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CAPITAL STOCK IN ARGENTINA

MEASUREMENT AND CONCEPTUAL
PROBLEMS

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The authors of this work are officers of the Planning Secretariat
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The opinions herein expressed are of their own responsibility.

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I. SUMMARY AND CONCLUSIONS

1- The main objective of this work is to quantify Stock of Capital in this country. The series obtained which cover the period 1970/86, define as K_T Total Capital (includes housing construction) and as K_R Reproductive Capital.

2- During the 70s the average relation Fixed Gross Investments and Gross Domestic Product was over 21%. From 1981 this rate is sharply decreased reaching in 1985 the lowest historical record: 12.5 %.

3- As a consequence of Fixed Gross Investments decrease a stagnating trend on the Stock of Capital is observed, specially on Reproductive Capital where some items, including "Machinery and Equipment" and "Transportation Equipment" are already recording absolute declines.

4- Consequences are not only quantitative. Analyzing the years of use of the Stock of Capital it is observed that 53 % of "Machinery and Equipment for Industry and Other Activities" were on service more than 10 years and 31 % more than 15 years. These and other complementary data prove that the production machinery in this country is composed by sediments of consecutive investment flows of highly diverging time and technology; all them coexist and account for the present production.

Based on the years of use of stock it can be said that the declining trend and the low volumes in gross investments prevent the country from incorporating the required technological progress to secure a solid growth.

5- It should be pointed out that under present investment rate the attainment of a quick modernization in Reproductive Capital is not feasible since annual gross investment flows represent a small fraction of stock. Regarding "Machinery and Equipment" stock, Gross Investments reached 3.6% of stock in 1985. This means that under this level 28 years will be required to achieve its complete renewal.

6- Other point of view to analyze present "Gross Investment" level consists in identifying Replacement Investment. Thus, in 1985 with a Fixed Gross Investment reaching 12.5 % of Gross Domestic Product "the removals for termination of service life" represent almost 8 % resulting in a 4.7 % Net Investment of Gross Domestic Product. If instead of Total Capital, Reproductive Capital is specially analyzed the arising Net Investment reaches 2.3 % of Gross Domestic Product.

7- Even though low investment rates are punctually noted it is also true that there exists a marked under-utilization of capacity as a consequence of economic stagnation.

From this point of view present investment rates should be reasonable. But this implies a static horizon in accordance with no participation in international trade and the impossibility to access to new technology and to cover deficiencies and deterioration in infrastructure. This situation would be reverted through the identification of a set of projects of high social profitability and of the economic

agents to carry them out.

8- The quantitative results herein shown are restricted to the limitations and hypothesis analyzed in the Chapter of Methodology.

11. INTRODUCTION

The volume and dynamism of Stock of Capital, its sectorial orientation, its degree of utilization and technological level are highly significant factors, although not enough, to account for economic growth potential in the medium-term period. The theory of economic growth and planning models confer, as well as to the distribution matters, a substantial role to the accumulative process and the election of technologies.

The above reasons wholly justify by their own the need to count permanently with statistical series on Stock of Capital as broken down as possible. But in our country, characterized in the last decade by foreign indebtedness, gross domestic product per capital decline, precisely, a strong drop in fixed gross investment rate, the need to know the effects of said investments decrease on Capital Stock arises.

In Chapter III herein main methodological guidelines are commented on, specially the depreciation method chosen and the lifetime attributed to each asset. Problems arising from the non-homogeneity of statistical series are also discussed in this chapter.

In Chapter IV results are expressed : stock trends and composition, service life, annual investment participation in total stock, percentage of renewal investment rate on gross domestic product and the capital/product relation.

Finally, a summary of other previous calculations made in this country and a sensitivity analysis on results according to other hypothesis of service life are enclosed in the attachment.

CHART I
GROSS PRODUCT PER CAPITA
1970 Index=100

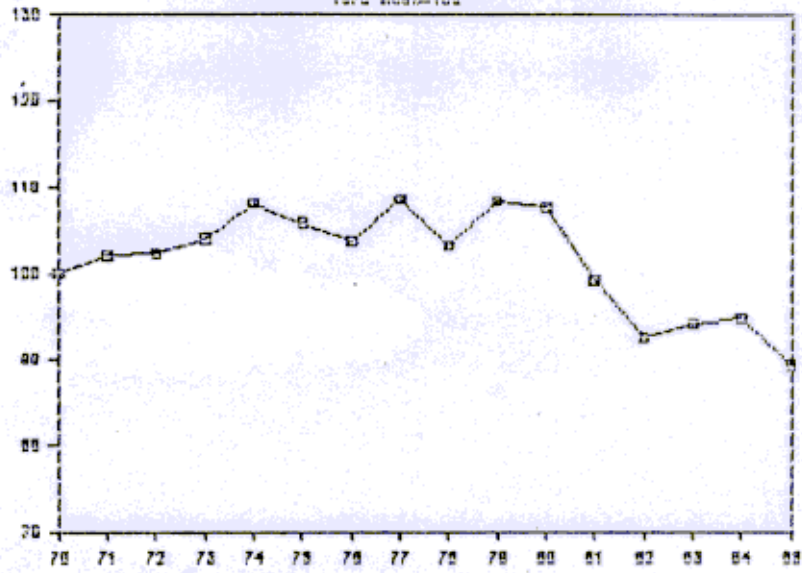
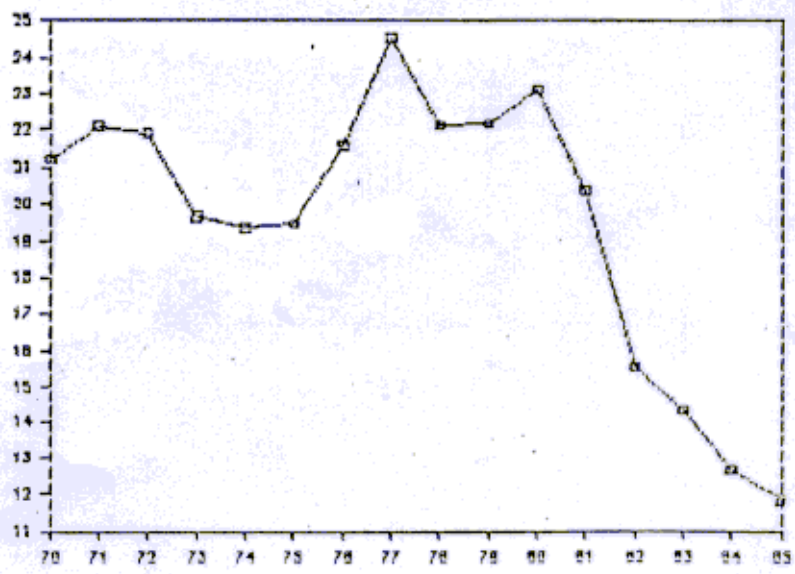


