Comment on: The Brazilian Depression in the 1980s and 1990

Samuel Pessoa
EPGE-FGV/RJ

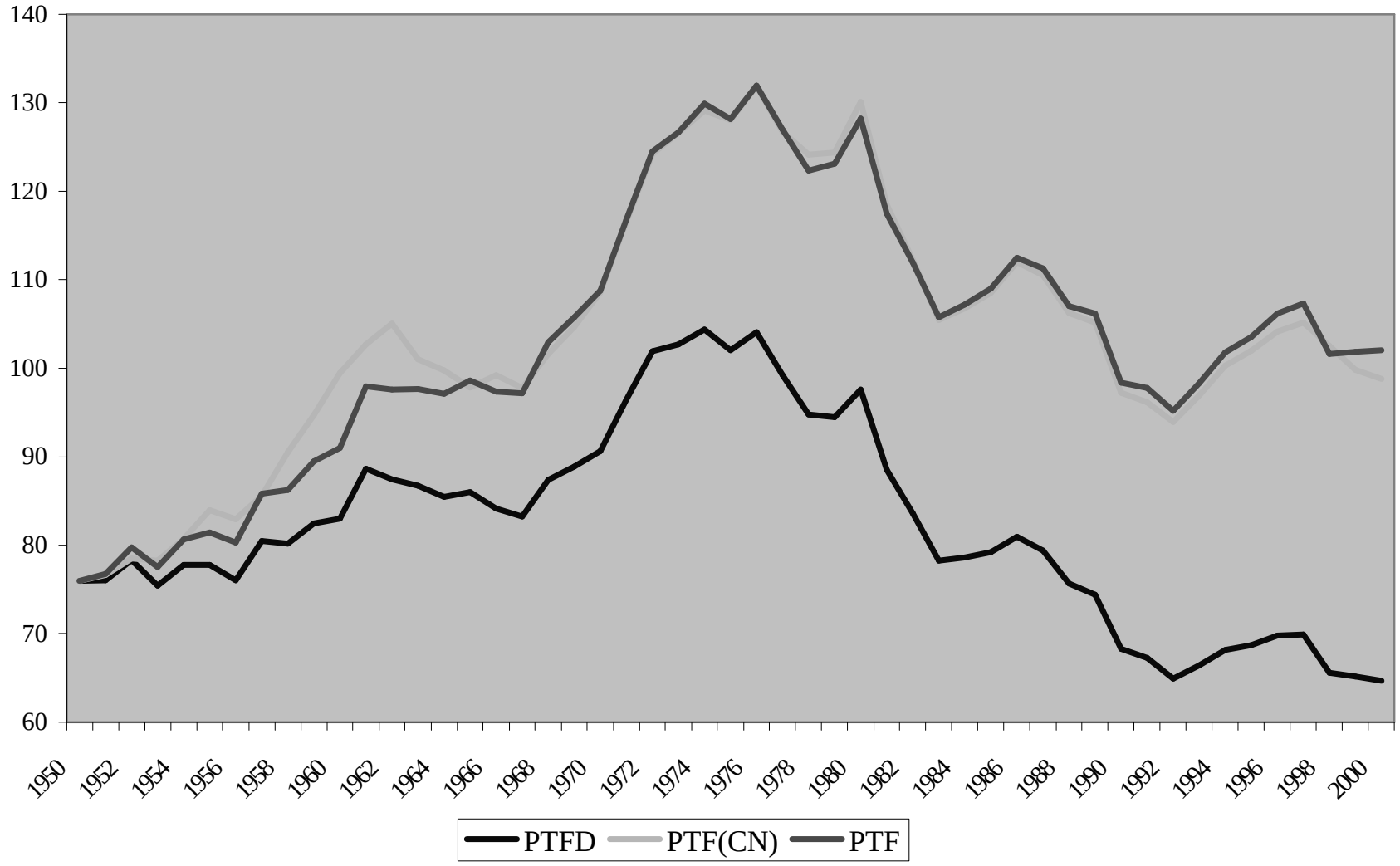
Y

- The neoclassical model of capital accumulation with an endogenous labor supply can *describe* pretty well the long-run dynamics of the major macroeconomic statistics for the Brazilian economy *if* we consider that
  - the observed TFP represents a truly technological process and
  - the relative price of structure has been increasing in the period
- The paper documents:
  - a decrease in (the level of) TFP in the 80's and 90's of roughly 33%
  - an increase in the relative price of investment goods

Specific comments on the paper:

- The decrease in TFP in Brazil represents a reversion of a pattern of 30 years of continuing increase on TFP

Evolution of TFP(D) Brazil: 1950-00 (US_{1950}=100, Trend=1.53%)



Specific comments on the paper:

- It seems to me that 9% for depreciation is too high. Depreciation for the US is 3.5% and, if I would assume another value for Brazil, I would pick a lower one (technological depreciation is higher in the US)

Specific comments on the paper:

- In the paper is not clear on what data on investment-rate they are employing: current or constant prices?

