Education Returns

AND DEMAND (COVERAGE AND STUDENTS MOTIVATIONS)

**See small part in text Education Policies

Schooling, Higher Education, Professional Education

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**Students Transitions**

More pronounced during teen age years after 13 years

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Source: FGV Social with PNAD/IBGE microdata
Mercado de Trabalho e Ciclo da Vida

Labour Market Outcomes and Life Cycle

Simple Bivariate Plot
Opened by Years of Age

Relative Ratio*

Mincerian Equation
Coefficients and Logistic Regression
Odds ratio Plot
Opened by Years of Age

Educational Premium by Years of Study - 2007

Simple Bivariate Plot
Opened by Years of Schooling

Mincerian Equation
Coefficients and Logistic Regression
Odds ratio Plot
Opened by Years of Schooling

Source: CPS/FGV from PNAD/IBGE microdata

* Basis: 15 years old

Source: CPS/FGV with PNAD/IBGE microdata

* Basis: 0 years of study
Returns from Education

Social Return $\rightarrow$ relevant concept for public policy

Private Return

+ Growth - Inequality + Social Welfare

+ Employability + Salary + Formality, Hours etc + Externalities

How they are measured and perceived in practice?*

Stepwise mincerian earnings equation shows that after own schooling, mean schooling in the community has the highest explanatory power pointing to externality effects.

*We will focus here on private returns which is the biggest chunk of social returns: for example, the choice between different university careers regarding salary or understanding the impact of a master's degree versus a pure bachelor's degree.

Educational Private Premiums

Individual Income by Years of Study in 2015 – Working Age Population

<table>
<thead>
<tr>
<th>Years of Study</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>R$ 815</td>
</tr>
<tr>
<td>High School</td>
<td>R$ 1,173</td>
</tr>
<tr>
<td>University</td>
<td>R$ 3,047</td>
</tr>
<tr>
<td>Working Age Population</td>
<td>R$ 5,616</td>
</tr>
<tr>
<td></td>
<td>R$ 7,350</td>
</tr>
</tbody>
</table>

Source: FGV Social with PME/IBGE microdata

*Law nº 11.274/feb/2006 – Elementary School now has a nine-year duration, including 6-year old children, setting a deadline for the implementation in the entire system by the end of 2010.
**Bivariated Evolution of Productive Attributes in Percentage Points**

*2003 to 2014*

6 Main Metro Areas

Cumulative Increase in the Occupied population share of those with given Productive Attributes = Other Equalization Force – Similar wrt Developed and Emerging countries

Source: CPS/FGV from PME/IBGE microdata, data until February 2015 * at least incomplete level

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**Bivariated Evolution of Earnings By Productive Attributes**

*2003 to 2014*

6 Main Metro Areas

Earnings increase (per year) of those with better Productive Attributes increased less than the mean = Equalization of Returns – Opposite wrt Developed and Emerging countries (except Latin American Countries)

Source: CPS/FGV from PME/IBGE microdata, data until February 2015 * at least incomplete level
Share with Completed Higher Education (%) 

Share with Graduates Completed (%) 

Ranking 5500 Municipalities 

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>BD/PIA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>São Caetano</td>
<td>31.40</td>
</tr>
<tr>
<td>2</td>
<td>Niterói</td>
<td>29.55</td>
</tr>
<tr>
<td>3</td>
<td>Vitória</td>
<td>27.57</td>
</tr>
<tr>
<td>4</td>
<td>Águas de São</td>
<td>27.14</td>
</tr>
<tr>
<td>5</td>
<td>Florianópolis</td>
<td>26.81</td>
</tr>
<tr>
<td>6</td>
<td>Santos</td>
<td>26.58</td>
</tr>
<tr>
<td>7</td>
<td>Curitiba</td>
<td>22.70</td>
</tr>
<tr>
<td>8</td>
<td>Porto Alegre</td>
<td>22.55</td>
</tr>
<tr>
<td>9</td>
<td>Balneário</td>
<td>22.26</td>
</tr>
<tr>
<td>10</td>
<td>Camboriú</td>
<td>19.75</td>
</tr>
</tbody>
</table>

Canápolis (Bahia) 0.24

Higher Education Map 1 % with bachelor’s degree within working age population (PIA) by county

Bachelor’s degree/ PIA
- 0.24 - 4.14
- 4.14 - 8.0
- 8.03 - 11.9
- 11.9 - 15.8
- 15.8 - 19.7
- 19.7 - 23.6
- 23.6 - 27.5
- 27.5 - 31.4

Source: CPS/FGV processing microdata from Censo 2010/IBGE

Source: CPS/FGV processing PNAD/IBGE microdata
Specific Careers Choices

Multivariate Ranking of University Careers by Labor Market Outcomes

<table>
<thead>
<tr>
<th>Rank</th>
<th>Career</th>
<th>Salary Rate</th>
<th>Working Hours</th>
<th>Occupancy Rate</th>
<th>Social Security Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medicina</td>
<td>41</td>
<td>42</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Odontologia</td>
<td>14</td>
<td>17</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Transporte Civil</td>
<td>17</td>
<td>14</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Engenharia Civil</td>
<td>18</td>
<td>44</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Estudos da Educação Superior</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>6</td>
<td>Arquitetura</td>
<td>18</td>
<td>32</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Física</td>
<td>21</td>
<td>42</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>8</td>
<td>Filosofia</td>
<td>28</td>
<td>47</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>9</td>
<td>Religião</td>
<td>31</td>
<td>48</td>
<td>46</td>
<td>48</td>
</tr>
</tbody>
</table>

Rendimento médio anual (milhões) e salário mínimo, em reais

Simulador Retornos da Educação Superior

http://www.cps.fgv.br/cps/bd/censo/universidade.eng/index.htm
Retrospectively, the cost diseases of services — in particular health and higher education plus a prospective rise in occupation in these areas given demand rise.