CHART II
INVESTMENT IN % OF G.D.P.



III. METHODOLOGY

Some methodological aspects are described here below. The former two do not show substantial disagreements, the situation grows complex when depreciation criteria and service life for each investment asset are determined.

a) Concepts of Capital Stock*

Two different concepts of Capital Stock are herein used.

Reproductive Stock (K_R) and
Total Capital (K_T)

Reproductive Capital is composed by those assets emerging from economic system and directly used for the production of other goods or services. This is the case of the following:

- Machinery, equipment and appliances used in manufacturing, agriculturing, building, mining, and other commercial activities and other services.
- Transportation and storage.
- Highways, electric power and communications infrastructure.
- Industrial, commercial, servicing and agricultural constructions.
- Required furniture, facilities and packing for all productive activities.

Finally, to reach Total Capital, Housing Investments must be added to items corresponding to K_R .

b) Method of Computation and Sources of Information

There exist two available ways to measure Capital Stock.

The former lies from direct surveys: census, samples and collection of balance sheets. This option, in practice, turns to be valid for specific sectorial surveys, for example textile industry, tractor industry or electric power capacity. But it shows significant operative difficulties when referred to the whole economy turning it almost impossible the attainment of a reliable survey.

* When computing the wealth of a Country in a wide sense other large range of items according to the objectives of each study, could be included besides the assets herein described. Among them are natural resources, human capital, foreign financial assets, livestock production, raw materials and products under industrial process. On the other hand, domestic financing assets, trademarks and patents, private-use automobiles, and most military investments must be specially excluded of assets stock.

The second option to measure Capital Stock was adopted herein and consists in accumulating annual investment flows during a determined period. This period is limited by the expected useful lifetime of investment assets. This measurement criteria, known as Permanent Inventory Method, uses data arising from Government National Accounts expressed in constant values; it becomes the generally used method for its simplicity and wide scope.

The herein used annual investment flows expressed in 1970 prices were supplied by the Argentine Central Bank (Banco Central de la Republica Argentina) The following sources were used for the years when the Central Bank did not count with information in 1970's prices: "Accounting System of Product and Income in Argentina", Central Bank, 1975; "Product and Income in the Argentine Republic during the 1935-54 period", Economic Affairs Department, 1955, and "The Economic Development in Argentina", United Nations, 1959 (statistical volume); this information was prepared on different prices that obliged us to match series expressed in different bases with the restrictions imposed by different internal structure in physical terms, as well as in relative prices.

c) Methods of Depreciation

The depreciation criteria to be adopted must express, as faithfully as possible, the actual production capacity of existing assets.

The first method consists in keeping unchanged the value of investments during its useful period depreciating them the date of its expected removal from productive process. This method describing a "rectangular survival curve" receives a rather unclear name by specialized literature, like "Gross Stock", "Stock Net of Removals", "Light Bulb Method" (we suggest a clearer title: Capital Stock with unic depreciation).

Other depreciation method, generally used in accounting records and/or taxation, is based on an annual rate directly proportional to the expected service life for each asset and its purchase value. In order that this coefficient does not lose acquisition power, this criteria is perfected through revaluation on original values and on depreciating figures. This method that describes a "lineal survival curve" is also confusedly known as "Net Stock" (we suggest Assets Stock with lineal depreciation).

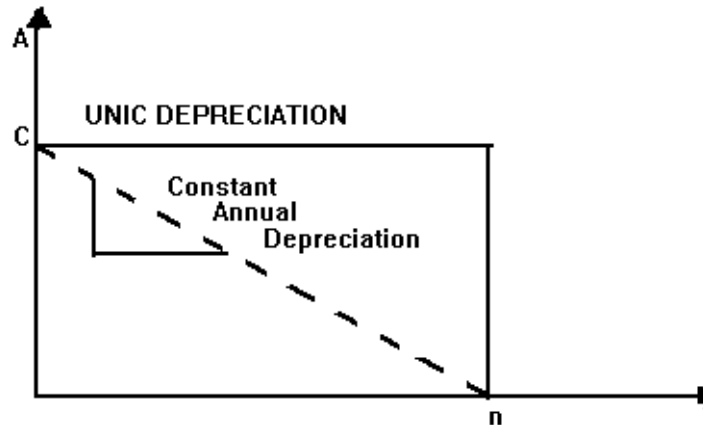
The following chart shows the different ways followed by the value of the same asset through its service life according to the above mentioned methods.

