3. Beans

Brazil and Mexico dominate production with 75.5 percent of Latin American production. Two of the three principal bean exporters, Argentina and Chile, follow with 7.5 percent of production (Table 3.1). Latin America remains a small net exporter of edible legumes with substantial exports by Argentina, Mexico, and Chile and large imports by Cuba and Venezuela (Table 3.2).

Bean production has been stagnant with continuing yield declines in Latin America (-0.8%) and a rapid decline in Brazil (-3.0%) (Figures 3.1 and 3.2). Production has been maintained by area increase especially in Brazil (2.5%). Even in the principal agricultural states of Brazil, Parana and São Paulo, bean yields remain low (Table 3.3). Mexico has been able to increase yields but area has declined rapidly there.

In 1979 there has been a decline in both Brazilian and Mexican bean production. In Brazil the gradual production decline over the last two harvests continued with a slightly falling area in the Central South (Table 3.3). In the 1979 "safra da agua" production has again fallen (Veja[53], p.83). In Mexico the bean harvest of 1979 of 638,000 tons was 32 percent lower than in 1978 implying a need to import 250,000 tons to maintain 1978 levels. (The Economist Intelligence Unit[12], p.16).

Bean production has not been stagnant everywhere. Argentine and Colombian production has increased rapidly largely due to a strong export demand for European and Venezuelan markets respectively. El Salvador also has exported beans to Guatemala and has an impressive rate of production growth (Figure 3.4).

High population and per capita income growth kept demand growth above three percent in most Latin American countries. In few countries did production grow sufficiently rapidly to accompany demand so some combination of rising prices, increasing imports, and decreased per capita consumption especially among poorer consumers were experienced by most countries in Latin America (Table 3.4 and Figure 3.5).

Only in Colombia and Mexico have bean yields been increasing significantly and absolute levels are still extremely low except in the temperate countries

(Table 3.5). Production increase or maintenance with falling yields have been achieved with rapid area expansion (Figure 3.6). As beans are pushed into more marginal areas further from the principal markets and prices go up the potential returns to yield increasing technology are also increasing. Production stagnation appears to be principally a supply problem. However, governments can help avoid price collapse in the limited domestic markets by price floors in good harvest years. More rapid income increase in the poorest sectors of the Latin American economies would also be expected to substantially increase demand growth.

Table 3.1

Dry Bean Production in Latin America, 1964-1966 to 1976-1978

Country	1964-1966		1976-1978	
	Average Production	%	Average Production	%
	1000 tons		1000 tons	
Brazil[a]	1881	53.6	1950	53.4
Mexico	922	27.3	807	22.1
Argentina	32	.9	174	4.8
Chile	77	2.3	98	2.7
Guatemala	56	1.7	75	2.1
Colombia	39	1.2	74	2.0
Peru	46	1.4	58	1.6
Paraguay	22	.7	56	1.5
Nicaragua	49	1.4	56	1.5
Venezuela	38	1.1	51	1.4
Haiti	41	1.2	47	1.3
Honduras	50	1.5	46	1.3
El Salvador	15	.4	39	1.1
Dominican Republic	25	.7	38	1.0
Ecuador	31	.9	29	0.8
Cuba	25	.7	25	0.6
Others[b]	30	.9	28	0.8
Latin America	3379		3651	

a/ Cowpeas were deleted from the Brazilian bean production estimates. Cowpeas were an estimated 22.5 percent of bean production in the Brazilian Northeast and 7.5 percent of total Brazilian bean production. These estimates were based upon beans and cowpeas maintaining the same production shares as in the 1966-1977 period according to unpublished CFP (the Brazilian Commission for Financing Production of agricultural commodities) data.

b/ Includes those countries producing less than 0.5 percent of Latin American production in 1976-1978.

Source: Updated from Sanders and Alvarez (45).

Table 3.2

Production, Trade, and Consumption of Edible Legumes[a] in Latin America, 1963-65 and 1975-77

