

Estimates of comparative Brazilian labour productivity in manufacturing in the 20th century

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Brazil

- The largest country in South America
- The world's fifth largest country by size
- The world's fifth largest country by population
- The world's eighth largest economy

More to the point...

- Brazil a latecomer in terms of industrialisation and modernisation
- Brazilian intellectuals and politicians preoccupied by the idea of Brazilian backwardness
- Industrialisation often seen as the only way by which Brazil could escape backwardness

- Has attracted a large inflow of foreign direct investments in the 20th century
- A way for multi-corporations to get a foothold on the highly protected Brazilian market
- Hence, many highly competitive manufacturing industries
- Potentially an important role for technological spillovers
- In sum, great scope for catching up

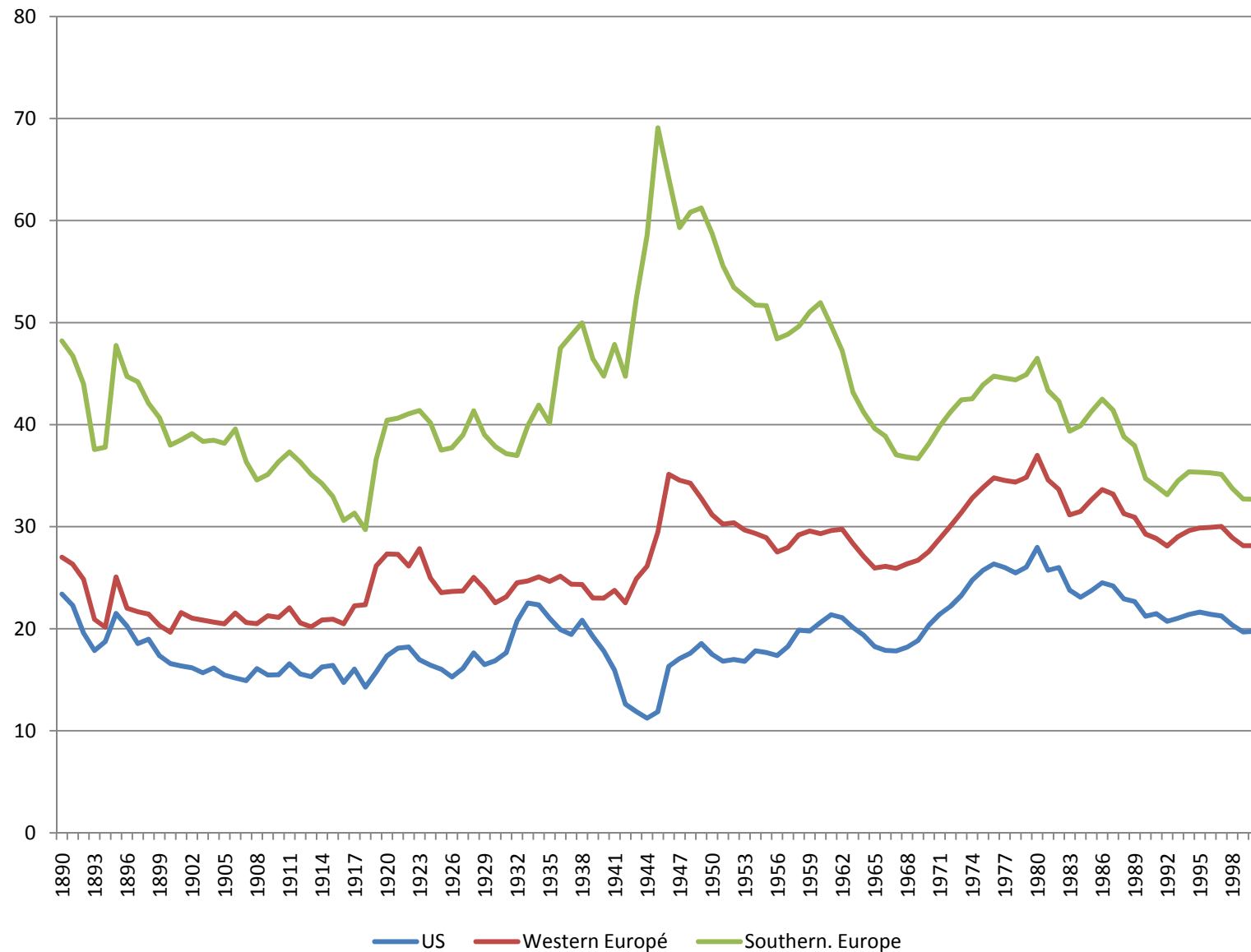
Brazilian GDP per capita: what does the whole economy level suggest?

