LIES, DAMN LIES, AND ARGENTINE GDP

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''Statistics are the poetry of Latin America'' was Frank Tannenbaum's discreet version of ''there are lies, damn lies, and statistics.'' This is a widespread enough view, even now, when numbers are fashionable, and a fair number of my colleagues suggest *any* series will do to illustrate their well-conceived articles. A few skeptics refuse to go in for misplaced fashion. A Mexican economist, working in the statistics in the boondocks, said he was told to apply a correction coefficient to his numbers, to make them consistent with his boss's earlier reports. He quit, and became an essayist. An Argentine economist said that when *his* division head wanted to show growth, the investigators were sent to big firms; slumps were reported by surveying the output of small firms.

There are a number of reasons for tampering with figures. Firms need to show small output to avoid taxes; the governments need, on the one hand, to ignore output so that firms can skip paying taxes and at least stay in business, while, on the other hand, they need to show high output to attract investment and, sometimes, to collect taxes from firms that can afford it. White-collar workers need figures that are consistent, so as not to be fired for incompetence, and competing agencies need figures slightly different from each other, to prove that their staffs should continue to be supported. Last, and least, researchers occasionally force their informants to provide figures, despite the fact that they do not exist, so that technical studies can be carried out.

In times of political strife, new statistics are needed to show your enemies' incompetence and, by contrast, spectacular growth under your management. It is a matter of ironic archaeology to figure out which, if any, statistics influenced government decision makers, or even accurately reflected economic growth.

Argentine statistics have been influenced by many of these considerations, and, even more, by technical ones: Six alternate series of manufacturing output are presented here, along with a skeleton key to a numerological wake, and some indications of the implications of each of the series for economic growth.

Argentine gross domestic product (GDP) is the total output pro-
duced within Argentina during any one year. It differs from the United
States concept of gross national product, which is the total output pro-
duced by factors of production owned by nationals, whether the factors
are located within the nation or abroad. Thus, interest payments from
Argentina to the United States arising from direct United States invest-
ment in Argentina are included in Argentine gross domestic product as
the economic activity took place in Argentina; they are also included in
United States gross national product, as the capital on which interest was
received was owned by United States citizens. The United Nations has
recently adopted gross domestic product for its national accounts year-
book; it is this concept which is employed throughout this essay.

Environmentalists aside, gross domestic product is often taken as
an indicator of economic welfare. If it rises, a nation is successful; if it rises
more rapidly than population, average citizens are better off; if the poor
get rich as fast as the rich get richer, moderate social justice is perceived.
Rather than quibble with summary judgments, I wish to explore whether
gross domestic product can be measured accurately.

The first problem is the distinction between changes in prices and
changes in output. If the price of eggs doubles, the dollar value of eggs
doubles; even if income doubles, no one is better off than before: There are
the same number of eggs. The same holds true for gross domestic product.
When it is reported in prices paid in the year in which it was produced, it is
"nominal." When output for each year is valued at any *one* year's prices,
so that price changes are not included in the gross domestic product, it is
"real." Consider the following example: Suppose that Argentina were to
produce ice cream and whiskey, at the prices and quantities indicated in
table 1.

T A B L E 1 . Hypothetical Real Product Index

Year	Ice Cream		Whiskey		Nominal GDP	Real[a] GDP	Real[b] GDP
	Price	Quantity	Price	Quantity			
1	10	1	20	100	2,010	2,010	6,020
2	20	2	60	5	340	300	340

[a]Valued in year 1 prices.
[b]Valued in year 2 prices.

Nominal GDP the first year is 2,010; the second year, 340. If the
quantity for both years is valued at prices which prevailed during the first

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year—i.e., the "base year" is year one—domestic product is 2,010 during year one, 300 during year two. If the quantity for both years is valued at prices which prevailed during the second year, real gross domestic product is 6,020 the first year, 340 during the second year. The sharply dissimilar results are obtained because the price of ice cream was one half that of whiskey during year one, but only one third that of whiskey during year two. Relative prices between various products are not the same from year to year; the results of comparisons of gross domestic product between years depend upon which year's prices are chosen to value output.

Relative prices between various products have fluctuated widely throughout Argentine history. For example, if Argentine GDP is valued at 1950 prices, the share of industry in gross domestic product is over-estimated, because 1950 was a year in which industrial prices were much higher in relation to the prices obtained in the rest of the economy than is normal either in Argentina or in other countries. The exaggerated industrial share of GDP, compared to per capita product, implies a less efficient industry than would be the case with a correctly estimated smaller industrial sector. Further, if the overvaluation of industry is greater than the undervaluation of agriculture, total product in earlier years is overstated, and the growth rate is understated. An estimate of the distortion of estimates of real GDP arising from a poorly chosen base year is given by comparing Argentine real GDP growth rates using a 1950 base year to Argentine real GDP growth rates using an average of 1935–39 prices as a base year. The 1935–39 average prices are heavily favorable to agriculture, relative to industry. Conservatives usually state that these are closest to average world prices between sectors, and therefore should be used to estimate real product. Table 2 indicates that real growth rate estimates may vary by almost fifty per cent, depending on the relative prices chosen.

T A B L E 2 . *Estimates of Growth Rates of Real Gross Domestic Product, 1900/1906, 1906/1910, 1910/1913, and 1913/1917*

Years	1950 Base Year	1935–39 Base Year
1900/1906	60.0	54.0
1906/1910	26.2	22.4
1910/1913	11.3	16.2
1913/1917	−19.6	−13.6

Source: 1950 Base Year—Economic Commission for Latin America, *El desarrollo económico de la Argentina*, 3 vols. (Mexico: 1959). Mimeographed Appendix E/CN.12/429/Add. 4; 1935–39 Base-Year—Laura Randall, *A Comparative Economic History of Latin America; Argentina, Brazil, Mexico and Peru, 1500–1914* (New York: Emerson Hall, 1975), chap. 7.