* Robert COEN : "Investment Behaviours, The Measurement of Depreciation, and Tax Policy".

CHART III

SURVIVAL CURVES OF INVESTMENTS

- According to different depreciation methods-



C: Original cost of asset

n: service life

According to the "annual lineal depreciation" residual value of investments goes downward during all service life (according to downgrade c/n). According to "unic depreciation" the value is stable until "n", when the asset is dropped out of stock.

Neither method is perfect.

The first can overvalue stock if productive capacity of working asset is deteriorated through time. Nevertheless, it should be noted that maintenance and repair works substantially reduce this effect.

The second method, annual depreciation, produces the contrary effect, it moves far from reality and strongly undervalues actual production capacity because it assumes that investments immediately and gradually lose their original productivity level. When this method is used it may occur that an asset is being depreciated even before starting working if the maturity period of the investment is longer than one year.

There also exist other depreciation methods which may be useful for specific cases of initially low or high productivity, for example the method that takes into account that a machine can increase its production capacity after a period of installation, and then, decrease in production capacity slowly, and in other cases, the method accepts that productivity declines slowly during the first year and more accelerated during the last years. These and other variations gives place to different survival curves.

As final results are highly sensitive to the depreciation method chosen this subject deserves priority attention.

In our opinion the one-time depreciation method at the termination of useful life, is which best suits the economic reality. This evidence arises from different empiric surveys where it was verified that habitual maintenance and repair works tend to keep original productive capacity until asset is withdrawn from stock. These are the reasons why we chose this depreciation method. (**).

To be consistent with the chosen method, which attributes to investments assets a complete productive capacity until the date of withdrawal, it was necessary to deduct machine repairs and maintenance accounts from annual investment flows (Machinery and Equipment and Transportation Equipment). If this deduction should not have been done there would have been an inconsistency with the method utilized and the stock would have improperly been overvalued.

Consequently, according to our option for the Permanent Inventory Method and the one-time depreciation criteria, for a moment "t" and for an asset "j" which average lifetime reaches "n" years, the value of Capital Stock at the start of period "t" is obtained from the accumulation of investments during the "n" years previous to "t". This procedure may be algebraically expressed in the following formula :

$$K_{tj} = \sum_{i=t-n}^{i=t-1} I_{ij}$$

where K_{tj} : Total capital in "j" assets at the start of period "t".

I_{ij} : Gross Investment (excluded repairs) in "i" assets during the period i ; this investment is supposed to be incorporated to capital at the end of the period "i" and starts its productive period in "i+1"

n : Service life for asset J

j : Determined type of investment and capital.

On the other hand, Total Stock at the moment "t" arising from adding different types of capital assets stands for the following formula:

$$K_{tT} = K_{t1} + K_{t2} + \dots + K_{tj} + \dots + K_{tm}$$

where:

K_{tT} : Total Capital at the beginning of period t.

1,2,...j...m: Different types of capital assets.

** See on last page.

d) Service Lives of Investments

Independently of the depreciation method chosen, the determination of lifetime for capital assets turns to be one of the most conflictive aspects for stock computation. The difficulty and the scepticism faced on this area are fully justified considering the varied range of investment assets, even when homogeneously assembles by their objective, they have a strong dispersion in service lives.

Service lives may differ not only from one asset to another, but also within the same kind of asset due to differences in quality, level of usage and technology, sometimes originating in the year of manufacture.

Empiric evidence shows that the country's productive system is formed by the sedimentation of the successive flows of investments, time and diverse technology, all these factors coexists and explain present production.

Technicians specialized in the different areas have been consulted in order to define the service life of each item. As a result three hypothesis of work have been defined. hypothesis I or Intermediate Hypothesis, the selected one, Hypothesis II (Minimum Duration) and Hypothesis III (Maximum Duration).

All our conclusions and analyses will refer to Hypothesis I. The other two will be used to make sensitivity analyses with respect to the modifications produced on the stock quantity by changes in the useful period.

Hypothesis of service lives are described in the following table:

<u>Service Lives</u>	<u>Hypothesis</u>		
	I	II	III
I. Construction *	64	56	71
i) Public	70	60	80
ii) Private*	60	54	65
a) Industry, Commerce and Services	50	40	60
b) Agricultural	20	15	70
c) Housing	65	60	70
II. Machinery and Equipment *	21	15	24
a) Agriculture Machinery	20	17	25
b) Machinery for Industry, Building and Services.	22	15	25
c) Tools	7	15	12
d) Furniture and Packing	18	15	20
III. Transportation*	17	13	25
a) Automobile	10	8	25
b) Railways	38	30	45
c) Ships	40	30	45
d) Planes	14	10	18

* Lifetime of the totals is a weighted average of the components.

e) Unresolved Theoretical Problems

Capital Stock series expressed in constant currency in a specific year, involves enigmas in connection with its effective homogeneity.

The first problem is inherited from our National Accounts and consists in the difficulty to carefully express in constant values a specific basic information in current values, taking into account, specially in the case of investment assets, the problem of constructing precise deflators of those products constantly altering their presentation and technology.

The second problem arises from the need to use long term historic series, in our case from 1900, expressed in prices of different years, with different internal structure both in physical terms and relative prices.

In the third place, it must be pointed out the frequent differences in productivity between assets of the same value in constant prices, specially if they were manufactured in different years.

As a consequence, the adding of values does not necessarily express the potentiality of production.