It seems to me that they use constant prices

If that is the case, how does the corrected data for changing in relative price compare with the (constant price) data from Ipeadata?

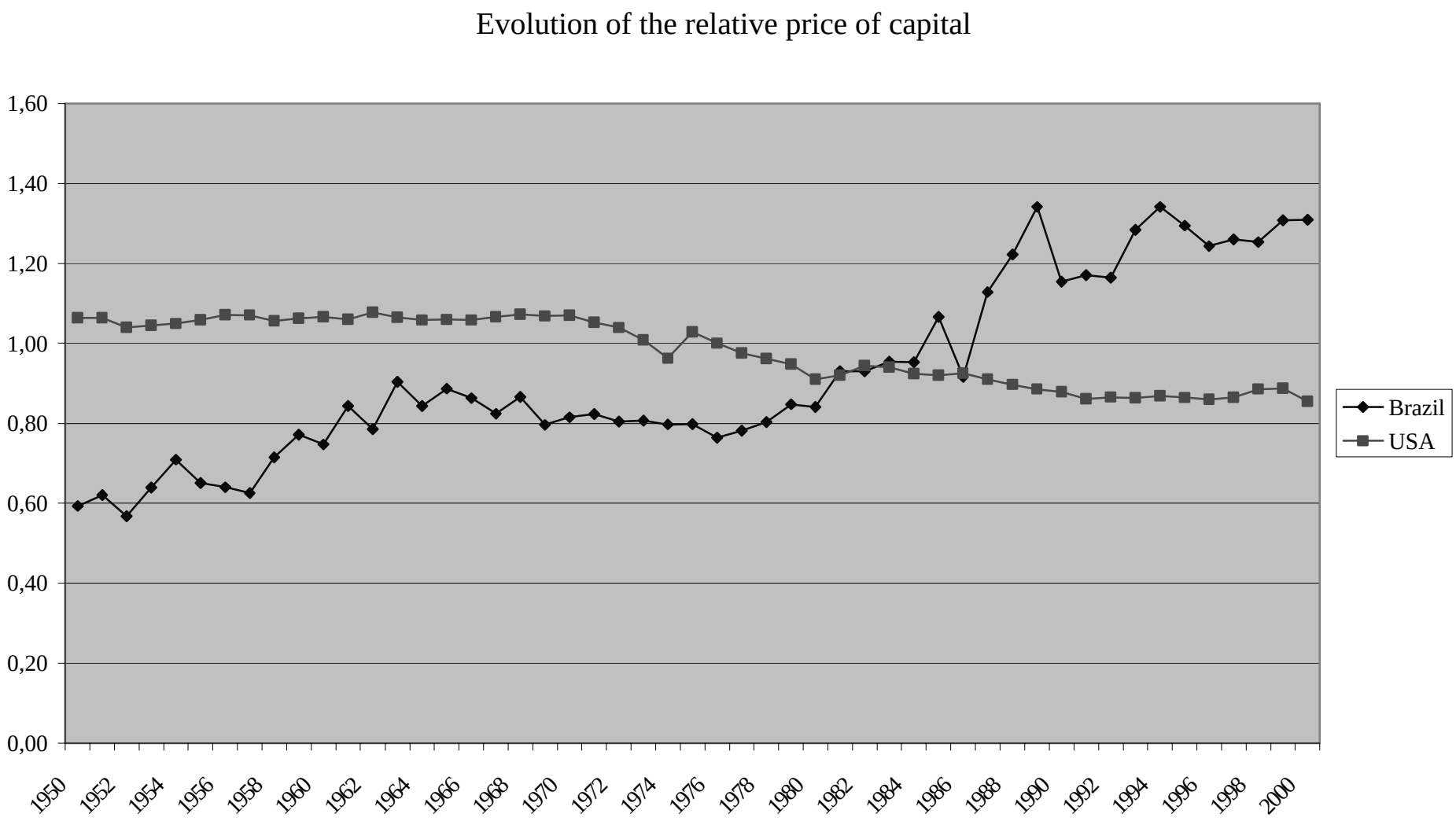
Specific comments on the paper:

- The paper is not very clear on the reason for the increase in the relative price of construction:
  - It may be the case that the industry run into decreasing returns due to the sudden increasing in demand or
  - That the resell price of buildings (in the secondary market) increased, although the production cost did not

Specific comments on the paper:

- My own view is that the increase in the relative price of investment goods in Brazil is a puzzle, specially if we acknowledge that over the same period the relative price was decreasing in the US. We need to understand this phenomenon better
- But, according to the PWT data set, the price was lower in the past

The PWT data shows the same fact:



Specific comments on the paper:

- A better treatment of the fiscal side of the economy is missing in the paper :
  - From 1980 till 2000 the average taxation rate increase from 20% to 37% of GDP

- My view is that this increase of the fiscal burden and the increase in the labor cost associated to the labor justice can explain the behavior of the hours worked

Comment on this research agenda

- The agenda is mainly descriptive. The next step (as Cole and Ohanian did for the US in the 30's) is to find *micro* evidence behind the decreasing in TFP. In Brazil I can think of:
  - An increase in non-productive activity (rent-seeking). As an example the number of case in the labor justice has been increasing steadily
  - An increase in the share of the informal economy probably due to:
    - Labor justice
    - The huge increase in the marginal taxation (from 1980 till 2000 the average taxation increased from 23% to 38% of GDP)

- Another possibility
  - The economies of LA were specialized into production of some commodity, or some other good whose production process has a low transaction cost
  - The region was not able to modernize their institutions as fast as capital accumulation and industrialization increase the economy's diversification
  - As a consequence transaction cost increased and TFP decreased

This conference: to study many individuals case

- We can do the opposite: to have a look into a set of economies
- Stylized facts that emerge (60-00):
  - There were a strong process of capital accumulation: K/Y increase from 1.8 (1960) to 2.5 (2000)
  - Latin America economies were among the most productivity in the 60's and early 70's
  - We have to understand why TFP decrease in LA *but* we also have to understand why it was so high in the past

A Growth Decomposition Study

- 83 Economies, 1960-2000
- Data:

  1) per capita output, investment rate and participation rate from PWT 6.0

  2) Education attainment of the Active Population from Barro and Lee, 2000

Methodology

- Production Function: $y_{it} = A_{it} k_{it}^{a} (H_{it} l_t)^{1-a}$, where: (economy *i*, time *t*)
  1) y_{it} per worker output
  2) A_{it} TFPD (Detrained)
  3) k_{it} per worker capital
  4) $H_{it} = e^{\frac{h}{1-y} h_{it}^{1-y}}$, h_{it} is Barro and Lee data
  5) $l_t = (1+g)^t$, where g is the evolution of the technological frontier

Calibration

- $a = 0.4$ and $g = 1{,}53\%$ per year
- $g =$ growth rate $\frac{y_{\text{US}}}{H_{\text{US}}}$, for 1950 - 72
- $H_{it} = e^{\frac{h}{1-y} h_{it}^{1-y}}$, where $h = 0.32$ and $y = 0.58$, Bils and Klenow (2000)
- $d = d_{\text{US}} = 3.5\%$ a year (NIPA)

Capital Stock

- $K_{it} = I_{i,t-1} + (1-d)K_{i,t-1}$
- $\left.\frac{K}{Y}\right|_{\text{Brazil,1950}} = 1.9$ (National Accounts)
- Other economies: Either $\left.\frac{K}{Y}\right|_{1950(60)} = 2$ or

$$K_{1950(60)} = \frac{I_{1950(60)}}{n+g+ng+d}$$

Computing the level of TFP

- We observe $y_{it}, k_{it}, H_{it}, l_{\text{it}}$
- We obtain the TFP for the *i*-th economy in time *t* as:

$$A_{it} = \frac{y_{it}}{k_{it}^{a} (H_{it} l_{t})^{1-a}}$$

- We perform growth accounting

$$\ln \frac{y_{i,t+N}}{y_{it}} = \ln \frac{A_{i,t+N}}{A_{it}} + a \ln \frac{k_{i,t+N}}{k_{it}} + (1-a)\left[\frac{h}{1-y} \left(h_{i,t+N}^{1-y} - h_{i,t}^{1-y} \right) + N \ln(1+g) \right]$$

Economies

1) English Language Economies: United Kingdom, Ireland, United States of America, Canada, Australia, New Zealand, South Africa (7 economies)

2) Continental European Economies: Iceland, Italy, France, Belgium, Netherlands, Germany, Austria, Switzerland, Sweden, Denmark, Norway, Finland (12 economies) – Iceland is an island!

