

Universidade Federal Fluminense
Faculdade de Economia
Programa de Pós-Graduação em Economia
Dissertação de Mestrado

BRUNA COSTA CATALDO DE ANDRADE

**Higher Education Funding in Brazil and the Income
Contingent Loans Alternative**

Niterói

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Dissertação apresentada ao Programa de Pós-Graduação em Economia da Universidade Federal Fluminense como requisito parcial para obtenção do título de Mestre em Economia.

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The opinions expressed in this work are of exclusive responsibility of the author.

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Abstract

The current economic and political crises in Brazil have been raising debates about the future of higher education funding, which has three main pillars: full government funding, full private funding, and mixed funding. The first corresponds to tax-financed public institutions. For those who cannot access the public system or afford full costs of the private, the government offers two programs: PROUNI and FIES. We critically analyze these three public policies and one of the main alternatives in literature, the Income Contingent Loan (ICL). The general objective is to analyze public policies for higher education funding in Brazil and ICL as alternative. We aim to map and characterize the system, not to discuss each policy in depth. We present their structures so problems can be identified and solutions can be researched with a comprehensive understanding of the system. The specific objectives are making a literature review of the ICL approach; describing higher education funding in Brazil; and discussing what benefits/difficulties implementing an ICL can bring. The objectives are guided by the research question: “What are the characteristics and challenges of funding higher education in Brazil, and what contributions the ICL perspective can give to solve the latter?”. Conclusions indicate the ICL literature positively contributes to the identification of the challenges but particularities of the country must be taken into consideration. Also, there is mixed-evidence concerning the implementation of a nation-wide ICL, but a strong recommendation for making FIES one – with attempts already in development. Lastly, blind-alleys were identified in the debate, leading to reform propositions disconnected from the country’s challenges.

Keywords: Higher education funding; Income Contingent Loans; Grant programs; Tax-financed education; Higher education policy

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List of Acronyms and Abbreviations

- CAPES: Federal Agency for Support and Evaluation of Graduate Education
- CC: Course Concept
- CES: Higher Education Census
- COFINS: Contribution for Social Security Financing
- CPC: Preliminary Course Concept
- CREDUC: Education Credit Program
- CSLL: Social Contribution on Net Profit
- EC95: Constitutional Amendment 95
- ENADE: National Assessment of Student Achievement
- ENEM: National Exam of Upper Secondary Education
- E-SOCIAL: Digital Bookkeeping of Tax, Social Security and Labor Obligations System
- FIES: Student Financing Fund
- FNDE: National Fund for the Development of Education
- ICL: Income Contingent Loan
- IGC: General Index of Courses
- INEP: National Institute for Educational Studies and Research “Anísio Teixeira”
- IRPJ: Corporate Income-Tax
- LOA: Annual Budget Law
- OECD: Organization for Economic Co-operation and Development
- PCE: Education Credit Program
- PIS: Contribution for the Social Integration Program
- PNE: National Education Plan
- PDE: Education Development Plan
- PROUNI: Program University for All
- REUNI: Restructure and Expansion of Federal Universities
- RFB: Brazilian Federal Revenue
- SES: Socioeconomic Status
- SIAFI: System of Financial Administration
- SISU: Unified Selection System
- SINAES: National Higher Education Assessment System

TBLR: Time-Based Repayment Loans

TCU: Federal Court of Audit

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Introduction

Since the end of 2014 Brazil faces economic and political crises that have been deteriorating its fiscal revenue. The government responded by cutting expenditure, which became an institutionalized policy after Constitutional Amendment 95 (EC95) in 2016. The EC95 limited the growth of government's expenditure to inflation, stopping its real growth for twenty years. That raised debates around the future of social policies as a whole, with higher education funding being the object of study in this work. Higher education funding in Brazil has three main pillars: full government funding, full private funding, and mixed funding. The first corresponds to the provision of tax-financed free higher education by the government. Participation happens through a selection process – National Exam of Upper Secondary Education¹ (ENEM) – because places are limited. For those who cannot access the highly-selective public system or afford full costs of the private, the government offers two programs: Program University for All² (PROUNI) and Student Financing Fund³ (FIES). They are mix-funding targeted public policies, cost-sharing programs that aim at increasing the participation in higher education through the private system. The current set of public policies for higher education funding is the same since the early 2000s: FIES was implemented in 1999 by President Cardoso, and PROUNI in 2004 by President Lula da Silva. Even though all have suffered reforms, the composition of the funding system remained the same.

PROUNI is a partnership between the government and private higher education institutions. They receive tax exemptions in exchange for offering full and partial grants to poorer students (MEC, 2016b). FIES, on the other hand, is a budgetary policy. It is a Time-Based Repayment Loan (TBLR) guaranteed by the government with subsidized interest rates that students apply to be able to pay for their tuition fees (MEC, 2017). The program went through reforms that started operating in 2018 and aimed at including ICL aspects. However, the administrative reports available for analysis are from before the reforms. For that reason,

¹ *Exame Nacional do Ensino Médio* – english version in free translation.

² *Programa Universidade para Todos* – english version in free translation.

³ *Fundo de Financiamento Estudantil* – english version in free translation.

we addressing the program as a TBLR. Even if there are no results available for the new FIES, the motivation and potential of the reform are mentioned.

The debate over higher education funding is not new in Brazil but the current political and economic crises increased its relevance. Some argue fully tax-financed public institutions are problematic: they should have fees and FIES should be expanded to them. On the other hand, some contest that government should put all its focus on public institutions to broaden access and achieve social justice. Most of these statements are made without a deep analysis of the structure of higher education and its funding and are based on “blind alleys” – mistaken arguments or premises – (BANCO MUNDIAL, 2017; CARTA CAPITAL, 2017; EXAME, 2017; FOLHA DE SÃO PAULO, 2017).

The current fiscal situation was not the cause of the problem in higher education but helped bringing an old debate to the spotlight. It raised questions such as: should public institutions of higher education be free, or should students pay? Are programs like FIES and PROUNI enough to sustain the system if they have to support public institutions as well? Are these programs well designed? Is tax-financed gratuity the best alternative to improve access and guarantee social inclusion? Are FIES and PROUNI better at doing it? Are poor people paying for the education of rich people because public institutions are tax-financed? Even though these questions have surfaced in society, there is still plenty to be developed in terms of academic evidence.

According to Barr (2012), social policy decisions should be taken in two steps. Initially, aims must be determined and that is the place for ideology because they are mainly normative and dependent on the preferences of each society. Then, a method must be chosen and this decision must be technical: the most efficient way to achieve the ideologically defined aims. The general aim of higher education is to guarantee the access of every person who has the will and competence to do it without influence from social, ethnic or gender conditions. Additional aims related to social justice, social cohesion, scientific freedom, and others are relevant and pursued in most developed countries to a degree dependent on their views as societies. The debate in Brazil mixes ideological arguments and method, leading to solution proposals that may harm society and the development of the country, considering higher levels of education

are generally related to positive impacts on individuals and the economy⁴ – even more in a globalized world (BARR, 2004, 2009, 2012, 2014, 2017; BROWNE, 2010; GRUBER, 2010; KALLISON, COHEN, 2010; OECD, 2008, 2017).

Despite the relevance of the sector, it has a history of under-funding and managerial hardship in Brazil. Public institutions end up with difficulties to improve infrastructure, hire and pay staff, and increase the number of places. It also becomes complicated to expand participation through FIES and PROUNI without limiting the resources to public institutions or other areas of government participation. Considering the persistence of the problem and its aggravation since the current recession, we analyze how public policies for higher education funding are structured in Brazil.

We contribute by critically analyzing the public policies for higher education funding in Brazil from the perspective of one of the main alternatives provided by international literature and experience, the Income Contingent Loan (ICL) – which is not as deeply discussed in Brazil as in other countries (CHAPMAN, NASCIMENTO, 2017; NASCIMENTO, 2015). We describe the results; identify the challenges for the future of higher education funding, discuss the criticism each policy receives, and then analyze the advantages and difficulties that choosing to implement an ICL represents. Structuring the proposal, the general objective is to analyze public policies for higher education funding in Brazil and ICL as alternative. The specific objectives are: reviewing the literature on the ICL approach; describing higher education funding in Brazil; and what benefits/difficulties an ICL can bring if implemented. The research question guiding the objectives is: “What are the characteristics and challenges of funding higher education in Brazil, and what contributions the ICL perspective gives to solving the latter?”.

It is important to determine the limits and methodological choices of the research. First, we aim to map and characterize the system, not to discuss each policy in depth. We present their structures so that problems can be identified and solutions researched with a comprehensive understanding of the system. We decided to make broader analyses rather than providing a deeper understanding of a single policy because of the diffuseness of the Brazilian debate. Consolidating the existent policies and identifying their idiosyncrasies in one work

⁴ See Wolf (2004) and Holmes and Mayhew (2016) for a relativization of that statement.

could bring cohesion in the comprehension of the challenges and be a starting point to identify what aspects need more profound analyses. So, we are more worried – in this work – with the proper identification of funding structures and challenges, than with presenting a consolidated reform proposal. It is our understanding that the Brazilian debate needs to go back to the problem identification phase to provide better reform suggestions to the country.

Also, we choose to discuss funding along with elements of quality and equity because of the existence of arguments in economic theory that relate outcomes of the latter two to the choice of the first leading to the need of identifying if this is the case in Brazil; also, a cost analysis should be accompanied by a benefit one. Quality and equity are complex themes by themselves, so analyses are not exhaustive and further research is needed. Additionally, we focus on the funding of teaching – following authors like Barr (2004, 2009, 2012, 2014, 2017), Browne (2010), Nascimento (2015), Chapman and Nascimento (2017), Nascimento (2017) and Waltenberg (2017). Research funding comprises industry and innovation literature, which would have to be analyzed and increase the object of study. The topic, however, is relevant – like quality and equity – and demands attention because independently of results, research will remain largely government's responsibility (BARR, 2012). Considering this, research funding is mentioned when necessary to understand results, particularly regarding quality and comparisons between the public and private sector.

Another note is that higher education studies comprise two main fields: provision and funding. Publicly owned institutions may or may not be publicly funded, the same for private ones. In that sense, conclusions regarding funding may apply to both types of provision (BARR, 2012). The provision in Brazil comprises three different types of institutions: colleges, university centers, and universities. Public institutions, even those responsible for technical and professional education, are given the status of universities to facilitate regulation, supervision and evaluation. In that sense, public institutions and public universities can be used as synonyms in this work (BRASIL, 2017). The accreditation of private institutions is different, with all of them starting as colleges and their status being changed to university centers and then universities if they attain the minimum standards of staff qualification, research development and results in quality assessments (BRASIL, 2017).

When it comes to the funding of these types of institutions, public ones are publicly funded and private ones are funded by both spheres. We do not discuss the possibilities of

privatizing or nationalizing institutions, only alternatives to the funding of an already established provision system. Also, we keep the research within the federal level, which is justified by state level having its own specificities and Brazilian constitution mandating that higher education is mainly a federal responsibility. So, public higher education institutions/public universities are synonyms of federal higher education institutions/federal universities in this work.

For the theoretical framework of this work, we selected the ICL proposition. Other theories within and outside economics can be used to discuss higher education funding, like Welfare State studies focused on public domain and social investment. The theoretical defense of tax-finance is supported by these works but they are not developed in this work because the object of study is the contribution of the ICL alternative. For literature review, we used indexed bases and complemented it with works from previous knowledge, along with cross-references. We also built descriptive statistics and historical analyses of the policies using secondary data and consulting administrative reports. The focus for the Brazilian case was on policy design, cost and social profile of the public policies for higher education funding. We used data from the country's Higher Education Census⁵ (CES) – provided by National Institute for Educational Studies and Research "Anísio Teixeira"⁶ (INEP) – consulted the Federal Government's Integrated System of Financial Administration⁷ (SIAFI) for fiscal information, and administrative reports for the description of the design of the policies as well as their results.

This work is structured in three chapters besides this introduction and the conclusion. In the first chapter we present the economic theory behind ICL and the method's construction in theory. In the second, we describe the main public policies for higher education funding in Brazil: tax-financed public institutions, FIES and PROUNI. Third chapter features the analysis of the findings according to the literature, identification of the challenges for higher education funding in Brazil and discussion of the contribution of implementing an ICL in the country.

⁵ *Censo da Educação Superior* – english version in free translation.

⁶ *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* – english version in free translation.

⁷ *Sistema Integrado de Administração Financeira do Governo Federal* – english version in free translation.

Chapter I – Higher Education Funding: The Development of the ICL alternative

In this chapter, we present the literature in which the ICL alternative is developed. The chapter is organized in two sections. In the first, we describe the global context of higher education: its trends, relevance and how funding relates to it. We do it to justify the importance of the sector, to demonstrate its relation to the development of a country and to show how the evolution of funding structures is related to the global trends. In the second section we detail the economic arguments used to develop the ICL alternative. We describe how the diagnoses from mainstream economic theory for higher education funding justify the development of the ICL approach.

1.1 Trends for Higher Education: The Relevance of the Sector and Its Funding

Despite differences in development, institutions and overall objectives within countries, some global trends can be observed in higher education. There is consensus that the sector has been facing continuous expansion (BARR, 2004, 2012, 2014, 2017; BROWNE, 2010; DYNARSKI, KREISMAN, 2013; HOLMES, MAYHEW, 2016; KALLISON, COHEN, 2010; KANE, 2006; MCLENDON *et al.*, 2017; OECD, 2008; UNESCO 2017). The trend represents an inflexion point: “The transformation from a small elite system into a mass system has brought with it a whole series of questions for policy-makers, stimulating a large body of economic research.” (HOLMES; MAYHEW, 2016, p. 475). Even though the movement can be traced back to the Post-World War II period in some countries, globally it was observed in the 1980s and early 1990s (UNESCO, 2017). According to the Organization for Economic Co-operation and Development (OECD) (2008), global enrollment went from 68 million in 1991 to 132 million in 2004, an average annual growth of 5,1% worldwide. More recently, the number of students went from 100 million in 2000 to 207 million in 2014, with global enrollment ratio⁸ rising from 19% to 34% (UNESCO, 2017).

Enrollment rates in the United States increased 60% for women and 31% for men from 1980 to 2000 in the 18 to 24 age group (KANE, 2006). Also, overall enrollment grew 32% from 2001 to 2011 (DYNARSKI; KREISMAN, 2013) and 46% of the population in the 25 to 64 age

⁸ Expresses enrollment as a percentage of the population in the five-year age group immediately following secondary education graduation.

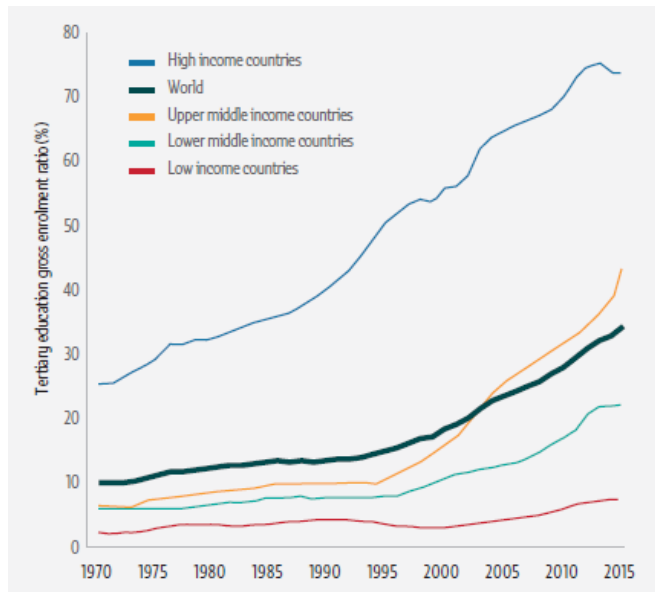
group had a higher education degree in 2016 (OECD, 2017). In England, participation went from 39% in 2000 to 45% in 2010 in the 18 to 30 age group (BROWNE, 2010). Considering the whole United Kingdom, 46% of the population in the 25 to 64 age group completed higher education (OECD, 2017). The general trend can be seen in figure 2. In it, we have the gross enrollment ratio by income group (Figure 1). One can see that lower income countries also follow the trend even if at lower levels and later start.

Also, the net entry rate⁹ of 29 OECD countries from 1995 to 2005 showed that higher participation rates were present in all of them (Figure 2). Brazil follows the trend: enrollment increased 62,2% in the 2006-2016 period, with an annual average of 5% (INEP, 2017a). Also, the participation of people above 25 years-old with higher education doubled from 7,6% to 13,3% in the 2002-2014 period (LAVINAS, 2017). In 2016, it reached 15% (OECD, 2017). The movement, however, has slowed down because enrollment increases are happening at decreasing rates (Figure 3). There is enough evidence of a global expansion of higher education that increased the importance of including it in the development strategy of a country, with its origin being usually attributed to:

(...) increased demand, greater wealth, more supportive government policies and a growing sense of responsibility for social equity (Oketch, 2016). The main driving force has been the increase in demand for higher education from the middle classes (...). Improved progression rates in primary and secondary schools are also a factor in increasing demand (...). Another factor is the increased participation in higher education of non-traditional students, including part-time students and working adults (UNESCO, 2017, p. 2).

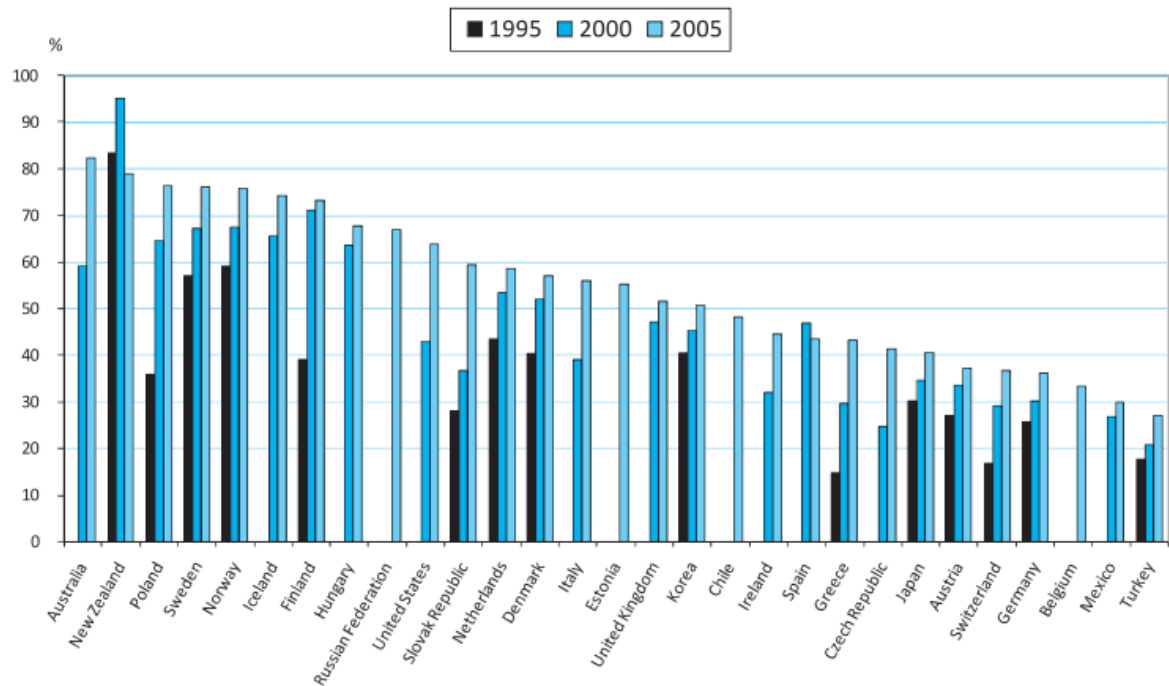
⁹ Expresses the share of students from an age cohort which is enrolled.

Figure 1: Higher Education's Gross Enrollment Ratio by Income Group



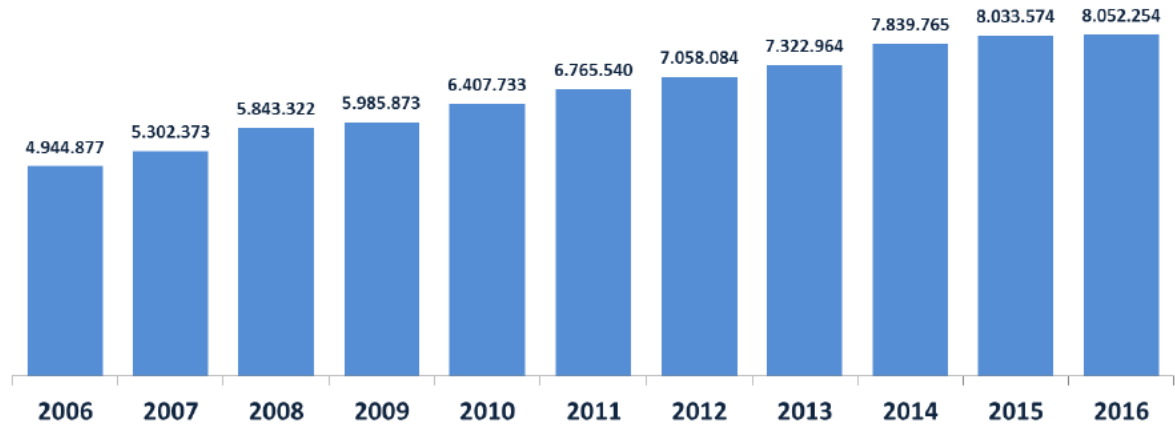
Source: UNESCO (2017)

Figure 2: Higher Education's Net Entry Rate (OECD Countries)



Source: OECD (2008)

Figure 3: Enrollments in Brazilian Higher Education

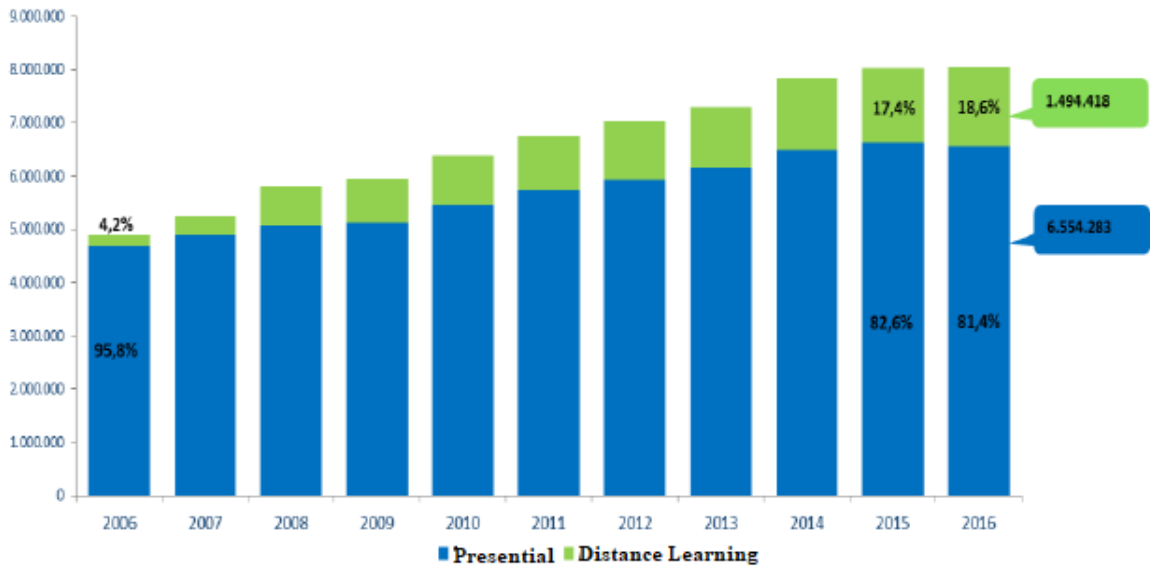


Source: INEP (2017a)

Another trend that justifies the need to study higher education and already indicates challenges within the sector is the diversification of provision and increased competition (BARR, 2012, 2017; BROWNE, 2010; OECD, 2008; UNESCO 2017). There has been an introduction of new types of institutions, more private provision and new modes of delivery that can be related to increasingly diversified demands from labor markets and rapidly evolving knowledge-based economy. The development of strategies for local communities and students having more heterogeneous preferences also contributed (BARR, 2012; BROWNE, 2010; OECD, 2008).