Recent estimates of output are constructed in ways that take account of the fact that not all of the price of a product is due to the work performed by the firm which manufactures it: The price of a product of a factory or industry includes the price of materials plus the value of the net product of operations performed in a factory. In this case, the price used in constructing an output index is the price of the value added by the factory per unit of output, rather than the final sales price. The problem of relative prices between categories of goods applies to value-added prices, as well as to final sale prices.

In the six estimates presented, price weights were chosen as follows: Economic Commission for Latin America (CEPAL), 1950; National Development Council (CONADE), 1960; Central Bank (BCRA), 1960; Víctor Elías (ELÍAS), 1960; and Hugh Schwartz (two series, SCHWARTZ A, SCHWARTZ B), 1943. Note that Schwartz, wherever possible, worked directly with physical production quantities, that he advocates on the grounds that technological change was relatively unimportant.

The second problem in measuring real gross domestic product is that of coverage. Various censuses of manufacturing production are not entirely comparable because the definition of manufacturing activity has changed over time. Work begun in the late 1950s by the Central Bank, the National Development Council, Hugh Schwartz, and Víctor Elías has yielded estimates adjusted to place manufacturing output indices for various years on a comparable basis.

Between census years, estimates of production are made by sampling, in which the production of selected firms is used to estimate total production. The importance given to each of the firms' output in the estimate of total production is based on the firm's share of total output in a base (census) year. Problems arise when new industries begin production after the base year and are not included in the index, or when old industries, with large base year weights, decline suddenly. Schwartz defends his choice of 1943 weights on the grounds that a number of industries were founded or strikingly expanded during the late 1950s. "As a consequence, the use of 1960 as a base year would mean the assignment of large weights to branches of production which were virtually nonexistent between 1945 and 1958. . . . In addition, some industries which grew in relative importance between 1943 and the mid-1950s declined in relative importance thereafter, and, in a few cases, may have been of even less weight in 1960 than they were in 1943."[1] Schwartz indicates that some of the assumptions made in preparing his estimates overstate the rise in industrial production, while the exclusion of some new products understates it. The Economic Commission for Latin America, where practicable, followed a procedure similar to that of Schwartz.

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Before 1935, 1950 value added weights were used in its estimates of gross domestic product. After 1935, 1943 weights were used. The Central Bank used 1960 weights.

Coverage by census is greater than coverage by sample. Schwartz and Elías obtained estimates of production between census years by interpolation. Schwartz based his index for 1946, 1948, 1950, and 1953 on the industrial censuses of these years. The index for the other years between 1943 and 1953 was compiled by modifying the official production index to make it consistent with the census data, "by attributing to each year a modification of the official production index by a percentage midway between that indicated by the two surrounding industrial censuses for 1947 and 1949, and either one-third or two-thirds of the difference between the two surrounding censuses in the case of the other years."[2] In the case of the metallurgical, metalworking, and machinery industries, the 1946, 1948, 1950, and 1953 calculations were based on a larger group of products than had been the case for the original 1943 calculation.[3] Schwartz's estimate A for 1954–61 was based on data for Argentina; his estimate B for 1954–60 was based on data for the province of Buenos Aires.[4]

Elías used a slightly different procedure of interpolation. The ratio of output based on the census to output based on a sample for census years was used to estimate output for intercensal years. In Elías's formula, where V^s is the index of physical production based on sample data, $V_t = V_t^s [(V_n^c/V_n^s) (1 - t/k) + (V_0^c/V_0^s) (t/k)]$, where: V_t: Estimated value added for period t (between censuses); V_t^s: Sample value added for period t (production index); V_n^c: Census value added for period n (upper census year); V_n^s: Sample value added for period n (production index); V_0^c: Census value added for period o (lower census year); V_0^s: Sample value added for period o (production index); k: Number of years between census years for which the interpolation is made (which could be different for each intercensal period).[5]

Elías's estimates take account of the fact that "the census data from 1946 forward are gross of indirect taxes, while those before 1946 are net of indirect taxes. Therefore for the years before 1946 we neglected the census data and instead used the sample estimates with 1946 benchmarked to the census."[6] None of the series of output indices is adjusted for changes in the quality of products.

Although the discussion, so far, has been technical, the results are political: The estimates of the increase in real manufacturing output under Perón (1943–55) range from that of the Central Bank, 47 per cent, to that of Schwartz B, 137 percent. Only the Central Bank indicates that Argentine manufacture grew faster after Perón's ouster than before it. Elías and the

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National Development Council (CONADE) indicate a slight fall off in manufacturing growth 1955–60 compared to 1950–55, while Schwartz A indicates that the rate of growth of real output fell by 50 percent! (See table 3.)

T A B L E 3 . Real Manufacturing Growth Rate, 1943–55, 1950–55, and 1955–60: Six Estimates

YEARS	BCRA	CONADE	CEPAL	ELÍAS	SCHWARTZ A	B
1943–55	47.0	79.0	65.0	80.0	133.0	137.0
1950–55	21.4	21.7	10.5	15.6	39.9	42.2
1955–60	23.3	19.0	n.a.	14.3	20.7	25.2

Source: Schwartz, "The Argentine Experience," appendix.