- In 1900, the Brazilian level was 8 percent of the US
- 100 years later, the level was 10 percent of the US
- Brazilian failure to catch up at the whole economy level

Astorga et al's (2005) Brazilian GDP per capital levels in relation to:

	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
US	8	8	8	8	8	7	9	9	13	11	10
N. Europe	10	10	13	11	11	13	12	12	17	14	13
S. Europe	18	17	18	17	20	22	20	16	20	17	15

Maddison's comparative GDP per capita levels 1890-2000 : Brazil relative to the US, Western Europe and Southern Europe



Are the GDP numbers credible?

- 1) Before 1980, data for agriculture, manufacturing, commerce and transport and communication
- 2) The informal sector is huge, but not included
- 3) Data before 1944 is based on very patchy data (Haddad 1979)

Will an income account look any different?

- Williamson's (1995) real wage data for unskilled workers
- In 1900, the Brazilian to US real wage ratio was 44!
- In 1988, the relative level was about the same!
- The real wage comparisons are difficult to reconcile with the GDP per capita numbers

Brazilian industrialisation

Historiography

- An older tradition (Furtado 1954) focuses on the crises of the 1930s and state-led industrialisation henceforth
- It largely glosses over pre-1930 accomplishments
- This interpretation spills over into Prebisch and ECLA
- In a more extreme version in what came to be known as dependency theory

ISI-era

- An attempt made at escaping from export dependence of raw materials
- A strategy to establish domestic manufacturing plants behind high tariffs
- Promotion of capital goods industries
- Brought industrialisation and rapid economic growth, above all in the 1960s
- The boom turned to bust about 1980

- A largely positive view of the ISI-era has given way to pessimism and mounting criticism
- Market critics maintain that ISI was responsible for deeply inefficient and high-cost industries
- Recently economic historians claim that ISI was a conspicuous example of the failure of state-led, inward-oriented industrialisation (Haber, Edwards)
- They blame ISI for the post-1980 downturn

- In a recent contribution, Haber (2006) argue the division between pre-1930 and post-1930 eras is artificial
 - 1) Industrialisation started before the 1930s
 - 2) The state promoted industrialisation behind tariffs also before the 1930s

Brazilian economic history research in the 1970s and 1980s

- Focuses more on Brazilian industrialisation pre-1930
- Roots back to at least 1890 (textiles)
- Brazil dependent on foreign technology
- Consumer goods industries dominated
- Very few capital goods industries
- Dependent on a few export commodities

What do we know about comparative Brazilian performance in manufacturing?

- Van Ark and Maddison (1989) benchmark of Brazil/US productivity level in 1975
- The Brazilian level half of the US
- Van Ark (1988) found that Brazil was on a par with the UK in 1975

Benchmarks

- Brazilian Industrial Censuses in (1907), 1919, 1939 and 1949
- They fail to give output in physical units
- The industry-of-origin approach, Rostas (1948), Paige and Bombach (1959), cannot be applied
- The remaining option is to use wholesale prices

A new Brazil/US benchmark of 1949

US				Brazil			Brazil/US
Value added		Number of workers	Labour productivity	Value added Cr	Number of workers	Labour productivity	Benchmark
\$	Cr						
1907							
1919							
1939							
1949	74 142 218	2072397324	11 916 183	173.91	47 614 903	1 142 220	41.68
1975							25.00 49.33 (38.1)

Time series extrapolation

- Official statistics give annual output and employment data back to 1945
- The problem is the pre-1945 period
- How can we establish a time series spanning the the pre-1945 period?
- Two possible solutions

