Global Economy

Group Project: Can Brazil be crowned as Champion?

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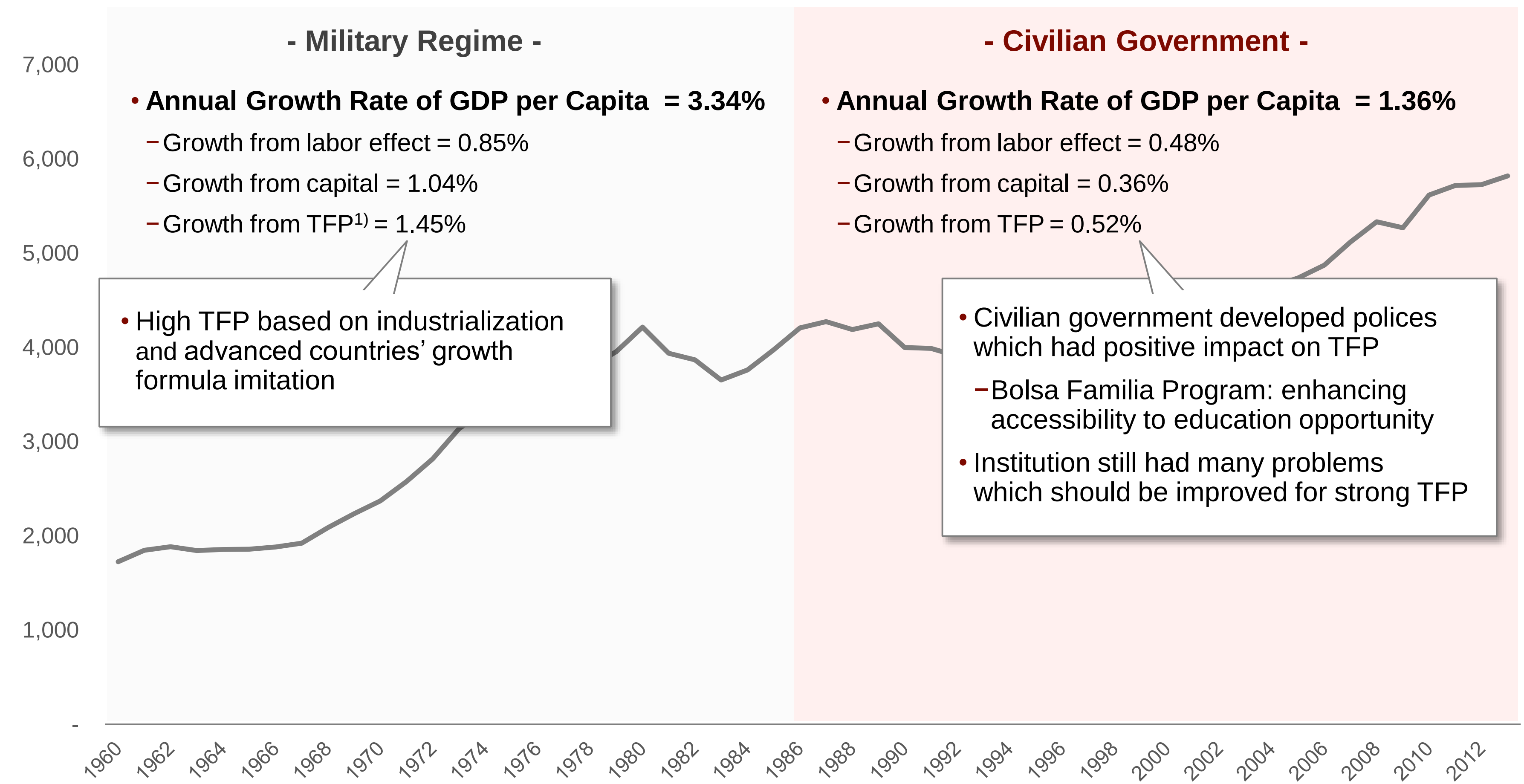
Brazil's annual growth rate of GDP per capita decreased mainly due to sharp drop in TFP