Although the Central Bank figures are low, they are not collected on the basis of political considerations: The underreporting for industries which Perón favored is no greater than that for those he did not.[7]

The implications of Schwartz's estimates for evaluating the efficiency of Argentine economic growth are interesting. According to official statistics, Argentina invested 17 percent of its product under Perón, while its growth rate was 3.6 percent. This implies a wait of five years to repay the initial investment. The standard estimate of payback period in Argentina is three years; the official figures are not credible. If the true growth of the economy is as much above the officially reported growth as the Schwartz estimates are above the Central Bank estimates, then it would take two and a half years to repay initial investment, and Argentine industry would be evaluated as much more efficient than official estimates imply.[8]

Whose estimate of industrial product is correct? Jeane Kirkpatrick indicates that Perón's adherents are far more concerned with how well they eat than with how much political power they wield.[9] Nowadays, Perón's supporters can vote. Unless their support of Perón stems from a mindless and stomachless charisma, Schwartz's estimates are correct, and carping at Argentine economic policy and performance (based, alas, on official Argentine figures) very much mistaken.

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APPENDIX

Six Estimates of Argentine Manufacturing Output, 1935–63

			Total				
YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	*SCHWARTZ*	B
1935	74.2	81.8	72.3	68.2	——		——
1936	79.0	——	76.6	72.6	——		——
1937	83.9	82.9	80.9	77.0	——		——
1938	87.2	——	85.1	81.7	——		——
1939	90.6	91.4	87.2	84.8	——		——
1940	90.7	——	87.2	83.1	——		——
1941	94.3	93.0	91.5	86.4	——		——
1942	95.7	77.6	95.7	95.8	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	113.4	111.7	110.6	109.8		115.1	
1945	114.2	110.7	108.5	104.5		117.6	
1946	128.8	121.6	119.1	114.0		134.7	
1947	148.5	137.4	136.2	132.7		156.0	
1948	150.3	139.9	142.6	128.9		158.5	
1949	144.9	144.2	142.6	120.0		157.3	
1950	149.3	155.8	146.8	121.2		166.5	
1951	152.9	158.0	148.9	124.5		183.6	
1952	141.8	149.4	146.8	122.1		182.2	
1953	138.8	149.4	146.8	121.4		190.0	
1954	150.7	162.6	159.6	131.0	207.1		212.3
1955	165.1	180.0	178.7	147.2	232.9		236.7
1956	——	181.9	189.4	157.4	247.4		257.3
1957	——	190.1	202.1	169.7	265.2		271.7
1958	——	209.9	217.0	183.8	286.7		283.9
1959	——	192.2	202.1	165.0	263.9		277.0
1960	——	205.8	212.8	181.5	281.0		296.4
1961	——	234.0	229.8	199.6	304.4		——
1962	——	218.7	214.9	188.6	——		——
1963	——	227.2	202.1	180.9	——		——

Sources:
CEPAL: United Nations Economic Commission for Latin America, *El desarrollo económico de la Argentina*, mimeographed appendix, E/CN.12/429/Add. 4.
ELÍAS: Victor Jorge Elías, "Estimates of Value Added, Capital and Labor in Argentine Manufacturing, 1935–1963" (Ph.D. diss., University of Chicago, 1969).
CONADE: Presidencia de la Nación, Consejo Nacional de Desarrollo, *Cuentas nacionales de la República Argentina*.

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Building Materials and Glassware

YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	SCHWARTZ	B
1935	——	63.3	——	——	——		——
1936	——	——	——	——	——		——
1937	67.4	67.3	67.8	63.4	——		——
1938	——	——	——	——	——		——
1939	75.9	75.8	76.8	72.9	——		——
1940	——	——	——	——	——		——
1941	83.2	83.3	83.9	80.6	——		——
1942	——	84.9	——	——	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	101.5	101.4	101.8	102.2		104.7	
1945	106.0	106.0	107.1	105.4		112.7	
1946	109.2	109.2	110.7	110.2		119.6	
1947	125.0	120.6	130.4	124.2		135.7	
1948	124.8	116.4	135.7	123.1		134.5	
1949	131.5	129.1	139.3	123.3		140.4	
1950	138.7	143.0	150.0	129.3		146.7	
1951	135.8	146.1	150.0	134.0		153.0	
1952	123.0	137.5	142.9	125.9		147.0	
1953	119.6	139.0	142.9	143.4		151.0	
1954	128.7	173.6	153.6	142.2	162.0		166.4
1955	141.3	152.5	167.9	152.9	177.3		179.8
1956	——	157.3	176.8	162.6	186.8		194.5
1957	——	162.0	192.9	173.0	204.3		198.9
1958	——	167.3	200.0	156.0	211.7		223.5
1959	——	159.1	176.8	155.0	187.8		190.4
1960	——	161.0	178.6	180.6	189.2		191.3
1961	——	183.1	200.0	155.3	212.5		——
1962	——	179.2	189.3	172.9	——		——
1963	——	182.0	164.3	199.4	——		——
1964	——	——	——	——	——		——