Regarding the participation of the private sector, an analysis of 19 OECD countries showed an expansion of private participation in all of them from 2000 to 2005. Globally, private institutions represented 30% of enrollments in 2017 (UNESCO, 2017), but countries like Japan and Chile stand out with 85% and 79% respectively (OECD, 2017). Results are similar for new modes of delivery, with distance learning gaining relevance due to technological advances combined with shift in the preferences of students and needs of the labor market. Brazil also fits this trend because enrollments increased more in the private sector than the public one in the decade of 2006-2016: 66.8% and 59% respectively. In 2016, private enrollments were 75.3% of the total. Likewise, distance learning has been rising systematically (Figure 4). It went from a 4.2% enrollment participation to 18.6% in the period (INEP, 2017a).

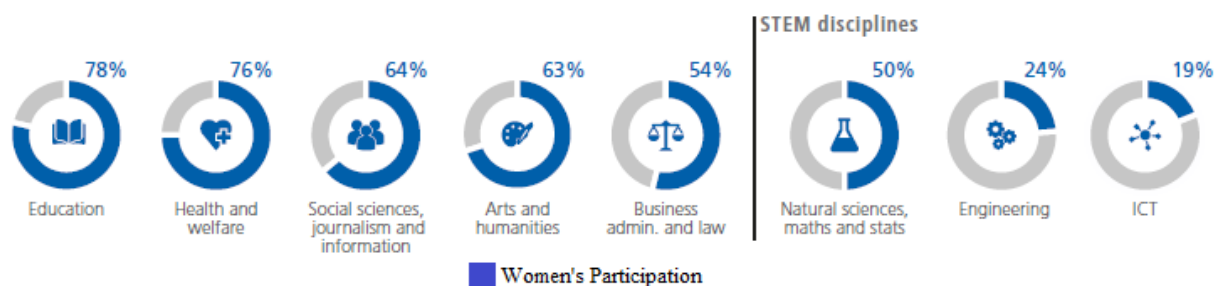
Figure 4: Enrollments in Brazilian Higher Education by Mode of Delivery



Source: INEP (2017a)

In addition to the expansion of the sector and its diversification, student bodies became more heterogeneous (OECD, 2008; UNESCO 2017). Female participation was the most notable trend: their net entry rate in OECD countries went from an average of 43% in 1998 to 61% in 2005 (OECD, 2008). Despite the increase in the participation of women, there is great heterogeneity when looking at the average participation by knowledge area in OECD countries (Figure 5). Women are participating but there is concentration in certain knowledge areas. Brazil reflects the trend, with women representing 71,1% of enrollments in education and 79% in health and welfare (INEP, 2017a). As for Science, Technology, Engineering and Mathematics (STEM) disciplines, they are 23% of the engineering, production and construction students. They are also 47% of natural sciences, mathematics and computer science undergraduates (MELO; THOMÉ, 2018).

Figure 5: Gender Parity Across Disciplines (OECD Averages for 2015)



Source: OECD (2017)

There are two more trends, which are the ones related to our object of study: new funding arrangements and increased focus on accountability. Both are related and particularly relevant because they are responsible for the maintenance and development of the entire system. Since they are our object of study, details are developed along this work. The importance of funding arrangements and accountability increased because other trends occurred simultaneously to global scenarios of fiscal constraint and demographic change, creating opposing movements: the need to expand and diversify higher education as a development strategy was accompanied by fiscal and demographic constraints. The funding of higher education, therefore, became a challenge in many countries (BARR, 2004, 2009, 2012, 2014, 2017; BROWNE, 2010; DYNARSKI, KREISMAN, 2013; OECD, 2008, 2017). The result was the emergence of debates on how to properly fund higher education without creating distortions.

Some countries approved reforms, such as Australia, New Zealand, the United Kingdom, Chile, Colombia, Brazil, Hungary, Malaysia and others. They encountered different levels of success, but the trend of searching for new funding arrangements due to pressures in the system can be observed globally. The situation was followed by an increased number of research studies trying to propose funding strategies for higher education in the current global outline, either through theoretical or empirical arguments. Although many approaches surfaced, the ICL stood out because of the Australian reforms in 1989 that became benchmark for others due to its relative success. Additionally, there has been positive research results from important names in the economics of education field. Considering this, we selected it as our theoretical perspective.

We conclude it is important to study the sector because it is a growing and more important area for development. Also, the acknowledgement of opposing movements indicates social policy challenges that need solving through new developments in theory and search for empirical evidence. These opposing movements generate a number of challenges but we focus on funding: guaranteeing sustainability, building a structure compatible to the country's goals for the sector and using public money efficiently. With the proper justification of the importance of higher education as a whole and its funding specifically, we move to the theoretical developments of ICL.

1.2 Cost-Sharing in Higher Education: From economic theory to the development of the ICL approach

The theoretical arguments behind the ICL derive from traditional economics. The first important concept from economic theory is cost-sharing: why it is needed in higher education and how it should be designed. Cost-sharing is a multiparty policy under which the costs of a program are shared by the stakeholders according to a previously determined formula. The main stakeholders in higher education are students/graduates, education institutions and the government. The core arguments for cost-sharing in higher education are: social benefits, equity and fiscal constraints.

First, social benefits exist in addition to private ones: “By increasing a person’s future earnings on average, higher education increases her future tax payments (...) production benefits arise where education, by making someone more productive, also makes others more productive.” (BARR, 2017, p. 358). The existence of social benefits is consensual, with the points of divergence being whether they are greater than private ones or not and if the comparison even matters because the existence of both types would already justify sharing the costs regardless (BARR, 2004, 2009, 2012, 2014, 2017; DOCAMPO, 2007; FRIEDMAN, 1955; GRUBER, 2010; OECD, 2008; STIGLITZ, 2014; WALTENBERG, 2017). The literature regarding ICL fits either arguments, but mostly the latter (BARR, 2009, 2012, 2014, 2017, GRUBER, 2010, KALLISON, COHEN, 2010, WALTENBERG, 2017).

The second cost-sharing element is equity. It is argued higher education is historically accessed by middle and upper-classes, making tax-finance a mechanism in which the poor pay for the rich to study. Lastly, there is the fiscal constraint problem, in which education must compete for public resources with pensions, health and other social needs that have been prioritized mainly because of changing demographics. The conclusion is that both society and the beneficiaries should bear the costs of the system (BARR, 2009, 2012, 2014, 2017; GRUBER, 2010; KALLISON, COHEN, 2010). The next step is to determine who should be the private stakeholder and the role of the government. Lastly, we see how the mechanism should operate – where the ICL literature contributes to economic theory.

1.2.1 The Cases for Private and Public Participation

Following the diagnosis that some level of private participation to fund higher education is necessary, one needs to determine who should be the private stakeholder responsible for it and how to charge. There are six possible sources of private funding for higher education: families, current earnings of students, their future earnings, employers, entrepreneurial activities by universities, and philanthropy. The advantages of each depend on their capacity of providing efficiency and equity (BARR, 2012, 2014). In the ICL, the argument is for future income of student (BARR, 2009, 2012, 2014, 2017; BROWNE, 2010; CHAPMAN, 2014; CHAPMAN, NASCIMENTO, 2017; OECD, 2008).

The problem with using family resources is they do nothing to improve access. People from low Socioeconomic Status (SES) would end up excluded because their families would not be able to afford tuition fees. So, funding the system through the earnings from families is considered to perpetuate inequalities and potentially increase it. It could also bring efficiency problems related to the loss of human capital potential. In addition, institutions may become under-funded, particularly in lower income countries. Current earnings of the student are considered problematic too because they are usually not enough to afford the costs. Also, part-time students would end up having less time to study, jeopardizing the quality of the system and human capital acquisition. It means this alternative is considered to harm equity and efficiency. Equity because poorer people are disproportionately affected, and efficiency because the decrease in quality and amount of resources may lead to human capital potential not being fulfilled.

Employers could bear the costs of their employees' education, there is an obvious interest in having well-trained workers, but there is also incentive to free-ride and search for workers trained and with education funded by competitors, also leading to under-funding. Difficulties are also pointed in the use of entrepreneurial activities from universities as the main source of funding because net revenue is too small. There could also be loss in terms of the liberty of seeking knowledge for its own sake, an important aim of higher education. The same argument is used for philanthropy. Overall, the previously described sources of private finance

are criticized for the potential of harming micro and productive efficiencies¹⁰, with equity also being jeopardized in some of them. We summarize the five private sources of finance already described and their respective issues (Figure 6). The problems do not exclude the possibility of using them. They are not equitable and efficient enough for national purposes, nevertheless, there are no barriers to using them as complementary source of revenue if the due analysis is made.

Figure 6: Private Sources of Funding and Their Problems

Private Source of Finance	Problems
Families	Excludes people from low SES leading to underfunding and less vertical equity. Human capital potential is jeopardized
Current Earnings of Students	Excludes people from low SES leading to underfunding and less vertical equity. Encourages part-time study leading to less quality. Human capital potential is jeopardized
Employers	Encourages free-riding from employers wishing to hire people whose education has already been paid by other employers, leading to underfunding
Entrepreneurial Activities from the University and Philanthropy	Revenues are too small, especially because it is not equally distributed within institutions and departments, leading to underfunding.

Source: based on Barr (2012)

After explaining the problems with other private sources of finance, one is left: future earnings of students, their income after they graduate. The choice of future income in comparison to other private sources is summarized by the principle that no student should have to pay for their education until they are graduated and working, the “free at the point of use” principle:

The evidence is clear that upfront payment has a negative effect on participation and access. (...) The effect will be particularly severe for students from low income backgrounds (...). We believe that student choice will have an important role in improving the quality of higher education, but student choice will not be effective if students have to make risk averse decisions that are driven by the need to meet obligations to family members, an employer or a bank (BROWNE, 2010, p.26).

¹⁰ Micro efficiency is the division of resources within higher education and productive efficiency is the promotion of quality in the management of the system.

So, in this theoretical framework, graduates should be the preferential stakeholders responsible for the private resources used to fund higher education and the mechanism to charge them should be loans. There are other alternatives, though: a graduate-tax that everyone holding a degree should pay through income-tax, and human capital contracts in which private participation in the costs of education happens through an equity finance tool. Both approaches were developed from the work of Milton Friedman. According to Friedman (1955), higher education funding methods are supposed to work as a risk-sharing mechanism justified by the benefit principle: those who benefit directly from a public service should be the ones paying for it. However, neither have been widely implemented as nationwide policies, so we focus on loans.

Next, we must see the role attributed to the public sector. The first is the provision of loans, justified by market failures: incomplete markets and imperfect information. Other roles will be presented later. Credit markets are pointed as incomplete because human capital investments are too risky due to the lack of collateral (BARR, 2004, 2012, 2014, 2017; CHAPMAN, 2014; CHAPMAN, NASCIMENTO, 2017; DYNARSKI, KREISMAN, 2013; FRIEDMAN, 1955; GRUBER, 2010; NASCIMENTO, 2015):

It is much harder to get a loan to finance education than it is to the (..) purchase of a car or a home since there is no collateral (...). As a result, in the absence of government intervention, banks may be unwilling to loan money to finance higher education (GRUBER, 2010, p. 315).

The unwillingness of the private sector to lend comes from the fact that if someone does not achieve the benefits attributed to owning a degree and stops repaying, the knowledge cannot be taken off of the person nor can they work for free because it would be considered slavery (BARR, 2009, 2012, 2014, 2017; CHAPMAN, 2014; DYNARSKI, KREISMAN, 2013; FRIEDMAN, 1955; NASCIMENTO, 2015; OECD, 2008).

The lack of collateral leads to problems in both sides of the market. On the demand side because people may be imperfectly informed of the nature of the product; there is a high risk of failing; the variance in the private benefits is high; and there is no security, the degree cannot be sold in the case of an unexpected decrease of income. Because the risk is much higher with student loans than with houses or cars, fewer people are willing to borrow even if they wish to go to university. The problem affects all students but even more the ones from low SES because they are usually less well-informed and cannot take much financial risk (BARR, 2009, 2012,

2014, 2017; CHAPMAN, 2014; DYNARSKI, KREISMAN, 2013; FRIEDMAN, 1955; NASCIMENTO, 2015; OECD, 2008). On the supply side, the risk is not having a collateral and the possibility of adverse selection because students are better informed about their abilities. The result is “(...) an inefficiently low level of borrowing and hence an inefficiently low level of investment in human capital.” (BARR, 2012, p. 305). That is why ICL literature defends the government should be the main provider of loans.

To this point, higher education funding methods should involve a cost-sharing mechanism with loans being provided by the government to be paid by students after graduation. The main contribution of the ICL literature is use of a mechanism that aims at achieving these results balancing social justice and fiscal sustainability. To have these outcomes, some characteristics must be present. The policy design, regardless of context-related characteristics, must tackle two main difficulties of the credit market for student loans: the lack of consumption-smoothing and insurance mechanisms. Students are credit constrained, so they need an instrument of consumption-smoothing. Also, investments in human capital are risky, so the system needs an insurance mechanism (BARR, 2004, 2009, 2012, 2014, 2017; CHAPMAN *et al.*, 2014; CHAPMAN, NASCIMENTO, 2017; LOCHNER, MONGE-NARANJO¹¹, 2016; NASCIMENTO, 2015; WALTENBERG, 2017).

1.2.2 Student Loans: The Path Towards Income Contingent Loans:

Not all cost-sharing policies involving loans provided by the government and paid by graduates are considered benchmark for higher education funding. In this section we describe what makes ICL benchmark and compare it to the TBRL guaranteed by the government, commonly practiced internationally. We start with the TBRL and then describe the correction mechanisms provided by the ICL. A TBRL guaranteed by the government is a policy in which repayments are fixed in time and the creditors are guaranteed to receive any unpaid installments from the government (CHAPMAN, NASCIMENTO, 2017). So, it requires repayments in a specified period of time in installments dependent on interest rates (NASCIMENTO, 2015).

¹¹ Lochner and Monge-Naranjo (2016), however, defend a different construction of loans with income contingent repayments, a needs-based system coupled with insurance mechanisms.

Those are the characteristics of a traditional mortgage type loan, which we already pointed as problematic for human capital investments due to the lack of collateral.

TBRLs guaranteed by the government are still the most disseminated student-loan policy. Nevertheless, the implementation of an ICL in Australia, further development of the theory, and the adoption by England, New Zealand and a few others led to it losing space. The number of countries transitioning to a system based on income contingent repayments or studying the possibility is increasing. The mortgage-type loan policy has been the object of criticism for a long time but it was the one available (NASCIMENTO, 2015). Its disadvantages arise mainly from the repayment through installments fixed in time, therefore not sensitive to changes in people's financial situation. The results are high default rates which are costly to the government because it is the guarantor and harmful to graduates in debt because they become ineligible for other forms of credit such as for cars and houses (CHAPMAN; NASCIMENTO, 2017).

An important concept to analyze the problem with mortgage-type loans for human capital is the repayment burden: the proportion of income per period a graduate has to allocate to the repayment of a student loan (CHAPMAN, 2014). Mathematically, the repayment burden in a given period t is the ratio between the loan repayment in t and income in t . In mortgage-type loans like TBRL, it may vary freely from 0% to over a 100% of a person's income. The problem is that higher proportions of income going into repayment leave lower amounts available, resulting in two undesired and related consequences: consumption hardship and higher default rates. Estimates of repayment burdens have been made for different thresholds of income by age and sex in selected countries with mortgage-type loans: United States, Germany, Vietnam, Indonesia and Thailand. For the 25% poorest in Vietnam, 40% to 85% of graduates face a 15% to 20% burden in the first ten years after graduation. Thai graduates see 30% of their income going into repayment. Results varied in Indonesia, with the poorest paying up to 85%. Developed countries did not have better outcomes: public sector lawyers in the United States have repayment burdens going up to 50% and women in East Germany 70% (CHAPMAN, 2014).

TBRLs are, therefore, connected to consumption hardship and higher default probabilities. Because installments are fixed in time, the risk of default increases. Graduates may end up even more credit-constrained than they were as students and may not profit from

the most common private benefit attributed to higher education: a higher (available) income. The government also risks high fiscal costs due to not getting the money back or having to actively chase it. We, therefore, analyze the ICL alternative and how literature explains it being better at avoiding these problems.

The ICL corresponds to one of two types of income contingent mechanisms: one with repayments contingent on lifetime income, meaning people with higher lifetime earnings will repay more in present-value; other with repayments that stop when full cost has been repaid in present-value terms, which means income-contingency impacts the period or repayment but not the total debt amount (BARR, 2017). The first definition leads to policies like graduate-taxes and human capital contracts and the second to loans with income contingent repayments. Hybrid designs are possible but we focus on the pure one.

If the government is considered the best stakeholder to provide student loans in general, two reasons are specific to ICL: governments have legal power to know the income of every person and enterprise, reducing administrative costs and facilitating collection; and they do not suffer from market limitations like having to create parallel enforcement mechanisms, adverse selection and moral hazard¹² (CHAPMAN, 2014; STIGLITZ, 2014). The main characteristic that accounts for ICL being the benchmark for student loans is that installments are attached to the payment capacity of the borrower, avoiding one of the main issues with such policies: default. The ICL is, therefore, more flexible with repayment because installments are defined by the income of the person instead of the distribution of debt balance among a predetermined number of periods (NASCIMENTO, 2015).

These characteristics make the system more equitable than others because “(...) repayments occur as income is measured and proportionally to it, rather than in installments defined *a priori* and regardless of the economic conditions throughout the different stages of the person’s life.”¹³ (NASCIMENTO, 2015, p.46). Also, Repayment Burdens are capped and

¹² Some authors defend that there are private mechanisms to correct the problems so that student loans can be properly provided by private banks but this position has little space in the literature so far. See Palacios (2014) and Stiglitz (2014).

¹³ “(...) os pagamentos ocorrem à medida que seja aferida renda e de maneira proporcional a esta, em vez de em parcelas e prazos definidos a priori e a despeito das condições econômicas que se apresentem nas diversas fases de vida da pessoa.” – english version in free translation.

determined by law, so ICL does not face problems with it because of its own nature of limiting them and attaching repayment to payment capacity. To understand the nature of that system we describe its main characteristics.

The ICL has necessary conditions for implementation and ideal ones – desired to facilitate operations and improve outcomes. We describe the ideal characteristics first to exemplify what attributes should be pursued. Then, by acknowledging that not all of them are feasible and some might not be ideal to every country, we present the necessary conditions. There are three main attributes in an ideal ICL. First, interest rate being at least the government's cost of borrowing because generalized interest subsidies are considered harmful due to being badly targeted and costly; jeopardizing size by reducing the amount of resources available; jeopardizing access by keeping people who need loans from getting them since supply is limited; and promoting regressivity by only decreasing the duration of the loan and leading to successful people in mid-career benefitting the most (BARR, 2004, 2009, 2012, 2014, 2017; BROWNE, 2010; NASCIMENTO, 2015).

Real interest rates are considered to be politically feasible exactly because a higher interest rate does not mean a larger debt amount, only a longer period of repayment. The Netherlands, Sweden and Hungary had experiences with charging positive real interest rates without political contentions (BARR, 2004). It is worth noting, however, that loans are only for living costs in Sweden because higher education is tax-financed. Also, student loans are not designed as an ICL in the Netherlands. Hungary, however, has an ICL system and the positive real interest rate was implemented knowingly.

The second ideal attribute is the loan being large enough to cover tuition and reasonable costs of living. The idea is to address the problem of students being credit constrained, to be a consumption-smoothing mechanism. Without it, students – particularly those from low SES – could give up the idea of going to university or become part-time students. In both cases the investment in human capital may become inefficiently low and higher education inequitable (BARR, 2004, 2009, 2012, 2014, 2017; BROWNE, 2010; NASCIMENTO, 2015). The last ideal attribute is an explicit income contingent formula to work as an insurance mechanism against low current income and reduce the risk related to investments in human capital. It is also reasonable that any existing debt is forgiven after a period of time to create an insurance

mechanism targeted at the lifetime poor (BARR, 2004, 2009, 2012, 2014, 2017; BROWNE, 2010; NASCIMENTO, 2015)

The benefit of an ICL with such design is to transfer the funding from taxpayer to the direct beneficiaries while giving guarantees to both borrowers and lenders. Borrowers have the guarantee that repayments will not compromise their financial security: the worst that can happen is having a longer repayment period, never higher installments. Lenders are secured because the government guarantees charges will be executed through the taxation system. Additionally, the policy can be self-financed when it comes to administrative and expected non-repayment costs as long as both are included in the interest rate (NASCIMENTO, 2015). A possible discussion regarding the self-finance possibility is the political cost of implementing the policy in such terms. In figure 7, we summarize how an ideal ICL is according to literature: the core characteristics of the policy, which problems are addressed and what type of mechanism corrects them (Figure 7).

Figure 7: Structure of an Ideal ICL

Income Contingent Loans Core Characteristics	Problem Addressed	Type of Correction Mechanism
Interest Rate is at Least the Government's Cost of Finance	Bad Targeting and High Cost	No Interest Subsidies
Loan Large Enough for Tuition and Cost of Living	Student's Being Credit Constrained	Consumption Smoothing
Explicit Income Contingent Formula + Forgiveness After 25-30 Years	High Risk in Human Capital Investment	Insurance

Source: based on Barr (2004, 2009, 2012, 2014, 2017), Browne (2010), Nascimento (2015)

Variations of the pure system may exist and participation of the government can take the form of traditional loans characteristics. Usually this happens due to political and administrative difficulties. However, uncharacteristic policies should be avoided as much as possible to keep the system from losing its differential (NASCIMENTO, 2015). Bringing theory to practice involves a number of political and administrative difficulties, but focusing on such structure helps achieving most of it (BARR, 2012).

Even though ICL is pointed as benchmark, warnings are made: the government does not have a marginalized role. It has important ones such as partially funding the system due to social benefits, organizing student loans due to credit markets being incomplete and collection

capacity, promoting access due to loan design not being enough to solve the problems of poorly-informed people, and being responsible for research funding. Also, the government is the regulator responsible for ensuring quality because well-informed consumers are not a synonym of perfectly-informed ones. It is supposed to be the incentive-setter of the system too (BARR, 2004, 2009, 2012, 2017; BROWNE, 2010; DYNARSKI, KREISMAN, 2013).

After presenting what design is desired of an ICL and recognizing there may be problems in implementing such policy, we look at the necessary conditions for doing it. They are institutional requirements that, if not present, make it impossible to implement a good ICL. These requirements are all related to the collection of the debt. They are: accurate record-keeping of students, a collecting mechanism with a well-established and computerized record-keeping system, an efficient way of determining the income of the graduates over time, and a strong legal framework with a functional judicial system (CHAPMAN, 2014). The debate about the pace at which a country should move towards an ICL – or if at all – depends on how many of the conditions it fulfills and to what extent. In addition to institutional requirements, there are political ones (QUIGGIN, 2014; RACIONERO; 2014; WITHERS, 2014). The political economy is relevant because “(...) whether a particular higher education financing scheme is implemented depends to a large extent on whether it can gather sufficient political support.” (RACIONERO, 2014, p.228).

Quiggin (2014) attributes the reduced number of ICL programs to the fact many countries would have to replace grants or tax-finance for loans, which can be politically difficult: “(...) the idea of replacing a perceived entitlement with a loan has been even less successful. The existence and survival of a grant program usually implies that the participants are perceived as deserving, so proposals to replace grants with loans face immediate political difficulties.” (QUIGGIN, 2014, p. 239). Support for income contingent policies, either for higher education or other areas, is hypothesized to depend on three aspects: how much social responsibility is attributed by the population to the area, the extent of non-refundable support at the moment of proposal, the perception of progressivity in the repayment structure. The more social, more non-refundable support and less progressivity perception, the less support (WITHERS, 2014).

Following this reasoning, a well-designed student loan is not the only aspect of a good policy. A full funding strategy must be designed. The system must be financed by a mix of

taxation and tuition fees to be covered by the entitlement to a loan. Barr (2004, 2009, 2012, 2014, 2017) includes that institutions should have some freedom to determine their fees because competition is viewed as positive considering students are generally well-informed and information easy to be improved. If competition is positive, variable fees encourage it. It does not mean, however, an unregulated one: there should be a cap high enough to increase resources and low enough to avoid political pressures and give institutions time to adapt to competition (BARR, 2004, 2009, 2012, 2014,2017; BROWNE, 2010). The system, therefore, should function on bands. There is also an argument that a student going to a local institution should not have to pay the same tuition as one enrolled in a university that is renowned internationally (BARR, 2009). The usual argument against it is that it deters people from poor backgrounds from entering the system. Barr (2004, 2009, 2012, 2014, 2017) argues this is true only for upfront fees.