Growth Trend of Brazil's GDP per Capita

(Unit: Constant '05 US$)



1. Total Factor Productivity

Source: World Bank, FRED, Problem Set #1 Country Data, Team Analysis

‘Team Brazil’ analyzed potential contribution of each growth driver in order to forecast Brazil’s future GDP growth

Framework & Summary

Feasibility of Labor driven Growth

✕

- % of young people is going down
- Urbanization is almost completed

Feasibility of Capital driven Growth

○

- Investment in infrastructure still can lead to further GDP growth

$$Y/N = L/N + a\cdot K/L + A$$

Feasibility of TFP driven Growth

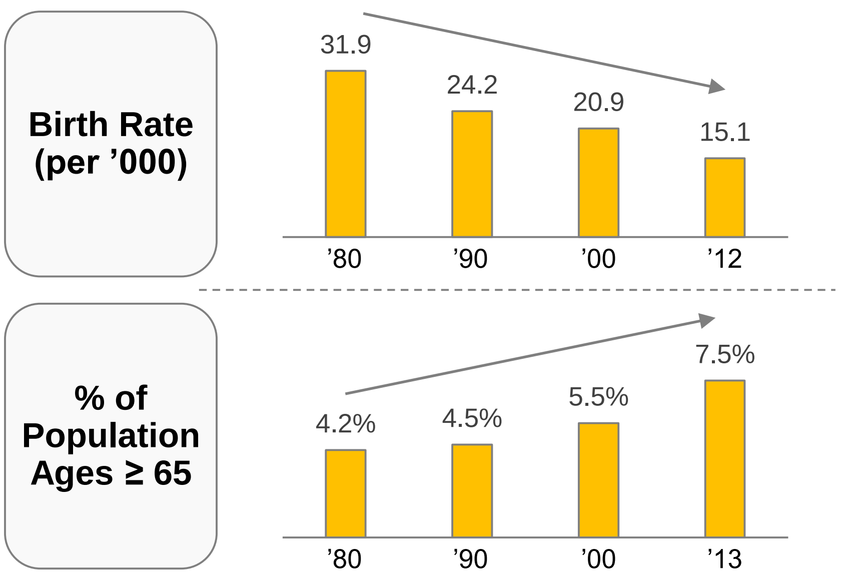
○

- In general, as economy becomes advanced, TFP plays a significant role in achieving sustainable GDP growth
- Brazil has chance to improve TFP by lowering transaction cost, minimizing macroeconomic risk and boosting creative destruction

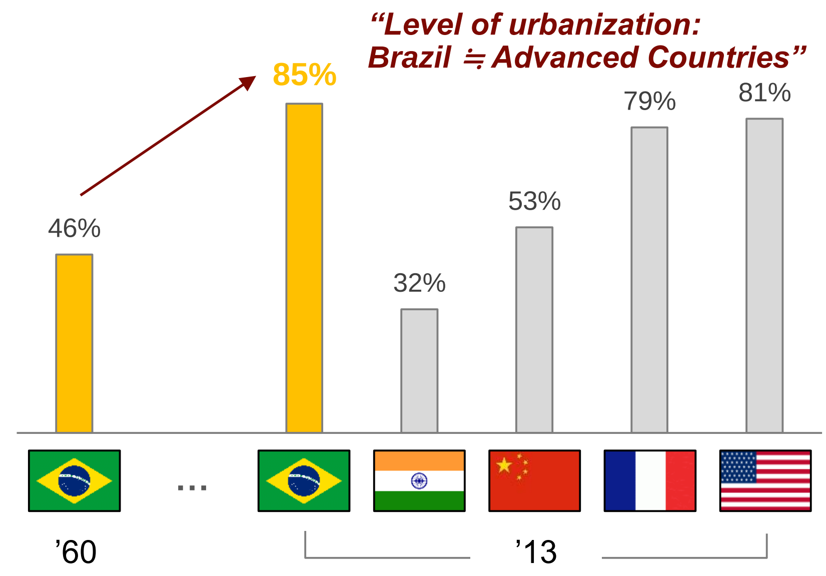
Demographic change in Brazil shows that labor would have limited contribution to future GDP growth