Chemicals

YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	SCHWARTZ	B
1935	——	49.5	——	——	——		——
1936	——	——	——	——	——		——
1937	54.4	54.4	55.6	52.7	——		——
1938	——	——	——	——	——		——
1939	69.1	69.2	69.4	60.5	——		——
1940	——	——	——	——	——		——
1941	88.8	88.7	88.9	80.5	——		——
1942	——	84.9	——	——	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	113.0	112.9	111.1	119.3		113.4	
1945	105.4	105.5	105.6	99.6		106.3	
1946	110.1	110.2	108.3	99.4		111.5	
1947	124.8	130.2	122.2	121.5		132.4	
1948	123.2	133.8	130.6	116.0		136.6	
1949	122.9	150.0	138.9	107.0		140.8	
1950	135.0	183.0	147.2	118.6		159.4	
1951	139.8	192.6	152.8	122.5		171.4	
1952	125.8	179.1	155.6	121.7		162.5	
1953	123.9	181.6	158.3	127.9		167.8	
1954	135.5	207.4	183.3	137.3	196.3		196.3
1955	156.4	223.9	208.3	152.5	221.8		226.4
1956	——	229.7	219.4	150.0	235.1		258.4
1957	——	250.3	247.2	171.7	251.6		290.8
1958	——	281.0	261.1	185.7	279.1		309.4
1959	——	280.2	266.7	191.6	284.1		297.8
1960	——	274.7	277.8	204.9	296.5		269.0
1961	——	312.6	288.9	205.7	308.2		——
1962	——	291.2	272.2	215.0	——		——
1963	——	309.9	263.9	268.4	——		——
1964	——	——	——	304.7	——		——

Electrical Machinery and Apparatuses

YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	SCHWARTZ	B
1935	——	77.0	——	——	——		——
1936	——	——	——	——	——		——
1937	85.8	86.1	85.7	87.2	——		——
1938	——	——	——	——	——		——
1939	125.9	126.1	114.3	126.8	——		——

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Electrical Machinery and Apparatuses *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	SCHWARTZ	B
1940	——	——	——	——	——		——
1941	133.9	133.9	128.6	133.8	——		——
1942	——	81.2	——	——	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	97.5	97.6	85.7	95.8		97.4	
1945	93.0	93.3	85.7	93.0		92.9	
1946	131.3	131.5	128.6	126.8		130.9	
1947	194.0	189.7	171.4	194.4		198.4	
1948	272.5	259.4	214.3	267.6		285.7	
1949	275.9	300.0	242.9	269.0		305.7	
1950	316.5	386.1	285.7	321.1		368.7	
1951	354.1	432.7	357.1	349.3		444.0	
1952	401.6	489.1	414.3	422.5		536.1	
1953	383.5	470.3	528.6	446.5		548.3	
1954	407.0	487.9	642.9	509.9	657.4		611.9
1955	512.7	600.0	800.0	600.0	823.0		695.8
1956	——	576.4	885.7	556.3	917.9		739.1
1957	——	631.5	1157.1	839.4	1203.0		815.3
1958	——	593.3	1285.7	1022.5	1326.9		750.1
1959	——	590.9	1271.4	1129.6	1312.6		676.6
1960	——	606.1	1428.6	1408.5	1477.7		640.4
1961	——	708.5	1714.3	1639.4	1773.8		——
1962	——	664.8	1342.9	1371.8	——		——
1963	——	687.9	1128.6	1138.0	——		——
1964	——	——	——	1397.2	——		——

Foodstuffs and Beverages

YEAR	CEPAL	ELÍAS	CONADE	BCRA	A	SCHWARTZ	B
1935	——	87.8	——	——	——		——
1936	——	——	——	——	——		——
1937	80.0	80.0	80.0	84.2	——		——
1938	——	——	——	——	——		——
1939	87.9	87.8	87.5	89.0	——		——
1940	——	——	——	——	——		——
1941	88.5	88.4	88.8	88.8	——		——
1942	——	76.1	——	——	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	106.6	106.4	106.3	106.9		106.8	

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Foodstuffs and Beverages *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1945	98.7	98.6	98.8	93.0		99.1
1946	105.3	105.3	105.0	94.5		106.0
1947	114.4	121.4	116.3	103.0		114.7
1948	108.4	122.0	110.0	90.3		108.4
1949	109.6	117.8	113.8	90.7		110.3
1950	112.1	114.7	111.3	90.1		113.5
1951	108.1	102.6	102.5	84.4		109.1
1952	110.8	97.0	102.5	84.1		111.3
1953	116.4	93.1	105.0	83.3		116.6
1954	117.6	96.4	107.5	84.2	119.6	129.7
1955	127.6	104.8	122.5	94.5	136.0	151.0
1956	——	121.1	140.0	105.0	156.5	162.5
1957	——	118.4	136.3	102.6	151.1	153.0
1958	——	134.2	147.5	112.8	164.1	140.2
1959	——	119.2	127.5	98.9	142.1	131.5
1960	——	119.3	125.0	99.1	139.1	125.1
1961	——	128.2	123.8	104.0	137.9	——
1962	——	131.9	128.8	111.3	——	——
1963	——	136.4	135.0	114.2	——	——
1964	——	——	——	113.2	——	——

Garments

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	90.1	——	——	——	——
1936	——	——	——	——	——	——
1937	99.5	99.5	100.0	88.5	——	——
1938	——	——	——	——	——	——
1939	102.8	102.7	103.6	99.9	——	——
1940	——	——	——	——	——	——
1941	100.5	100.5	100.0	98.5	——	——
1942	——	60.5	——	——	——	——
1943	100.0	100.0	100.0	100.0		100.0
1944	118.3	118.2	117.9	101.1		118.8
1945	125.4	125.3	125.0	111.8		126.5
1946	129.1	129.0	130.4	126.3		147.7
1947	144.3	123.0	141.1	143.4		138.9
1948	178.3	107.2	160.7	178.5		162.3
1949	171.4	111.4	158.9	155.1		156.1