One limitation indicated by literature is the fiscal situation of the country. Loans have high upfront costs because repayments do not happen for a considerably long period of time (BARR, 2009). The perspective may be different for those moving from a tax-financed system because higher education already depends on a willingness to make fiscally representative expenditures. In that case, the fiscal impact of substituting systems may be different and depend on further empirical analysis. One could argue that private lenders could reduce the fiscal cost. The problem is that “(...) private lenders will typically charge a substantial risk premium unless there is a government guarantee; and if there is a government guarantee, the loans will be classified as public spending.” (BARR, 2009, p. 205).

The last aspect of a well-designed higher education funding is the promotion of access because there are poorly-informed people who are not protected by the income contingent mechanism (BARR, 2004, 2009, 2012, 2014,2017; BROWNE, 2010). To promote access, we must understand what harms it. The lack of information about university; aspirations; and money are pointed as the mains reasons. To correct them, most strategies involve more resources earlier in the educational system. Few access policies should come from the higher education system itself, like:

(...) financial incentives to universities to widen participation, and by extra resources to provide additional intellectual support at tertiary institutions for students from disadvantaged backgrounds. In designing such policies, however, it is important to be clear that these are only palliative actions.

Grants, though important, important, are the tail; it is attainment that is the dog (BARR, 2009, p. 206).

Barr (2004, 2009, 2012, 2014,2017) then gives lessons about such type of higher education funding reforms: they relax the supply-side constraint; and liberalizing too fast is politically destabilizing but not liberalizing is also a mistake. It relaxes the supply constraint because large taxpayer subsidies constrain the supply due to the constant desire to reduce public expenditure, making it difficult to increase size. Because talented students do not have a guaranteed place, the result can be a high-quality system that turns away qualified people due to its inability to expand. Fast liberalizations are problematic because they create social and political unrest that may lead to the discontinuation of the policy, particularly if the countries have no fees. The opposite, however, is also true: not liberalizing at all can lead to quality decreases due to budget limitation and equity problems due to scarce places benefiting the richest.

Chapter II – Brazilian Higher Education Funding Structure:

After presenting the theoretical framework, we move to the description and analysis of the Brazilian case. The chapter is divided in the three public policies for higher education funding: tax-financed public universities, FIES and PROUNI. This is, therefore, a descriptive chapter in which we map the system: development, characteristics and outcomes. After, we interpret results from the ICL literature's perspective and analyze how it may contribute to reforms.

2.1 Tax-Financed Public Universities:

The first Brazilian funding mechanism is tax-finance, which makes the public system free to students. Even though tax-financed gratuity is a legacy of Empire time, the current structure of public higher education was first implemented by the 1968 reforms, responsible for the organization in research universities and technological institutions (SAMPAIO, 1991). So, the current public system started its formation in 1968 and evolved in the following decades. Because institutions are tax-financed, they must follow the country's budget regulation, respect public administration laws and public finance procedures. Since the operation of the Brazilian budget is a literature in itself and out of the scope of this work, only the aspects necessary to the understanding of public expenditure with higher education are presented.

Concerning the government's commitment to funding, the most recent change happened in the 2000s when higher education was considered strategic and entered the National Education Plan (PNE)¹⁴ of 2001 and the Education Development Plan (PDE)¹⁵ of 2007. Expanding the public system became an explicit goal, as well as promoting inclusion in it. After 2014, however, the discourse changed in spite of a new PNE because of the country's fiscal crisis. We analyze the budget and social profile of tax-financed public institutions to provide material for further discussion regarding what characteristics can be attributed to tax-finance, remembering the analysis is restricted to the federal level.

¹⁴ *Plano Nacional da Educação* – english version in free translation.

¹⁵ *Plano de Desenvolvimento da Educação* – english version in free translation.

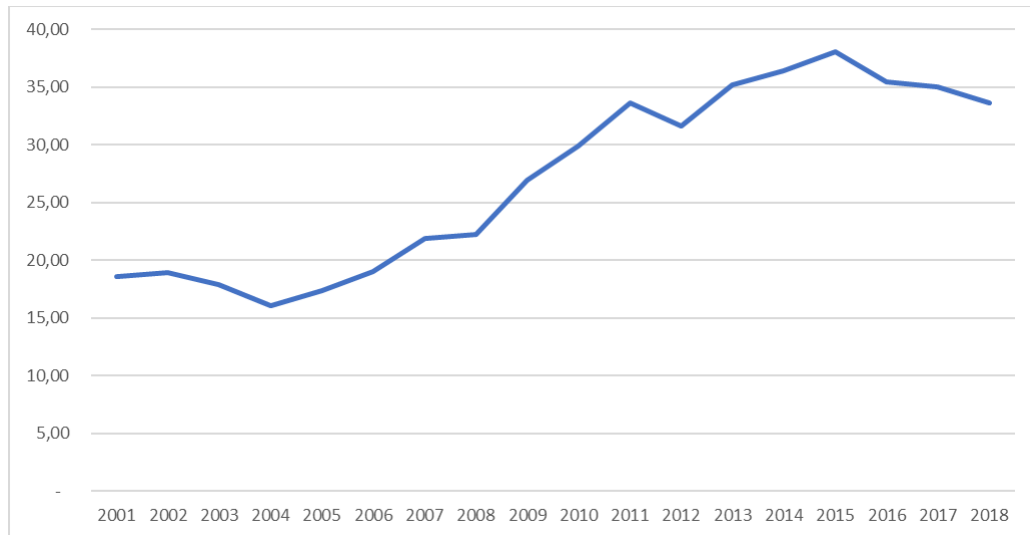
2.1.1 Budget Analysis: A Cost Perspective

To analyze the costs of the public higher education system, we look at its budget. In Brazil, it has four expenditure phases: authorized, committed, executed and paid. The authorized budget is the amount determined by the Annual Budget Law (LOA)¹⁶. When an amount of the authorized budget is committed, it means the government reserved the money for that expenditure to happen. The expenditure is considered executed when the government receives the outcomes, and payment occurs only after it (SENADO FEDERAL, 2017). Because resources are reserved in the committed phase and the execution of the expenditure may not happen in the same year, all the budgetary analysis in this work uses the committed budget as reference.

Looking at the government's policies, three different periods can be identified between 2001 and 2018. The first between 2001 and 2007 reflects the initial commitment to expansion made by the PNE; the second from 2008 to 2013 is related to the PDE and expected acceleration in the expansion process; and the last from 2014 to 2018 after the recession and the freezing of public expenditure by EC95. Budget results reflect each policy of the governments in each period: the real growth-rates of the first and second periods were respectively 17,5% and 58%. In the third period, the budget had a real decrease of 7,64% (SIAFI, 2019) (Figure 8). In the periods of growth there were also episodes of real decreases, such as between 2002-2004 and 2011-2012 but they proved to be temporary and not a trend such as the post-2014 case (Table 1).

¹⁶ *Lei Orçamentária Anual* – english version in free translation.

Figure 8: Budget Evolution of Public Universities (BRL billions/ real prices¹)



Source: data from SIAFI (2019)

¹: Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

Table 1: Budget of Public Universities (BRL billions/ real prices¹)

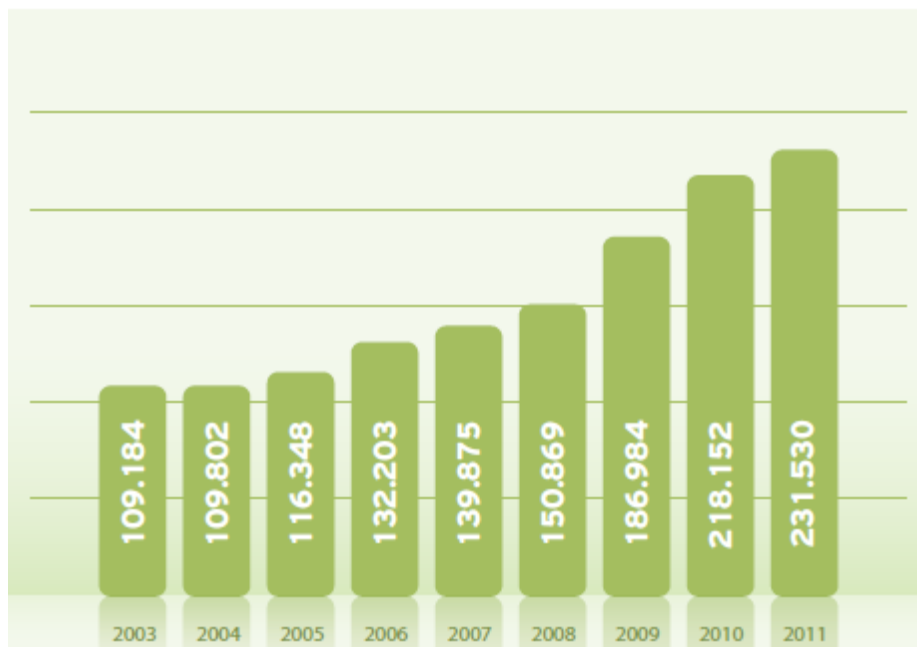
Year	Real Budget
2001	18,62
2002	18,95
2003	17,89
2004	16,05
2005	17,39
2006	19,02
2007	21,88
2008	22,28
2009	26,92
2010	29,87
2011	33,59
2012	31,65
2013	35,20
2014	36,43
2015	38,07
2016	35,44
2017	35,02
2018	33,64

Source: data from SIAFI (2019)

¹: Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

Between 2008 and 2013, an important expansion policy was implemented as an action of the PDE to widen access and permanence in public higher education institutions: the program “Restructure and Expansion of Federal Universities” (REUNI)¹⁷. REUNI aimed at creating the conditions for public universities to expand their *campi*, number of places, number of courses with evening classes, and social assistance (MEC, 2010b; 2012b). During the active period of the program, 14 universities and 100 *campi* were created, the number of places in undergraduate courses increased 53,46% between 2008 and 2011, and the amount of resources destined at student permanence increased 298,92% (MEC, 2010b) (Figure 9). Nevertheless, REUNI received criticism due to problems with unfinished construction, unplanned and disorganized expansion, excessive number of temporary contracts for professors and other disputed decisions that led to national strikes in 2012 (ADUSP, 2012; G1, 2012).

Figure 9: Places in Public Universities’ Undergraduate Courses



Source: MEC (2012b)

In spite of the problems, the expansion happened and the fact the budget grew but so did the system is a sign that a better understanding of costs depends on a *per capita* analysis. Before building the indicator, however, a relativization regarding the budget of public higher education must be made. In Brazil, federal universities have three main activities – teaching,

¹⁷ *Reestruturação e Expansão das Universidades Federais* – english version in free translation.

research and extension – unlike private institutions, who mostly only teach, which is demonstrated by the fact none of the top-20 institutions for scientific production are private (CLARIVATE, 2017). Considering this and the fact public universities’ budget includes research, analyzing only teaching requires separating it to avoid problematic comparisons. Brazilian government, however, does not provide this information. Mostly because the separation itself is complicated and a possible research theme on its own.

Confronted with making only overestimated analyses of the cost *per* student using the full budget, or making a rough proxy by using only the resources that go directly to universities – excluding hospitals and research/administrative organizations – we chose the latter. However, as a recognition that a proper separation would require much more research and quantitative effort, we make the analysis with both. The idea is that such presentation reduces the problem of using a simple proxy or just using the excessively over-estimated available data without some type of treatment. The result is that an average of 15,84% was removed from the analysis between 2001-2007, and 17,2% between 2013-2018 (Table 2). The period from 2008-2012 could not be analyzed due to missing information. For the cost *per* student analysis we focus on the 2013-2016 period¹⁸.

Table 2: Teaching Budget Proxy (BRL billions/ real prices¹)

Year	Full Budget	Teaching Budget Proxy
2001	18,62	14,22
2002	18,95	15,12
2003	17,89	14,30
2004	16,05	15,64
2005	17,39	15,03
2006	19,02	16,53
2007	21,88	18,06
Year	Full Budget	Teaching Budget Proxy
2013	35,20	29,28
2014	36,43	29,55
2015	38,07	29,35
2016	35,44	29,49
2017	35,02	30,00
2018	33,64	29,15

¹⁸ The 2017 and 2018 CES have not been made available in time.

Source: data from SIAFI (2019)

¹: Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

Next, we look at the number of students enrolled in the public system, that grew 11% between 2013 and 2016. We find that the monthly cost of a student in 2016 was BRL 1.552,23 using the teaching budget proxy and BRL 1.865,33 using the full budget (Table 3). The Brazilian Federal Court of Audit¹⁹ (TCU) estimates the average monthly tuition for private higher education institutions as BRL 964,56 (RESENDE, 2018), making them cheaper. Nevertheless, there are more private institutions than federal ones, making them more heterogeneous in terms of quality and tuition, making the use of average as measure complicated.

The cost *per* student comparison with private institutions that have similar activities and quality results is different. We selected three private institutions with positive results in quality assessments and strong research programs as example: PUC-RJ, FGV-RJ and FGV-SP. Their website only published the tuition fees for 2018 and the cost *per* student analysis of public institutions goes until 2016, but values are adjusted by 2018 prices. The average tuition of these institutions was, respectively: BRL 3.660, BRL 3.359, BRL 4.426 (PUC-RIO, 2019; FGV, 2019), therefore more expensive.

Table 3: Cost per Student of Public Universities (BRL/ real prices¹)

Year	Students in Federal Institutions	Budget	Cost per Student	Monthly Cost
2013	1.422.513	35.201.672.324,99	24.746,12	2.062,18
2014	1.504.383	36.428.934.703,64	24.215,20	2.017,93
2015	1.531.355	38.065.550.467,27	24.857,43	2.071,45
2016	1.583.459	35.444.025.395,39	22.383,92	1.865,33
Year	Students in Federal Institutions	Teaching Budget Proxy	Cost per Student	Monthly Cost
2013	1.422.513	29.282.746.902,29	20.585,22	1.715,44
2014	1.504.383	29.551.570.486,68	19.643,65	1.636,97
2015	1.531.355	29.349.163.069,52	19.165,49	1.597,12
2016	1.583.459	29.494.731.623,24	18.626,77	1.552,23

Source: data from INEP (2014, 2015, 2016, 2017b), SIAFI (2019)

¹⁹ Tribunal de Contas da União – english version in free translation.

¹: Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

Cost *per student* analyses for federal higher education institutions, however, must be dealt with caution, with longstanding debates about which criteria should be used and the choices affecting the results. The most recent estimate made by MEC identified a monthly cost *per student* of BRL3.129,25 in 2016. The criteria used were: the authorized budget of BRL 46,2 billion; 1,23 million students; values adjusted by 2016 average prices, inclusion of hospitals and highlights received by universities from the Brazilian congress (MEC, 2018). We must, therefore, look at cost *per student* indicators for public universities carefully. Considering the MEC estimates, it stands out that cost *per student* grew only 1,68% between 2009-2013 (MEC, 2018). Also, even from this higher estimate, results are lower than that of selected private institutions. To be more certain about this comparison, however, a larger study must be made with a larger selection of private institutions with similar characteristics of public ones and the development of a more sophisticated methodology to estimate the latter's cost *per student*. Three is a small sample that should be regarded as example.

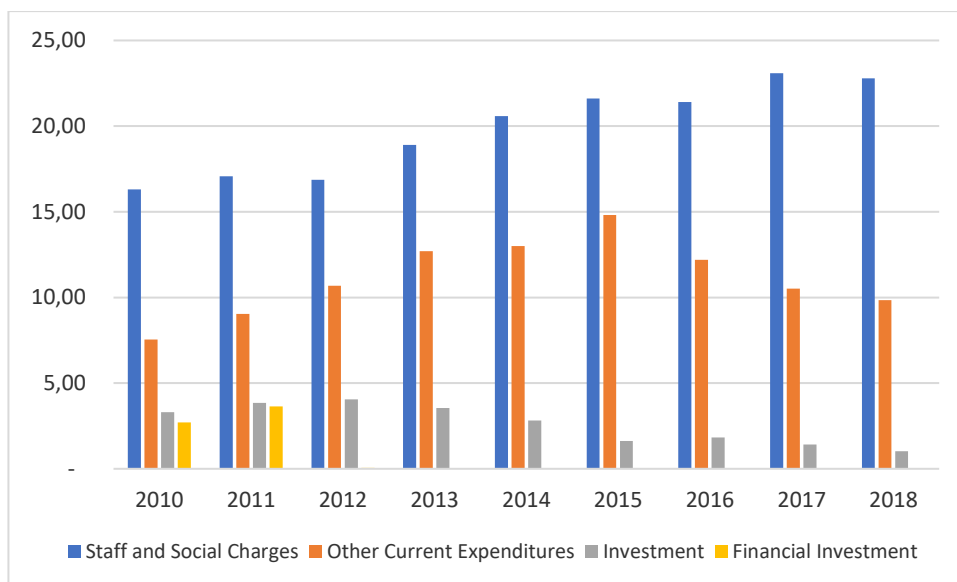
Another cost variable is the participation of public higher education in the overall education's budget. The participation of higher education has been decreasing: 44% between 2001 and 2017 at an average rate of 3,19% *per year* (SIAFI, 2019), even if the other educational levels are not federal responsibility. This has to be acknowledged when the comparison between educational levels is made: most of the expenditure with basic education happens at the state or municipality level, even if there are federal transferences, because this is the constitutional determination. Another indicator is the participation in the GDP, that indicates the problem of interpreting the data as a lack of resources for public basic education due to excesses in higher education: basic education corresponds to 4,4% of the GDP, while higher education 0,9% (NASCIMENTO; VERHINE, 2017). There are matters to be discussed about the micro-efficiency of education's budget, but one must be careful when comparing the money destined by the federal government to different educational levels.

The distribution of the budget by expenditure nature shows most of the expansion went to staff and social charges (SIAFI, 2019) (Figure 10). This happens because of the budget's rigid structure: expenditure with staff and social charges accounts for pensions of inactive staff, wage adjustments and new hiring. Of the three, only the hiring of new staff can be contained through infra legal acts the other two are mandatory. Summing all mandatory expenditures,

they represent 87% of the budget (MEC, 2018). Additionally, 50% of the expenditure with staff is with inactive ones, so the expansion cannot even be interpreted as institutions having a higher number of professors and administrative personnel (MEC 2018).

The rigidity of the budget also poses problems in times of fiscal constraints because when cuts must be made, they must be in the 13% that are discretionary, which are mostly other current expenditures and investments. This is shown by data after 2014, when austerity policies were put in place: expenditure with staff and social charges had a real growth of 5,41%, while other current expenditures decreased 33,58% and investments 37,45% (SIAFI, 2019). This helps explaining the continued experience of under-funding regardless of the budget increase. REUNI helped increase the size of the public system but the budget did not actually accompany this growth if we consider what is actually available for improving infrastructure, quantity of staff and other daily activities.

Figure 10: Budget of Public Universities by Expenditure Nature (BRL billions/ real prices¹)



Source: data from SIAFI (2019)

¹: Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

Public higher education has been expanded throughout the years in budget and size, maintaining cost *per* student relatively stable during the expansion period. Also, in spite of the expansion, participation in overall education's budget decreased. It must be acknowledged that public universities are responsible for only 24,7% of enrollments in higher education (MEC, 2018), so the money invested in it does not reach the majority of higher education students. To

understand what that represents, we must look at the socioeconomic profile of the students. Additionally, the expansion of the system did not solve its under-funding with most of the additional resources going to inactive staff payrolls. The persistence of the problem led to strikes, fires in several buildings and other occurrences – particularly after 2014 (ADUSP, 2012; AGÊNCIA BRASIL, 2017; FOLHA DE SÃO PAULO, 2015).

2.1.2 Student's Profile and Social Impacts: A Benefit Perspective

After analyzing the costs of the tax-financed public system, we look at those who benefit from it from two perspectives: vertical (socioeconomic profile of students and of those who finance the system) and horizontal equity (racial profile). The fact taxpayers assume the costs with public institutions and that only 24,7% of higher education students are in them gives more importance to the socioeconomic profile of students and equality in access. Historically, public universities have been accessed by the upper middle class, with the income profile of students in 1997 indicating 55,7% of them were from classes A or B²⁰ (FRANCO; CUNHA, 2017).

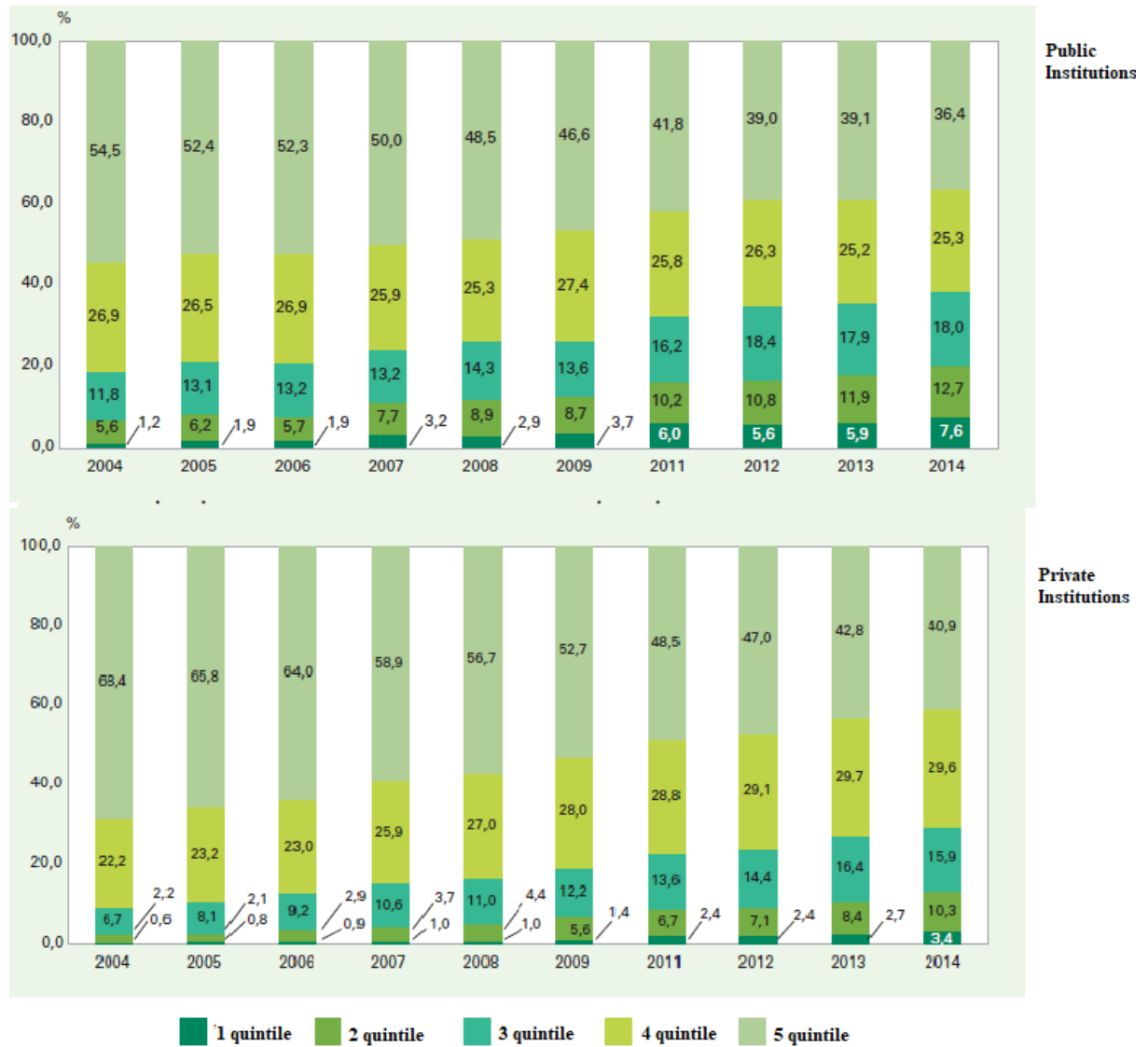
In 2014, the participation of classes A and B decreased to 47,9%, with the main change happening between classes A and C: the first lost 38,8% of its participation while the latter gained 42,4% (FRANCO; CUNHA, 2017). Using wage thresholds as reference, 71,4% of students were in the 2 richest quintiles in 2004 (4th and 5th), but that proportion reduced to 61,7% in 2014. Also, the result for private higher education institutions was worse: both became more inclusive, but 70% of the private sector students were from the 2 richest income quintiles in 2014 (IBGE, 2015) (Figure 11). This indicates higher education is more a result of the inequalities of previous educational levels and the Brazilian society as a whole than the cause of the problem. Nevertheless, measures can be taken to improve results – such as the creation of targeted policies – to avoid making the problem worse. For public institutions, the government implemented REUNI in 2007 and Law 12.711 – social and racial affirmative action – in 2012. The affirmative action law stipulated 50% of all places in the public universities would have to go to people who integrally studied in public high schools and 50% of these places would have to go to those whose *per capita* family income was up to 1,5 minimum wages²¹

²⁰ The criteria for determining the classes are from ABEP (2014).