3) Peninsular European Economies: Portugal, Spain, Greece, Turkey, Cyprus (5 economies)

4) Tigers Asiatic: Japan, Republic of Korea, Taiwan, Thailand, Hong Kong, Singapore (6 economies)

5) Arab and Hebrew: Iran, Syria, Jordan, Tunisia, Israel (5 economies)

6) Latin America: Mexico, Guatemala, Honduras, Costa Rica, Nicaragua, Dominican Republic, El Salvador, Panama, Colombia, Venezuela, Peru, Ecuador, Chile, Bolivia, Paraguay, Uruguay, Argentina, Brazil (18 economies)

7) Caribbean: Barbados, Guiana, Jamaica, Trinidad and Tobago (4 economies)

8) South Asia: Nepal, India, Indonesia, Bangladesh, Pakistan, Malaysia, Philippines, Mauricio, Fiji, Papua New Guinea (10 economies)

9) Sub-Saharan Africa: Botswana, Cameroon, Central African Republic, Congo, Ghana, Kenya, Lesotho, Malawi, Mozambique, Niger, Senegal, Tanzania, Togo, Uganda, Zambia, Zimbabwe (16 economies)

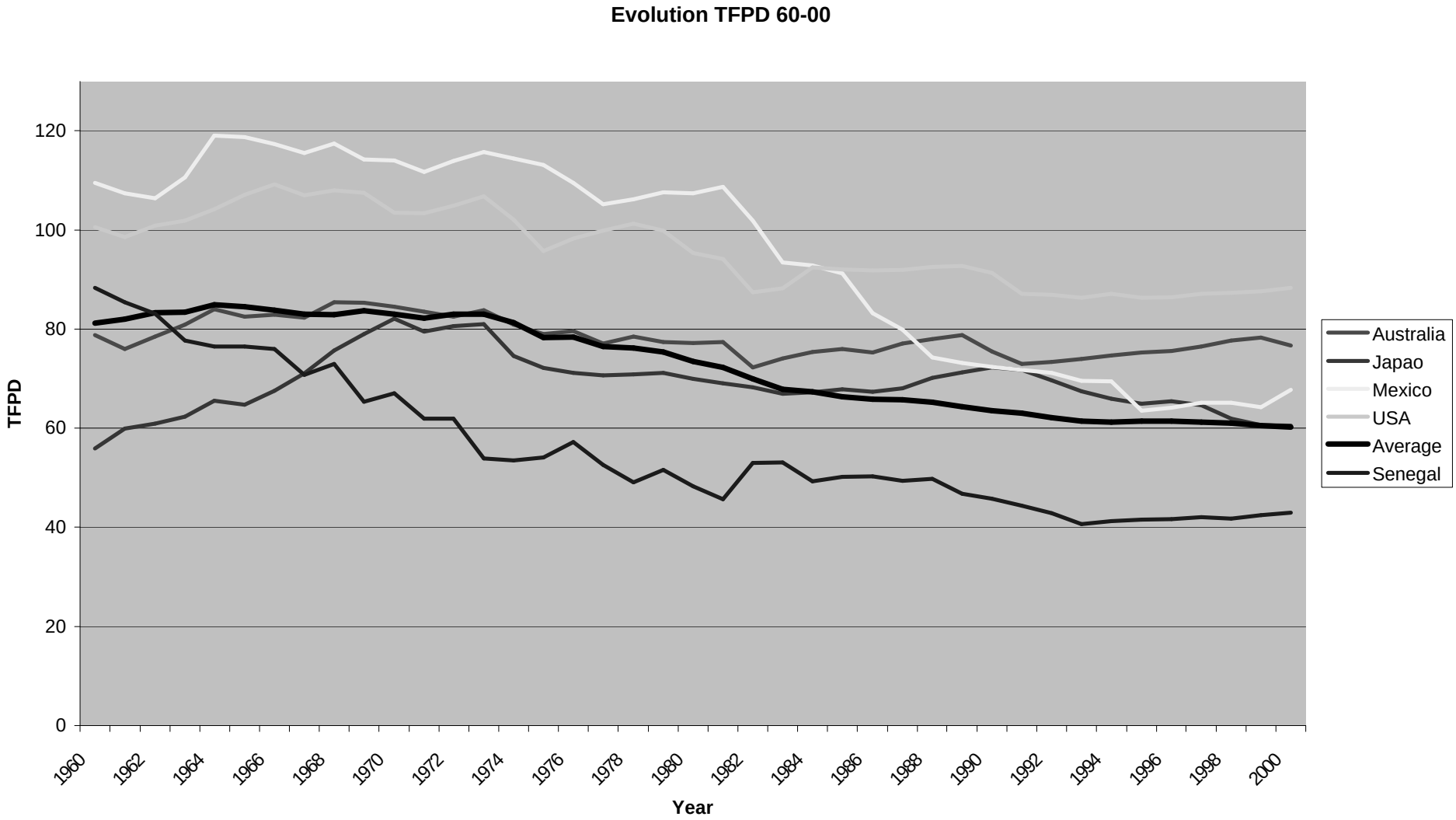

Evolution TFPD 60-00
TFPD
120
100
80
60
40
20
0
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
Year
Australia
Japao
Mexico
USA
Average
Senegal

Table 1

	ΔY	$TFPD_{1960}$	$TFPD_{1970}$	$TFPD_{2000}$	ΔTFPD	gK/Y
Average	159%	81	83	55	-32%	1,0%
Average Without Disasters	189%	82	86	61	-26%	1,0%
Standard Deviation		27	27	28		
Coef. Variacao		0,33	0,33	0,50		
English	127%	89	94	83	-7%	0,2%
Continental Europe	142%	90	93	77	-14%	0,9%
Peninsular Europe	272%	80	95	74	-8%	1,2%
Tigers	657%	54	68	72	34%	2,0%
Arab and Hebrew	153%	102	101	71	-30%	0,7%
Latin America	52%	92	97	57	-39%	0,7%
Caribbean	111%	73	79	60	-18%	0,3%
