No. 87–7. St. Paul: University of Minnesota.