Country	Mean 1963-1965				Mean 1975-1977			
	Total Production	+Imports -Exports	Net Domestic Consumption[b]	Apparent Per Capita Consumption	Total Production	+Imports -Exports	Net Domestic Consumption[b]	Apparent Per Capita Consumption
	1000 tons			- kg/year -	1000 tons			- kg/year -
Exporters								
Argentina	85	-18.2	66.8	3.0	213	-124.9	88.1	3.4
Mexico	969	-22.9	946.1	22.9	999	-59.1	939.9	15.1
Chile	88	-27.1	60.9	7.3	116	-35.7	80.3	7.7
Colombia	91	2.4	93.4	5.2	126	-5.6	120.4	4.9
Nicaragua	45	-2.0	43.0	20.8	53	-2.5	51.5	22.9
Honduras	50	-18.0	32.0	14.3	44	-2.1	41.9	14.8
Peru	105	1.8	106.8	9.4	105	-0.6	104.4	6.5
Bolivia	10	0.3	9.7	2.5	17	-0.1	16.9	2.9
Importers								
Cuba	27	61.5	88.5	11.8	25	97.9	122.9	13.0
Venezuela	43	32.4	75.4	8.4	50	45.4	95.4	7.7
Brazil	2123	7.9	2130.9	26.6	2220	12.3	2232.3	20.4
Guatemala	59	2.3	61.3	13.7	76	6.4	82.4	13.1
El Salvador	15	15.2	30.2	10.7	42	6.3	48.3	11.7
Dominican Republic	50	5.4	55.4	15.4	57	5.4	62.4	12.8
Panama	7	3.4	10.4	8.7	6	2.8	8.8	5.1
Uruguay	7	1.5	8.5	3.6	5	1.2	6.2	2.1
Costa Rica	15	1.0	16.0	11.2	15	0.8	15.8	7.9
Haiti	43	0.5	43.5	10.6	87	0.6	87.6	18.8
Ecuador	65	0.1	65.1	13.3	50	0.6	50.6	7.0
Paraguay	26	-1.0	25.0	12.9	66	0.0	66.0	23.7
Others[d]	19	23.2	43.2	5.2	17	47.3	64.3	9.6
Latin America	3942	69.7	4012	16.8	4390	-3.6	4386	13.7

a/ Includes all edible legumes as defined by FAO. See the Appendix of Sanders and Alvarez.

b/ Sum of the two previous columns, i.e. production plus imports minus exports. No adjustments for losses, seed use or animal feed utilization were made.

c/ The previous column, Net Domestic Consumption, divided by the population with the qualification on utilization in b/.

d/ Includes Guyana, Jamaica, Surinam, Trinidad and Tobago, Puerto Rico, Belize and other Caribbean islands which either produce or import legumes.

Source: Updating of Sanders and Alvarez (45).

Table 3.3

Area, Production and Yields of Beans in the Brazilian States and Regions, 1976/77 to 1978/79

Regions	1976-1977			1977-1978			1978-1979[a]		
	Area (1000ha)	Production (1000t)	Yields (kg/ha)	Area (1000ha)	Production (1000t)	Yields (kg/ha)	Area (1000ha)	Production (1000t)	Yields (kg/ha)
Paraná	809.6	576.9	713	744.0	507.0	681	746.5	503.5	674
São Paulo	349.5	201.6	577	485.6	230.3	474	351.5	231.1	657
Minas Gerais	598.5	283.4	474	559.4	277.5	496	449.9	210.8	469
Santa Catarina	188.9	134.5	712	195.1	123.1	631	232.4	191.5	824
Rio Grande do Sul	175.0	109.5	626	203.7	132.3	650	178.3	136.7	167
Goiás	212.2	86.8	409	207.6	78.4	378	199.4	72.3	362
Mato Grosso	115.5	88.6	767	113.0	60.5	535	6.12	42.5	694
Espírito Santo	86.8	41.1	474	86.7	41.6	480	75.8	27.7	365
Rio de Janeiro	12.0	7.2	600	12.0	7.2	600	12.8	9.0	703
Center-South	2,548	1,530	600	2,607	1,458	559	2,308	1,425	618
North-Northeast[b]	...	582	...	...	567	...	...	557	...
Brazil	...	2,112	...	...	2,025	...	...	1,982	...

a/ Preliminary estimates.

b/ Adjusted from the IEA data with the assumption that the same percentage of Brazilian bean are cowpeas, 7.5 percent of the Brazilian total or 22.5 percent of North-Northeast bean production as during the period 1966-77. See. J. H. Sanders and G. H. Nicoleti. (46).

Source: Instituto de Economia Agricola (IEA), p.135. (30).

Table 3.4

Demand Components and Trends and Production Trends of Beans in Latin America, 1965-1978

