



The World Bank

Improving Inclusion in Basic and Higher Education Additional Financing (P179668)

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ARGENTINE REPUBLIC:

IMPROVING INCLUSION IN BASIC AND HIGHER EDUCATION ADDITIONAL FINANCING

ADDENDUM TO THE TECHNICAL ASSESSMENT

November 23, 2022



Strategic Relevance

1. **Rationale for Bank Engagement and Bank's value added.** There is a strategic rationale for the Bank to engage in the proposed AF, as it is consistent with the Bank's twin goals of eliminating extreme poverty and boosting shared prosperity by supporting programs targeted towards students at risk of dropout and repetition, who overwhelmingly come from vulnerable backgrounds. The Operation is aligned with the commitment to ensuring sustainability and improved efficiency of priority education programs. Additionally, the Bank has a history of engagement with Argentina, through which it has acquired in-depth knowledge of both the education sector and the federal nature of the country. Given that this federal nature could present bottlenecks to implementation due to varying political will and implementation capacity among provinces, the Bank is well-positioned to rapidly respond to the Borrower's request for support to programs that are carried out (or expected to be scaled up) nationwide by drawing on and incorporating lessons learned from previous and ongoing operations into their design. Furthermore, the Bank's vast experience on improving information management systems, evaluation, and decision-making in the sector can be a great value added in the form of technical assistance, as it can draw from international experience and best practices to improve government systems.

2. **No additional partners are expected.** However, the Inter-American Development Bank (IADB) will partially support the activities under Results Area 1 until June 2019, through its project *Programa de Apoyo a la Equidad y Efectividad del Sistema de Protección Social en Argentina* (AR-L1302). The objectives of the IDB support are to fund PROGRESAR scholarships and contribute to the monitoring and information system of the program, to support: (i) the strengthening of academic trajectories of students supported by the PROGRESAR scholarships; (ii) a more efficient incorporation of former AUH beneficiaries to the PROGRESAR Scholarships system; and (iii) to contribute to early dropout alert systems. The total amount of support of the IDB component related to PROGRESAR Scholarships is US\$320 million and the support is expected to end in June 2019, before the World Bank support for PROGRESAR Scholarships becomes effective. The objectives of the IDB operation are aligned with the development objectives of the World Bank support, and there would be dialogue and articulation between both institutions.

Rationale for Public Sector Provision/Financing

3. Three factors provide a strong rationale for public sector financing of the interventions supported by the Program. First, individual acquisition of education generates positive externalities on society by making individuals more engaged and responsible citizens and increasing the overall level of productivity and growth in the economy. To the extent that individuals do not take these benefits into account when making education investment decisions, public sector investments can lead to efficiency gains. Second, there is imperfect information that makes individuals unaware of the importance of education in future labor opportunities and, even if they are aware, financial constraints might prevent them from financing these investments in the credit market. Third, the education system has the potential to promote equality of opportunities. Since dropout through secondary and higher education is particularly relevant for students from disadvantaged households, any policy aimed at reducing financial and non-financial barriers at these educational levels will benefit vulnerable groups and is therefore desirable from an equity perspective.



Technical Soundness

4. **Technical Soundness.** This section presents a review of the available literature to provide further evidence that the Operation's design is technically sound, based on international best practices, and in line with evidence-based interventions.

5. **Financial support (CCTs, merit- and need-based scholarships) for school completion: a large body of evidence finds that scholarship programs almost always improve school participation outcomes (enrollment, attendance, completion and dropout) and can, in some cases, improve student learning.** The 2018 improvements and modifications to PROGRESAR Scholarships, which promote more inclusion, merit-based benefits, and Strategic Careers in higher education, have also been identified in the literature as effective interventions for education outcomes. Evidence suggests that interventions that increase the benefits of attending school (such as scholarships) increase time in school,¹ while those that increase the benefits of higher effort and better academic performance (such as merit-based scholarships) improve learning outcomes. The significantly positive effects on school participation are found in Brazil,² Colombia,³ Cambodia,⁴ China,⁵ Honduras,⁶ Malawi,⁷ Mexico,⁸ Nicaragua,⁹ and Pakistan.¹⁰ In Malawi and Nicaragua, estimates calculated several years after the end of the program show that scholarship beneficiaries had higher cognitive skills, as measured by test scores. In contrast, in other countries (Cambodia, China and Colombia), there is no evidence of impacts on learning. Only one of the interventions to increase demand for education in developing countries has consistently worked to increase test scores across multiple contexts: merit-based scholarships.¹¹ Overall, the findings indicate that merit-based scholarships can effectively increase test scores and attendance, while need-based scholarships tend to affect mainly enrollment and attendance, but not test scores. However, there can be an equity issue, as merit-based scholarships typically reach students who are already better off, which highlights the importance of combining this merit-based scholarship with strong targeting mechanisms. Evidence on the effect of merit-based scholarships for higher education students is also promising, although the results are more mixed.¹² In particular, a few rigorous recent evaluations have shown large impacts. For instance, Angrist et al (2017) show that scholarships significantly boosted college enrollment and persistence. Four years after award receipt, randomly selected scholarship winners were 13 percentage points more likely to be enrolled in college.