Garments *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1950	153.8	105.6	169.6	136.0	138.4	
1951	145.1	107.0	171.4	140.0	138.1	
1952	129.4	100.2	155.4	125.1	127.5	
1953	135.7	113.5	151.8	128.9	142.7	
1954	142.2	120.9	157.1	129.0	148.4	149.7
1955	137.8	125.8	176.8	137.7	166.4	126.3
1956	——	124.1	178.6	141.8	168.4	173.0
1957	——	116.7	187.5	143.2	176.2	169.8
1958	——	103.5	185.7	141.9	175.4	178.7
1959	——	87.9	171.4	125.8	161.8	192.4
1960	——	81.6	178.6	140.3	168.2	198.1
1961	——	102.6	178.6	119.0	168.1	——
1962	——	97.4	150.0	109.6	——	——
1963	——	91.8	125.0	132.3	——	——
1964	——	——	——	145.6	——	——
1965	——	——	——	——	——	——

Leather

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	48.6	——	——	——	——
1936	——	——	——	——	——	——
1937	51.0	51.0	50.7	54.0	——	——
1938	——	——	——	——	——	——
1939	68.6	68.6	69.0	70.7	——	——
1940	——	——	——	——	——	——
1941	79.5	79.6	78.9	81.2	——	——
1942	——	72.2	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	113.3	113.2	112.7	114.1	109.9	
1945	116.7	116.7	116.9	117.0	109.6	
1946	124.7	124.7	123.9	124.5	113.3	
1947	103.8	106.9	133.8	195.9	95.4	
1948	111.8	118.7	136.6	113.2	102.1	
1949	102.9	117.3	126.8	104.7	91.8	
1950	103.3	126.0	122.5	104.1	89.9	
1951	100.3	143.9	128.2	118.4	106.2	
1952	85.3	140.7	132.4	117.1	106.4	
1953	83.2	155.0	126.8	124.2	119.4	

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Leather *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1954	81.0	143.7	122.5	108.5	115.3	127.8
1955	84.1	141.7	121.1	121.5	114.4	133.0
1956	——	133.0	128.2	120.1	120.2	135.8
1957	——	125.2	145.1	139.7	136.2	138.6
1958	——	124.0	159.2	155.4	149.8	132.2
1959	——	102.6	160.6	157.1	150.7	125.3
1960	——	103.2	140.8	141.4	132.4	131.5
1961	——	120.0	122.5	117.0	115.7	——
1962	——	93.5	109.9	94.2	——	——
1963	——	98.5	97.2	92.5	——	——
1964	——	——	——	103.5	——	——
1965	——	——	——	106.2	——	——

Metals Excluding Machinery

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	115.1	——	——	——	——
1936	——	——	——	——	——	——
1937	133.2	133.2	130.0	132.8	——	——
1938	——	——	——	——	——	——
1939	130.6	130.7	130.0	130.4	——	——
1940	——	——	——	——	——	——
1941	125.4	125.1	125.0	125.2	——	——
1942	——	78.9	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	139.9	139.7	135.0	139.6	140.9	
1945	132.5	132.7	130.0	132.4	134.8	
1946	163.1	163.3	160.0	162.8	167.7	
1947	180.4	194.0	195.0	180.0	198.8	
1948	198.5	228.1	215.0	198.0	233.1	
1949	201.3	249.2	225.0	200.8	253.4	
1950	215.5	292.5	245.0	215.2	289.7	
1951	226.5	306.5	275.0	227.6	364.9	
1952	177.3	244.7	250.0	209.6	333.0	
1953	172.0	241.7	265.0	211.6	368.5	
1954	212.7	311.6	360.0	280.4	495.3	402.0
1955	253.4	385.4	430.0	338.0	596.2	450.7
1956	——	379.4	430.0	332.4	595.9	490.1

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Metals Excluding Machinery *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1957	——	434.2	490.0	376.8	680.3	512.2
1958	——	538.7	570.0	435.6	790.4	555.3
1959	——	478.9	480.0	387.6	665.5	562.7
1960	——	502.5	500.0	400.0	692.8	520.7
1961	——	588.4	595.0	442.0	825.1	——
1962	——	486.9	540.0	406.4	——	——
1963	——	504.0	540.0	411.2	——	——
1964	——	——	——	565.6	——	——
1965	——	——	——	626.0	——	——

Paper and Cardboard

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	52.0	——	——	——	——
1936	——	——	——	——	——	——
1937	58.9	59.1	59.3	56.4	——	——
1938	——	——	——	——	——	——
1939	75.6	75.7	75.9	73.9	——	——
1940	——	——	——	——	——	——
1941	91.2	91.3	90.7	89.5	——	——
1942	——	91.9	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	100.7	100.9	100.0	101.7	100.7	
1945	102.3	102.6	101.9	102.0	102.3	
1946	106.9	107.0	107.4	105.9	106.9	
1947	114.0	123.2	122.2	112.7	110.5	
1948	120.8	140.3	131.5	119.0	113.2	
1949	118.2	147.5	125.9	115.8	116.3	
1950	136.1	181.0	137.0	132.2	140.0	
1951	148.7	195.1	148.1	138.7	151.5	
1952	128.3	165.9	127.8	126.5	129.2	
1953	113.7	144.8	114.8	112.4	113.4	
1954	147.3	181.5	146.3	140.1	184.6	216.8
1955	173.7	206.4	170.4	194.1	192.6	222.9
1956	——	220.7	187.0	205.6	215.6	229.6
1957	——	219.0	194.4	213.6	214.3	231.4
1958	——	248.0	218.5	238.7	183.3	196.4
1959	——	249.9	216.7	206.1	225.9	——
1960	——	213.2	185.2	169.8	——	——