²¹ Brazilian minimum wage is BRL 998,00 in 2019.

(BRASIL, 2012). For the private sector, the government used FIES and PROUNI to promote vertical equity in the system.

Figure 11: Income Profile of Students by Type of Institutions (%)



Source: IBGE (2015)

Next, we analyze the profile of the taxpayers who bear the costs of federal institutions to evaluate if it is unequal and/or regressive. An unequal system is not necessarily regressive, as long as those who pay are the ones who benefit. They are different problems who may or may not happen at the same time. A 2012 estimation indicated public higher education in Brazil was not actually regressive, with the 10% richest funding the rest of the others. Castro and Tannuri-Pianto (2017) estimated all the benefits received by public universities' students, the

total amount of their taxes that go directly to the system and calculated the difference, reaching a net benefit indicator. Results pointed to those from the fourth to seventh deciles being the ones who benefit the most and only the ninth and tenth deciles having negative net benefits (CASTRO; TANNURI-PIANTO, 2016) (Table 4). So, there is indication that the poor do not pay for the education of the rich in Brazil as expected, but another expectation is confirmed: the middle classes tend to appropriate from most of the universal benefits instead of the poorest (BARR, 2012). It is important to register that the two poorest deciles do not make for 10% of enrollments, partly because they are the most affected by the high school bottleneck that affects the Brazilian population – so they cannot benefit from the system if they do not enter it. Particularly if they are not even eligible due to not completing high school.

So, the Brazilian public higher education system is still unequal but not as regressive as expected. An important element that can jeopardize the equity and make it more regressive is the lack of capacity to expand due to lack of resources: the supply limitation can create repressed demand of people who finished high school and want to enter the system but are not able to, particularly people from lower SES. The numbers from the Unified Selection System²² (SISU) – system that uses ENEM scores to select people to public universities – for 2018 are evidence that Brazil currently faces such problem. There were 4,1 million applicants for 239,7 thousand places in the first semester selection (BRASIL ESCOLA, 2018a) and 508,5 thousand applicants for 57,2 places in the second semester (BRASIL ESCOLA, 2018b).

Concerning vertical equity, therefore, public higher education is still unequal and does not represent the income profile of the country, but improvement occurred after reforms in specific regulation. There are also signs that inequality in higher education is a reflection of other social inequalities rather than caused by it because the private sector has similar – even worse – results. Additionally, there is evidence public universities are not as regressive as expected, with the richest paying the most even though middle classes do appropriate more than the poorest. Nevertheless, an important point of caution regarding regressivity is the supply constraint because its potential of affecting poorer people the most.

²² *Sistema de Seleção Unificada* – english version in free translation

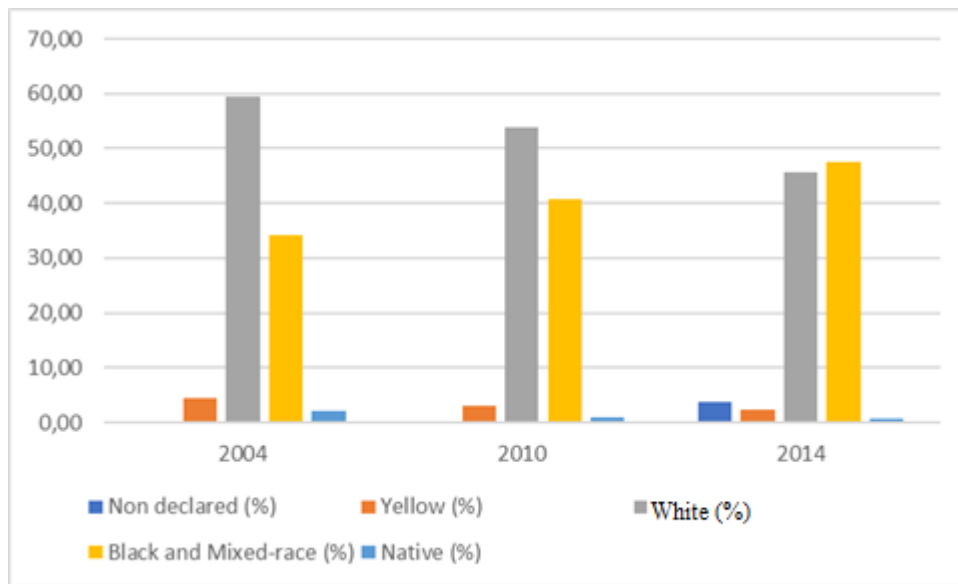
Table 4: Net Benefit of Public Universities by Income-Threshold

Income Decile	Total Benefit (RS bi)	Total Contribution (RS bi)	Net Benefit (RS bi)	Net Benefit/Total Contribution (%)
1	1,3	0,6	0,7	2,2
2	1,7	1,3	0,4	1,1
3	2,2	1,5	0,6	1,8
4	3,5	2,1	1,4	4,0
5	4,1	2,6	1,5	4,3
6	3,0	1,7	1,3	3,8
7	5,4	3,1	2,2	6,5
8	4,0	3,7	0,3	0,9
9	5,1	5,5	-0,4	-1,1
10	4,2	12,5	-8,2	-23,6
Total	34,9	34,9	0,00	0,0

Source: Castro, Tannuri-Pianto (2016)

Regarding horizontal equity, the main aspect is the racial profile of students because the participation of mixed-race and black people is smaller than in society. However, it has been increasing. From 2004 to 2014, the participation of white people in public institutions decreased 23%, while that of black and mixed-race people increased 39,09%. Also, the decrease in participation of white people was larger than in the population – in which it was 11% – meaning affirmative action and REUNI helped accelerating the process (FRANCO; CUNHA, 2017) (Figure 12).

Figure 12: Racial Profile of Public Universities



Source: Franco, Cunha (2017)

Moving to the quality of education, federal institutions have the best results of the system. The National Higher Education Assessment System (SINAES)²³ comprises a set of indicators: Course Concept (CC)²⁴, the Preliminary Course Concept (CPC)²⁵ and the National Assessment of Student Achievement²⁶ (ENADE). ENADE evaluates students when they are finishing their undergraduate studies: they take a test with general and specific questions and results are ensembled to provide courses with a concept from 1 to 5 – 3 being the minimum acceptable. CPC incorporates parameters like pedagogical organization, infrastructure and staff. CC adds *in loco* assessment (TESOURO NACIONAL, 2015). There is also the General Index of Courses²⁷ (IGC), that ensembles the CPC of all courses to create an institutional measure. The IGC includes assessments made by the Federal Agency for Support and Evaluation of Graduate Education (CAPES)²⁸ regarding *strictu sensu* graduate programs and is

²³ Sistema Nacional de Avaliação do Ensino Superior – english version in free translation.

²⁴ Conceito de Curso – english version in free translation.

²⁵ Conceito de Curso Preliminar – english version in free translation.

²⁶ Exame Nacional de Desempenho do Estudante – english version in free translation.

²⁷ Índice Geral de Cursos Avaliados – english version in free translation.

²⁸ Coordenação para o Aperfeiçoamento de Pessoal do Nível Superior – english version in free translation.

considered the most general quality indicator in the Brazilian system (TESOURO NACIONAL, 2015).

Looking at the results, the top-20 institutions who do more research are public, with fourteen being federal; all federal institutions scored 3 or more in the IGC of 2017, with 4 being grade with the highest participation; and 80,22% of them received a 3 or more in the 2017 ENADE, with 4 also being the highest participation (INEP, 2018a, 2018b). The Brazilian system of evaluation, however, is not exempt of criticism and results must be relativized. The OECD identified that the design of ENADE does not allow for comparison between years and courses. Also, there is criticism about the tests having no consequences to the student, giving them no incentive to answer it properly. Another sensitive point is it tends to disfavor professionalizing and technical courses because they usually do not have as many professors with PhD. Also, the system does not provide information regarding evasion or labor market prospects, and puts too much focus on courses rather than institutions (SCHWARTZMAN, 2018). There is also indication of bias in the results. Several private institutions are being investigated for frauds to increase their results (ESTADÃO, 2016; VEJA, 2018). Also, students in public universities have been boycotting the tests due to being against their existence and the lack of individual consequences for underperforming in them (ANDIFES, 2013; EXTRA, 2010; ISTO É, 2010; VEJA, 2010)

Summarizing the findings, public higher education is unequal though there is evidence it is not as regressive as expected. Also, inequality has been decreasing – particularly after affirmative action law and REUNI – and there is evidence higher education reflects that of society and other educational levels, meaning the funding mechanism can make it worse without proper measures but not solve it due to not being its main cause. As for horizontal equity, conclusions are the same: public universities still do not represent the racial profile of the population, but are improving and not being mainly accessed by white people anymore. The improvement is attributed to policies implemented following the PNE and the PDE, which also reinforced the need for inclusion programs for the private sector. This led to PROUNI being created and FIES being expanded, both with the explicit goal of expanding higher education while promoting equity, which is also a problem in the private sector.

2.2 FIES: The Brazilian Time-Based Repayment Loan

The next policy we analyze is FIES, a student loan implemented by President Cardoso in 1999 that started operating in 2000. It is a cost-sharing mechanism between the government and students that has been considerably expanded in the last decade and considered an alternative to substitute tax-finance by the World Bank (BANCO MUNDIAL, 2017). It was institutionalized in 2001 by Law 10.260, has accounting nature, and aims at providing student loans to those regularly enrolled in private higher education institutions (MEC, 2017; RESENDE, 2018). FIES, however, was not the first student loan in Brazil. The military rule implemented the Education Credit Program²⁹ (PCE) in 1975, which was reformed as CREDOC in 1992 (MEC, 2017) and benefited 870 thousand students. The program was discontinued in 1997 and activities paralyzed in 1998 due to a default rate that surpassed 80% (LAVINAS, 2017; RESENDE, 2018).

The government, however, considered expanding higher education as strategic and decided Brazil needed a new loan system, leading to the implementation of FIES. Its posterior expansion relates to the context of the PDE, that determined higher education policies should aim at the following principles:

(...) to be complementary among them; to expand the number of places; to assure the quality of the courses offered; to promote social inclusion through education; to consider territorial ordering, providing teaching access to the most remote regions of the country; and to foster economic and social development, making higher education, whether as a trainer of qualified human resources or as a key piece in the scientific-technological production, a key element of integration and Nation formation (TCU, 2009, p. 29)³⁰.

Since 1999, FIES suffered many changes in its design and operating mechanisms, reflecting in its outcomes. The most recent reform occurred in 2018 and tried to include income contingent attributes in the program. Because the period of analysis of the research ends with FIES still a

²⁹ *Programa de Crédito Educativo* – english version in free translation.

³⁰ “(...) complementares entre si: expansão da oferta de vagas; garantia de qualidade dos cursos oferecidos; promoção da inclusão social pela educação; ordenação territorial, permitindo que ensino de qualidade seja acessível às regiões mais remotas do país; e desenvolvimento econômico e social, fazendo da educação superior, seja enquanto formadora de recursos humanamente qualificados, seja como peça fundamental na produção científico-tecnológica, elemento-chave da integração e formação da Nação.” – english version in free translation.

TBRL guaranteed by the government, this is how we address the policy. Nevertheless, we present the reform, its motivation and potential.

2.2.1 Design and Operation

The evolution of the design and operating mechanisms of FIES can be divided in three periods. From 2000 to 2009, it was small and had little fiscal relevance. From 2010 to 2014, it went through flexibilizations and continuous budget increases. Lastly, the flexibilization was reverted after 2015. We present the evolution of the periods and focus on changes that directly affect either the cost of the program or its social benefits, meaning the list of changes is not exhaustive.

Between 2000 and 2009, the government determined FIES would be committed to fiscal equilibrium with the justification that CREDUC had failed because it was not self-financing. Following this diagnosis, FIES could only finance 70% of tuitions when it started operating, with that percentage being reduced to 50% in 2005. In 2007, however, a change in the legislation – Law 11.522/2007 – increased the funding percentage to 100% and created a 6-month grace period. In 2008, students became allowed to use FIES and PROUNI complementarily to attend PDE recommendations. Flexibilizations, however, were also accompanied by a restriction: from 2008, only institutions with positive results in SINAES would be allowed to participate (RESENDE, 2018). FIES, therefore, went through flexibilizations and restrictions that are described as a consolidation process.

The determination of interest rates also followed the search for fiscal sustainability. FIES started operating with a 9% annual interest rate, that was reduced to 3,5% for strategic courses and 6,5% for others in 2006 (MEC, 2017). The focus on fiscal sustainability was still present, however, through the limitation of the number of new contracts: they went from 65 thousand in 2002 to 32 thousand in 2009 (RESENDE, 2018). So, the government was adjusting the FIES according to the goal of fiscal sustainability. If there were ways of relaxing the conditions without jeopardizing their view of fiscal sustainability, the government would do it. After 2009, however, the government accelerated the process of relaxing the operating mechanisms, an indication that there would be less fiscal commitment.

Between 2010 and 2014, the government reduced the annual interest rate to 3,4% for all courses and contracts; increased the repayment period to three times plus twelve months the

duration of the course and the grace period to eighteen months. Incentives were given to students in strategic areas: doctors had their grace period extended until the end of residency; basic education teachers and family health doctors would have 1% of their debt pardoned for every month working in the public sector; and all students in teacher's training courses along with PROUNI recipients would have 100% of their tuition financed (MEC 2017; TCU, 2010). Continuous selection processes were implemented to substitute semesterly ones – people became able to apply for a loan at any time of the year – and students were waived of the mandatory registration check, with only guarantors needing it. The Guarantee Fund for Education Credit Operations³¹ (FGEDUC) also became collateral guarantor for everyone (MEC, 2017; TCU, 2010). Lastly, ENEM became mandatory: there would be no grade restriction but if loans were limited, students with the highest grades would be selected (MEC, 2017; TCU, 2010). These structural changes indicate the government was willing to increase its participation in the cost-sharing, mainly through subsidies, considering the country's cost of borrowing was 9,25% in 2010 (RESENDE, 2018) and contracts – old and new – would start operating at 3,4%. FIES, therefore, suffered rapid flexibilization resulting in higher demand.

After 2014, however, there was a change in the trend and restricting measures were taken. In 2015, Brazil implemented austerity policies to respond to recession and, as a result, changed the regulation to adjust FIES to the conjuncture. A minimum ENEM score of 450 on the tests and higher than 0 on the essay became mandatory for application, meaning merit-based aspects were added. Priorities categories were set to improve targeting: quality (institutions with better results in SINAES), region (North, Northwest, and Midwest), and knowledge areas (Engineering, Health, Teaching). Interest rate increased to 6,5% and repayment period went back to three times the utilization period. Also, quarterly interest payments went from BRL 50 to BRL 150. In 2016, ENEM became the sole criteria for selection (MEC, 2016a).

In 2017, President Temer promoted a structural reform of the program still within the restrictive goal. The main change was the possibility of repaying the loan through payroll, indicating an attempt to include income contingent aspects. Additionally, private institutions were required to increase their contributions to the guarantor fund to reduce the credit risk to the Union, and the interest became indexed to inflation to avoid negative real interest rates. The

³¹ *Fundo de Garantia de Operações de Crédito Educativo* – english version in free translation.

reform also included a second modality in which private and public banks operate instead of the National Fund for the Development of Education³² (FNDE), but only 265 contracts were signed of 105 thousand offered. Lastly, the government committed to making the program more transparent (PIRES, 2018). There are no results available for this structure of the program as of January 2019. The challenges posed by the evolution of FIES (Figure 13) are discussed in chapter 3 along with analyses of the new structure.

Figure 13: Design of FIES by Period

Characteristic	2000-2009	2010-2014	2015-2018
Interest-rate	9% <i>per year</i> until 2005. After 2006, 3,5% <i>per year</i> for strategic courses and 6,5% for others	3,4% <i>per year</i> for all courses	6,5% <i>per year</i> for all courses until 2017. In 2018, it became variable. The debt balance started being corrected by inflation
Repayment Period	2 times the duration of the course until 2006. After 2007, a 6 months grace period was created	3 times plus 12 months the duration of the course with an 18 months grace period	Until 2017, 3 times the duration of the course with an 18 months grace period. In 2018, a type of income-contingent mechanism was introduced so the repayment period became variable. The grace period was extinguished
Quarterly Interest Payment	No mention	Up to R\$ 50	Up to R\$150
Income-test	No mention	Gross family income up to 20 minimum wages	Gross <i>per capita</i> family income up to 2,5 minimum wages until 2015 and 3 after 2016
ENEM	No mention	The participation in an edition posterior to 2010 became mandatory	Besides participating, there must be a minimum score of 450 on the tests and more than zero on the essay
SINAES Quality Assessments	No mention until 2007. After 2007, the courses started being required to take at least 3 in the 1-5 scale	Minimum score: 3	Priority to courses with a 5 score

Source: data from BRASIL (2009), MEC (2017), Resende (2018), TCU (2010)

Next, we describe the costs and benefits of FIES. The analyses are limited to 2016, with the exception of a few variables³³. So, the entire cost analysis remains within the time-frame in which FIES functioned fully as a TBRL.

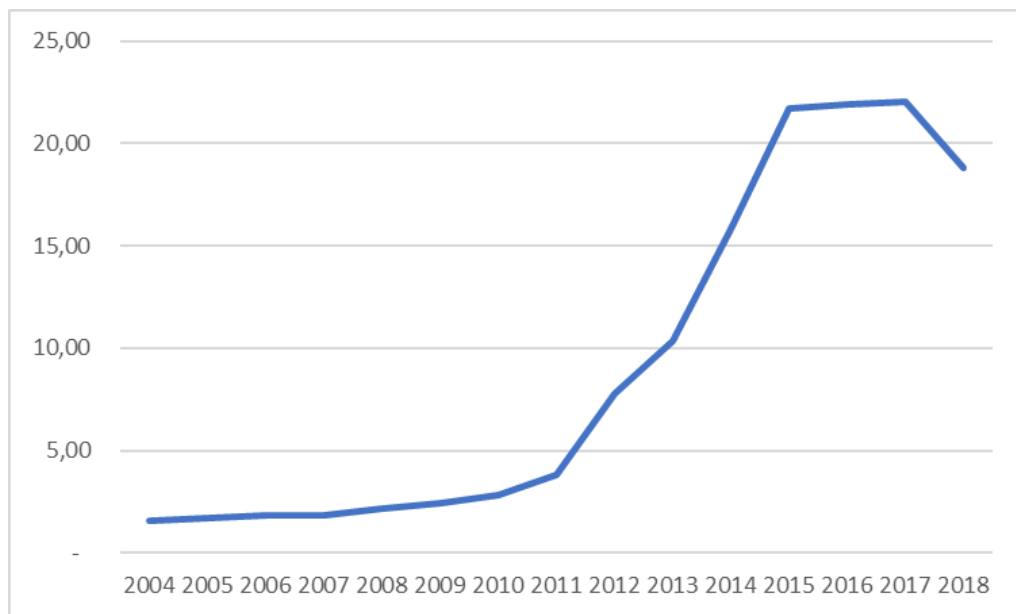
³² *Fundo Nacional de Desenvolvimento da Educação* – english version in free translation.

³³ Most of 2017 official results were made available in late December 2018, with the complete research being finalized in January 2019.

2.2.2 Budget Analysis: A Cost Perspective

Considering FIES was a TBLR guaranteed by the government during the analysis, we look at the three main cost sources existent for such structure: budget, implicit cost with interest subsidies and default. The budget is the fiscal commitment necessary to provide the loans and pay for the administration and management of the program. It has been expanded throughout the years and real growth-rates reflect the changes in the design of the policy: 7,17% *per year* on average between 2004 and 2009; 41,17% between 2010 and 2014; and -3,53% between 2015 and 2018 (Figure 14). The evolution indicates that even though budget is exogenous to the design of the policy, it followed the pattern of the reforms. Further analyses are focused on the post-2010 period because of data availability. Also, the program was less representative before.

Figure 14: Budget Evolution of FIES (BRL billions/real prices¹)



Source: data from SIAFI (2019)

¹ Prices adjusted by SIAFI according to the accumulated IPCA inflation rate of November 2018

There were also implicit costs related to interest subsidies. They can be estimated by calculating the present value of the loan's repayment to determine how much of tax-payer's money is spent for every BRL 100 used on FIES. The implicit cost is particularly important because it is endogenous to the design of the policy, unlike the budget, meaning restrictive/expansive measures directly impact it. Nascimento and Longo (2016) considered only the amount of tax-payers money used to cover interest subsidies – excluding management,

operation and default. The estimate is the difference between how much the government should receive from FIES and how much it will have to disburse to honor the public bonds issued to pay for the degrees in present value. They are proxies of the average participation of taxpayer's money in FIES. Values could be different for beneficiaries with different repayment conditions, such as public-school teachers and family health physicians.

Two estimates were made for different periods of the program: one using the conditions from 2010 to the first semester of 2015, the other using the ones from the second semester of 2015 to the second of 2016 (Table 5). Results point to a 47% implicit subsidy on the first case and 27% on the second: for every BRL 100 spent on FIES, BRL 47 and BRL 27 are taxpayer's money if the beneficiary pays everything on schedule. This is evidence that the government achieved its goal of reducing the implicit cost related to interest subsidies by changing the design of the policy (NASCIMENTO; LONGO, 2016). An estimate by Dearden and Nascimento (2018) indicated the implicit subsidy of FIES after the 2017 reforms would range from 37%-44% but comparisons cannot be made due to use of different parameters and models.

Table 5: Parameters for Estimating the Implicit Subsidy of FIES

FIES Parameter	Contracts Between 2010 and the First Semester of 2015	Contracts Between the First Semester of 2015 and the Second Semester of 2016
Tuition	R\$ 955	R\$ 955
Utilization Period	48 months	48 months
Grace Period	18 months	18 months
Repayment Period	156 months	144 months
Maximum Quarterly Interest Payment	R\$ 50	R\$ 250
Annual Inflation	6,1%	6,1%
FIES interest-rate	3,4%	6,5%
Annual Basic Interest Rate (SELIC)	10,96%	10,96%

Source: Nascimento; Longo (2016)³⁴

The third element is the default rate, which is expected to be high according to literature. Results confirm it: late payments have reached 61,8% in 2018 and default rate 40,7% (ALMEIDA JÚNIOR *et al.*, 2018) (Table 6). Comparing default rates through time and between different studies is difficult because there is no consensus regarding when a contract is in default. Some of the parameters we found were: more than 60 days without payment

³⁴ Nascimento and Longo (2016b) used a quarterly interest payment of BRL 250, but MEC (2016) and Resende (2018) indicate the value for the period was BRL 150, so the second indicator may be over-estimated.

(RESENDE, 2018); more than 90 days (ALMEIDA JÚNIOR *et al.*, 2018); more than 270 days (RESENDE, 2018). There is also divergence regarding which contracts enter the calculus: some use only those in repayment period (ALMEIDA JÚNIOR *et al.*, 2018; MEC, 2017); some use all (MEC 2017). The government's latest official estimate for the entire stock of contracts is that 51,4% of them were in default as of 2016 (MEC, 2017).

Table 6: Delayed Payment of FIES (Contracts in Repayment Period After 2010)

Risk - Brazilian Central Bank	Number of Days in Default	Number of Contrats in Repayment Period that are in Default	Percentage of People Defaulting Considering the Total of Contracts in Repayment Period
A	1 to 15	40.368	6,6
B	16 to 30	57.836	9,4
C	31 to 60	17.937	2,9
D	61 to 90	12.561	2,1
E ¹	91 to 120	12.333	2,0
F ¹	121 to 150	5.273	0,9
G ¹	151 to 180	5.564	0,9
H ¹	More than 180	226.315	37,0
Total		378.187	61,8

Source: Almeida Júnior *et al.* (2018)

¹: Risk categories the authors consider in default.