In Brazil population with a university degree grows at 4.8% per year against 0.8% of overall population. Education Expenses Income Elasticity (among people with University degree) is 1.91 (elastic) and the odds of having this expenses is affected both by individual and family income.
THE KEY: DIFFERENCES IN ABILITY TO ADOPT AND ADAPT NEW TECHNOLOGIES

Inferences across Latin American Countries provinces suggests that a doubling the density of engineers is associated with a 60% rise in GDP (similar result across U.S. States)

Self-Perception - Reality = Gap

Source: Maloney, 2015
What is the Private Premium from Professional Education Attributes?

1. Level of the Course
   - Technological College 24%
   - Technical High School 14%
   - Basic Qualification

2. Thematic Areas of the Courses
   - Health
   - Management
   - Computer, etc.

3. Relation with Earlier Regular Education: RE-Education

4. Private, Public & Non Profit Supply

5. Daytime or Evening Courses NS

6. Classroom Courses or On Line NS

Source: Special supplement PNAD

Controlled by Years of schooling, year, gender, race, Age and Family size polynomial, Status in the Family, Capital/Suburbs of 6 main metro cities.

Source: FGV Social from PME/IBGE microdata – 15 a 60 anos
Youth Wave in Professional Education - % Attends a Course

Technical Education Coverage at High School Level %

Still Low Coverage
If education generates such a high private return, why do young Brazilians invest so little in it? Answer: the return to high school has fallen 54% in 18 years.

Source: FGV Social with PNAD/IBGE supplement microdata

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**HIGH SCHOOL DROP-OUT MOTIVATION (15 to 17 years old)**

- **DEMAND (INCOME/WORK)**
  - 27.1% of drop-out motivations

- **SUPPLY**
  - LACK OF SCHOOLS
    - 10.9% of drop-out motivations

- **DROP-OUTs ALLEGED MOTIVATIONS**

- **OTHER REASONS**
  - 21.7% of drop-out motivations

- **DEMAND (LACK OF INTEREST)**
  - 40.3% of drop-out motivations

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**Professional Course**

- **Did not Attend**
  - (62.2%)

  - Attended (37.4%)

    - Did not Conclude (5.5%)

      - Work in the Area of the Course
        - 79.5%

      - Among the Rest – Had Better Working Opportunities
        - 50.8%

    - Concluded (94.5%)

      - Among the Rest – Had Better Working Opportunities
        - 50.8%

      - “10% Law”

- **Lack of Supply**
  - 5.4%

- **Not Interested**
  - 86.4%

- **Lack of Resources**
  - 4.2%

- **Others**
  - 26%

- **Higher Education Range**

  - Work in the Area of the Course
    - 79.5%

  - Among the Rest – Had Better Working Opportunities
    - 50.8%

  - “10% Law”

Source: CPS/FGV processing microdata from PNAD 2007/IBGE
It is Necessary to Understand Supply and Demand for Education

Attended? Yes  Concluded? Yes  Work in the Area of the Course?

No  No  No

Why not?

Estimate Models, Hear Different Actors Motivations and Comunicate Results

Research Provides a Service
(Public Quasi-Policy)

New Data Dissemination
(Production of Indicators, Rankings, etc)

Debate Promotion and
Informational Exchange

Public Policies and New
Opportunities

Public Opinion

Private Sector

Educational System

International Organizations

Direct and Indirect
Impacts of Research
On Education and
Productive Inclusion

Policy Proposals (Education and Labor)

- **Knowledge** – Provide information on the supply, demand and return of regular and professional education for potential students, companies and managers. The use of interactive internet devices, such as mobile applications (APPs) with games characteristics, in the case of young people, allows us to adapt to the context of each one and motivate them.

- **Life Skills and Non Cognitive Human Capital** – Financial Literacy, Foreign Languages, CIT courses. To also recognize previous learning flaws. **Talent Attraction & Professional Education, Public-Private Interaction in Education**

- **Certification** – Investment in the formal recognition of talents and skills acquired during the professional exercise, the so-called on-the-job training (Apprenticeship Law).

- **Train+Workers (and -Unemployed) Demand driven courses** – Change the scope of the unemployed to the employed group. Split public costs with the worker and the company that employs it, in terms of dividing the cost of the course itself or exploiting the working time And leisure, such as making use of part of holiday period. This would make it possible to better reconcile the effective joint demand of all actors involved in the process.

- **Bolsa Jovem 2.0** – Extending the age range of Bolsa Familia beneficiaries, including their role in the choice of vocational courses and direct receipt of benefits, which are not necessarily monetary. Experiences in the states.

- **Circulation** – Flexibility in the design of courses aimed at young people, given the need for these to circulate and their consequent tendency towards greater drop-out of the courses initially chosen. Emphasize the offer of modular and short duration courses with the option of taking advantage of credits already taken in other courses, while valuing the search for higher professional levels. Allow more choice in High School (recent reform)