South Asia	199%	73	68	56	-23%	1,4%
Sub-Saharan Africa	81%	70	62	35	-51%	1,4%

TFPD Decrease:

- Why did it decrease so much for: Latin America, and Arab and Hebrew economies?
- Why Latin America was so productive in 1960?
- For Africa it seems that war and other conflicts explain (maybe for Arab and Hebrew)
- Is there evidence of reduction in natural resources value (from 60 till 00)?

Was the 90’s a second lost decade?

- The evolution of TFP showed a marked inflexion from the 80’s to the 90’s

Growth Accounting (Set Average 80-90)

	$\Delta y_{80\text{-}90}$	TFPD	Frontier	K/L	H	TFP
Average	0,7%	-1,5%	0,9%	0,7%	0,6%	-0,6%
English	1,4%	-0,7%	0,9%	0,8%	0,4%	0,2%
Continental Europe	1,5%	-0,7%	0,9%	0,8%	0,5%	0,3%
Peninsular Europe	2,5%	-0,2%	0,9%	1,1%	0,8%	0,7%
Tigers	4,9%	1,0%	0,9%	2,4%	0,6%	2,0%
Arab and Hebrew	-0,1%	-2,6%	0,9%	0,7%	0,9%	-1,7%
Latin America	-1,3%	-2,9%	0,9%	0,2%	0,5%	-2,0%
Caribbean	-0,8%	-2,2%	0,9%	0,1%	0,4%	-1,2%
South Asia	2,1%	-0,9%	0,9%	1,3%	0,7%	0,1%
Sub-Saharan Africa	-0,4%	-2,2%	0,9%	0,2%	0,8%	-1,3%

Growth Accounting (Set Average 90-00)

	$\Delta y_{90\text{-}00}$	TFPD	Frontier	K/L	H	TFP
Average	1,1%	-0,9%	0,9%	0,6%	0,5%	0,0%
English	1,2%	-0,5%	0,9%	0,4%	0,4%	0,4%
Continental Europe	0,6%	-1,4%	0,9%	0,7%	0,4%	-0,5%
Peninsular Europe	1,4%	-1,3%	0,9%	1,1%	0,7%	-0,4%
Tigers	5,0%	0,7%	0,9%	2,9%	0,5%	1,6%
Arab and Hebrew	3,6%	1,3%	0,9%	0,6%	0,7%	2,2%
Latin America	0,2%	-0,9%	0,9%	-0,3%	0,6%	-0,1%
Caribbean	1,4%	0,1%	0,9%	-0,1%	0,4%	1,0%
South Asia	4,3%	1,1%	0,9%	1,8%	0,5%	2,0%
Sub-Saharan Africa	-2,1%	-3,3%	0,9%	-0,2%	0,4%	-2,4%