Demographic Change in Brazil

Aging Society[1)]



% of Urban Population



- No more dramatic L/N increase by youth population & urbanization
  - With the consistent decreasing birth rate, Brazil became aging society,
  - Brazil shows high urbanization rate compared to other developing countries such as India and China

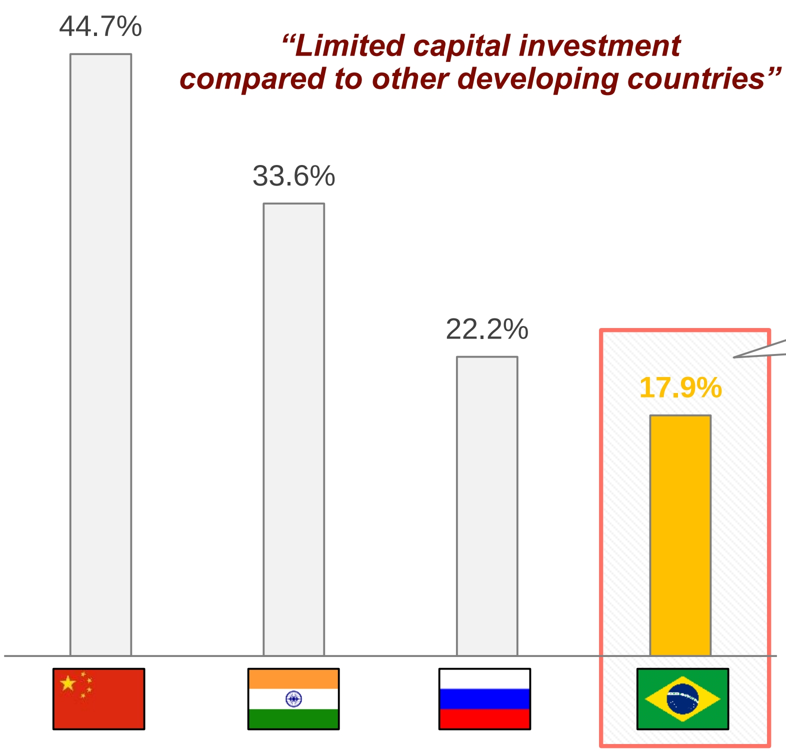
1. % of population ages 65 and above is more than 7% = Aging Society, more than 14% = Aged Society, more than 20% = Super Aged Society

Source: World Bank Data, Team Analysis

The fact that Brazil economy is suffering from lack of Biz. infra implies accumulating capital stock still can contribute to GDP growth

Insufficient Business Infrastructure

Avg. Gross Capital Formation
('02 ~ '13, Unit: % of GDP)



Infrastructure: Weakness in Brazil Economy

Indicator	Rank among 144 Countries
Quality of overall infrastructure	120
Quality of road	122
Quality of railroad infrastructure	95
Quality of port infrastructure	122
Quality of air transport infrastructure	113
Quality of electricity supply	89
⋮	⋮

- Limited capital investment brought about inferior infrastructure which deteriorate Brazil's competitiveness
  - According to global competitiveness report 2015, inadequate supply of infrastructure is regarded as one of the most problematic factors of doing business
- Conversely, it implies that **achieving GDP growth by accumulating capital and improving infrastructure is still possible**

