Window of Opportunity? Demographic Changes and Economic Consequences in Brazil

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Main Objectives

- What is the size of the demographic dividend?
- How long it will last?
- How can public policies provide adequate conditions to realize the dividends?

⇒ Investigate Public and Private Dividend
⇒ Closer Look at the Social Security System
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Main Ideas

- Changes in Population Age Structure Interacts with Economic Life Cycle Affecting Income Per Capita Growth
- Two Demographic Dividends:
  - Increase in the share of population that is of working age
  - Related to the creation of wealth that arises from population aging
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  - Related to the creation of wealth that arises from population aging
Motivation

- Brazil is unique for combining:
  - Rapidly Population Aging: 65+ from 3% in 1970 to 20% in 2050
  - Large Public Sector (as % of GDP): 12% for the elderly
  - Increasingly generous Public Pension System
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Demographic Transition in Brazil

Life Expectancy at Birth

Total Fertility Rate

Population Age Structure

Dependency Ratios

SOURCE: Authors’ Calculations, based on IBGE Population Projections
Public Expenditures in Brazil

- Window of Opportunity in Brazil
- Bernardo Queiroz

Introduction

Background

Methods and Data

Methods

Data

Results

Conclusion

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Dividends in Brazil are ignored by policy-makers and still faces huge debate in the academia:

⇒ Carvalho & Wong (1995): first to point out the need to respond ahead of time to boost dividend

⇒ Turra & Rios-Neto (2001); fiscal gains from dividends will not last long

⇒ Rios-Neto (2004): positive relationship between demographic transition and income growth, but potential growth remains unclear

⇒ Queiroz, Turra & Perez (2006): provided first estimate of dividend following Mason & Lee
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Estimating the First Dividend

- Refers to the income growth due to the increase in the share of population that is of working age. That is, there are more potential producers that consumers in the economy.

- It is measured by the ratio between Effective Consumers and Effective Producers in the Economy

  ⇒ Effective Consumer: population weighted by consumption age profile

  ⇒ Effective Producer: population weighted by labor income age profile
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Output per effective consumer can be expressed as:

\[
\frac{Y_t}{N_t} = \frac{L_t}{N_t} \cdot \frac{Y_t}{L_t}
\]  

where \( Y_t \) is the total output, \( N_t \) is the effective number of producers, and \( L_t \) is the effective number of consumers. The support ratio is given by the ratio of effective producers \( (N_t) \) to the number of effective consumers \( (L_t) \). By taking the natural log of both side and deriving it in respect to time, we obtain rates of growth:

\[
\dot{y}_t = \dot{L}_t - \dot{N}_t + \dot{y}_t^l
\]
Necessary Data to Estimate First Dividend

- Population Projections from United Nation: 1970 to 2050
- Labor Income and Consumption Age Profiles: estimated using NTA methodology
Demographic Transition in Brazil

Introduction

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Methods

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Performance Transition in Brazil

Year

Life Expectancy at Birth

TFR

Total Fertility Rate

Year

Population Age Structure

Dependency Ratios

Year

SOURCE: Authors’ Calculations, based on IBGE Population Projections
Labor Income and Consumption Age Profiles

Figure: Economic Life Cycle

Income
Consumption
The First Demographic Dividend

- The growth in the support ratio is the difference between the growth in the number of effective producers minus the growth in the number of effective producers. That is, the growth of the working age population.

- Given the Labor Productivity, an increase in the working age population increases the output per effective consumer.
The First Dividend
Public and Private Dividend

- Private Dividend: effect of increases in household support ratio. It takes into account beneficiaries of private inter-vivo transfers.

- Public Dividend (Fiscal): is given by changes in the ratio between effective tax payers and effective beneficiaries from public transfers.
Public and Private First Dividends
Second Demographic Dividend

- It is related to the creation of wealth that arises in response to population aging.
- With rising elderly population, consumption in the future can only be maintained by accumulating capital or transfer wealth. Accumulation of wealth also influences economic growth.
- Elderly hold more wealth (composition effect), and living longer increases demand for wealth (behavioral effect).
- It is reflected by the rate of growth of productivity - increases in capital-labor ratio.
- It is different from the first dividend because it is not temporary since capital deepening has permanent effect on income.
Estimates of the Second Dividend
## Estimated Growth from Dividends and Observed Growth

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<tr>
<th>Period</th>
<th>GDP per Consumer</th>
<th>Total Dividend</th>
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<td>1970-1975</td>
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<td>1970-2010</td>
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Concluding Remarks

- Population age structure in Brazil is changing rapidly. Government, families, and individuals should be prepared for the possible impacts (positive and negative).

- Paper shows that demographic changes might favor economic growth when appropriate policies and institutions are in place.

- Results indicate that Brazil is failing to take advantage of the positive impacts of demographic dividend. First dividend is almost over. The first dividend was short because of the rapid decline in fertility.
The fiscal dividend will last a very short period of time. Giving current structure of public transfers in Brazil, the government will face an increasing fiscal expenditure, what might harm economic growth.

Second dividend is also in check, because large public transfers might affect propensity to save since individuals expected to consume at older ages financed by public transfers here.
Political arena does not give proper attention to demographic change. Need to educate policy makers about demography.

Future work will include simulations affect labor income age profiles - based on declining fertility and increasing human capital accumulation. Based on the assumption that there is a quality dividend.

Importance of further research on familial support system. Much attention is being paid to the public pension system, but families make important transfers. Allocation of time is not included here.