Summarizing the cost structure of FIES until 2017 we have a high but decreasing budget, high but also decreasing interest subsidy and high default rate. We made a proxy of the total cost with FIES from 2010 to 2016. We used the two indicators from Nascimento and Longo (2016) to include costs with interest subsidies and used their average as proxy for 2015 because the first semester is in the first indicator (47%) and the second semester in the second one (27%). Also, we used the government's most recent estimation of default rate (51,4%) for the entire period (Figure 16). The result is the government spent considerable amounts of money with FIES that do not appear on its budget, showing that a badly designed student loan can be a fiscal time-bomb (Table 7).

Figure 15: Parameters for Estimating Total Cost of FIES (2010-2016)

Cost Element	Parameter
Budget	Real budget, with prices adjusted by SIAFI according to the accumulated IPCA inflation-rate of November 2018
Implicit-Cost with Interest-rate¹	47% from 2010 to 2014, 37% for 2015 and 27% for 2016
Default-rate	51,4%

Source: based on SIAFI (2019); Nascimento, Longo (2016); MEC (2017)

Table 7: Estimate of the Total Cost of FIES (2010-2016)

Year	Budgetary Cost (billions)	Implicit Cost with Interest-Subsidies (billions)	Default Cost	Total
2010	2,83	1,33	1,45	5,61
2011	3,81	1,79	1,96	7,56
2012	7,76	3,65	3,99	15,39
2013	10,35	4,86	5,32	20,53
2014	15,86	7,45	8,15	31,46
2015	21,72	8,04	11,16	40,91
2016	21,91	5,92	11,26	39,09

Source: data from SIAFI (2019); Nascimento, Longo (2016); MEC (2017)

The percentage of implicit costs with interest subsidies decreasing from 47% to 27% is positive because it is directly attached to policy design, meaning some restrictive goals have been achieved. Nevertheless, the cost is still high. The traditional cost *per student* analysis does not apply to FIES but there is an indicator with similar reasoning: how much the government must disburse to cover the currently active contracts (Table 8). We used 8 semesters of utilization and found, for 2017, a minimum disbursement of BRL 15,4 billion. If we consider there are administration costs and new contracts, there is actually little space for reducing the budget unless the number of new contracts decreases, which is happening. The process for opening budgetary space is: the government makes the design more restrictive, the implicit cost decreases along with the number of new contracts, leading to lower cost with interest subsidies and lower minimum disbursements to maintain the program.

Table 8: Minimum Disbursement Needed to Pay for Active Contracts (2017)

Start of the Financing	Estimated End of the Financing	Number of Tuitions in 2017	Average Tuition Fee (R\$)	Number of Contracts Signed	Disbursement needed in 2017
2nd Semester 2013	June 2017	6	964,56	215.232	1.245.625.068
1st Semester 2014	December 2017	12	964,56	479.176	5.546.328.031
2nd Semester 2014	June 2018	12	964,56	253.417	2.933.230.818
1st Semester 2015	December 2019	12	964,56	243.341	2.816.603.940
2nd Semester 2015	June 2019	12	964,56	44.026	509.588.623
1st Semester 2016	December 2020	12	964,56	148.011	1.713.185.882
2nd Semester 2016	June 2020	12	964,56	55.495	642.339.086
Total					15.406.901.447

Source: Own elaboration based on MEC (2016a, 2017), Resende (2018)

Summarizing the findings, the structure of FIES until 2017 gave space for poor fiscal results, but some of the problems have been diagnosed and measures were taken aiming at

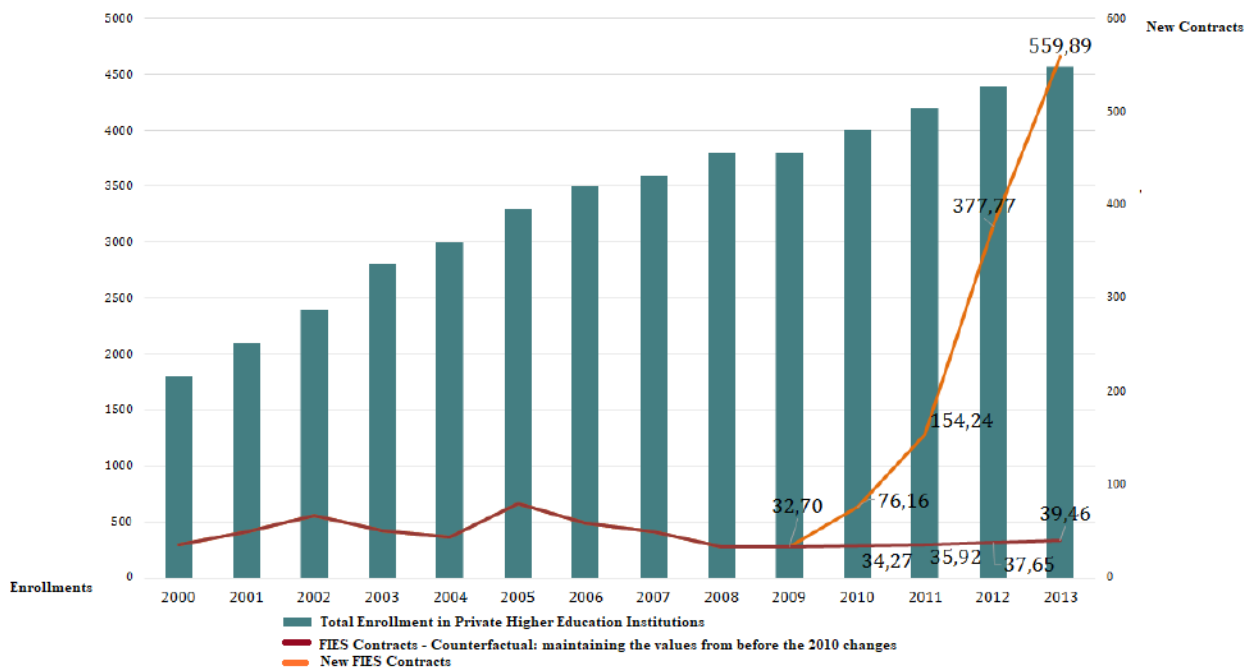
correcting them. Later, we discuss if they are capable of doing it. The budget has grown for most of the period, with an acceleration between 2010-2014. Even though it followed the pattern of changes in the policy, this is not a direct result of the design. Nevertheless, there are indirect relations that make changing the budget difficult because there is a minimum fiscal commitment that must be made to cover the contracts that are already active, along with new ones and administration. What the policy design directly affects is the implicit cost with interest subsidies. During the expansion period, they represented almost half of the money put in FIES. After the first restrictive reforms in 2015, they decreased to little more than a quarter. Default rate, however, is high and the causes are not consensual (RESENDE, 2018). It is possibly related to economic recession in addition to FIES being designed as a TBLR, that has tendencies for high default rates by design.

2.2.3 Student's Profile and Social Impact: A Benefit Perspective

To address the benefits related to FIES, we look at the socioeconomic profile of the beneficiaries. Starting with the income of beneficiaries, the program had different phases and has not always been targeted. Until 2012 there was no means-test, only the need to prove tuition heavily compromised one's income.

Considering this, we look at how it reflected in vertical equity and find that FIES did not benefit only the lowest parts of the Brazilian income-threshold, with evidence pointing to a "crowding-out effect": the number of FIES contracts grew faster than enrollment rates, indicating a considerable proportion of the beneficiaries were already enrolled and paying for their tuitions but chose to apply for FIES, particularly after the flexibilization of 2010 (Figure 16). Actually, until 2015, people whose gross *per capita* family income were between 3 and 6 times the minimum wage were eligible for the program (RESENDE, 2018).

Figure 16: Crowding-Out Effect of FIES – Effects of 2010's Flexibilization



Source: Tesouro Nacional (2015)

The number of beneficiaries grew by 960% while enrollment in the private sector grew by 17% from 2010 to 2014 (RESENDE, 2018). So, FIES contributed to inclusion in the system but the “crowding-out” puts into debate if the program promoted as much vertical equity as expected, particularly since it is supposed to be targeted since 2012, period which comprises the largest expansion and “crowding-out “effect.

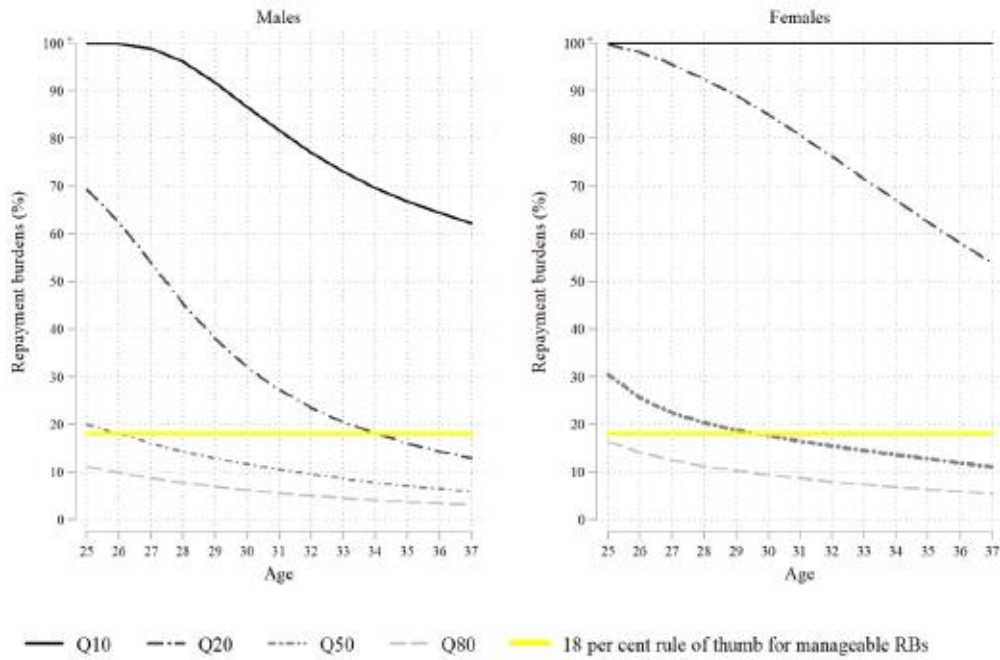
Considering FIES must be repaid and, therefore, reduced their available income of students during this period, the repayment burden must be assessed to evaluate the actual benefits of the program. In higher education literature, the main private benefit of a degree is higher available income in the future. However, if repayment burdens are too high, they may lead to graduates having low available incomes and being as credit constrained as when they were students. Regarding the return of the degree, despite measurement debates, estimates indicate an income increase between 145% and 150% (LAVINAS, 2017; RESENDE, 2018). Looking separately at the effect of FIES on income, the program was estimated to increase wages by BRL 307 using workers in all educational levels as reference. Using those who were eligible for the program, the income was shown to grow BRL 281. Lastly, when looking at people who did not have a degree in the beginning of the period and got one by the end of it,

there was no statistical significance (ROCHA *et al.*, 2016). So, depending on the group the conclusion regarding the positive effects of FIES on the return of higher education changes.

Next, we look at how repayments decrease the available income. The repayment burden analysis is important to determine the potential consumption hardship and default probability caused by the loan. Default may happen even if the person can afford repayment – as long as the financial costs of paying are larger than the costs of the penalty for defaulting – and it is not necessarily inefficient if debtors use it as an insurance mechanism, but excessive repayment burdens may increase the probability of default and influence the decision of the government regarding how much subsidies are needed (DEARDEN; NASCIMENTO, 2018). As for what is a manageable repayment burden, there is no consensus with only *ad hoc* definitions ranging from 8%-20%. We follow the 18% of pre-tax income selected as rule of thumb by Dearden and Nascimento (2018).

Dearden and Nascimento (2018) estimated the repayment burden for the mid-2015 to 2017 FIES using the following parameters: BRL 50 thousand for a four-year course (roughly BRL 1 thousand of monthly tuition); full funding; loans log-normally distributed with a standard deviation of BRL 25 thousand and within the range of BRL 5 thousand and BRL 300 thousand; no payments during utilization; 4,5% annual inflation and a 5% annual real interest rate. Results point to significant hardship for debtors, particularly those at the bottom 20% of the income-distribution but also those in the middle income-thresholds and mostly to women (Figure 17). The authors found that only 32,7% of all males and 14,4% would never face a repayment burden larger than 18%.

Figure 17: Repayment Burdens of FIES (Quantiles of Income Distribution/2015-2017)

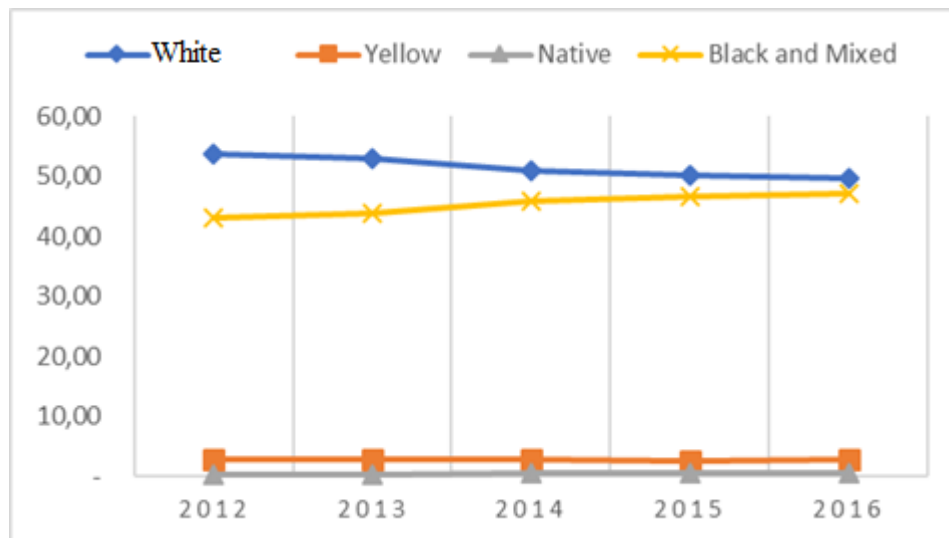


Source: Dearden, Nascimento (2018)

As for horizontal equity, the trend is similar to that of public institutions. In 2016, 47,04%³⁵ of the beneficiaries of FIES declared themselves black or mixed-race (INEP, 2017b), reflecting their lack of representation when compared to the population. Nevertheless, the participation of white people has been decreasing in favor of black and mixed-race people at least since 2012. From 2012 to 2016, the participation of black and mixed-raced people grew by 9% while that of white people decreased by 8%, indicating the substitution (Figure 18). In terms of horizontal equity, the program does not reflect the racial profile of the Brazilian society, but is moving towards it.

³⁵ The data is harmed by missing information, that represents an average of 40%. The only treatment given was its removal from the universe. This method, however, is adequate only when it can be assumed the missing data was random, which we cannot assure.

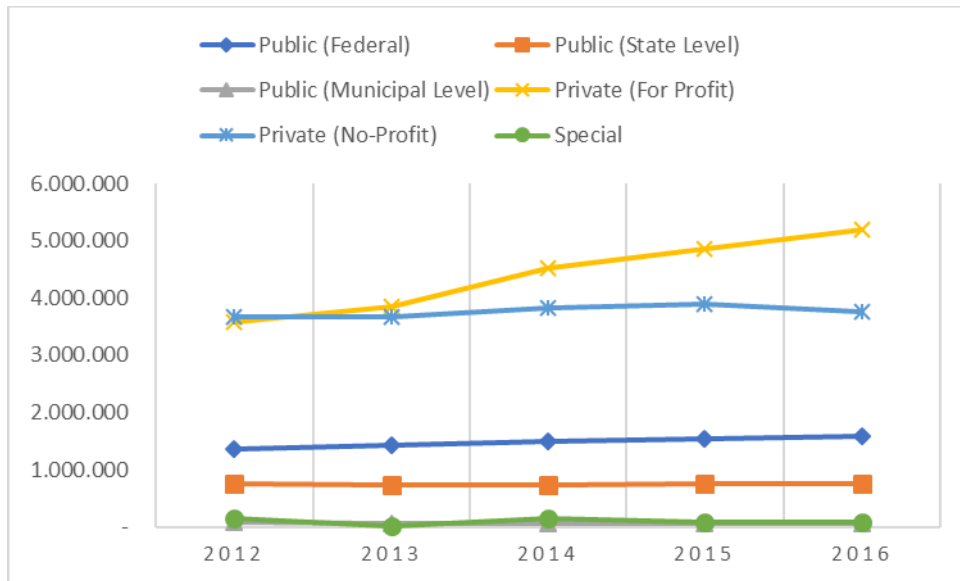
Figure 18: Racial Profile of FIES



Source: data from INEP (2013, 2014, 2015, 2016 2017b)

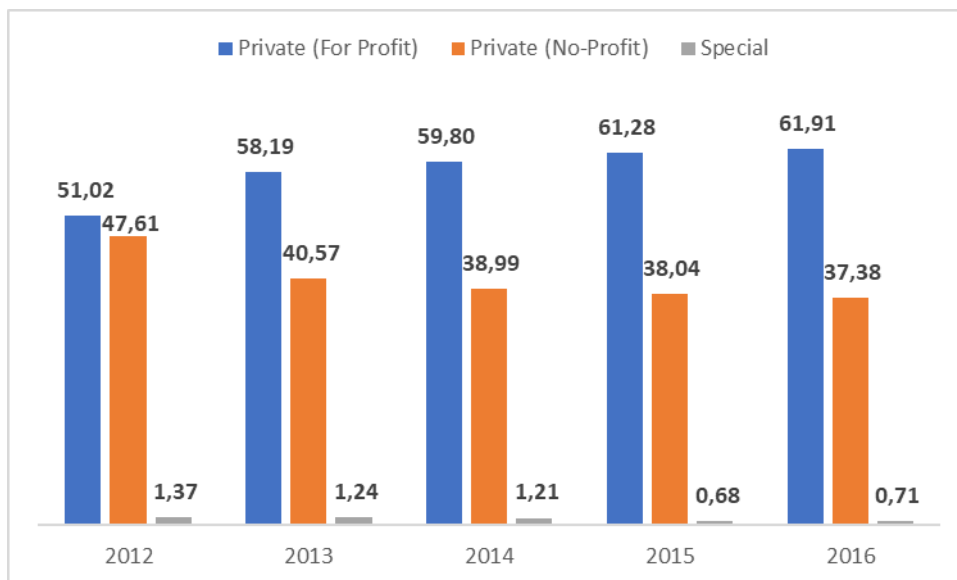
A third aspect is the quality of the institutions. After 2008, the government explicitly determined quality parameters. Before, specific regulation did not mention quality in spite of it being already in the PNE. Nevertheless, results show that quality assurance has not been properly enforced, with indication the expansion of the program happened at its cost. First, we look at the profile of the institutions. The evolution of enrollment shows the main responsible for its expansion were for-profit institutions, with a 45,78% growth-rate from 2012 to 2016 (Figure 19). They also have the largest participation in the program: 61,91% in 2016 with a 21,34% growth-rate between 2012-2016 (Figure 20). When it comes to quality, these institutions have the worst ENADE indicators: in 2017, 14.53% of for-profit institutions got a 4 or a 5 and 42.62% scored under 3. For comparison, 46,59% of public institutions got 4 or 5 and 17,87% scored less than 3 (INEP, 2018a).

Figure 19: Higher Education's Enrollment by Administrative Category



Source: data from INEP (2013, 2014, 2015, 2016, 2017b)

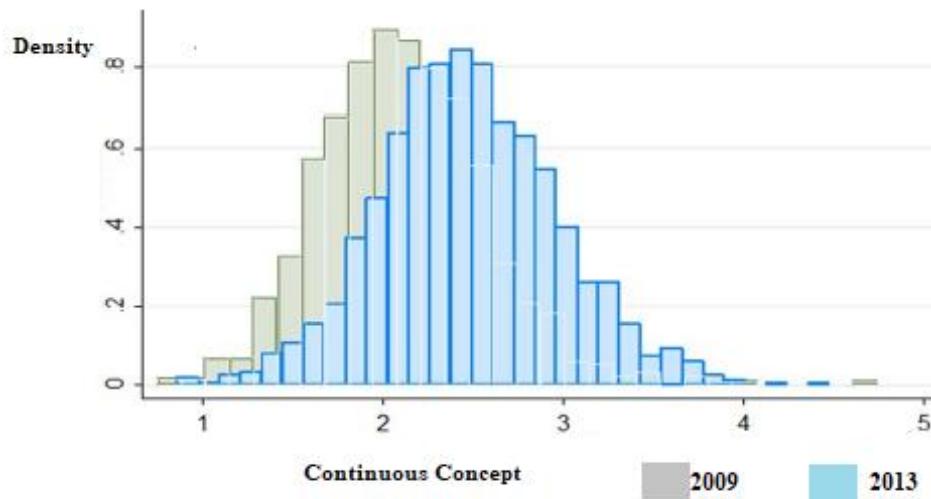
Figure 20: Participation in FIES by Administrative Category



Source: data from INEP (2013, 2014, 2015, 2016, 2017b)

The IGC quality indicator is not considered for accreditation in the program but analyzing its continuous distribution for private higher education institutions which were accredited at FIES from 2009 to 2013, results point to a concentration on lower quality ones (Figure 21). In 2017, the average IGC for private institutions was 2,6 (INEP, 2018b).

Figure 21: Distribution of the Continuous IGC of Institutions Accredited at FIES (2009-2013)



Source: Tesouro Nacional, 2015

In spite of the well established consensus that a student loan program is necessary, FIES has problematic results. The repayment burdens are high, compromising the actual private benefit associated with higher education of higher available income. Also, many people who were already paying for their education started using FIES instead of poorer people who cannot access higher education due to funding issues. Additionally, it does not guarantee participation in good quality institutions. As for horizontal equity, social minorities who are underrepresented in higher education – mostly black and mixed-raced people – have gained space. Even if FIES does not reflect the racial profile of the Brazilian society, it is moving in this direction. It is worth remembering, however, that equity and quality have been shown not to be a direct result of funding nature.

2.3 PROUNI: A Cost-Sharing Grant Program

The last policy is PROUNI, created in 2004 and implemented in 2005 by President Lula da Silva to establish partnerships between the government and private institutions so they offer grants³⁶ to low SES students in exchange for tax exemptions (CGU, 2015; MEC, 2016b; TCU, 2009). It is, therefore, a cost-sharing policy between the government and private institutions created to complement FIES. PROUNI was implemented with the explicit goal of providing 100% and 50% grants in private institutions, for-profit or not. Law 11.096 of 2005

³⁶ Grant, in this case, is defined as a scenario in which the student does not have to pay tuition fees.

institutionalized it with the same goal, but including the possibility of 25% grants (BRASIL, 2005). Since then, it has suffered fewer changes than FIES. We analyze the design and outcomes of the policy to further discuss its role in higher education funding.

2.2.1 Design and Operation

We start with the aspect that shows the cost-sharing nature of PROUNI: how the government sets the incentives for private institutions to provide the grants. Before the program, there were few of them and the ones that existed were offered in cheaper and less demanded courses (MOURA, 2016) even with private higher education representing 98% of vacant places (SOUZA; MENEZES, 2014; TCU, 2009). PROUNI is a public policy that gives fiscal incentives for institutions so they increase the number of grants and, because the government is the one organizing, it has the power to insert its own strategic goals in their provision. It is, therefore, a cost-sharing policy: the government gives tax exemptions so private institutions cover for the tuition of the students (BRASIL, 2005; SOUZA, MENEZES, 2014). The mindset was that all three stakeholders could benefit: the government would expand higher education and promote inclusion; private institutions would occupy their vacant places and be released from paying a determined list of taxes; and beneficiaries would access higher education without paying.

An institution can only be accredited in the program after presenting a certificate proving it does not have financial problems. Then, it must sign a contract and commit to offering grants in one of two possible proportions: full grants as 1:10,7 of their paying students; or 1:22 as long as they are complemented with partial ones until beneficiaries represent 8,5% of their revenue. Despite having to respect the chosen proportion, they are allowed to move one fifth of the grants between courses and class periods. They must also separate part of the grants for affirmative action, and the proportion destined to racial minorities must be at least the same as the one in the most recent census. These grants can only be given to other people if the targeted groups do not fill them (BRASIL, 2005).