Source: World Bank Data, Global Competitiveness Report 2015, Team Analysis

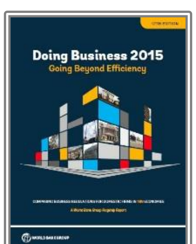
Root cause of insufficient business infrastructure is underdevelopment of financial market

Root Cause Analysis – Insufficient Business Infrastructure

Global Competitiveness Report

- The level of financial market development **= Ranked as 53rd** among 144 countries
- Accessibility to financing is regarded as problematic factor of doing business in Brazil

Doing Business Report



- Easiness of getting credit **= Ranked as 89th** among 189 countries
- Easiness of resolving insolvency **= Ranked as 55th** among 189 countries
  - Average time required = 4.0 years
  - Average cost = 12% of the estate

Negative Impact on Capital Stock

- Difficult to raise the funds and mobilize them through the financial market
- After all, less money would be invested in the business infra construction project

Source: Doing Business 2015, Global Competitiveness Report 2015, Team Analysis

Lowering transaction cost and managing macroeconomic risk would help Brazil enjoy sustainable GDP growth

High Transaction Cost & Macroeconomic Risk

High Transaction Cost

Easiness of Starting a Business

- Ranked as 167th among 189 countries
  - # of procedures required: 11.6
  - Average period: 83.6 days

Easiness of Dealing with Construction Permits

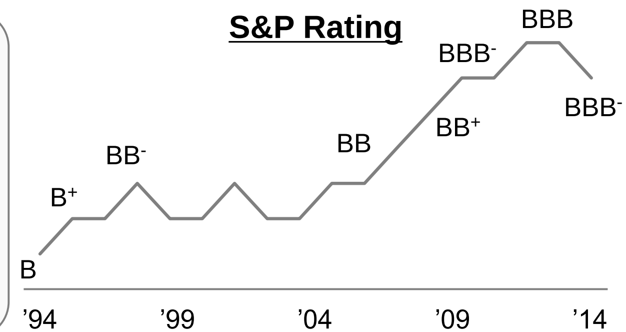
- Ranked as 174th among 189 countries
  - # of procedures required: 18.2
  - Average period: 426.1 days

Easiness of Trading across Borders

- Ranked as 123th among 189 countries
  - Document to export & import: 6 / 8
  - Time to export & import: 13.4 / 17.0 days

High Macroeconomic Risk

Credit Risk



Unstable Political Leadership

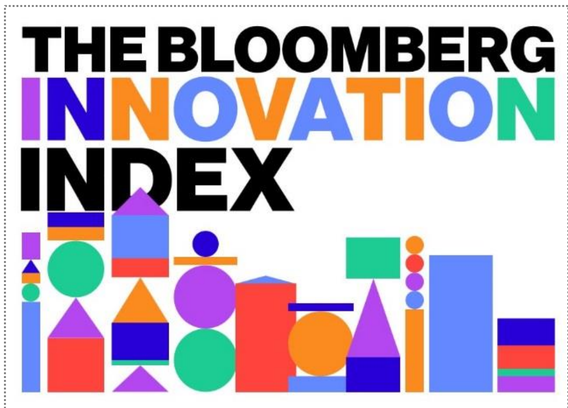
- Big protests is currently demanding President's impeachment
- Difficult to forecast direction of government policy

- Both high transaction cost and macroeconomic risk hinder economic growth
- Additional growth can be accomplished by solving these issues above

Source: Doing Business 2015, LGERI, Media Research, Team Analysis

Opportunity to boost GDP growth by encouraging creative destruction also exists

Lack of Creative Destruction



- Ranked countries based on their overall ability to innovate
- Equally weighted six criteria[1] are as follows
  (R&D, Manufacturing,
  High-tech companies, Education,
  Research Personnel, Patents)

2015 Ranking

1	South Korea
⋮	
6	United States
⋮	
14	Russia
⋮	
22	China
⋮	
47	Brazil

"Room for Further improvement"