6. **Non-financial support is also critical to strengthen the transition to higher education. This is particularly relevant for disadvantaged students who are the first generation in their family to have access to higher education and may lack support to make informed decisions and basic skills to**

¹ Glewwe & Muralidharan (2015,), Damon et al (2018)

² De Janvry et al (2012)

³ Barrera-Osorio et al (2011)

⁴ Barrera-Osorio & Filmer (2013)

⁵ Mo et al (2013)

⁶ Galiani and McEwan (2013)

⁷ Baird et al (2011)

⁸ Schultz (2004); Behrman et al, 2009, 2011

⁹ Braham et al (2013)

¹⁰ Chaudhury and Parajuli (2010)

¹¹ Kremer, Miguel and Thornton (2009), Friedman et al (2011), Blimpo (2014)

¹² Dynarski (2008), Castelman (2014), Scott-Clayton (2011b), Scott-Clayton & Zafar (2016), Bettinger et al (2016); DesJardins & McCall (2014), DesJardin et al, (2010), Sjoquist & Winters (2012, 2015)



succeed in higher education. Information-based programs that provide key data to students and parents have been shown to improve career choices in higher education. A recent RCT in Chile shows that providing information to future higher education students, through an online platform, on the potential earnings (and fee costs) corresponding to different enrollment choices, helped particularly low-socioeconomic students enroll in degrees with higher returns.¹³ The introduction of additional incentives for “strategic” careers (most high in demand) aimed at guiding the decision of new students could reinforce the effects of providing this information. Studies that analyze the role of financial aid in supporting strategic career (STEM) attainment in the U.S. find that eligibility for need-based financial aid increased STEM credit completion by 20 to 35 percent among academically ready students in a large, public higher education system.¹⁴ Evidence from basic education also highlights the potential of information-based interventions. An RCT in the Dominican Republic finds that providing students with information on earnings differences by education reduced dropout by 7 percent in the subsequent year, and increased school completion by 0.2 years.¹⁵ Similarly, informing fourth grade students and their parents of earning differences by education levels in Madagascar increased average attendance by 3.5 percentage points.¹⁶

7. Socioemotional support and low-cost behavioral interventions are also essential to support students struggling with the more complex curriculum and environment of higher education. During the transition to a new education level, students can face frequent social setbacks and feelings of anxiety and isolation. Interventions that provide self-administered short programs on motivation and belonging have shown that college students benefit when they understand that challenges in the transition to college are common and improvable, and thus, that early struggles need not portend permanent lack of belonging or potential.¹⁷ In addition, a RCT showed that providing services that helped students set goals and acquire financial aid between their transition from high school to college increased college enrollment by 3 percentage points (even more for low-income students).¹⁸ Recent experimental evidence in the U.S. found that brief, one-time messages to students increased recurring tutoring attendance, leading to relevant changes in students’ study habits.¹⁹

8. Standardized student assessments are a key ingredient to shift the focus to learning and support students’ trajectories. The benefits of education—cultural, economic, and social—accrue to society only when learning occurs.²⁰ For example, an increase of one standard deviation in scores on international assessments of reading and mathematics achievement levels has been linked to a 2 percent increase in annual growth rates of GDP per capita.²¹ For governments to learn what policies worked to improve learning and to avoid “flying blind,” they need credible data.²² The Operation would support the strengthening of the student evaluation system. In a recent paper, Bergbauer, Hanushek and Woessmann (2018) find that the sole fact that countries adopt a standardized student assessment

¹³ Neilson et al (2018)

¹⁴ Castelman et al (2018)

¹⁵ Jensen (2010)

¹⁶ Nguyen (2008)

¹⁷ Yaeger et al (2016); Walton & Cohen (2011)

¹⁸ Castleman & Page (2015)

¹⁹ Pugach & Wilson (2018.)