Country	Growth Rates		Income Elasticity of Demand for Pulses	Growth Rates	
	Per Capita GNP	Human Population[a]		Demand[b]	Production
	$(\dot{y})$ %	$(\dot{p})$	(Ey)	$(\dot{d})$ %	
Brazil	4.2	2.70	0.03	2.83	-0.59
Mexico	2.8	3.76	-0.16	3.31	-0.40
Argentina	2.8	1.35	0.12	1.69	16.46
Chile	0.6	1.64	0.30	1.82	1.88
Guatemala	2.8	3.13	0.40	4.22	2.83
Colombia	2.7	2.68	0.50	4.03	6.39
Honduras	1.8	2.19	0.40	2.91	-1.38
Nicaragua	3.5	2.99	0.20	3.69	0.49
Haiti	0.2	1.61	0.44	1.70	1.41
El Salvador	1.8	2.91	0.40	3.63	7.53
Peru	2.5	2.92	0.60	4.42	0.88
Venezuela	2.2	3.13	0.30	3.79	1.73
Dominican Republic	3.4	2.91	0.40	4.27	4.20
Ecuador	3.8	3.20	0.50	5.10	-2.26
Costa Rica	2.9	2.67	0.30	3.54	-0.04
Panama	3.8	2.95	0.25	3.90	-4.68
Uruguay	0.4	0.15	0.10	0.55	2.14
Latin America	3.0	2.72	0.08	2.96	0.55

a/ Population growth estimates are for the period 1960-1976.

b/ Demand growth is the sum of population growth plus the income elasticity of demand for pulses from FAO times the per capital GDP growth. The third interaction term was considered to be trivial due to the generally low income elasticities of demand.

Source: Updated from Sanders and Alvarez (45).

Table 3.5

Bean Yields in Latin American Countries and North America, 1964-66 and 1976-78

Country	Mean 1964-66	Mean 1976-78
	----- kg/ha -----	
Brazil	655	592
Mexico	431	492
Argentina	1019	1018
Chile	1241	1010
Colombia	542	680
Guatemala	651	563
Nicaragua	942	779
Honduras	676	533
El Salvador	576	736
Peru	920	793
Venezuela	427	502
Dominican Republic	658	864
Ecuador	477	473
United States	1370	1404
Canada	1630	1484

Source: Updated from Sanders and Alvarez (45).

Table 3.6

Growth Rates[a] of Population, Bean Production, Area, and Yields, 1965-1978

Country	Population	Production	Area	Yield
Brazil	2.70	-0.59	2.46	-3.05
Mexico	3.76	-0.40	-2.52	2.12
Argentina	1.35	16.46	15.40	1.06
Colombia	2.68	6.39	3.16	3.23
Cuba	1.82	0.61	0.00	0.61
Chile	1.64	1.88	4.32	-2.44
Ecuador	3.20	-2.25	-1.04	-1.22
El Salvador	2.91	7.53	6.40	1.13
Guatemala	3.13	2.83	3.53	-0.70
Haiti	1.61	1.41	0.37	1.04
Honduras	2.19	-1.38	1.48	-2.86
Nicaragua	2.99	0.49	2.27	-1.78
Panama	2.95	-4.68	-2.60	-2.08
Peru	2.92	0.88	1.38	-0.50
Dominican Republic	2.91	4.20	2.65	1.55
Uruguay	0.15	2.14	0.06	2.08
Venezuela	3.13	1.73	0.27	1.46
Latin America	2.72	0.32	1.12	-0.80

a/ Estimated with the semi-log model $LY = A + bX$

where:

LY is the log to the base e

"A" and "b" are the parameters of the regression and

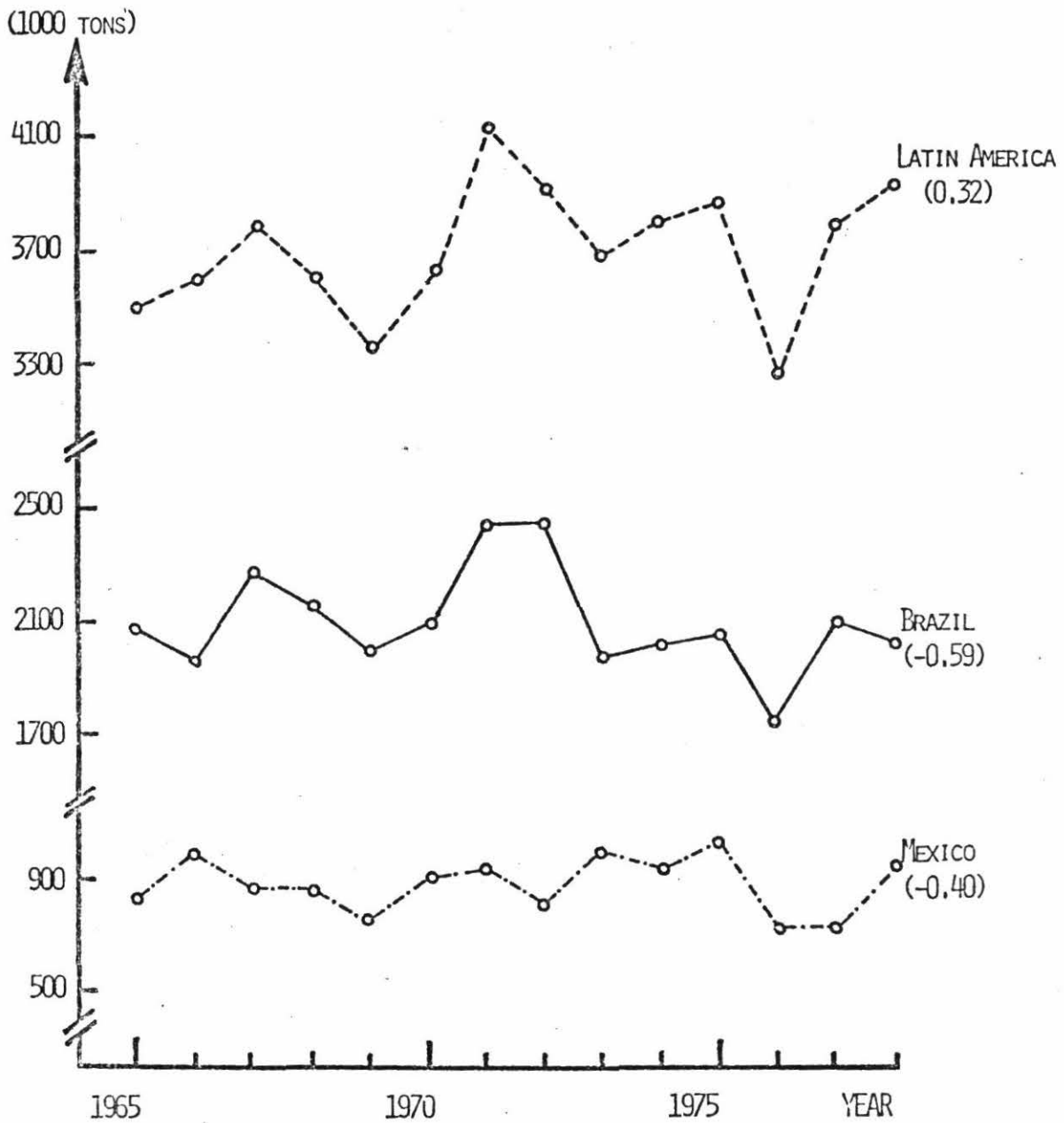
"X" is the trend term.

Deriving LP with respect to the trend terms gives b, or the geometric growth rate multiplied by 100.

Source: Updated from Sanders and Alvarez (45).