- Brazil is ranked as a 47^{th} innovative country
  - Much lower than other developing country such as China and Russia
- It implies innovation supportive business environment can lead to Brazil's further growth (Ex. South Korea case)

1. R&D: R&D expenditure as % of GDP
   Manufacturing: manufacturing value-added per capita,
   High Tech Companies: # of domestically domiciled high-tech public companies
   Education: # of secondary graduates enrolled in postsecondary institutions as a percentage of cohort, % of labor force with tertiary degrees, annual science and engineering graduates as a % of the labor force & as a % of total tertiary graduates
   Patents: resident utility patent filings per 1 million population & per $1 million of R&D spent, utility patents granted as % of world total

Source: Bloomberg, Team Analysis

Huge bureaucracy, corruption and inconsistent policy are root causes of Brazil’s low TFP

Root Cause Analysis – Inferior Total Factor Productivity

- **Huge bureaucracy**
  - The excessive regulations, taxes & paperwork made 40% of start-up can’t survive for more than 2 years[1)]

- **Widespread corruption**
  - Pointed out as a factor of weakening competitiveness[2)]
  - 20% of public official had ever asked bribe[3)]

- **Inconsistent policy**
  - S&P pointed out mixed policy signaling as a reason of credit degrading
  - Brazil failed to keep the announcement about its budget balance

- **Protectionism**
  - Brail is apparently pursuing open economy, but still many barriers
  - Protectionism causes conflict with Japan and EU

“Less Competition”

High Transaction Cost

High Macro-economic Risk

Lack of Creative Destruction

1. Revealed by IBGE, Brazil’s main government research institute 2. By Global Competitiveness Report 2015 3. By survey conducted in ’08

Source: Global Competitiveness Report 2015, Media Research, Team Analysis

Actions required to solve the current issues and to attain the sustainable growth are as follows

Actions Required

Fostering Financial Market	• Incentive to encourage private sector's investment • Benchmark successful financial market development cases of advanced countries
Simplification of Regulations	• Simplify approval process and tax structure • Get rid of unnecessary regulations
Eliminating Corruption	• Reinforce corruption monitoring system • Set the strong penalty law for prevention
Time Consistent Policy	• Develop policy with a long-term view • Break from the populism
Encouraging Competition	• Supporting system for the entrepreneurship • Lower the trade barrier