²⁰ OECD, 2010

²¹ Hanushek and Woessmann, 2007, 2009

²² World Bank, 2018



and make results of the evaluations public is associated with improvements in student achievement. As part of the Operation, the SEE would improve the report on the results of the assessment that each school receives to provide principals with information on what students mastered and what competencies they need to improve. A recent RCT in La Rioja, Argentina found that providing schools with such information (together with a short training) improved student achievement between 0.28 and 0.38 of a standard deviation, which represents around one additional academic year of learning.²³

9. **The development of a formative assessment platform to be used by teachers for pedagogical purposes is in line with international best practices and policy recommendations for learning recovery, and would strengthen the national education evaluation system.** Teachers are the most important school-based determinant of student learning.²⁴ Research in Peru and Ecuador shows that teacher subject content knowledge²⁵ and pedagogical practices²⁶ in the classroom are among the most important factors to explain teachers' value added. The Operation would strengthen the evaluation system in these dimensions, by (i) developing a formative assessment platform that provide teachers with real-time student learning data with detailed information on the main gaps each student is facing; and (ii) provide content and pedagogical tools to address these gaps.

Assessment of PROGRESAR's Management and Information System²⁷

10. **Description.** The PROGRESAR Scholarship Program involves the following steps related to: (i) scholarship enrollment; (ii) application assessment; (iii) scholarship approval and award; and (iv) payment and accountability. The Program's enforcement authority is the ME through the DNB, which interacts with other agencies, including ANSES, which was the enforcement authority until early 2018, and with which the ME signed a cooperation agreement for participation at certain stages. Below is a detailed description of each process and sub-process.

11. **Scholarship Enrollment.** The enrollment period opens annually from February 1st to March 31st.²⁸ The application process begins when a potential recipient enrolls as a program applicant. Two different enrollment mechanisms exist, depending on whether the application is submitted for the Basic Education scholarship, for the Technical and Professional Education scholarship, or for the Higher Education scholarship. For Basic Education Scholarships, applications can be submitted in person at the Comprehensive Service Units (UDAI) of ANSES, but they can also be filed before the Mobile Service Units (UDAM) of the same agency, and more recently, online through the PROGRESAR website. To complete the application at the UDAI, the applicant must first make an appointment either online or by phone (line 130). The application process requires filling in a form, which can be downloaded previously or be handed to the applicant in person. Together with the form, the applicant must submit a regular student certificate duly signed and stamped by the educational institution where he/she attends primary or elementary school. The data is manually entered into an ANSES platform. The ANSES staff checks the

²³ de Hoyos et al, 2018

²⁴ Hanushek and Rivkin (2010); World Bank (2018)

²⁵ Metzler and Woessmann (2012)

²⁶ Araujo et al. (2016)

²⁷ Based on an assessment carried out by the IDB in the context of the *Programa de Apoyo a la Equidad y Efectividad del Sistema de Protección Social en Argentina* (AR-L1302) and information provided by ME.

²⁸ A second enrollment period started in 2020 and opens in august of each calendar year. The processes described below apply for all the yearly calls.



applicant's personal information, identity card, identity information in the People's Data Administration System (ADP), and that the stamp on the student certificate matches the authorized Single Institution Code (CUE). Once these checks are made, the process is approved. For more details on this process, see Figure A3.1. For enrollment in Basic Education and Higher Education scholarships, enrollment is through the ME online platform, where the applicant must log in with a username and password. This username will be valid throughout the scholarship award process, since the Program will use this platform to communicate with the applicant (for instance, to notify the applicant of the need for additional information, the granting or denial of the scholarship, and the ways to file claims). By entering the username and password, the applicant can fill in a form with his/her personal data and information on the area and institution where he/she is enrolled and/or studying. For more details on this process, see Figure A3.2.

12. **Application Assessment.** The application assessment process ensures the fulfillment of the terms and conditions set forth under the executive order that initiated the program (No. 90/2018). For this purpose, the ME requests certain information from ANSES and schools, Universities and Tertiary Institutions to determine the eligibility of the enrolled applicants. The socioeconomic assessment process aims to verify the applicant's identity and validate personal and family economic status. At this point, the decision is made as to whether the applicant falls within the eligibility criteria established under the executive order that created the program (No. 90/2018). The socioeconomic assessment is performed by ANSES, taking into account the income level reported by the applicant and his/her family. The academic requirement verification is as follows for the different scholarships. For Basic Education scholarships who enroll through the in-person channels, the regular student certificate submitted by the applicant at the enrollment stage is deemed as sufficient. For this reason, no additional step is taken at this point. The information requested from Basic and Higher Education scholarships applicants through the online enrollment form allows grouping of applicants by educational institution. In order to complete the applicants' academic assessment for scholarships, ME sends each university a TXT file for them to certify the applicant's current career, enrollment year and progress. The basic education and tertiary institutions can access the information posted on the ME web platform and certify the academic status of their applicants (i.e. year of entry, career and approved subjects). Finally, in the case of Teacher Training scholarships, the applicants must pass an exam administered by the SEIE. Those who were granted this scholarship in the past must have passed 20 percent of the curricula subjects each year covered by the scholarship.