This problem seems to have no solution other than to purge the series by means a "technological advantage" index implicating a very complex elaboration.

This work admits this serious difficulty. The structure of existing capital by years was determined with the aim of having quantitative elements of heterogeneous technology. (See item IV c) .

IV. RESULTS OBTAINED

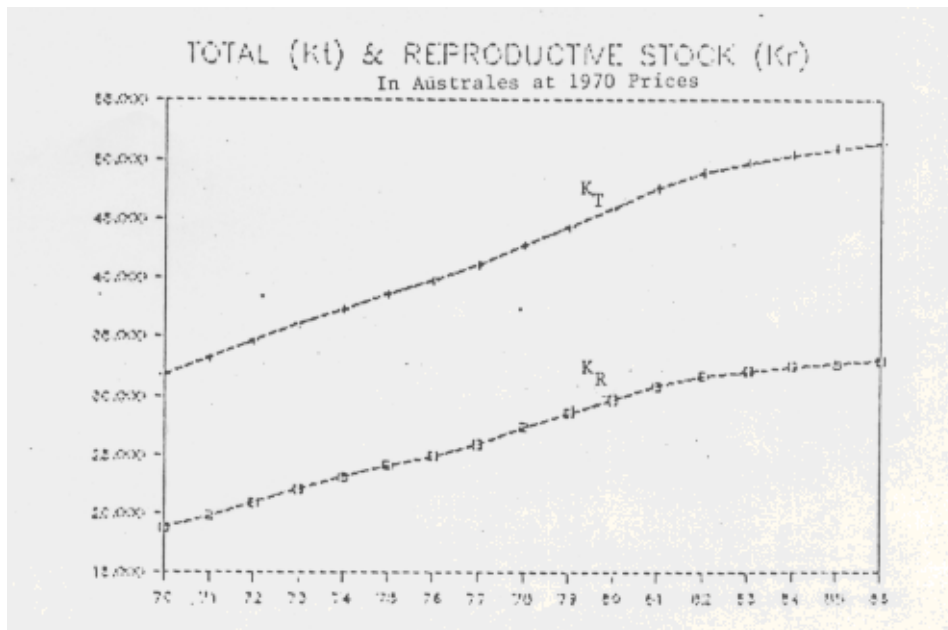
Statistical series of Capital Stock from January 1st of each year covering the period 1907/86 have been elaborated on the basis of methodological criteria explained in the previous chapter.

The Chart Capital Stock Indicators shows a synthesis of principal results. (See next page),

a) Historic Evolution

Two clearly defined periods arise from the analysis of these series. A growth trend up to 1982 (3,6 % for K_T and 4,4 % for K_R) and almost stagnation of the series as from that year on, specially regarding productive assets (K_R) which grows less than 1% annually. Strictly speaking, reduction in stock (Tables 1 to 4) is observed in some components of productive assets, specially in respect to Machinery and Equipment.

CHART IV



CAPITAL STOCK INDICATORS

	K_t	K_x	
Annual Percentage Variance of Stock 1970/82	3.6	4.4	
Annual Percentage Variance of Stock 1982/86	1.2	0.9	
Annual Percentage Variance of Stock 1970/82 (per capita)	2.0	2.7	
Annual Percentage Variance of Stock 1982/86 (per capita)	-0.3	-0.7	
Stock as of 1/1/86 in current Dollars (M)	378.100	242.100	
Stock as of 1/1/86 in Australes at 1970 Prices	51.393	32.909	
Stock Mix as of 1/1/86 (Z)			
- Machinery and Equipment	<u>18.2</u>	<u>28.5</u>	
Agriculture Machinery	2.5	3.9	
Machinery for Industry, Building and Services	13.7	21.4	
Tools	0.4	0.6	
Furniture/Packing	1.6	2.6	
- Transportation Equipment	<u>4.7</u>	<u>7.3</u>	
Railway	0.5	0.7	
Planes	0.2	0.4	
Ships	0.7	1.0	
Automobile	3.3	5.2	
- Productive Building	<u>41.1</u>	<u>64.2</u>	
Public	28.5	44.6	
Private: Commerce, Industry and Services	10.3	16.0	
Private: Agricultural	2.3	3.6	
Subtotal	64.0	100.0	
- Housing	36.0	---	
Total	<u>100.0</u>	<u>100.0</u>	
Capital/Product Relation (1985)	5.1	3.3	
Gross Investment in (%) of 1985 Stock (the flow applied to K_R excludes Housing)	2.4	2.7	
Total Annual Investment in Relation to Gross Domestic Production (%) (1985)			
- Fixed Gross Investment	12.5		
- Net Investment	4.7		
- Renewal Investment	7.8		
Stock Service Life	*	**	***
Reproductive Capital	83	56	34
Machinery for Industry, Building, Commerce and Services	81	53	31

* Stock of more than 5 years (in % of total)

** Stock of more than 10 years (in % of total)

*** Stock of more than 15 years (in % of total)

The stock stagnation is evident when considering Reproductive Capital. In this case, during the 1970/82 period, the annual growth was 2.7 % and during the 82/86 period it turned negative (-- 0.7 % annual).

The present stock is valued in dollars for 1986, it is U\$S 378.100 million for K_T and U\$S 242.100 million for K_R .

b) Composition By Type of Investment

From the point of view of its composition, in the Reproductive Capital there prevails "Building" for infrastructure, industry, commerce, agriculture and services with 64 %. "Machinery and Equipment" and "Transportation Equipment" represent 29 % and 7 % respectively. On the other hand, Total Stock is formed by 36 % for "Housing" and 64 % for Productive Assets.