FIGURE 3.1

BEAN PRODUCTION IN LATIN AMERICA, BRAZIL AND MEXICO, 1965-1978

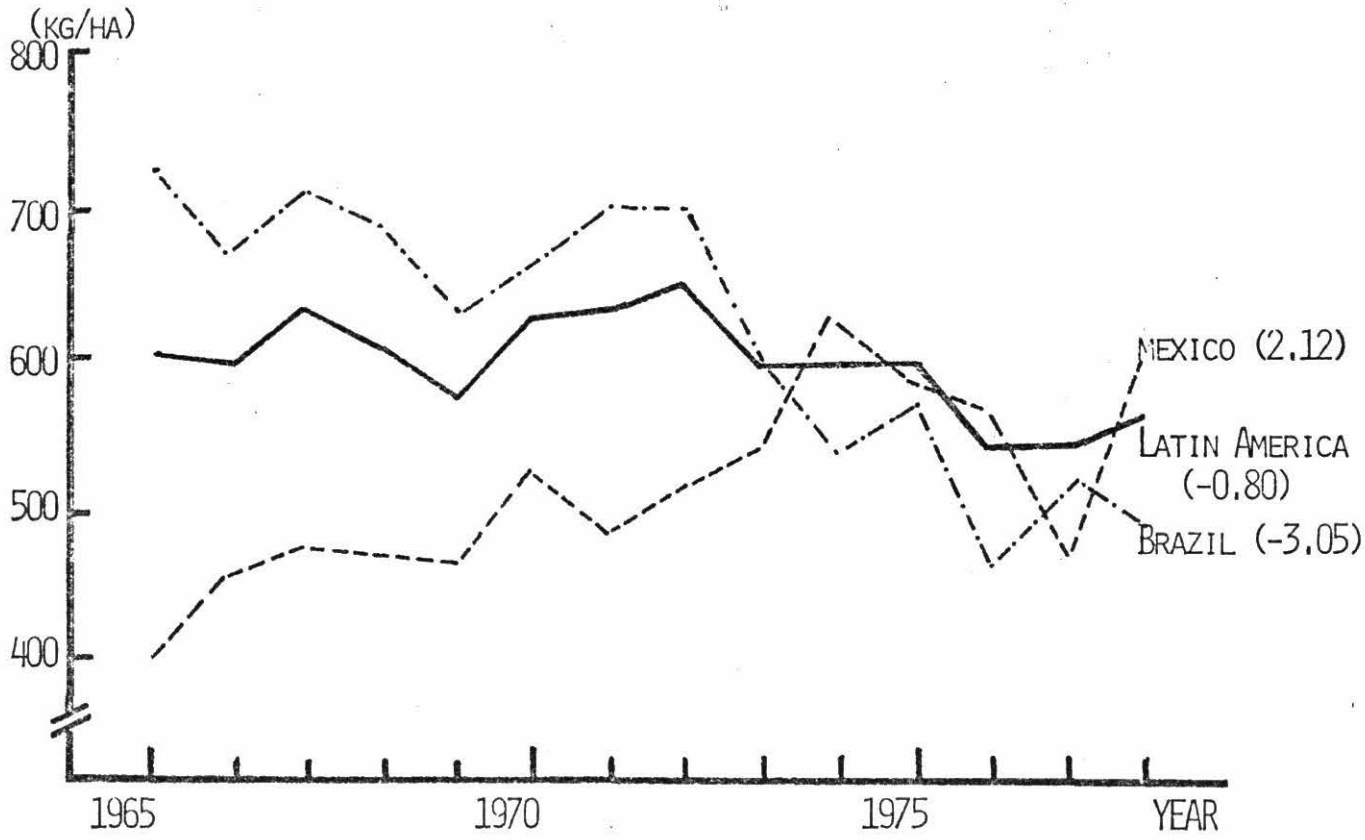


(GEOMETRIC GROWTH RATES ARE INCLUDED IN PARENTHESES)

SOURCE: UPDATED FROM SANDERS AND ALVAREZ (45).