In exchange for entering the program and complying with the contract, institutions become exempt from the following taxes: Corporate Income-Tax (IRPJ)³⁷, Social Contribution

³⁷ *Imposto de Renda das Pessoas Jurídicas* – english version in free translation.

on Net Profit (CSLL)³⁸, Contribution for Social Security Financing (COFINS)³⁹, and Contribution for the Social Integration Program (PIS)⁴⁰. In 2011, Law 12.431 determined the fiscal benefit would be a proportion of the occupied grants instead of offered ones, excluding the ones that ended up vacant (BRASIL, 2011). Even though all private institutions are under the same regulation, there are differences on how much each type benefits. Brazilian Federal Constitution mandates that not-for-profit private institutions be exempt from a list of taxes (BRASIL, 1988), so they only pay PIS (1% payroll discount) and COFINS (3% of their revenues) when not accredited to PROUNI. For-profit institutions, on the other hand, pay 25% of IRPJ, 9% of CSLL, 3% of COFINS and 0,65% of PIS when out of the program. Considering this, the institutions who most benefited directly from PROUNI were the for-profit ones (SOUZA; MENEZES, 2014), making them the major private stakeholder.

To receive the fiscal benefits, however, institutions must comply with the previously described rules or offer 20% more grants as penalty, with recurrence leading to de-accreditation. Another case in which the punishment is de-accreditation is insufficient performance in the SINAES for two consecutive periods (BRASIL, 2007) (Figure 22).

Figure 22 Conditions for an Institution's Accreditation at PROUNI

Rules	Following the proportion of grants determined by law; promoting affirmative action in the proportion of the population census; and receiving at least the minimum grades in the evaluations from SINAES for two consecutive periods
Benefits	Becoming exempt from 4 taxes: IRPJ, CSLL, PIS and COFINS
Punishments	Having to offer 20% more grants; and de-accreditation from the program

As for the students, eligibility criteria relates to PROUNI being a needs-based program with merit-based conditionalities: socioeconomic determinants are dependent on minimum performance results. Two conditions are necessary: not having a higher education degree, and

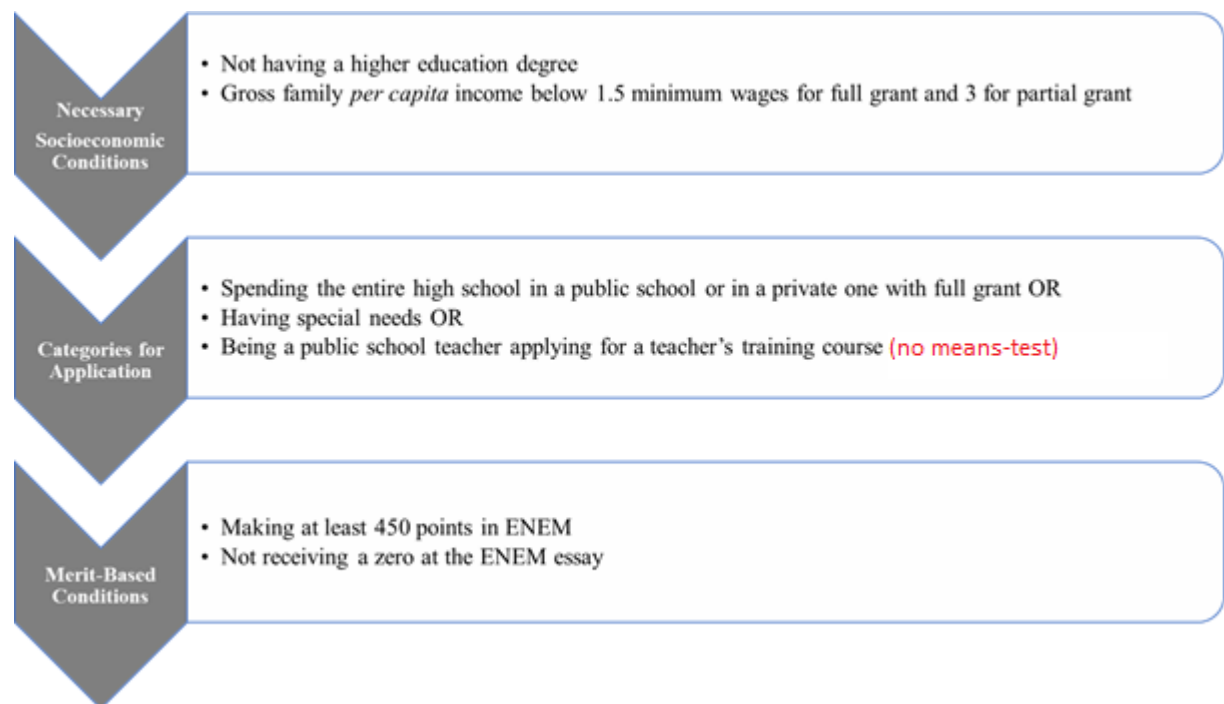
³⁸ *Contribuição Social sobre Lucro Líquido* – english version in free translation.

³⁹ *Contribuição para o financiamento da Seguridade Social* – english version in free translation.

⁴⁰ *Contribuição para o Programa de Integração Social* – english version in free translation

having a gross *per capita* family income below 3 times the minimum wage. There are two income thresholds, however: full grants can only contemplate students whose gross *per capita* family income is below 1,5 times the minimum wage. Those whose gross *per capita* family income lie between 1,5 and 3 times the minimum wage can receive 50% or 25% grants (BRASIL, 2005). The applicant must also fit into one of three categories: having studied in a public school – or private one with full grant – during all of high school; having special needs; or being a public-school teacher who wishes to enter a teacher’s training course. Those in the last category are waived of the means-test. Additionally, there are merit-based conditions: a minimum score of 450 points on the ENEM tests and more than 0 on the essay. If the number of grants is smaller than that of applicants, students with the best grades are selected (Figure 23). Lastly, a person can receive a PROUNI grant for two times the duration of their courses, which is the standard maximum period students can be enrolled in higher education institutions without facing the possibility of expulsion processes (BRASIL, 2005).

Figure 23: Eligibility Criteria for PROUNI



After being selected, there are standards the students must follow not to lose the grant, with most losses happening over administrative problems (Figure 24). On the other hand, PROUNI has complementary actions to avoid evasion, particularly of students with partial

grants. They can apply for financial aid⁴¹ to cover part of living costs if they are enrolled in courses with at least six semesters and six hours of class per day. Also, the program maintains a partnership with a few public banks to offer internships so beneficiaries can complement their earnings. They can also complement PROUNI with other funding alternatives, such as scientific initiation grants and FIES. This is justified by the will to increase the number of students who have a “free at the point of use” education (MEC, 2015b). Institutions are responsible for controlling and checking the documents following a guide given by MEC. Nevertheless, some aspects are dependent on self-report (TCU, 2009). Next, we analyze the costs of the program.

Figure 24: Situations That Lead to the Loss of a PROUNI Grant

Administrative
Student misses the enrollment at the beginning of the semester. The person is selected to receive a PROUNI grant but does not enroll in a private higher education institution
Student cancels the enrollment and cuts academic ties to the institution
Student is simultaneously enrolled, at any moment during participation in PROUNI, in a public higher education institution
Student does not provide the required documents or falsifies them
Student accumulates PROUNI grants
Student simultaneously has a PROUNI grant and a FIES loan for different courses
Student requests the end of the grant
A judicial order demands the end of the grant
Student evades higher education
Student dies
Eligibility
Student goes out of the income threshold due to changes in socioeconomic status
Performance
Student does not reach 75% approval-rate in each semester's disciplines

Source: based on MEC (2015b)

2.2.2 Tax exemption Analysis: A Cost Perspective

PROUNI is not a budgetary policy, it is a tax expenditure one. Brazil follows OECD and Inter-American Center of Tax Administration (IACT) recommendations regarding tax relief, which is defined as: “(...) every situation that promotes credit presumptions, exemptions, amnesties, tax-rate reductions, deductions, rebates and deferments of tax nature.”⁴² (MF, 2018,

⁴¹ Up to BRL300,00 as of 2018.

⁴² “(...) todas e quaisquer situações que promovam presunções creditícias, isenções, anistias, reduções de alíquotas, deduções, abatimentos e diferimentos de obrigações de natureza tributária.” – english version in free translation.

p.7). A tax relief can attend different goals: simplifying or reducing administration costs, promoting equity, correcting deviations, compensating the taxpayers for services that have not been delivered by the government, compensating civil entities for developing complementary actions in typical State functions, promoting income and regional equalization, and encouraging certain sectors within the economy (MF, 2018).

The last four are considered tax expenditures because they are alternative ways to promote a political action for social and economic development through the tax-system. The definition of tax expenditure, however, is not consensual: OECD indicates that to be a tax expenditure, the goals must be similar to that of public expenditures, and be a deviation from the normal tax-structure – meaning it cannot have general application. The idea of a normal tax-structure is also debatable, but the common aspects are usually the principles of equity, progressivity, and neutrality. Considering this, a policy that distances itself from any of the principles with the goal of promoting social and economic development is a tax expenditure (MF, 2018). The formal definition used in Brazil is:

Tax expenditures are indirect government expenditures carried out through the tax system, in order to meet economic and social objectives and constitute an exception to the reference tax system, reducing potential revenue and, consequently, increasing the economic availability to the taxpayer (MF, 2018, p. 9)⁴³

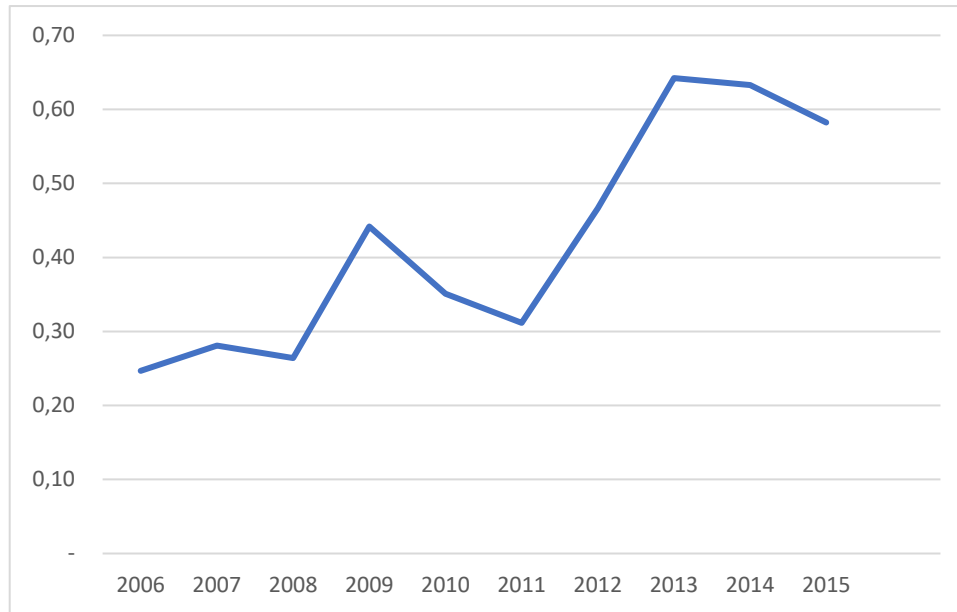
PROUNI fits the definition: it aims at promoting social and economic development by increasing the participation and inclusion of higher education through decreases in the country's potential revenue. So, the program represents an indirect cost to the government. The evolution of the government's expenditure with the program goes in the same direction of other funding policies: the amount of public money used increased (Figure 25). The government renounced BRL 0,25 billion in 2006 (MF, 2011) and BRL 0,58 billion in 2015⁴⁴ (MF, 2018). That represented a growth of 136% in the period. The overall expansion was not linear, however, with decreases in 2010 and 2011, and after 2014. The first two can be attributed to the flexibilization of FIES. The decrease after 2014 is related to changes in policy direction after

⁴³ *“Gastos tributários são gastos indiretos do governo realizados por intermédio do sistema tributário, visando a atender objetivos econômicos e sociais e constituem-se em uma exceção ao sistema tributário de referência, reduzindo a arrecadação potencial e, conseqüentemente, aumentando a disponibilidade econômica do contribuinte.”* – english version in free translation.

⁴⁴ The last year with available tax exemption information. For 2016-2018, only predictions are available.

the recession. Discriminating by tax, IRPJ deductions were the main source of tax expenditure, reaching 54,3% of the cost in 2015 (Table 9).

Figure 25: Evolution of the Tax exemptions of PROUNI (BRL billions/real prices¹)



Sources: data from MF (2011, 2013, 2018)

¹ Prices adjusted by the accumulated IPCA inflation rate of November 2018.

Table 9: PROUNI's Tax expenditure by Tax (BRL billions/ real prices¹)

Tax	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IRPJ	0,13	0,13	0,11	0,16	0,15	0,12	0,19	0,30	0,29	0,32
CSLL	0,04	0,04	0,04	0,08	0,05	0,04	0,06	0,11	0,10	0,12
PIS	0,01	0,02	0,02	0,04	0,03	0,03	0,04	0,04	0,04	0,03
COFINS	0,06	0,09	0,10	0,17	0,13	0,12	0,18	0,20	0,20	0,12
TOTAL	0,25	0,28	0,26	0,44	0,35	0,31	0,47	0,64	0,63	0,58

Source: data from MF (2011, 2013, 2018)

¹ Prices adjusted by the accumulated IPCA inflation rate of November 2018.

Results are compatible with other higher education funding sources and with the goal of expanding the system. Nevertheless, unlike FIES, the cost of PROUNI low even after the expansion. In 2015, the program represented 0,64% of Brazil's total tax expenditure and 0,13% of the GDP (MF, 2018). It is, therefore, hardly fiscally representative. Regarding cost *per* student, we excluded 25% grants because they only appear in 2008 and represent 2% of said year's total grants.

Looking at the number of grants before calculating the cost *per* student, we find that they grew 150,2% between 2005 and 2016 (Table 10). It is important, however, to differentiate occupied from offered ones because, until 2011, tax exemptions were calculated using the latter as reference. Considering this, we estimated cost *per* student using offered grants (Table 11) from 2006-2011 and occupied ones from 2012-2015. It confirms PROUNI is a low-cost policy to the government. In 2015, the annual cost was BRL 2,3 thousand *per* student (Table 12). Then, we look at the benefits of the program

Table 10: Number of Students with PROUNI Grants

Year	Occupied Grants
2005	95.629
2006	109.025
2007	105.574
2008	124.621
2009	161.369
2010	152.733
2011	170.766
2012	176.764
2013	177.326
2014	223.598
2015	252.650
2016	239.262
TOTAL	1.989.317

Source: data from MEC (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c)

Table 11: Offered PROUNI Grants

Year	Offered grants
2005	112.275
2006	138.668
2007	163.854
2008	225.005
2009	247.643
2010	241.273
2011	254.598
2012	284.622
2013	252.374
2014	306.726
2015	329.117
2016	329.180
TOTAL	2.885.335

Source: data from MEC (2016b)

Table 12: Cost per Student of PROUNI (BRL/ real prices¹)

Year	2006	2007	2008	2009	2010
Tax-expenditure (R\$)	246.829.913	280.733.272	264.183.631	441.960.718	351.173.617
grants	138.668	163.854	225.005	247.643	241.273
Cost/student (R\$)	1.780,01	1.713,31	1.174,12	1.784,67	1.455,50
Year	2011	2012	2013	2014	2015
Tax-expenditure (R\$)	311.802.913	466.222.510	642.295.125	632.848.447	582.175.960
grants	254.598	176.764	177.326	223.598	252.650
Cost/student (R\$)	1.224,69	2.637,54	3.622,11	2.830,30	2.304,28

Source: data from MEC (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c; MF, 2011, 2013, 2018)

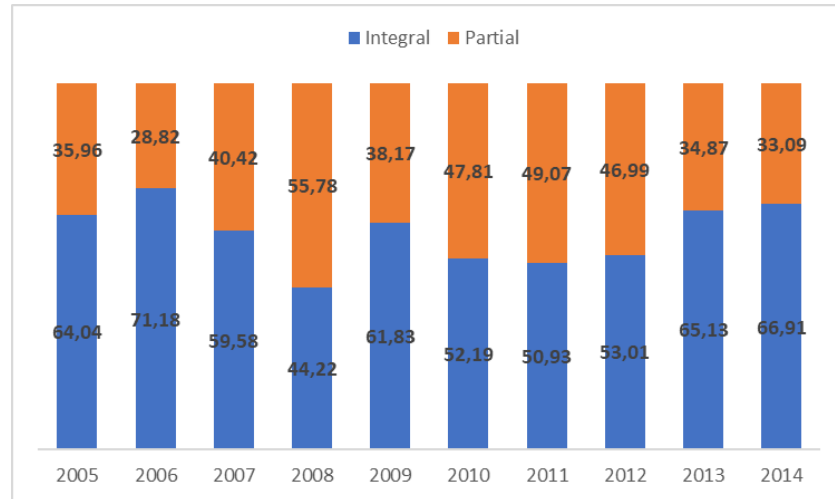
¹ Prices adjusted by the accumulated IPCA inflation rate of November 2018

2.2.3 The Profile of Students and Institutions: A Benefit Perspective

To understand the profile of PROUNI beneficiaries, we start with their income. Because there are no income variables in the bases, we use the proportion of partial and integral grants as proxy. The program's regulation stipulates integral grants can only be given to students whose gross *per capita* family income is below 1,5 minimum wages, so we use this indicator to see how many beneficiaries belong to each threshold. The proportion of grants being offered indicate the program's goal of improving vertical equity. Not only it is already a targeted policy,

but there was a higher number of integral than partial grants in all years but 2008⁴⁵, meaning the policy intended to be progressive within the income-thresholds eligible (Figure 26).

Figure 26: Proportion of Offered PROUNI Grants by Type (%)

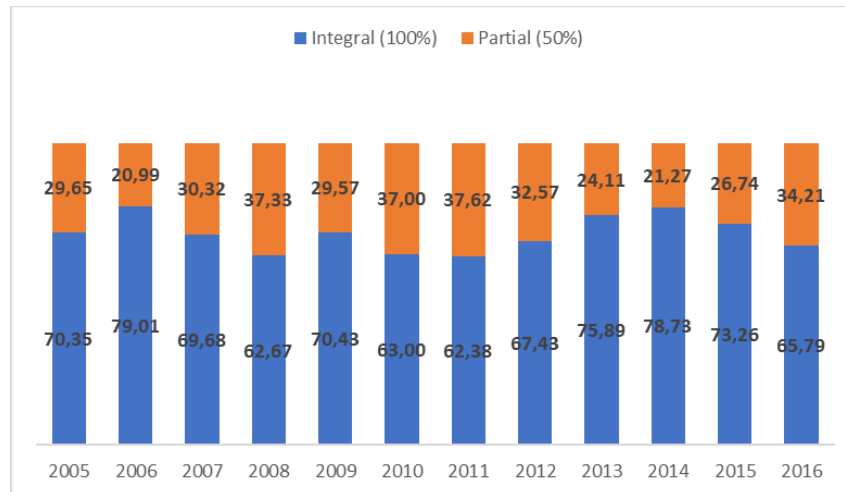


Source: data from MEC (2016c)

Integral grants are also being more occupied, so the main targeted group is actually demanding them. Integral grants represent an average of 69,88% of the occupied ones (Figure 27). In 12 years, PROUNI benefitted a total of 1,39 million people in this threshold and 0,59 people between 1,5 and 3 (Table 13). Comparing with FIES and public higher education institutions, the program benefits poorer people the most. Considering PROUNI was one of the actions taken to solve the problem in the private sector, the result is positive, with the portion of the inequality that is actually promoted by higher education having decreased after the program.

⁴⁵ The number of offered grants by type was only available until 2014.

Figure 27: Proportion of Occupied PROUNI Grants by Type (%)



Source: data from MEC (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c)

Table 13: Occupied PROUNI Grants by Type

Year	Integral (100%)	Partial (50%)	Total
2005	67.276	28.353	95.629
2006	86.141	22.884	109.025
2007	73.561	32.013	105.574
2008	76.643	45.648	122.291
2009	113.647	47.722	161.369
2010	96.216	56.517	152.733
2011	106.516	64.250	170.766
2012	119.191	57.573	176.764
2013	134.571	42.755	177.326
2014	176.033	47.565	223.598
2015	185.086	67.564	252.650
2016	157.406	81.856	239.262
Total	1.392.287	594.700	1.986.987

Source: data from MEC (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c)

As for horizontal equity, the participation of black and mixed-race people was lower than that of white people only in 2007 and 2008 (Table 14). Black and mixed-race people were 54,9% of the population in 2016 (AGÊNCIA IBGE, 2017) and their PROUNI participation was 57,41%. Concerning the socioeconomic profile, therefore, PROUNI is a well-targeted program. The people who were intended to be included in higher education are in fact benefiting from it,

both from a vertical and horizontal equity perspectives. The difference between PROUNI and FIES in that respect comes from their regulations: PROUNI mandates the grants must be distributed respecting at least the racial proportion of the most recent census, with results showing the determination is enforced.

Table 14: Racial Profile of PROUNI

Year	Yellow (%)	Caucasian (%)	Native (%)	Black or Mixed-Race (%)
2005	3,14	47,32	0,81	48,74
2006	1,90	48,83	0,19	49,08
2007	1,87	51,88	0,10	46,16
2008	1,94	50,05	0,09	47,92
2009	1,75	48,86	0,08	49,31
2010	1,66	47,85	0,08	50,41
2011	1,64	47,71	0,08	50,57
2012	1,61	44,19	0,09	54,11
2013	1,67	43,39	0,08	54,86
2014	1,72	41,70	0,08	56,50
2015	1,71	41,70	0,08	56,51
2016	1,84	40,67	0,08	57,41

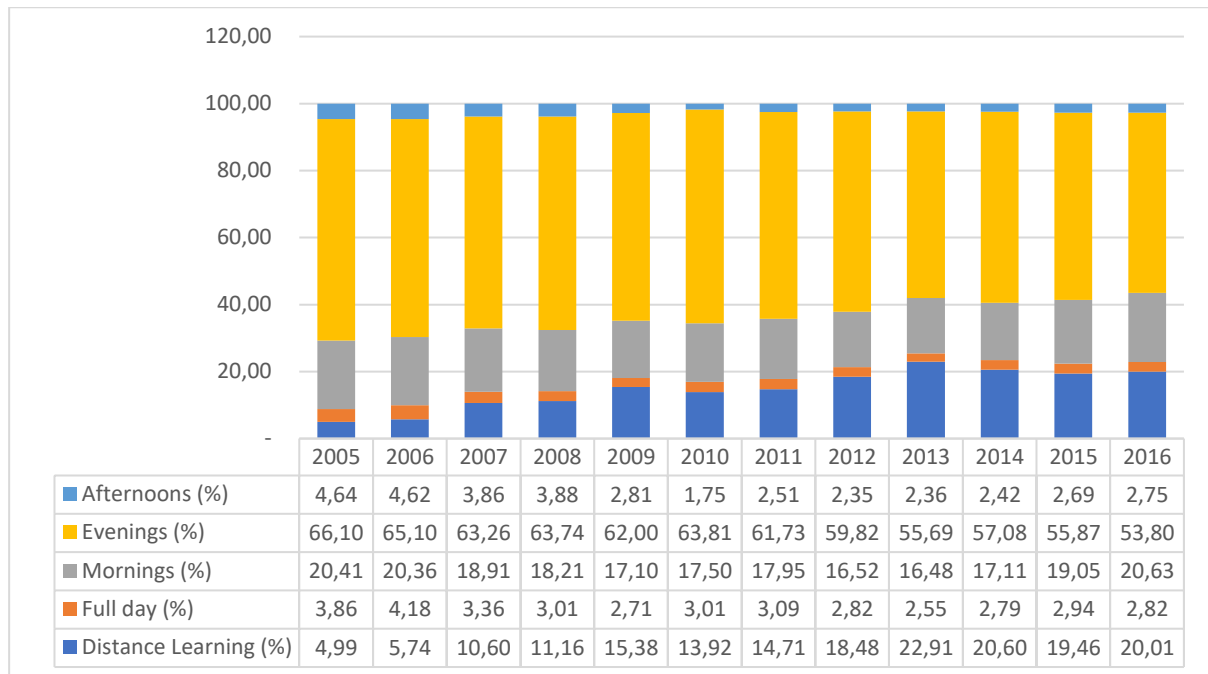
Source: data from (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c)

To analyze quality, we look at the profile of accredited institutions. Between 2005 and 2010, 1.574 institutions received at least one PROUNI beneficiary and 5% of them concentrated 64,75% of the occupied grants (MEC, 2005, 2006, 2007, 2008, 2009, 2010a). From 2011 to 2015 there were 1.540 institutions and the concentration in the first 5% was 55,64% (MEC, 2011, 2012a, 2013, 2014, 2015a), a decrease of 9,1%. Nevertheless, PROUNI recipients are still concentrated in few institutions. Also, most of the accredited institutions are for-profit, 57% in 2015 (MEC, 2015b).