Tables 2 and 4 and selected charts to show the constituents forming part of groups already mentioned.

It is important to point out the strong influence of Building ("Housing" and "Reproductive Building") on the total capital and also, on the other hand, the fact that said items admit longer life periods and thus hinder the possibility for total assets to thoroughly reflect stagnation and/or decline in "Machinery and Equipment" and "Transportation Equipment", occurred during the last years.

c) Structure By Ages

A complementary way to evaluate capital stock is to calculate its structure by period of incorporation. This approach clarifies conclusions allowing to know the level of technological advance of existing equipment.

If we limit the analysis to productive assets, the structure for 1986 is as follows:

<u>SERVICE LIFE OF STOCK</u>	*	**	***
Productive Assets	83	56	34
- Agriculture Machinery	86	62	35
- Machinery for Industry, Commerce, Services and Building	81	53	31
- Building in Infrastructure, Industry, Commerce and Services	86	64	47

* Stock of more than 5 years (in % of total)

** Stock of more than 10 years (in % of total)

*** Stock of more than 15 years (in % of total)

This structure shows that more of 50 % of stock has been in use for more than 10 years. This shows the country's limitations to secure development and compete with progress occurred in other countries during the last years.

d) Restrictions to Stock Renewal

One way of considering whether a rapid technological renewal of stock is feasible or not, in the case present gross investment rate prevails, is to relate annual gross investment flow to existing stock.

ANNUAL INVESTMENT AS PERCENTAGE OF TOTAL (1985)

	K_T	K_R
Gross Investment Flow *	2.4	2.7
Net Investment Flow *	0.9	0.7
Renewal Investment Flow *	1.5	2.0

* Flows applied to K_R exclude Housing

The above chart shows that present gross investment levels are a very small share of total stock (2.4 % for K_T and 2.7 % for K_R). Therefore, this implies a severe limitation for the rapid renewal of existing stock. In the case of "Machinery and Equipment", stock, where a greater technological renewal of stock should be aimed at, gross investment is 3,6 % of stock. This means that at the present rate, 28 years will be necessary for achieving a total renewal.

INVESTMENT AS PERCENTAGE OF GROSS DOMESTIC PRODUCT (1985)

Total Fixed Gross Investment	12.5
Gross Fixed Investment excluding Housing	7.6
Total Net Investment	4.7
Net Investment excluding Housing	2.3
Total Renewal Investment	7.8
Renewal Investment excluding Housing	5.3

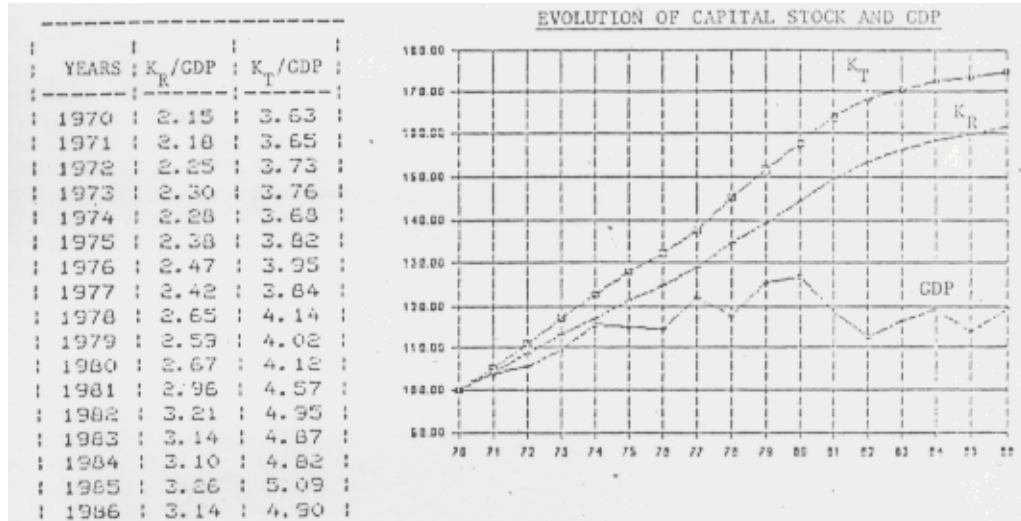
In the 70s fixed gross investment represented an average 21 % of gross domestic product. This gave rise to significant net investment additions. But at present, the need for renewal (7.8 % of gross domestic product) absorbs a significant share of gross investment (12.5 % of gross domestic product) fact, which ratifies the above mentioned, from another standpoint. If this estimate obviates Housing Investment the diagnosis grows worse as renewal absorbs 70 % of gross investment.

e) Capital/Product Relation

Statistical series show a trend towards increase in the capital/product relation for the period 1970/82, both for total capital and product assets. The development between 1970 and 1982, shows two concurrent facts: a gradual change in the production function towards capital intensive technologies and the existence of ideal capacity in productive stock, associated with stagnation and decline of the Gross Domestic Product from 1978 on (Chart V).

CAPITAL / PRODUCT RELATION (In Australes 1970 Prices)

CHART V



As from 1982 the Capital/Product relation becomes stable as a consequence of the low gross investment records during the 80s. The small fluctuations between 1982 and 1986 are influenced, in a greater extent, by cyclic fluctuations in the Cross Domestic Product rather than by those of Capital Stock.

The marginal relations Capital/Product are not expressed because, in the case of Argentina, their results are of no interest due to its variability associated with the erratic behaviour of Gross Domestic Product.