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Paper and Cardboard *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	SCHWARTZ B
1961	——	268.0	227.8	212.6	——	——
1962	——	265.7	222.2	205.9	——	——
1963	——	268.2	213.0	196.6	——	——
1964	——	——	——	230.9	——	——
1965	——	——	——	261.6	——	——

Petroleum Derivatives

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	SCHWARTZ B
1935	——	90.8	——	——	——	——
1936	——	——	——	——	——	——
1937	85.2	85.1	84.4	85.2	——	——
1938	——	——	——	——	——	——
1939	96.0	95.8	96.9	96.2	——	——
1940	——	——	——	——	——	——
1941	103.1	103.1	103.1	103.3	——	——
1942	——	100.7	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	97.6	97.3	96.9	97.6	97.5	
1945	93.6	93.5	93.8	93.8	93.6	
1946	113.4	113.4	112.5	113.6	113.3	
1947	119.3	140.5	118.8	119.2	121.8	
1948	138.4	187.8	140.6	138.5	144.1	
1949	139.1	195.4	143.8	139.1	147.4	
1950	172.4	249.6	178.1	172.4	185.6	
1951	171.0	243.5	175.0	181.4	183.7	
1952	185.2	258.8	190.6	184.9	198.4	
1953	194.7	267.2	200.0	195.3	208.2	
1954	206.7	284.7	212.5	206.5	220.3	219.4
1955	220.2	308.8	228.1	219.8	236.9	231.7
1956	——	322.9	234.4	226.6	242.8	230.5
1957	——	394.3	281.3	270.4	294.0	277.5
1958	——	409.5	309.4	293.2	321.9	282.9
1959	——	373.3	287.5	274.6	300.6	286.3
1960	——	381.7	312.5	295.9	325.8	306.5
1961	——	401.5	337.5	321.6	352.9	——
1962	——	430.9	384.4	370.7	——	——
1963	——	410.3	378.1	——	——	——
1964	——	——	369.8	——	——	——

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Petroleum Derivatives *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1965	———	———	389.6	———	———	———
1966	———	———	441.4	———	———	———

Printing

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	113.8	——	——	——	——
1936	——	——	——	——	——	——
1937	119.9	120.2	120.3	135.0	——	——
1938	——	——	——	——	——	——
1939	131.3	131.3	131.3	147.0	——	——
1940	——	——	——	——	——	——
1941	134.9	135.0	134.4	149.5	——	——
1942	——	81.2	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	116.6	116.7	117.2	120.4	115.4	
1945	118.9	119.0	118.8	125.0	116.4	
1946	140.8	141.0	140.6	144.8	136.4	
1947	144.2	147.5	148.4	146.8	144.5	
1948	155.9	163.0	160.9	144.6	161.5	
1949	144.1	151.0	162.5	126.3	140.6	
1950	164.5	172.7	157.8	141.3	150.5	
1951	140.0	166.8	145.3	157.6	125.5	
1952	99.8	133.2	100.0	109.4	87.7	
1953	107.2	157.8	96.9	93.0	92.1	
1954	121.5	162.8	112.5	108.3	106.5	106.1
1955	135.5	163.7	128.1	122.3	122.2	131.2
1956	——	151.2	142.2	116.0	135.0	154.1
1957	——	160.5	150.0	158.2	142.6	190.2
1958	——	166.2	156.3	199.6	148.7	201.1
1959	——	156.0	142.2	158.0	134.7	177.3
1960	——	166.7	156.3	184.2	148.6	169.0
1961	——	184.2	173.4	212.3	165.5	——
1962	——	162.2	150.0	184.3	——	——
1963	——	163.0	135.9	182.0	——	——
1964	——	——	——	188.2	——	——
1965	——	——	——	214.5	——	——
1966	——	——	——	——	——	——

Rubber

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	381.3	——	——	——	——
1936	——	——	——	——	——	——
1937	410.4	409.4	400.0	200.0	——	——
1938	——	——	——	——	——	——
1939	400.0	400.0	388.9	199.3	——	——
1940	——	——	——	——	——	——
1941	445.8	445.3	433.3	218.1	——	——
1942	——	317.2	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	94.5	93.8	88.9	109.4	94.4	
1945	90.0	90.6	88.9	94.2	90.1	
1946	347.8	348.4	344.4	210.9	347.3	
1947	619.9	709.4	577.8	343.5	618.5	
1948	601.5	775.0	588.9	371.7	600.5	
1949	540.3	764.1	544.4	344.2	591.5	
1950	497.5	765.6	511.1	329.7	592.9	
1951	711.9	1075.0	700.0	442.0	806.6	
1952	732.8	1084.4	744.4	470.3	786.9	
1953	602.5	873.4	677.8	456.5	611.5	
1954	747.3	1156.3	822.2	549.3	745.4	227.1
1955	864.7	1425.0	933.3	613.8	843.9	764.4
1956	——	1464.1	922.2	623.9	841.4	801.7
1957	——	1632.8	966.7	641.3	872.6	1684.7
1958	——	1559.4	988.9	655.1	894.0	1704.3
1959	——	1395.3	900.0	578.3	815.1	1442.5
1960	——	1562.5	1111.1	724.6	1009.0	1810.0
1961	——	1973.4	1488.9	916.7	1350.2	——
1962	——	1860.9	1455.6	867.4	——	——
1963	——	1673.4	1100.0	660.9	——	——
1964	——	——	——	839.1	——	——
1965	——	——	——	——	——	——