Sufficient Capital Stock

Low Transaction Cost

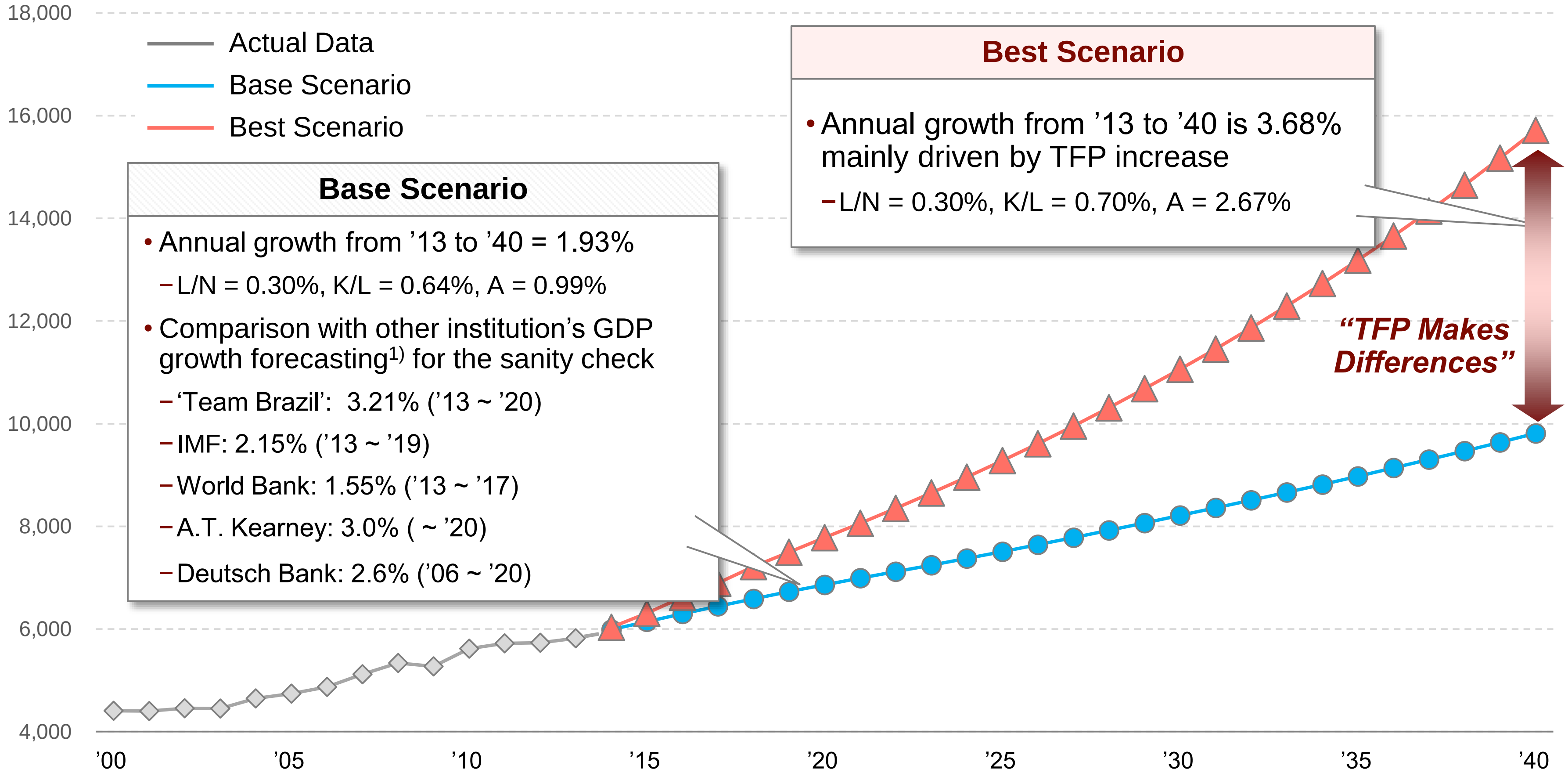
Stable Macroeconomic Environment

Creative Destruction

Under the best scenario where all the recommendations are well implemented, investment can be justified

GDP per Capita Forecasting

(Unit: Constant '05 US$)



1. GDP growth rate is higher than GEP per Capita growth rate due to increase in total population

Source: IMF, World Bank, A.T. Kearney, Deutsch Bank, Team Analysis

[Appendix] Key Assumptions – Base Scenario & Best Scenario

Scenario	Factor	Assumptions
Base Scenario	Labor	• From '14 to '40, annual growth rate of total population would decrease 0.85% to 0.59% (From '08 to '13, annual growth rate of total population went down by 0.01% per each year) • From '14 to '40, employment / total population would increase 53.9% to 57.7% (From '08 to '13, employment / total population went up by 0.07% per each year)
	Capital	• 18% of total GDP would be re-invested into the next year capital stock
	TFP	• From '14 to '40, annual growth rate of TFP would be 0.99% (From '03 to '13, annual growth rate of TFP was 0.99%)
Best Scenario	Labor	• Same assumption with base scenario
	Capital	• From '13 to '14, 22% of total GDP would be invested into the next year's capital stock (Investment rate = Russia) • Investment rate from '15 to '16 would rise to 33.6% (India Level) and from '16 to '40 would reach the 44.7% (China Level)
	TFP	• From '14 to '40, annual growth rate of TFP would be 2.7% (Brazil experienced 2.7% of annual TFP growth from '93 to '97)

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