T A B L E 1

TOTAL CAPITAL STOCK - HYPOTHESIS I
In Austrelas at 1970 Prices

YEARS	MACHINERY & EQUIP.	TRANSPORT. EQUIPMENT	REPRODUCTIVE BUILDING(*)	TOTAL STOCK	REPROD. - Kr -	HOUSING	TOTAL STOCK - Kt -
1970	4845	1861	12122	18628	12997	31625	
1971	5149	1935	12720	19803	13378	33161	
1972	5534	2006	13369	20909	13722	34631	
1973	5923	2127	14033	22082	13977	36058	
1974	6262	2294	14551	23106	14205	37311	
1975	6644	2379	15073	24056	14464	38579	
1976	7005	2414	15482	24900	14830	39730	
1977	7360	2447	16071	25897	15148	41045	
1978	7905	2561	16997	27353	15460	42622	
1979	8246	2618	17663	26547	15771	44318	
1980	8631	2704	18372	29706	16232	45539	
1981	9043	2762	19040	30865	16747	47611	
1982	9338	2755	19586	31679	17232	49912	
1983	9396	2631	20074	32100	17611	49711	
1984	9351	2533	20559	32483	17932	50415	
1985	9375	2473	20827	32675	18244	50918	
1986	9378	2402	21129	32909	18494	51393	

* Includes: Infrastructure / Industrial, Commercial, Agricultural Building and Services.

T A B L E 2

CAPITAL STOCK - MACHINERY & EQUIPMENT - HYPOTHESIS I
In Australes at 1970 Prices

YEARS	(AGRICULT. MACHINERY)	(MACH. EQ. F/IND. BLD. SERV.)	TOOLS	(FURNITURE & PACKING)	TOTAL
1970	717	3586	111	431	4845
1971	765	3794	128	462	5149
1972	821	4075	142	496	5534
1973	876	4363	156	528	5923
1974	954	4580	171	556	6262
1975	1052	4819	187	587	6644
1976	1122	5063	203	617	7005
1977	1204	5307	228	641	7380
1978	1299	5551	278	677	7905
1979	1324	5908	313	702	8246
1980	1356	6208	330	737	8631
1981	1347	6563	341	772	9043
1982	1308	6896	336	798	9338
1983	1293	6967	324	811	9396
1984	1308	6959	301	822	9391
1985	1318	6967	252	836	9375
1986	1293	7028	212	845	9378

T A B L E 3

CAPITAL STOCK - TRANSPORTATION EQUIPMENT - HYPOTHESIS I
In Australes at 1970 Prices

YEARS	RAILWAYS	PLANES	SHIPS	AUTO-MOBILES	TOTAL
1970	163	53	199	1446	1861
1971	169	55	203	1509	1935
1972	175	61	207	1563	2006
1973	190	62	214	1660	2127
1974	202	64	219	1808	2294
1975	208	70	226	1875	2379
1976	210	75	230	1899	2414
1977	207	72	236	1931	2447
1978	206	81	272	2002	2561
1979	207	85	296	2031	2618
1980	212	115	312	2066	2704
1981	216	112	319	2134	2782
1982	221	121	330	2083	2755
1983	224	115	334	1958	2631
1984	227	121	341	1844	2533
1985	228	127	346	1772	2473
1986	229	124	347	1702	2402

T A B L E 4

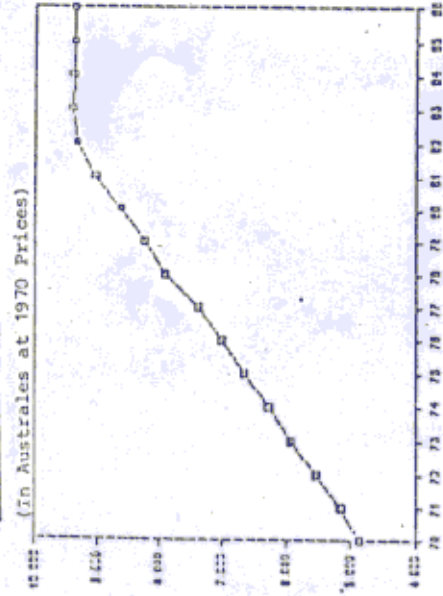
CAPITAL STOCK - PRODUCTIVE BUILDING - HYPOTHESIS I

In Australes at 1970 Prices

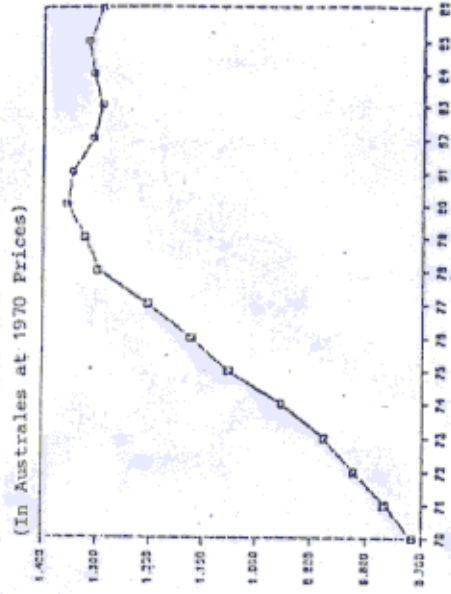
YEARS	PUBLIC	P R I V A T E			TOTAL
		Others *	(Agricult.	(Sub-Total)	
1970	7369	3415	1317	4732	12102
1971	7847	3541	1332	4873	12720
1972	8354	3678	1337	5015	13369
1973	8875	3802	1355	5157	14033
1974	9302	3889	1359	5249	14551
1975	9727	3977	1370	5347	15073
1976	10047	4079	1356	5435	15462
1977	10555	4199	1317	5516	16071
1978	11263	4316	1319	5635	16897
1979	11931	4447	1304	5751	17683
1980	12474	4597	1301	5898	18372
1981	12997	4779	1264	6043	19040
1982	13423	4914	1250	6163	19586
1983	13807	5023	1244	6267	20074
1984	14209	5115	1235	6351	20559
1985	14422	5198	1207	6404	20827
1986	14669	5280	1180	6460	21129