Textiles

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	54.4	——	——	——	——
1936	——	——	——	——	——	——
1937	62.7	62.7	63.5	43.6	——	——

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Textiles *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A		B
1938	———	———	———	———	———		———
1939	69.6	69.6	69.2	63.7	———		———
1940	———	———	———	———	———		———
1941	77.4	77.2	78.8	58.2	———		———
1942	———	78.9	———	———	———		———
1943	100.0	100.0	100.0	100.0		100.0	
1944	113.0	112.8	113.5	108.2		111.8	
1945	121.8	121.5	123.1	112.2		119.3	
1946	134.0	134.0	134.6	120.0		129.9	
1947	137.0	138.3	148.1	120.2		136.9	
1948	151.1	155.1	167.3	131.9		156.0	
1949	157.1	171.6	171.2	128.7		164.6	
1950	152.7	176.8	180.8	127.4		162.4	
1951	151.3	188.4	184.6	130.8		173.2	
1952	124.4	165.6	175.0	129.9		152.3	
1953	123.2	174.7	159.6	124.9		160.6	
1954	131.3	187.8	169.2	130.3	171.5		178.7
1955	138.8	202.1	188.5	139.7	190.5		192.7
1956	———	207.9	188.5	150.0	190.3		206.4
1957	———	196.3	196.2	143.9	198.5		183.7
1958	———	206.4	200.0	151.2	201.1		156.4
1959	———	181.4	182.7	124.7	184.0		164.0
1960	———	207.0	192.3	135.9	194.2		———
1961	———	239.8	194.2	151.6	196.7		———
1962	———	183.9	157.7	121.2	———		———
1963	———	196.5	144.2	117.5	———		———
1964	———	———	———	148.0	———		———
1965	———	———	———	170.2	———		———

Tobacco

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A		B
1935	———	91.4	———	———	———		———
1936	———	———	———	———	———		———
1937	82.7	82.8	83.1	82.6	———		———
1938	———	———	———	———	———		———
1939	91.0	92.2	91.5	90.0	———		———
1940	———	———	———	———	———		———
1941	92.1	92.2	93.2	92.1	———		———

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Tobacco *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1942	——	87.0	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	103.7	104.0	105.1	103.7	103.8	
1945	110.3	110.3	110.2	110.3	110.2	
1946	117.3	117.4	118.6	117.3	117.3	
1947	125.9	122.5	128.8	125.9	124.3	
1948	133.0	125.8	140.7	133.0	129.4	
1949	142.4	140.1	152.5	142.4	138.4	
1950	138.7	141.8	149.2	138.7	134.5	
1951	143.1	144.1	157.6	141.3	139.0	
1952	152.3	150.8	172.9	137.9	148.1	
1953	151.3	147.3	174.6	141.9	147.3	
1954	144.7	151.3	167.8	138.8	141.0	——
1955	152.6	170.6	176.3	149.2	148.8	——
1956	——	177.7	172.9	152.2	145.5	——
1957	——	187.6	171.2	156.2	145.1	——
1958	——	196.2	176.3	174.0	148.5	——
1959	——	194.8	174.6	166.1	147.3	——
1960	——	190.8	169.5	154.1	142.4	——
1961	——	198.1	174.6	172.3	146.3	——
1962	——	203.1	176.3	178.6	——	——
1963	——	205.3	174.6	175.3	——	——
1964	——	——	——	192.0	——	——
1965	——	——	——	195.8	——	——

Various Manufactures

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	56.0	——	——	——	——
1936	——	——	——	——	——	——
1937	63.2	63.5	82.2	78.9	——	——
1938	——	——	——	——	——	——
1939	70.1	71.4	88.9	82.8	——	——
1940	——	——	——	——	——	——
1941	73.5	73.6	93.3	86.8	——	——
1942	——	60.6	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	109.2	109.2	111.1	109.4	107.0	
1945	129.4	129.5	108.9	106.7	126.3	

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Various Manufactures *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1946	137.1	137.2	120.0	116.7	132.2	
1947	142.7	145.1	137.8	137.6	154.7	
1948	147.9	152.7	144.4	135.4	178.0	
1949	155.9	147.6	146.7	136.1	172.2	
1950	180.2	155.5	151.1	136.6	185.1	
1951	201.8	175.6	151.1	140.8	219.3	
1952	204.1	179.0	148.9	144.0	233.7	
1953	175.3	155.1	151.1	140.1	211.1	
1954	200.9	181.2	164.4	143.0	——	265.8
1955	192.4	177.0	184.4	153.0	——	268.1
1956	——	165.3	195.6	150.3	——	285.2
1957	——	152.1	208.9	154.8	——	332.5
1958	——	188.6	226.7	164.8	——	397.5
1959	——	175.7	208.9	168.6	——	418.4
1960	——	155.5	222.2	170.2	——	428.5
1961	——	159.7	240.0	168.6	——	——
1962	——	186.0	224.4	168.1	——	——
1963	——	208.1	213.3	156.3	——	——
1964	——	——	——	150.3	——	——
1965	——	——	——	160.9	——	——