FIGURE 3.2

DRY BEAN YIELDS OF LATIN AMERICA, BRAZIL AND MEXICO, 1965-1978

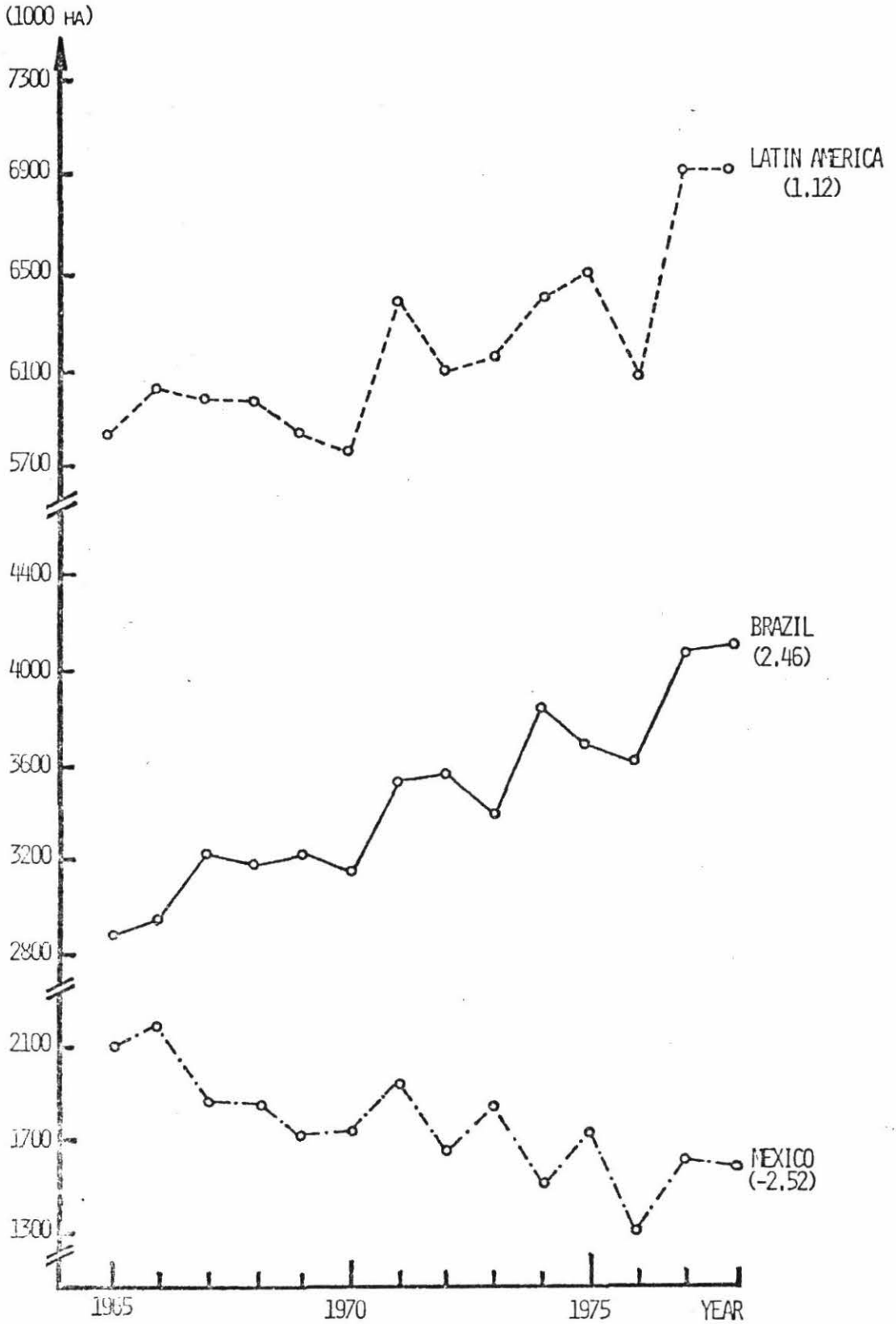


(GEOMETRIC GROWTH RATES ARE IN PARENTHESES)

SOURCE: UPDATED FROM SANDERS AND ALVAREZ (45).

FIGURE 3.3

AREA IN BEANS IN LATIN AMERICA, BRAZIL AND MEXICO

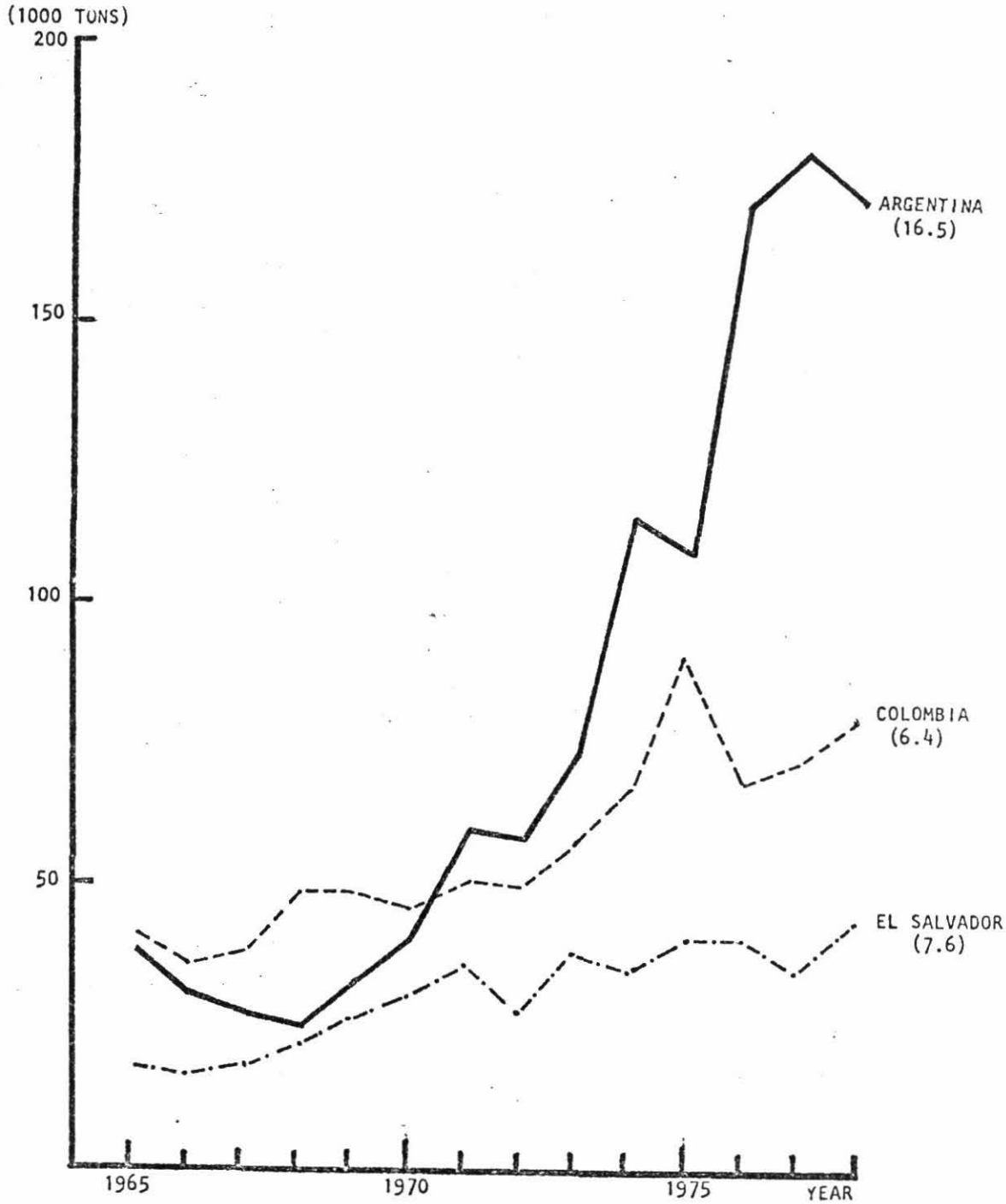


(GEOMETRIC GROWTH RATES ARE INCLUDED IN PARENTHESES)

SOURCE: UPDATED FROM SANDERS AND ALVAREZ (45).