* Includes that for Industry, Commerce & Services

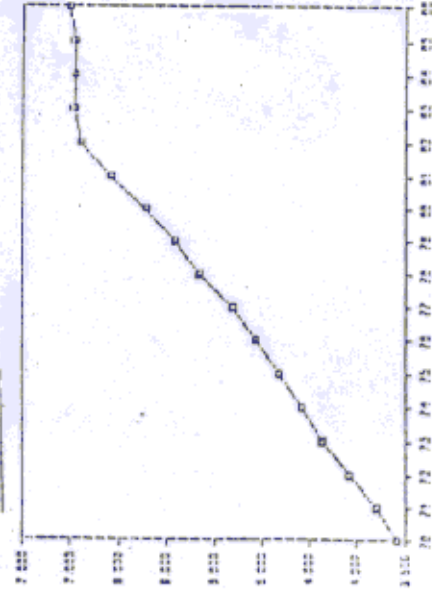
CAPITAL STOCK - MACHINERY AND EQUIPMENT



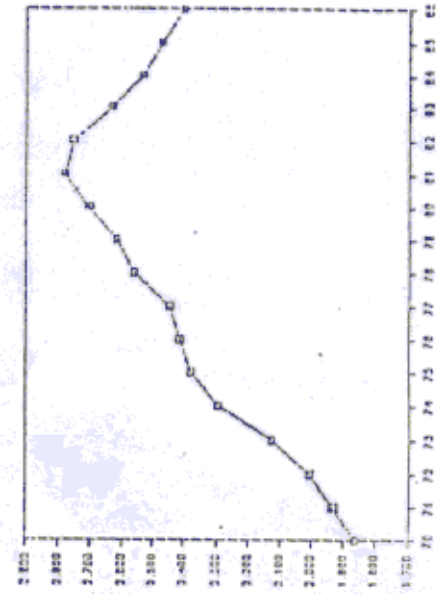
AGRICULTURE EQUIPMENT



MACHINERY AND EQUIPMENT FOR BUILDING, INDUSTRY AND SERVICES



CAPITAL STOCK - TRANSPORTATION EQUIPMENT



ANNEX I

Characteristics of Some Variable Series

The following chart illustrates the empiric surveys made in our country as well as some of their characteristics.

S U R V E Y S					
	Year	Period Included	Ranging	Depreciation System	Service Life C; M&E, T
CEPAL	1958	1900/55	C; MyE	Lineal	-----
Balboa/ Fracchia	1959	1935/55	C; MyE	Lineal	50 4 to 20 8 to 23
O.E.C.E.I.	1960	1935/59	Null	-----	-----
O.E.C.E.I.	1973	1900/70	Null	-----	-----
I.N.P.E	1975	1935/73	Null	Lineal	60 25 25 50 20 20
I.N.P.E	1975	1950/73	Null	Unique	40 15 15
F.I.D.E	1980	1950/79	Null	Lineal & Unique	40 15 15
F.I.D.E	1982	1950/81	C;E	Lineal	50 10 10
I.N.P.E	1983	1970/82	C _r ; C _{nr} MyE; T	Unique	50 20 20
C.E.E	1984	1975/84	C MyE T	Lineal	40 10 15
Planning Secretariat	1984	1970/84	C _r ; C _{nr} MyE T	Unique	50 20 20
Planning Secretariat	1986	1970/86	See Charts 1 to 4	Unique	See Chapter III d

C: Total Building; Cr: Residential Building; Cnr: Non-Residential building;
M & E: Machinery and Equipment; T: Transportation; E: Equipment

Recent surveys reveal obvious differences in their results as shown in the following table:

CAPITAL STOCK

At the beginning of each year; In Australes at 1970 prices

	PLANNING K _P	SECRETARIAT K _R	FIDE N° 47	Center of Economic Studies
1970	31.825	18.828	16.365	-----
1971	33.181	19.803	17.419	-----
1972	34.631	20.909	18.442	-----
1973	36.058	22.082	19.278	-----
1974	37.311	23.106	20.146	-----
1975	38.579	24.096	20.966	-----
1976	39.730	24.900	21.903	19.164
1977	41.045	25.897	23.209	20.097
1978	42.822	27.363	24.181	21.392
1979	44.318	28.547	25.251	22.297
1980	45.939	29.706	26.537	23.245
1981	47.611	30.865	27.347	24.222
1982	48.911	31.679	-----	24.717
1983	49.711	32.100	-----	24.682
1984	50.411	32.483	-----	24.616
1985	50.918	32.675	-----	24.377
1986	51.393	32.909	-----	-----

Coverage :	Total	Excludes Residential Bld.	Total	Total
Depreciation	Unique	Unique	Lineal	Lineal
Service Life:				
Building	64*	62*	50	40
Mach & Equipment	21*	21*	10	10
Transportation	17*	17*	10	15

K_P series of the Planning Secretariat have the same coverage as the other surveys. However, a relative difference in the hypothesis concerning useful periods and fundamentally different hypothesis in the depreciation system, for instance in 1981, give rise to a stock 74 % and 97 % higher in respect to other surveys.