Vehicles and Machinery Excluding Electrical

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	B
1935	——	100.0	——	——	——	——
1936	——	——	——	——	——	——
1937	81.7	111.1	81.3	61.3	——	——
1938	——	——	——	——	——	——
1939	81.8	130.9	81.3	61.5	——	——
1940	——	——	——	——	——	——
1941	79.7	98.3	81.3	51.1	——	——
1942	——	65.7	——	——	——	——
1943	100.0	100.0	100.0	100.0	100.0	
1944	108.8	108.8	112.5	111.1	109.2	
1945	114.1	114.4	118.8	115.2	114.6	
1946	137.1	137.0	137.5	145.6	138.0	
1947	233.6	226.5	206.3	282.6	222.4	
1948	186.2	174.0	206.3	219.3	167.0	
1949	139.4	176.2	193.8	138.5	143.9	

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Vehicles and Machinery Excluding Electrical *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A		B
1950	128.2	222.1	206.3	129.3		149.7	
1951	147.1	237.6	212.5	128.9		185.2	
1952	163.3	267.4	231.3	131.1		219.1	
1953	152.9	253.6	250.0	133.3		220.2	
1954	157.1	285.1	281.3	146.7	247.0		235.3
1955	179.6	354.1	318.8	175.2	280.7		262.8
1956	——	280.7	343.8	195.2	304.5		277.8
1957	——	341.4	406.3	219.6	357.1		313.9
1958	——	422.1	462.5	253.0	410.2		337.3
1959	——	387.8	456.3	239.6	401.8		369.9
1960	——	552.5	625.0	370.4	553.6		466.6
1961	——	649.7	750.0	448.1	661.6		——
1962	——	649.2	656.3	432.2	——		——
1963	——	705.0	550.0	368.9	——		——
1964	——	——	——	485.2	——		——
1965	——	——	——	554.0	——		——

Woodworking

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A		B
1935	——	67.5	——	——	——		——
1936	——	——	——	——	——		——
1937	81.2	81.2	81.0	83.4	——		——
1938	——	——	——	——	——		——
1939	78.0	78.0	77.8	73.5	——		——
1940	——	——	——	——	——		——
1941	78.7	78.8	77.8	74.7	——		——
1942	——	83.0	——	——	——		——
1943	100.0	100.0	100.0	100.0		100.0	
1944	138.6	138.8	138.1	125.4		179.0	
1945	134.2	134.3	133.3	120.2		212.3	
1946	144.1	144.2	142.9	126.5		269.8	
1947	142.4	121.3	152.4	122.9		249.8	
1948	149.2	104.8	158.7	131.5		245.5	
1949	133.9	105.2	157.1	121.5		232.8	
1950	137.4	119.3	155.6	122.6		251.3	
1951	136.4	122.6	154.0	129.4		306.1	
1952	118.4	110.2	150.8	125.6		314.9	

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Woodworking *(cont.)*

YEAR	CEPAL	ELÍAS	CONADE	BCRA	SCHWARTZ A	SCHWARTZ B
1953	123.8	118.9	146.0	148.6	380.7	
1954	126.5	117.4	151.0	160.4	391.4	394.0
1955	119.1	106.2	146.0	159.6	406.6	411.2
1956	——	101.1	150.8	185.2	397.5	427.9
1957	——	104.5	157.1	178.0	428.7	398.6
1958	——	109.7	152.4	159.3	417.6	440.9
1959	——	108.9	165.1	149.5	411.2	368.5
1960	——	132.5	160.3	171.5	413.1	363.9
1961	——	149.1	158.7	159.6	418.0	——
1962	——	101.2	158.7	141.6	——	——
1963	——	108.5	160.3	168.6	——	——
1964	——	——	141.2	187.9	——	——
1965	——	——	119.0	——	——	——

NOTES

1. Hugh H. Schwartz, ''The Argentine Experience with Industrial Credit and Protection Incentives, 1943–1958'' (Ph.D. diss., Yale University, 1967), vol. 1, p. 135. Schwartz adds that ''it would be interesting to see what growth rates would be implied by the use of 1946 weights. At that time prices were not quite as distorted from 'normal' as in the wartime year of 1943, nor did they yet have the, I believe, even greater price distortions of the Argentina of 1950.'' Schwartz prefers the 1943 weights until the late 1950s, but prefers the 1960 base for the period beginning 1957–58 (Schwartz to Randall, 12 March 1975).
2. Schwartz, ''The Argentine Experience,'' p. 132.
3. Ibid., app. M.
4. Ibid., p. 133. Note that the Schwartz indices for the years after 1953 linked together indices with different weighting systems. The analysis holds, despite this, as Schwartz's 1943 base would tend to understate industrial growth by the mid-1950s.
5. Víctor Jorge Elías, ''Estimates of Value Added, Capital and Labor in Argentine Manufacturing, 1935–1963'' (Ph.D. diss., University of Chicago, 1969), pp. 8–10.
6. Elías, ''Estimates of Value Added.''
7. Laura Randall, *An Economic History of Argentina in the Twentieth Century* (New York: Columbia University Press, forthcoming).
8. On a related point, see Daniel Schydlowsky, ''International Trade Policy in the Economic Growth of Latin America,'' in *Trade and Investment Policies in the Americas*, ed. Stephen E. Guisinger (Dallas: Southern Methodist University Press, 1973). Schwartz believes that his findings have stronger implications for the responsiveness of Argentine industrialists to financial incentives than for the efficiency of Argentine industrial growth, which he believes ''was quite uneven, with some very bright spots and some very bad areas'' (Schwartz to Randall, 12 March 1975). For an evaluation of industrialization policies according to presidential period, utilizing the data presented in this article, see Randall, *An Economic History of Argentina*.
9. Jeane Kirkpatrick, *Leader and Vanguard in Mass Society: A Study of Peronist Argentina* (Cambridge: MIT Press, 1971).