FIGURE 3.4

BEAN PRODUCTION IN LATIN AMERICAN COUNTRIES WITH RAPIDLY INCREASING PRODUCTION, 1965-78

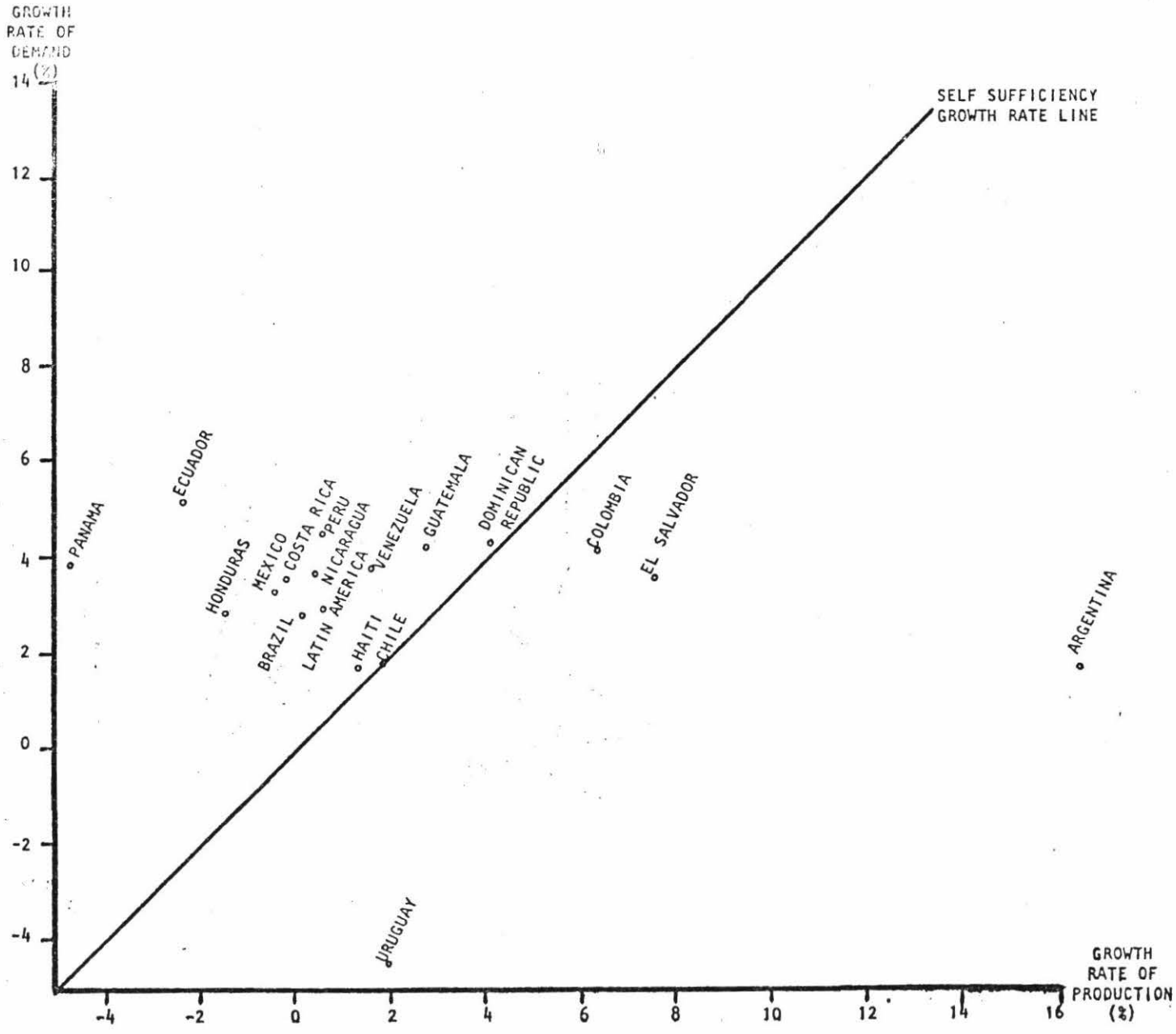


(THE GEOMETRIC GROWTH RATES ARE INCLUDED IN PARENTHESES)

SOURCE: UPDATED FROM SANDERS AND ALVAREZ (45).