* Result from service life average of each component

ANNEX II

SENSITIVITY ANALYSIS ACCORDING TO DIFFERENT USEFUL, SERVICE LIFE HYPOTHESIS

The purpose of this section is to depict the degree in which Capital Stock is modified when adopting different useful period hypothesis (See III d). The results obtained, show, in the first place, a trend towards stagnation that is similar in all hypothesis (Tables 7 and 5).

PERCENTAGE VARIATION IN RELATION TO BASIC HYPOTHESIS

Stock Hypothesis		K _T		Productive Building	Machinery & Equipment	Transportation Equipment
		K _T	K _R			
Minimum	(H ₂)	-8,5	-10,4	-4,3	-22,1	-23,4
Maximum	(H ₃)	7,9	11,6	6,8	13,7	46,0

With respect to the differences between the hypothesis themselves, a difference of approximately 10 % is shown in K_T and K_R.

With respect to its components, the difference is greater in "Machinery and Equipment" and "Transportation Equipment", and is less in "Productive Building".

CHART VII

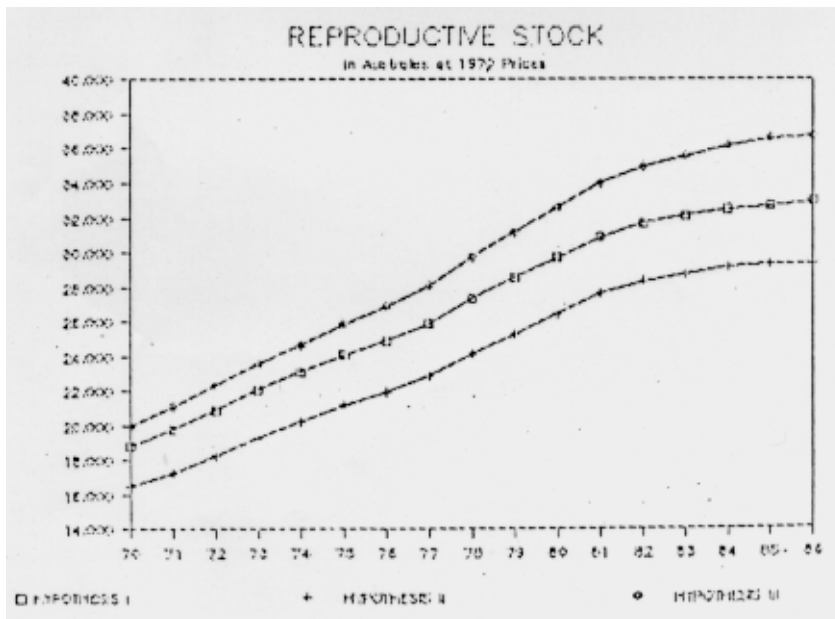


TABLE 5

TOTAL CAPITAL STOCK - HYPOTHESIS II
In Australia at 1970 Prices

YEARS	MACHINERY & EQUIP.	TRANSPORT. EQUIPMENT	REPRODUCTIVE BUILDING(*)	TOTAL REPROD. STOCK - Kr -	HOUSING	TOTAL STOCK - Kt -
1970	4072	1547	10848	16467	12146	28613
1971	4376	1614	11295	17265	12389	29673
1972	4707	1743	11830	18280	12627	30907
1973	5037	1850	12455	19341	12893	32234
1974	5309	1942	12989	20240	13128	33567
1975	5642	2023	13522	21187	13519	34706
1976	5867	2074	14000	21941	14073	36013
1977	6063	2077	14693	22833	14603	37436
1978	6441	2124	15613	24178	15076	39254
1979	6694	2126	16457	25277	15543	40820
1980	6993	2191	17238	26422	16047	42469
1981	7373	2241	18023	27637	16515	44152
1982	7556	2151	18641	28348	16934	45282
1983	7531	2044	19133	28708	17205	45913
1984	7517	1986	19635	29138	17354	46492
1985	7447	1949	19908	29303	17509	46813
1986	7304	1841	20228	29372	17658	47030

TOTAL CAPITAL STOCK - HYPOTHESIS III
In Australia at 1970 Prices

YEARS	MACHINERY & EQUIP.	TRANSPORT. EQUIPMENT	REPRODUCTIVE BUILDING(*)	TOTAL REPROD. STOCK - Kr -	HOUSING	TOTAL STOCK - Kt -
1970	5127	2153	12668	19948	13336	33284
1971	5550	2311	13229	21090	13761	34851
1972	5989	2479	13878	22346	14176	36522
1973	6369	2651	14549	23569	14567	38136
1974	6683	2854	15116	24653	14929	39582
1975	7087	3029	15749	25864	15335	41199
1976	7468	3105	16325	26897	15819	42717
1977	7853	3145	17067	28065	16244	44309
1978	8433	3286	18033	29751	16543	46295
1979	8850	3417	18899	31166	16848	48014
1980	9302	3557	19718	32577	17197	49773
1981	9796	3671	20512	33978	17504	51462
1982	10129	3702	21113	34944	17778	52722
1983	10291	3662	21610	35563	17995	53557
1984	10450	3635	22075	36161	18160	54320
1985	10638	3577	22358	36572	18429	55000
1986	10663	3502	22564	36729	18715	55444

(**) Unic depreciation method may be perfected if data on the dispersions of the averages obtained were available. Based on surveys and other empiric enquiries the average service life for twelve different kinds of investment were determined (see page 11); of course, these averages admit certain deviations which have not been taken into account as the available information is not reliable enough.

It should be noted that, however, hypothesis of probable dispersions were worked up and neither final results nor conclusions were altered.

ANNEX III

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