As for the courses, ten of them accounted for 64,89% of the beneficiaries between 2005-2010 (MEC, 2005, 2006, 2007, 2008, 2009, 2010a) and 40,44% from 2011-2015 (MEC, 2011, 2012a, 2013, 2014, 2015a) In the first period, the ten courses were business administration, law, pedagogy, accounting, nursing, physical education, psychology, physiotherapy, human resources management and social services. The only change in the following period was the substitution of physiotherapy for civil engineering. Lastly, most of the grants are for courses with evening classes, with day classes having lost space to distance learning (Figure 28). The fact PROUNI is targeted at poorer people who mostly need to work during the day helps

explaining the result. The general diagnosis is there are many accredited institutions but the majority of students go to only a few. The same for courses. Most of the institutions are for-profit and most recipients study during the evenings.

Figure 28: Class Hours of PROUNI Recipients



Source: Own elaboration based on MEC (2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012a, 2013, 2014, 2015a, 2016c)

This institutional profile indicates the same results as FIES: problems with quality due to the large participation of for-profit institutions. The private higher education institutions receiving the larger amounts of fiscal benefits and most part of students are the ones with the worst quality indicators. Summarizing the results, PROUNI is not like the other two funding mechanisms. It has the lowest cost *per* student and contributes the most to vertical and horizontal. However, it is smaller and complementary by nature since there are more limitations to tax-expenditure and grant programs. Also, much like FIES, the quality of the education is questionable, leading to doubts about who actually benefits the most from the program: students or the private sector.

Chapter III – Discussion:

After describing the Brazilian public policies for higher education funding, we interpret the results from the ICL literature perspective. Initially to see if they correspond to the conclusions of the literature. To do it, we first summarize the ICL arguments regarding the Brazilian policies. Then, we consolidate the results to assess their relation to literature. Second, we see what possibilities can be taken for the Brazilian case from the ICL arguments. The chapter is divided in two sections: one in which we debate the results of the Brazilian case and one to raise possible alternatives and limitations for the country.

3.1 Tax-finance, Time-Based Repayment Loan and Grant program: Interpreting the Results of Brazilian Public Policies for Higher Education Funding Through the ICL Literature

To analyze how ICL literature contributes to the interpretation of the Brazilian case, we first summarize what results are expected of the country's policies. First, we present the theoretical conclusions for tax-financed systems, then TBRLs and lastly grant programs, which correspond to public universities, FIES and PROUNI respectively. Next, we compare the results of these policies to literature's expectations.

3.1.1 The Brazilian Higher Education Funding Policies according to ICL Literature

There are three main arguments against tax-finance: macroeconomic, microeconomic and social. The first statement is that higher education needs more money to increase size and quality but public finances are constrained by competing demands (BARR, 2004, 2009, 2012, 2014, 2017; OECD, 2008; STIGLITZ, 2014, NASCIMENTO, VERHINE, 2017). Pressures from other responsibilities could lead to the reduction of the budget for higher education. In a more competitive global economy with demographic changes, there is also less space for increasing taxation.

The second statement is the microeconomic one, related to efficiency. A tax-financed system is considered to provide bad incentives. The lack of fees means there is a price floor and cap at the same time, resulting in problems related to both: the floor reduces incentive for quality and the cap for efficiency. Also, Barr (2004, 2009, 2012, 2014, 2017) indicates that the inexistence of a price mechanism harms signaling and resources end up misallocated. Also, the usual goals of higher education are larger quantity and quality with less use of public money

but tax-financed systems can only be “Large and tax-financed, but with worries about quality (France, Germany, Italy); High-quality and tax-financed, but small (the UK, until 1989); Large and good-quality, but fiscally expensive (Scandinavia).” (BARR, 2009, p. 201). The last option is not considered illogical but unsustainable in the present day because of taxation limits and fiscal constraints.

As for the social argument, one statement is that tax-finance does not help participation rates because the causes for them being low are not in higher education in the first place. Additionally, tax-finance would not help but it could make it worse by being regressive because university students are disproportionately from the upper middle-class resulting in the poorer paying for the richer kid educations (BARR, 2009). Also, the opposition to tax-finance considers part of its defense based on mistakes, which they call “blind-alleys”. The first blind alley is that higher education should be free because it is a basic right: something being a right should not make it automatically free. The equity goal is not necessarily related to making higher education free but avoiding situations in which talented people do not access it because they are poor. A consensual argument, however, is that no student should have to pay while studying, only after.

A second blind alley is that it is immoral to charge for education. The counter-argument is the same (BARR, 2004, 2012). There is also the idea that elitism has no place in education and the argument used against it is that the problem is what type of elitism is being referred to. Social elitism is indeed considered wrong because social background should not interfere in access to the system. Intellectual elitism, however, is desired. The last blind alley is that graduates pay for their education through higher taxes, but graduates end up contributing less to the government itself because a percentage of their contribution is a compensation for the cost of their degrees. Also, not all socially good deals are automatically tax-financed and there are limits to taxation that result in the costs increasing more than the taxes paid by graduates (BARR, 2004, 2012).

The main opposition to TBRLs is based on it being a mortgage-type loan for human capital in which the lack of collateral leads to high repayment burdens and default rate due to problems both on the demand and supply sides. Mainly, the lack of insurance and consumption-smoothing mechanisms result in a costly and inefficient policy. First, there is the unwillingness of the private sector to lend because of the lack of collateral and adverse selection/moral hazard

issues. Then, the demand is also jeopardized because people are imperfectly informed and the loans cannot be securitized (BARR, 2009, 2012, 2014, 2017; CHAPMAN, 2014; DYNARSKI, KREISMAN, 2013; FRIEDMAN, 1955; NASCIMENTO, 2015; OECD, 2008). So, TBRLs result in consumption hardship and higher default probabilities, with graduates facing a scenario where they are more credit-constrained than as students while the government has the high fiscal cost it wished to avoid.

Regarding grant programs, they are less discussed and seen as a complementary policy responsible for reducing informational problems. The argument is that students – mostly those who come from low SES backgrounds – may not know if they really want to enter higher education or if they are apt to go through with it. Grants should be offered in these cases, particularly for the first year of study, to guarantee that apt people will not give up higher education before even trying due to informational problems. Considering people from low SES are the most affected, grant programs should be targeted at the lowest part of the income-threshold (BARR, 2004, 2009, 2017; BROWNE, 2010). When compared to an ICL, grant programs appear as a twofold policy: they can encourage lower aptitude people to get into higher education but also avoid that higher aptitude ones do not enter due to risk aversion; also, they may be superior to loans in equity terms because they decrease the costs of higher education but they may also be regressive if not properly targeted (YUN, 2014). With the full diagnosis of how literature understands policies like the ones in Brazil, we move to the comparison of the Brazilian case to these diagnoses.

3.1.2 Comparing the Results of Brazil to the Interpretations from Literature

Regarding tax-financed institutions, results for Brazil comply with the diagnosis that fiscal difficulties and competing demands lead to funding problems. For example, the pressure from the recession, political change, and increasing expenditure with the pensions system led the government to reduce the budget of public higher education after 2014 to meet other priorities, with real decreases affecting institutions and leading to strikes and difficulties with the development of daily activities. The freezing of any real growth for twenty years starting in 2016 is an indicative of the problem: the system cannot be expanded without costs going up but the budget cannot accompany them, leading to under-funding.

Another example of competing demands comes from within higher education. The movement towards the private sector with FIES resulted in the program having a higher budgetary growth-rate than that of public universities (Table 15). The macroeconomic arguments against tax-finance, therefore, are strong in Brazil. Being dependent on tax-finance renders the system unable to search for alternatives regarding hiring new staff, improving infrastructure, or increasing the number of places unless it becomes a political choice to change the situation – which makes the strategy volatile. Additionally, it reduces the space for long-run planning because macroeconomic changes may affect the availability of resources, also contributing to a volatile funding.

Table 15: Annual Growth-Rates of FIES and Public Higher Education Institution's Budget (%)

Year	FIES	Public Higher Education Institutions
2007	3,32	15,04
2008	14,90	1,83
2009	12,57	20,83
2010	17,18	10,95
2011	34,69	12,48
2012	103,67 -	5,77
2013	33,38	11,21
2014	53,24	3,49
2015	36,94	4,49
2016	0,90 -	6,89
2017	0,48 -	1,21
2018	- 14,59 -	3,92

Source: data from SIAFI (2019)

Concerning the microeconomic arguments against tax-finance, there must be certain degree of relativization. The idea that tax-financed gratuity would lead to lack of quality and efficiency as stated mainly by Barr (2004, 2009, 2012, 2014, 2017) is only partially true in Brazil. Even though quality measures are questioned, the country's public institutions have the best results. What is indeed true is the lack of incentives for efficiency and proper resource allocation. Not only due to tax-finance itself but because of a rigid budget structure, a determination of Brazilian public administration and public finance laws and regulation. The

result is that 87% of the budget is for mandatory expenditure, meaning these resources are not available for the institutions to manage (MEC, 2018). Also, any saved money must be returned, reducing the incentives to save and stimulating unnecessary spending. So, the current legislation of the tax-financed system makes it impossible for institutions to optimize resource allocation intertemporally.

As for the “trilemma” regarding the impossibility of higher education systems having high quality outcomes while being tax-financed and massified, Brazil reflects the problem but additional aspects have to be considered. The difficulties experienced by institutions after the implementation of REUNI evidenced the argument: the large expansion in a short period of time maintaining quality happened at the same time as difficulties with infrastructure and staff, which could be associated with the amount of resources not keeping up with the rhythm of expansion. Nevertheless, budgetary analysis points to a certain stability in the amount of resources *per* student in the period – with either a slight growth or decrease depending on the estimate but no substantial variations – so fiscal disbursements were accompanying the expansion.

So, there was more to the problem than the simple idea that choosing to massify public higher education while keeping its quality made impossible for the government to provide the resources: the rigidity of the budget led to most of the additional disbursements being unavailable for the accommodation of more students. Moving forward, the “trilemma” is expected to become more relevant because if the government used to have the resources to maintain the cost *per* student relatively stable when trying to expand and maintain quality, it does not anymore – due to economic reasons such as competing demands, the crisis and EC95 but also political shifts in the country. The conclusion is that a good and larger system can be tax-financed if the fiscal and political contexts are positive and there is political will to do it, which has been the case in Brazil until 2014, but the situation deteriorated.

The results from the Brazilian case confirm the idea that tax-finance does not help participation because the causes for them being low are not in higher education. Public and private institutions have similar results, indicating higher education reflects inequalities of accumulated in society. Higher education is found to be able to make the inequality problem worse if there are no specific policies to avoid it. However, there are limitations to what can be done in terms of higher education policy to correct inequalities accumulated from earlier

educational levels and society. So, the choice of funding mechanisms is not actually the main responsible. Some works in ICL literature point to that conclusion but with some bias: it is said that income-contingency by itself cannot solve inequality, with a complete policy design including access policies to correct the problem (BARR, 2012; BROWNE, 2010). The same can be said about tax-finance or any other funding structure. In Brazil, the combination of tax-finance and affirmative action made the system more equal and increased participation. The same happened in the private sector after FIES and PROUNI. Regarding regressivity, there is evidence against the idea the poor pay for the education of the rich. In spite of middle classes appropriating benefits instead of the poor, the two richest deciles pay for the education of the fourth to seventh.

Briefly discussing the blind alleys in the tax-finance defense, some should be relativized. Indeed, being a right or a socially good deal does not automatically mean making it free; morality is not in question when debating funding method; and there are limits to taxation. Nevertheless, the argument that intellectual elitism is desired in opposition to social elitism, however true, deserves the caution of mentioning the connection both can have in an unequal society. Additionally, the argument that it is a blind alley to assume graduates repay their costs of education with higher taxes assumes an actuarial perspective, but this is neither the only perspective available, nor a consensual one. So, the argument should not be considered a blind alley but a different approach.

Regarding the results of FIES most literature's conclusions are confirmed. Starting with repayment burdens, estimates show they are high and affect women and the poorest disproportionately. Another characteristic is the lack of insurance and consumption-smoothing mechanisms, which lead to higher default probabilities, and higher fiscal costs. The findings correspond to predictions from the literature. Through its periods – but mostly from 2010 to 2014 – FIES had high implicit subsidies (reaching 47% in 2014) and default rates (51,4% in 2016) that increased the fiscal weight on the government. Nevertheless, changes made in 2015 helped reducing the implicit subsidies (27% in 2016). The government identified the problematic outcomes of FIES due to its design and promoted a reform that intended to include income contingent attributes, which we will analyze when identifying the challenges for each policy.

Looking at the diagnoses for grant programs and the results of PROUNI, we find that it follows the expected. It is said they are supposed to be complementary and targeted, with PROUNI corresponding to both statements. When compared to FIES and tax-financed public institutions, the program attends fewer people and has lower cost due to its smaller scale, but it is better targeted. The design of PROUNI differs from the diagnosis because it covers the entire duration of the course instead of just one year – having performance conditionalities to keep students from lingering. Nevertheless, the low cost of PROUNI and its appropriate targeting do not indicate restrictions should be taken.

One point of caution with grant programs that also apply to tax-financed public institutions is the possibility of attracting lower aptitude students. Evidence is mixed. For PROUNI, results indicate that beneficiaries do not have worse performance – with some finding it is actually better (WEINER; MELGUIZO, 2016). For public institutions, however, there is indication that those who entered the system through affirmative action score less at ENADE (WALTENBERG; CARVALHO, 2012). It is possible that PROUNI's findings are related to the performance conditionalities in the design. Independently of the results, however, this aspect is not directly related to funding and all mechanisms are subject to it if there is the choice of implementing affirmative action to promote equity. Also, equity gains may be larger than performance loss, which could only be determined by the development of a new research.

We conclude that ICL literature contributes positively to the analysis of the Brazilian higher education funding, with criticisms that identify and apply to the country. However, particularities lead to some results diverging from the expected and needing relativization. A contributing factor is most of the literature follows the perspective of developed countries, particularly those with an Anglo-Saxon Welfare State model⁴⁶, which is not the case of Brazil. Summarizing the diagnoses from literature and the case of Brazil, results indicate problems with efficiency, equity and quality but improvement in later years. The last two, however, showed little evidence of being directly linked to funding method – meaning any method will have to be accompanied by complementary equity and quality policies (Figure 29).

⁴⁶ Classification following Esping-Anderen (1990)

Figure 29: ICL Literature Predictions Compared to Results from Brazil

Funding Mechanism	ICL Literature Diagnosis	Brazil
Tax-Financed Gratuities	The system will be under-funded due to competing demands and limits to taxation imposed by a more competitive global economy. The government must choose two out of quality, size and fiscal sustainability. The system will be unequal and regressive.	There is evidence of under-funding but cost <i>per</i> student has been stable, indicating budget rigidity poses as much of a challenge as fiscal constraint because additional disbursements do not go to the management of institutions. Nevertheless, quality remained high and size increased. The system is not regressive because the rich are the ones who contribute the most, but the middle class does benefit more than the poor. Inequality is still present but decreasing, and the private system showed similar results, indicating funding is not its main source.
Time-Based Repayment Loans	The lack of insurance and consumption-smoothing mechanisms related to the inexistence of collateral leads to high repayment burden and default-rates. The presence of interest-subsidies increases the fiscal burden on the taxpayer and opens space to arbitrage from those who do not need the loan, therefore being regressive because the supply of loans is limited and the poorest may end up not accessing them.	Estimates of repayment burdens are high and affect women and the 20% poorest the most. Default-rate is high and around 50%, imposing additional fiscal weight on the government and consumption hardship/credit constraint on individuals. Interest-subsidies are also high and costly but they are decreasing due to more restrictive reforms. There is a relevant crowding-out effect and possible arbitrage.
Grant Programs	They are viewed as complementary policy to correct informational problems that must be targeted to low SES people that may not try to enter the system despite wishing and have aptitude. Caution must be taken to avoid pervasive effects on performance by attracting low aptitude people because of the reduced costs of entry	PROUNI does function as a complementary policy to the other ones if we consider its scale, cost and number of beneficiaries. It is targeted and, despite recurrent debate, there is evidence PROUNI recipients do not underperform when compared to other students

3.2 The Challenges of Higher Education Funding in Brazil:

From the results found for each Brazilian public policy for higher education funding and the contributions of the literature, we identify the challenges that must be dealt with. In the first section, we describe them and suggest possible solutions within the current structure and reproduce the concept of “blind alleys” to avoid policy reforms being made based on misidentified challenges. In the second section we discuss how a reform towards ICL can be made and what are the limitations.

3.2.1 Identification of the Challenges

After presenting the policies and analyzing them with the contribution of the literature, we can identify what are the main challenges ahead of Brazil in terms of higher education funding. The first one is fiscal sustainability: both public institutions and FIES have been affected by fiscal difficulties. While PROUNI presented better results, it is a complementary and smaller program, not responsible for sustaining the system. The nature and extent of the fiscal challenges are different for public institutions and FIES. Public institutions do represent a high fiscal commitment while having the minority of enrollments, but they also comprise most of the research in higher education and there is little space for separating what is research and what is teaching in the Brazilian system. Also, analyzing solely the budgetary increase throughout the years without looking at the expansion of the system leads to misleading results regarding costs. The same is true when comparisons to private institutions are made without concessions to the fact the latter have almost no research and high variance in tuition fees that lead to problematic averages.

So, it is not that the public system is too expensive considering the number of students it benefits – the cost *per* student remained stable – the research it produces and the quality it has. The problem is that costs are rising inertially due to mandatory expenses – mostly with inactive staff – and almost no additional resources will actually be available. Institutions have been left in a situation where budget was increasing but their operating conditions continued to deteriorate and, after 2014, not even that because the real budget decreased. Considering there can be no more increases in the real budget because of EC95, and competing demands are pressuring the national budget, the situation can become critical. Particularly considering the explicit goal in the PNE of massifying participation through the public sector, which would require more disbursements. So, the actual fiscal challenges for public institutions are: making the budget more flexible so it can be efficiently allocated, solving the inertial component of the costs, and finding alternatives to complement funding and/or discuss other alternatives for massifying higher education because the latter cannot happen without the first.

The fiscal sustainability challenge for FIES is mostly related to implicit costs with subsidies and default rates. The direct cost of the program did increase rapidly, with an estimate of a minimum budget of BRL 16 billion just to cover active contracts in 2017. Although a challenge, the last contracts signed in the flexibilization period are supposed to enter repayment

period in 2019. Considering the number of signed contracts has been declining, the minimum budget required will decrease. However, the program has a history of high implicit costs that compromises sustainability and imposes higher fiscal commitments than what is evidenced by the budget. Costs with interest subsidies have been decreasing but the default rate remains high. So, the fiscal sustainability challenge of FIES is to reduce the default rate and guarantee a decreasing trend of interest subsidies.

The latter reforms announced in 2017 were motivated by the government's identification of these challenges and are an attempt to solve them by trying to introduce income contingent attributes. Wage was selected as variable for income measurement and collection became a responsibility of the employer through the Digital Bookkeeping of Tax, Social Security and Labor Obligations System⁴⁷ (e-Social). Repayment Burden was capped at 13% of the wage (NASCIMENTO, 2018). Those measures were directly aimed at addressing the default and fiscal sustainability challenges. Other resolutions motivated by fiscal sustainability were: increasing the private institutions' contributions to the guarantor fund to reduce the credit risk of the program to the Union, the linkage of interest to inflation to avoid negative real interest rates, and the creation of a modality run by private and public banks together as substitute of the National Fund for the Development of Education⁴⁸ (FNDE) (NASCIMENTO, 2018; PIRES, 2018).

The intention of making FIES a student loan with income contingent repayment was clear, representing advancement in the perception of how student loan design can avoid problems, a positive path in the higher education funding debate. Nevertheless, the outcome of the reforms ended up being a “quasi-ICL” (NASCIMENTO, 2018). Not all the necessary requirements were met and most of the desired ones were not too. The result was that FIES became a payroll loan (*empréstimo consignado*) instead of a student loan with income contingent repayment.

Students and graduates not contemplated by the e-Social still have to make quarterly payments, reducing the insurance and consumption-smoothing effects of the program. There

⁴⁷ *Sistema de Escrituração Fiscal Digital das Obrigações Fiscais Previdenciárias e Trabalhistas* – english version in free translation.

⁴⁸ *Fundo Nacional de Desenvolvimento da Educação* – english version in free translation.

are no clear rules for forgiveness after a certain period of time, which also impacts the insurance mechanism. The fact collection is through e-Social instead of the RFB reduces its reach, and income only being measured by wage affects the precision of income measurement, both necessary conditions of a student loan with income contingent repayment. Considering neither insurance, not consumption-smoothing are guaranteed and that measurement and collection are jeopardized, one cannot say FIES became a student loan with income contingent repayment, just a student-loan with payroll deduction. When debating the implementation of a student loan with income contingent repayment to solve FIES problems, we look at estimates for the results of these reforms.

Moving to equity, we have already seen higher education largely reflects inequalities of the Brazilian society and educational, resulting in the problem being present in the entire system, regardless of funding. However, the lack of specific equity policies attached to funding mechanisms may lead to higher education making the equity problem worse. So, there are policies that can improve equity, but we must acknowledge that as long as Brazil is an unequal country with an unequal basic education system, higher education will remain unequal to certain extent. Concerning current policies, public institutions have a history of income and racial inequality but all indicators improved considerably after affirmative action, with an inflexion on the racial profile: black and mixed-race people became more represented than white people in 2014, even if they are still less represented than in the population.

As for FIES, because its expansion happened in the context of the diagnosis that private institutions could be used to make higher education more inclusive, vertical equity results could be better. Not because of the funding method, but of its explicit goal at the time of the expansion. The lack of targeting for 12 years and loose targeting for an additional two led to a crowding-out effect and students who were already paying for their education started using the program. FIES did promote inclusion throughout its almost 20 years of operation but poorer students could have benefitted and did not because of the crowding-out. Nevertheless, recent changes in design improved targeting. So, FIES and public institutions actually have similar results in this aspect: both could be more equal but are improving. Racially, they also had similar results but the inflexion did not happen in FIES yet.

PROUNI had the best equity results, with no inequality being identified when considering comparisons to the population. This is attributed to better targeting and specific

mechanisms in the design to guarantee racial representation. The equity challenges for the system as a whole, therefore, are guaranteeing affirmative action continues being enforced and that permanence measures are taken so that better enrollment results are not lost to evasion and low completion rates. Regardless of funding decisions, therefore, affirmative action will remain important, and evidence has shown that neither tax-finance nor cost-sharing can be dismissed based solely on equity arguments.

Lastly, there is quality. Before making any statements regarding the results, it is important to redesign the structure of SINAES. Concerning the results, the challenges are different for public institutions, FIES and PROUNI. Public universities have positive quality results and are recognized as the best in the system but their quality can be jeopardized if the previously indicated challenges are not addressed. FIES and PROUNI, on the other hand, are public policies that put taxpayer's money in the private sector to promote expansion and inclusion in higher education. However, one cannot say the money is efficiently allocated if the quality of the institutions is low. In such case, private institutions are the ones benefitting the most, not the students nor the government. They have their places occupied and receive public money or pay fewer taxes but make no efforts to actually increase the human capital of the country. The regulation of each program does include quality assurance measures but there is no indication they are being enforced. The challenge, therefore, is to enforce these measures.

Now, we move to our interpretation of the "blind alley" expression. We use it to analyze common statements regarding higher education in Brazilian civil society that either omit information or are no longer true. The World Bank report on the matter (BANCO MUNDIAL, 2017) consolidates most of them. The first is saying public institutions are used solely by rich students and the private sector is more inclusive: "Public expenditure with higher education benefit mainly students from rich families."⁴⁹ (BANCO MUNDIAL, 2017, p.136). This statement omits information and considers a scenario that no longer reflects reality. Higher education is more accessed by the rich but this is true for public and private institutions. Regarding public universities, the situation has improved considerably: there has been a substitution of high and upper middle-class students to ones from middle and lower middle-class. Regardless, we have seen equity is not mainly a result of funding. What indeed needs

⁴⁹ "*Os gastos públicos com o ensino superior beneficiam majoritariamente os estudantes das famílias mais ricas.*" - english version in free translation.

further research is the distribution of black/mixed-raced and poor students within courses, because there is indication they occupy least prestigious ones (DUENHAS, 2013).