FIGURE 3.5

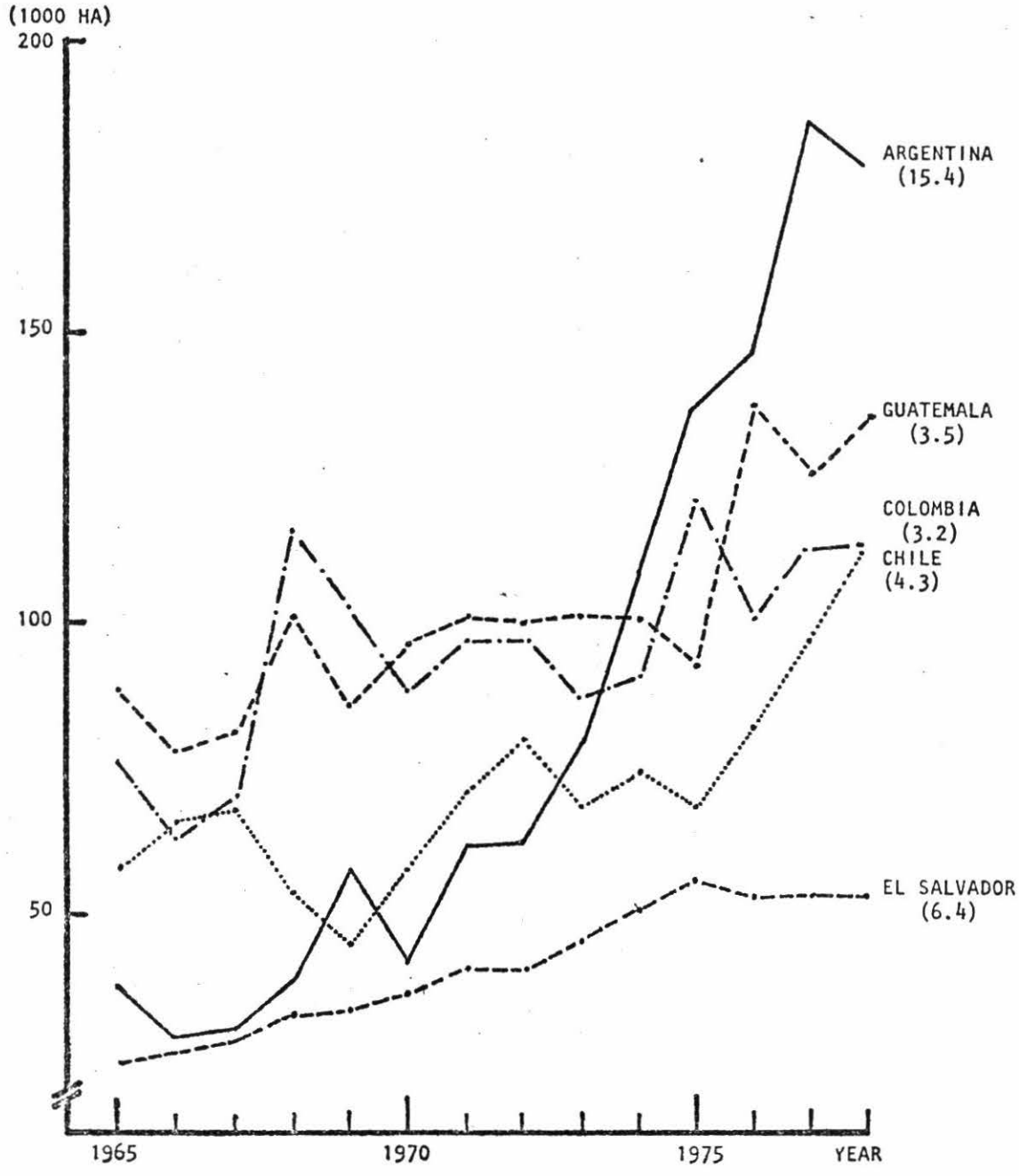
GROWTH RATES OF DEMAND AND PRODUCTION OF BEANS IN LATIN AMERICAN COUNTRIES, 1965-1978



SOURCE: SAME AS TABLE 3.4

FIGURE 3.6

BEAN AREA IN LATIN AMERICAN COUNTRIES WITH RAPIDLY INCREASING AREA (EXCLUDING BRAZIL), 1965 - 1978



(GEOMETRIC GROWTH RATES ARE INCLUDED IN PARENTHESES)

SOURCE: UPDATED FROM SANDERS AND ALVAREZ (49).