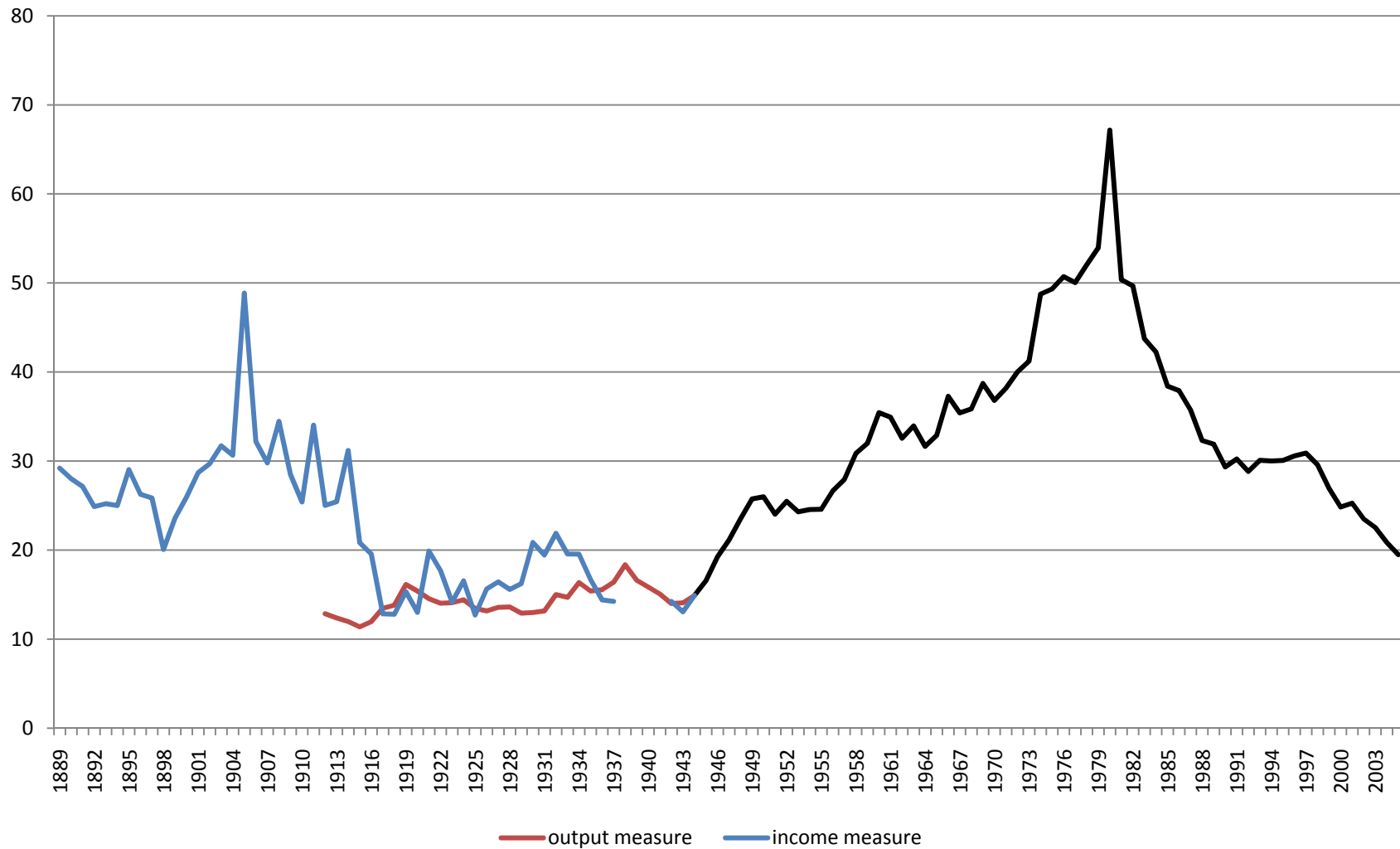
1) Imposto de consume

- A tax levied on sold output
- Available annually from 1912 to 1938
- Sold output in physical units and corresponding product value
- However, there is no employment data
- Solution: assuming an elasticity of labour productivity with respect to output (Verdoorn's Law)

2) Series of nominal wages deflated by product prices

- Assumed to track labour productivity
- Depends on factor shares
- Problem: scarcity of reliable wage data
- Everyone uses Lobo's (1985) series of craftsmen from Rio
- Something more reliable would be welcome

Long-run Brazil/US productivity levels



Long-run Sweden/US productivity levels