A second “blind alley” is saying FIES should be extended to public universities because it would represent a fiscal gain: “Luckily, Brazil already has the program FIES (...). The same system should be expanded to include the access to public universities (...). Together, the policies could improve the system’s equity and provide a fiscal economy in the national budget of approximately 0,5% of the GDP”⁵⁰ (BANCO MUNDIAL, 2017, p. 138). Usually, the analyses tend to favor FIES because only budgets are compared. First, FIES has high implicit costs that are hidden in such analyses. Second, the budget of public institutions includes costs with research and graduate courses that are not present in most private institutions where FIES operates and usually no filters are used to remove them. Third, average tuition is not a good measure for comparison due to heterogeneity and variance in the tuitions of the private sector. When public institutions are compared to private ones that do research and have equivalent quality results, there is evidence the costs are similar. So, neither FIES nor public institutions are exempt from fiscal problems but the usual comparisons leave important variables out and lead to misconceptions of their fiscal sustainability, making public institutions seem more expensive than they are and FIES cheaper than it is.

A third blind alley is the use of analyses where only costs are taken into consideration, which applies to all funding policies. The common claim that the budget for public institutions is too high usually shows no statements regarding the expansion of the system to benefit more students nor the importance of the research developed in them. Also, critics of giving tax exemptions or putting government money in private institutions tend to ignore the individual and collective benefits they can bring if properly designed. Ignoring benefits also lead to problematic statements with “the-cheaper-the-better” mentality because quality ends up not being considered. If the cost is lower but the quality is lower too, then it is not necessarily a good outcome. This is the case when the costs of higher-quality public institutions are compared with the average of the private system that includes many lower-quality ones: “Besides, students in public universities cost three times more than students enrolled in private universities on

⁵⁰ “*Felizmente, o Brasil já possui o programa FIES(...). O mesmo sistema deveria ser expandido para financiar o acesso a universidades federais. (...) Juntas, essas medidas melhorariam a equidade do sistema e gerariam uma economia para o orçamento federal de aproximadamente 0,5% do PIB.*” – english version in free translation.

average.”⁵¹ (BANCO MUNDIAL, 2017, p 123). What indeed has to be discussed is if the country needs all its students in high-quality, research institutions with the highest number of PhD professors it can have. Diversification may be positive and represent a cost reduction without actually jeopardizing quality if a floor is determined and thorough inspections are made. However, this is a research topic regarding the provision of the system.

The last blind alley is advocating for charging upfront tuition at public institutions for those who can pay: “This indicates the need to introduce the payment of monthly tuitions in public universities for rich families and to focalize better the access to student funding for higher education (FIES program).”⁵² (BANCO MUNDIAL, 2017, p. 121). First, upfront tuition fees are mostly left out of the international debate because of the arguments posed in 1955 by Friedman’s seminal work on the matter⁵³. Regardless, there are other problems. First, determining who can pay. If the income line is too low, low SES students will be excluded and equity compromised as well as human capital. If it is too high, not enough money will be collected and the policy is not going to be fiscally representative – possibly being negative because of operating costs. Second, the current income of students is not as high as disseminated. Saying 65% of students in public universities are within the 40% richest (BANCO MUNDIAL, 2017) hides that this represents a gross *per capita* family income of 2 times the minimum wage (IBGE, 2018). A better parameter, for example, would be the percentage of students belonging to the 20% richest, which have a gross *per capita* family income 4 times the minimum wage (IBGE, 2018).

The fact Brazil is a middle-income country with high inequality means that really high incomes are a reality to a very small percentage of the population. This is evidenced by estimates that point that charging upfront tuition fees of students who can pay – using a gross family income of BRL 10.000 as parameter - would not generate enough revenue or movement of richer students to the private sector. The result of such policy would be a BRL 0,53 billion annual revenue if the students in the paying threshold stayed on the system, or 134 thousand

⁵¹ “*Além do mais, alunos nas universidades públicas brasileiras em média custam de duas a três vezes mais do que alunos matriculados em universidades privadas.*” – english version in free translation.

⁵² “*Isso indica a necessidade de introduzir o pagamento de mensalidades em universidades públicas para as famílias mais ricas e de direcionar melhor o acesso ao financiamento estudantil para o ensino superior (programa FIES).*” - english version in free translation.

⁵³ See Chapter 1

places to poorer students if all of them transferred (DUENHAS, 2013). Nevertheless, charging people is not an impossibility, just not through FIES as currently designed or upfront monthly tuition fees – as shown by literature, international experience and the country’s current situation. So, we analyze the charging possibility for solving the challenges through the student loan with income contingent repayment alternative.

3.2.2 Implementing an ICL: Advantages and Difficulties

Part of the literature states a complete ICL system should be accompanied by measures other than a student-loan to form a complete funding strategy (BARR, 2004, 2009, 2012, 2014,2017; BROWNE, 2010), and it is important to assess how implementing such strategy can contribute to solving the challenges for higher education funding in Brazil. Nevertheless, this involves deeper analyses of affirmative action and permanence policies, quality measurement, returns to higher education, among others. So, we limit the analysis to the student loan design, the implementation of one with income contingent repayments.

So, looking at the challenges that a student loan with income contingent repayments are expected to solve, we are talking mostly fiscal sustainability with spill-overs to quality. In that sense, we discuss the institutional and political conditions to implement the loan, the potential gains from it, and difficulties to be faced if reforms are actually considered. We focus, therefore, mostly on FIES and tax-financed public institutions. We begin with the institutional and political conditions, since they are the minimum requirements for a successful reform. There is recognition in literature and international experience that it requires accurate record-keeping of debt balances, a well-established collecting mechanism, an efficient determination of income over time, and a strong judicial system (CHAPMAN, 2014; DUENHAS, 2013). The requirements determine if a country should reform and at which pace.

There are also political requirements because any reform depends on whether it can gather sufficient political support (QUIGGIN, 2014; RACIONERO; 2014; WITHERS, 2014). They are: how social the higher education is perceived to be, how much non-refundable support already exists, and how progressive repayments will be. The more social, more support and less progressivity, the worse is the political environment (WITHERS, 2014). When these conditions were not properly considered, even developed countries experienced negative outcomes– with New Zealand being the most common example (BARR, 2012). Looking at developing

countries, there were experiences in Papua New Guinea (1996), Indonesia (1995 and 1998), Ethiopia (2000) and Mexico (2003). Reports indicated problems with weak administrative systems, unreliable tax collection and lack of instruments for taxpayers' identification (DUENHAS, 2013).

In Brazil, every Brazilian can be identified by the Individual Taxpayer Registration⁵⁴ (CPF): all taxpayers must have the document, which is required at the moment of enrollment. So, if every enrolled student can be identified by an individual number attached to the Brazilian Federal Revenue⁵⁵ (RFB), there can be accurate record-keeping of debt balance (DEARDEN; NASCIMENTO, 2018; DUENHAS, 2013). Also, the RFB is capable of reaching 80% of the economically active population with a higher education degree and that can also be combined with the government's unified registry for social programs to try and capture the other 20% (NASCIMENTO, 2017), so it can be stated Brazil can have a well-established collecting mechanism for the program (DEARDEN, NASCIMENTO, 2018; NASCIMENTO 2017).

There are problems, however, in the measurement of income overtime: breaches in Brazilian tax legislation compromise the filling of income tax returns and generate under-reporting, and the computation would have to account for all labor and capital earnings declared – including those that can be deducted from income-tax (NASCIMENTO, 2015; WALTENBERG, 2017). The need for two different analyses because they take into account different earnings could represent a complex and excessive amount of work. A positive point, however, is that it could give political leverage for the end of problematic deductions. Lastly, Brazil aimed at guaranteeing the existence of a strong judicial system after the re-democratization and the Federal Constitution of 1988 but there has been debate if the goal was achieved, with criticism towards the country's lack of legal certainty – particularly regarding tax and labor legislation (IBPT, 2018) – and judicialization of politics (OLIVEIRA, 2015). The institutional requirements, therefore, are partially fulfilled. There are difficulties, but none indicative of severe institutional fragility. So, we can say Brazil has the necessary conditions to implement an ICL but there are potential red-flags that must be accounted for or the policy might fail.

⁵⁴ *Cadastro de Pessoa Física* – english version in free translation.

⁵⁵ *Receita Federal Brasileira* – english version in free translation.

Regarding political conditionalities, the situation is more problematic. Brazil has had tax-financed public higher education for a long time and the fact these institutions are considered the best leads to high demand and social prestige. There is a cultural ethos of higher education as an entitlement, which may lead to resistance. For example, a survey found that 78,5% of the sample agreed that public higher education institutions formed more conscious citizens, 90,9% that they formed good professionals, 88,9% that they contributed to the social and scientific development of the country, 68,9% that they promoted inclusion, and 81% that entering one is a reason for pride (IDEIA BIG DATA, 2018). Also, Brazil is going through political crises and societal unrest at least since the 2014 elections, having gone through the impeachment of President Rousseff in 2016 and arrest of corrupt politicians and entrepreneurs in the last five years. Such unstable political situation is not the best scenario for ambitious reforms. Barr (2012) already gives a note of caution against big-bang liberalizations, with current political distress being aggravating.

So, evidence points to Brazil standing somewhere in the middle of developed countries that have successfully introduced student loans with income contingent repayments (ex: Australia, England, New Zealand) and developing countries that cannot do it because they lack the necessary conditions. Brazil can identify and collect the money from graduates, and a wide-range of information is made available annually through administrative reports and microdata. There would be some difficulties with measuring income and legal uncertainty, which do not preclude the policy from being implemented but may raise debates about the pace and scale of the reforms. In such situation, it is recommended that if reforms are made, they be gradual. One option, followed so far, is to start with FIES instead of implementing a national student loan with income contingent repayments.

The 2017 reforms had the explicit goal of transforming FIES into an income contingent student loan. Because the reforms did not include neither the entire necessary conditions, nor the desired, we conclude Brazil should continue to aim for a student-loan with income contingent design for the private sector – particularly considering the vast majority of students are there. The difficulty of achieving a successful result with FIES even with the explicit goal of doing it reinforces that a gradual approach is best. A smaller scale experiment makes it easier for the particularities of the country to be identified, mistakes corrected, institutional requirements developed and public opinion managed. This try and error is what the new FIES

actually represents. If Brazil tries to implement a full liberalization national policy with its current institutions and political situation, there is a high probability of failing to solve higher education's problems or make them worse.

That was the case of New Zealand's first attempt in the early 1990s when the government failed to communicate with the population – who found it too complex and unfair – and lost the following elections and the program was discontinued. The case is considered a benchmark because the design of the policy was the closest to literature recommendations but political difficulties led to negative outcomes (BARR, 2012). Chile also faced such problem recently: the country had high tuitions and loan systems which were failing, so it started discussions to reform towards an ICL but faced pressure from society and turned to tax-finance after electing a president who campaigned on the matter (DELISLE, BERNASCONI, 2018; SALMI, 2014).

The fiscal challenges of FIES are reducing implicit costs and default rate and the first attempt at moving it towards income-contingency has already been made. Since actual results cannot be analyzed, estimates have been made for the outcome of the reforms. Dearden and Nascimento (2018) conclude there will be 56% to 63% overall repayment in net present values, which indicate the maintenance of implicit costs due to interest subsidies. The authors point that the overall repayment could reach 80% to 100% if the real government's cost of borrowing was used instead of the current 0% real interest rate. Regarding repayment burdens, the current design already solves the challenge with the 13% cap that can even be increased to higher income graduates considering the 18% rule of thumb.

We conclude the reform had the positive outcome of the political identification that income-contingency is the best path to follow with student-loan design, with the program moving away from a TBLR structure. Also, capping the repayment-burden solves the default challenge in the long run. A part of the problem may continue because not all graduates are reached, their income is not properly measured and enforcement is necessary with the employers but the high default challenge due to high repayment burdens was corrected. Regarding interest subsidies, the positive side of the reform was to end the possibility of negative real interest but the determination of a 0% real interest still jeopardizes the rate of repayment and fiscal sustainability of the program. Lastly, the direct cost of the program is expected to be a positive outcome of the reforms: with fewer contracts, better focalization and

more participation of the institutions in the guarantor's fund, the minimum disbursement with FIES should decrease in the middle to long-run. So, part of the challenges previous to the reforms remain but they are being addressed and with the goal to reach a student loan with income contingent repayment.

To achieve it, Dearden and Nascimento (2018) estimated the best design to reduce the implicit costs and found that the program should have 0% interest rate for the duration of the course and as long as graduates do not reach the first tax-threshold. After, interest rate would become the government's cost of borrowing. Additionally, repayment rates should increase progressively with tax thresholds set at half of the current tax rates. With this design and repayment being based on total earnings rather than just labor, subsidy could decrease to 12% (DEARDEN; NASCIMENTO, 2018). Implementing such policy would require further reforms, such as shifting collection to the RFB. It would also bring up the difficult political debate regarding interest subsidies.

Regarding public higher education institutions, the fiscal sustainability challenges are: making the budget more flexible, solving the inertial component of the costs, and finding alternatives to complement funding or discussing alternatives for the massification of higher education. Ending tax-finance and introducing student loans with income contingent repayments aims at solving the latter. As previously mentioned, the institutions and political conditions of Brazil raise questions as to desirability and possibility of doing it in a full short-run liberalization process. Other difficulty to be faced if the government chooses to do it – independently of when – is the requirement of larger legislative processes, possibly involving the Federal Supreme Court (STF) because gratuity is ensured by the Constitution in art. 206 (BRASIL, 1988). None of that prevents reforms, particularly if they are needed, but it represents a challenge that must be acknowledged when proposing reforms.

Assuming student loans with income contingent repayments are implemented in public institutions with the same design as the current FIES or the one estimated to be the best by Dearden and Nascimento (2018), the problems of lack of funding alternatives, pressure from competing demands and fear of losing quality would be alleviated by the additional revenue. Nevertheless, the initial fiscal disbursement would remain high until repayments started and research would remain a responsibility of the government. So, it is important to know that the fiscal outcome would only be identified in the long-run and not represent the reduction of

government responsibility with a considerable part of the funding. This is not a problem but the expectations must be adjusted. Also, even with students contributing to the cost of their education, the lack of autonomy and inertial increase of the costs would require additional measures related to changes in the governance of the system such as accountability, autonomy to develop staff policies and allocate resources (IPEA, 2018), and discussion if the payment of inactive staff should be part of the institutions' budget or the social security one.

Our conclusion regarding the advantages and difficulties of implementing a student loan with income contingent repayment in Brazil is that the diagnosis is different for FIES and public institutions. Brazil possesses enough institutional capabilities and political stability to reform a targeted policy that uses public money in the private sector. It is already trying to do it, and facing both difficulties and positive results. With public higher education institutions, the results are slightly different. Student loans with income contingent repayments would provide additional revenue, helping decrease the dependence of macroeconomic conditions and political will for fiscal disbursements, and facilitating expansion and quality improvement. There are, however, a number of complexities that indicate other reforms should be prioritized: lack of political environment, potential need for constitutional change, backlash from society, communication problems due to the complexity of the system, and the funding of research.

The other two challenges could be tackled first. Although changing the governance of the institutions might also face legal and social difficulties, they should be smaller because it would not involve changes in the constitution, it would not affect society so directly, and they would be easier to explain. Also, starting by the efficiency and resource allocation issues would avoid a situation in which a well-designed charging mechanism would be implemented only for the additional resources to be drowned by the inertial components of the costs with public institutions. Charging public higher education, therefore, is not an impossibility but is rather complex. Income contingent student loans have potential if ways of surpassing the difficulties are found – which can happen if the government makes a commitment to using the reforms of FIES as controlled experiment. So, the fiscal challenges of the public sector are easier to identify than to solve, but mapping the characteristics, problems, and possible solutions contributes to identifying the best alternative for solving them.

Conclusion

We developed this research from the context of a growing debate about higher education funding in Brazil that was aggravated by the political and economic crises that were followed by austerity reforms and culminated in the freezing of real public expenditures for twenty years. In this context, discussing alternatives for the maintenance and development of social policies became necessary and, in the particular case of higher education, questions were raised regarding fiscal sustainability, equity promotion and quality of the current funding structure. In addition to the particularities of the Brazilian case, global trends already pointed to the existence of divergent movements: while expanding higher education became increasingly important, changing demographics and international competition changed priorities and imposed limits on taxation that created challenges for the funding of the system. So, Brazil faced two scenarios that made the higher education funding debate more relevant: a context of negative macroeconomic environment and correspondence to global trends regarding funding challenges for the sector.

We contributed by mapping the public policies for higher education funding in Brazil and critically analyzing them using contributions from the ICL literature, that was developed both in theory and international experience as an alternative to solve previously described issues. We described the results of each Brazilian policy; identified the challenges, discussed the criticisms; pointed the blind alleys in the debate; and analyzed the advantages and difficulties associated with implementing an ICL in a developing, middle-income and unequal country like Brazil. The development of the research was guided by the question “What are the characteristics and challenges of funding higher education in Brazil, and what contributions can the ICL perspective give to solve the latter?”.

We found that public universities face three main fiscal challenges. First, making their budgets more flexible so that resources can be allocated efficiently and incentives for saving are created. The second is controlling the inertial component of their costs related to mandatory expenditures – particularly with pensions of inactive staff – because until this is solved additional funds from any sources will not be available for investment, staff, and other activities that increase and improve the system. Lastly, finding alternative sources to avoid pressure from competing demands and negative effects on quality – even more after the implementation of EC95 – or have to re-discuss the model of expansion and provision. The current tax-finance

structure and university governance does not allow for more expansion focused on the public sector with gratuity and quality without the discussion of complementary funding as it did in the past, even if other problems kept the resources from actually improving the system. So, either the massification or the funding strategies will have to be reformed.

Implementing income-contingency in public institutions can directly help in the third challenge because it represents an additional source of revenue to fund teaching while the government would be able to focus on research. However, it is not enough if the other two are not dealt with because the additional funding would face the same problems of administrative rigidity. Also, it is technically feasible to implement an ICL in Brazilian public universities, but political difficulties indicate the movement should be gradual and it would still face problems such as cultural view of the population, legal impediments, a complex and long legislative process in times of political distress, and difficulties to explain the system to an unequal country with high levels of poverty. Considering previous experiences in developing – and even developed – countries, political conditions are just as important as good policy design to guarantee the success of a reform towards an ICL because full liberalization is harmful to the process and the country. Our conclusion is that any funding reform should not start with the substitution of tax-finance but with the other challenges, which are less politically sensitive than starting to charge for a currently free service.

As for FIES, the fiscal challenges are mainly to decrease implicit costs with interest subsidies and default rates. The origin of both problems was in the organization of the program as a traditional mortgage-type loan, which does not provide insurance and consumption-smoothing mechanisms leading to market failures. Also, the period of extensive flexibilization of the operating mechanisms led to poor targeting and deepened the high costs with interest subsidies and default rate. Concerning the possibility to reform FIES into a loan with income contingent repayment, FIES fits the criteria. The 2017 reforms were the first attempt at doing so but the new design actually turned the program into a payroll loan instead of an income contingent one because insurance, consumption-smoothing and institutional mechanisms were not properly created by maintaining minimum payments, not stipulating a forgiveness rule and choosing the e-Social as collecting mechanism and wages as income measurement variable.

Estimates indicate that even with a problematic design, the first movement towards income-contingency did create the conditions to solve default because repayment burden has

been capped at 13% (it could reach more than 100% before depending of the socioeconomic profile). However, implicit costs will remain high, so further changes are necessary to achieve the full potential of the policy: using the government's cost of borrowing as interest rate, maximizing the collecting potential by using the RFB, and measuring income using total earnings instead of just labor. Starting the proposal of a national funding reform towards an ICL through FIES also fits the idea that big-bang liberalizations are problematic as well as not reforming. It is a gradual movement. It does not mean, however, that there are no points of caution. First, the constant reforms of FIES, though a positive feature in terms of openness to change, can make the understanding of the policy harder and reduce demand excessively. Also, interest subsidies are politically sensitive to remove.

Regarding PROUNI, we did not identify fiscal challenges and the program is a complementary policy to the others. It is well-targeted, equitable, and has low fiscal cost. Looking at the equity challenges, we found that some of the diagnoses from literature did not reflect the Brazilian case and others did. First, Brazil complies with the diagnosis that equity issues are not mainly solved by interventions in higher education because the problem is generated before. So, the system mostly reflects accumulated inequalities from previous educational levels and other areas. Another diagnosis from literature that reflects Brazilian reality is that access policies in higher education cannot solve the equity problem but can reduce it, so they are necessary. What goes against theoretical framework is that this is true for all funding mechanisms. So, the inequality in the Brazilian tax-financed system is not actually attributed to tax-finance and can be reduced by using affirmative action as literature recommends for ICL.

The last dimension is quality – with all analyses needing relativizations due to measurement problems. In this aspect, the challenges for public universities partially reflect literature. They have the best quality results – going against literature's statement that tax-finance does not provide quality incentives – but their capacity of hiring new staff, maintaining current staff, improving infrastructure, and other activities that sustain such results are endangered by current fiscal constraints. Literature points this as part of a “trilemma”: higher education cannot be massified, good and cheap at the same time. So, when the Brazilian system started being massified while being good, the literature predicted it would either become too expensive or quality would decrease.

This is only partially the case because results showed that cost *per* student remained fairly stable. The problem was that the additional resources did not go to the actual improvement of the institution's teaching and infrastructure conditions, deteriorating their operating conditions. Our conclusion is that to avoid quality problems, the fiscal challenges of flexibilizing the budget and dealing with the inertial mandatory expenditures are particularly relevant. Also, the changes in Brazil's institutional environment point to an aggravation of the "trilemma" idea because political will to maintain the cost *per* student during a massification process no longer exist. So, in the current situation, expanding the public system with quality will demand alternative sources of funding. Not because it is not possible but because the current political environment does not favor it.

Regarding FIES and PROUNI, they attend students mostly from for-profit institutions, which have the worst quality results. This happens because quality insurance measures in their regulation are not properly enforced but also because the competition in the private sector is not well regulated. Literature indicates there must be regulation to avoid quality loss. In Brazil this is not present, so for-profit institutions are the ones who benefit the most from these public policies. The students get degrees but their capacities are harmed; the government expands higher education quantitatively but that does not reflect in proportional human capital gains; and for-profit institutions make higher profits by becoming exempt from taxes and guaranteeing the resources without having to invest in quality. Our conclusion is that FIES and PROUNI along with the entire private higher education sector need more quality regulation.

ICL literature, therefore, contributes positively to the identification of problems in the Brazil's higher education funding, helping to map the situation so the development of alternative public policies follows a realistic diagnosis. Limitations are in the particularities of a middle-income, unequal, developing country like Brazil, which leads to different results because literature and international experience is mainly based on developed countries with Anglo-Saxon Welfare States. Also, we identified blind alleys in the Brazilian debate that cloud the path towards necessary reforms, such as implying public universities are more unequal than private ones and that this is so because of tax-finance, that FIES is fiscally superior to other funding mechanisms, that the cost *per* student is considerably higher in the public institutions than in private ones, and/or that the cheaper the better. The results, however, show the

statements are based in unbalanced comparisons, omission of variables and/or realities that changed throughout time.

So, we contribute to the debate not by providing solutions but by mapping the starting point of the debate: where reforms are needed, what problems actually exist, and to which variables they are related to or not. The ICL literature showed potential to help in the development of this mapping but further analyses are needed to make prescriptions available. Also, other theoretical approaches should be added to account for the particularities of a country like Brazil. Usually, ICL literature in Brazil focuses on the technical aspects to be fulfilled so that reform can happen and it tends to present optimistic perspectives. Nevertheless, we identified that a more comprehensive and deeper analysis of social justice, political and institutional aspects is needed and contributes to any reform pursued. Particularly considering that if not using a given political will as reference, other valid reform possibilities may arise. After bringing the debate back to an initial phase of characterizing the system and identifying the problems, we can develop further research and make deeper and more detailed analyses of each challenge to provide more concrete policy prescriptions and solutions. In that case, each challenge will have to be researched individually, so it is possible to give the analyses the development and level of detail it needs.

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