13. **Scholarship approval and award.** ME receives information on the socioeconomic and academic assessments and based on this information, initiates an information consolidation step to conclude the process. At this point, the decision is made to grant or deny the scholarship or to identify inconsistencies for later clarification. The scholarship amount is determined through a ministerial resolution and is determined based on the incentives scheme of the scholarships.

14. **Payment and Accountability.** The funds from the scholarships are paid throughout 12 months and are collected monthly in arrears. The recipients for Basic and for the first year of higher education receive 80 percent of the scholarship amount. The remaining 20 percent is withheld and paid the following year, once the requirements established under executive order No. 90/2018 are fulfilled.

15. **Pre-settlement.** ME keeps the recipient database at the NB. Every month, it performs the pre-settlement process, which generates the list of scholars for the respective payment period, creating a



TXT file that contains the personal data of the scholar, the payment period, and the items to settle. The pre-settlement process is sent to ANSES via an internal note (no amount indicated) and the TXT format file. Once this information is received, ANSES checks enrollment validity, existence of labor ID code (CUIL), and vital status of the individual according to the data contained in the People's Data Administration system (ADP). ANSES updates its own file of PROGRESAR scholars (called Z2- PROGRESAR 2) based on the information submitted by ME. Once these checks are completed, ANSES creates an issuance and payment order file, and assigns a payment terminal for scholars who have not yet been assigned one. Assignment is performed based on the individual's address recorded in ANSES. The possible payment terminal options include Banks (*Nación* or others), *Correo Argentino*, Rural offices or PIM (virtual wallet from *Nación Servicios*, via cell phone). Non-bank payment methods are available when scholars do not have easy access to a bank branch due to geographical location. ANSES sends the file to the scholar's Payment area for a preliminary estimation of bank fees and notifies MECCyT of the amount to pay. This includes the amount to pay to the scholars and the applicable fees charged by the bank.

16. **Payment.** ME then conducts the permanent updates and formalizes the payment order by sending a Note to the General Administration Directorate (DGA). The DGA generates an e-SIDIF file and submits it to the MH to allocate budget and send the funds to the *Banco de la Nación Argentina* account number 3793/42 (exclusive account for PROGRESAR Scholarships). With a second Note, it sends the updated file to the Fund Payment Department, which is responsible for processing the payment to scholars. Once the funds have been transferred from ME to ANSES, the latter uses an account in the Central Bank of the Republic of Argentina (BCRA), which receives the funds coming from the already mentioned *Banco Nación* account, and from where it makes the payments to the payment network (mainly banks and *Correo Argentino*). The monthly payment operation lasts approximately 40 days. In a large number of cases, the funds are credited to the scholars' savings accounts on day 1 of the payment operation; however, in some cases, the funds are not directly credited, so the payer institution keeps the funds until the scholar collects them at any time during that period. Likewise, *Correo Argentino* keeps the funds available for collection during that period of time.

17. **Accountability of funds.** Once that period is completed, the monthly payment operation is deemed as closed, and both the Banks and *Correo Argentino* must account for the received funds before the BCRA. For this purpose, they must submit a file stating the paid funds and the funds due for payment together with a note, which will be valid as a sworn statement for 100 percent of the funds sent. Likewise, the funds due for payment must be sent back to the BCRA account that originally made the transfer. At that point, the BCRA checks that the entities have reported the total number of cases they account for, the paid funds, the paid fees, the due amounts, and the unpaid fees. This accountability process before the BCRA can take up to 10 business days (or more in the case of *Correo Argentino*). The BCRA consolidates the information received by banks, posts the reported accounts into the system, and submits the information to ANSES. ANSES then consolidates the information on the results of the payment process, i.e., it makes a summary of the total funds transferred to the BCRA, how much was paid, how much was not paid and the amount of paid and unpaid fees. Based on this information, an electronic file is created, and a Final Report is sent to the ME, including the summary data for the payment process with a table attached, specifying this information per payer institution and some additional data. Finally, ANSES takes the necessary steps to return the funds by instructing its Finance area to approve the return of funds. Thus, the Accounting area generates a Payment Order for the *Banco Nación* account 4982/45 (the account selected by the ME for the return of funds). The



Treasury area then executes the Payment Order and makes the payment to the ME bank account. Figure A3.3 illustrates the scholarship payment process.

Figure A3.1. Basic Education Scholarship In-person Enrollment Process
Performed in ANSES – ME receives the final information directly from ANSES

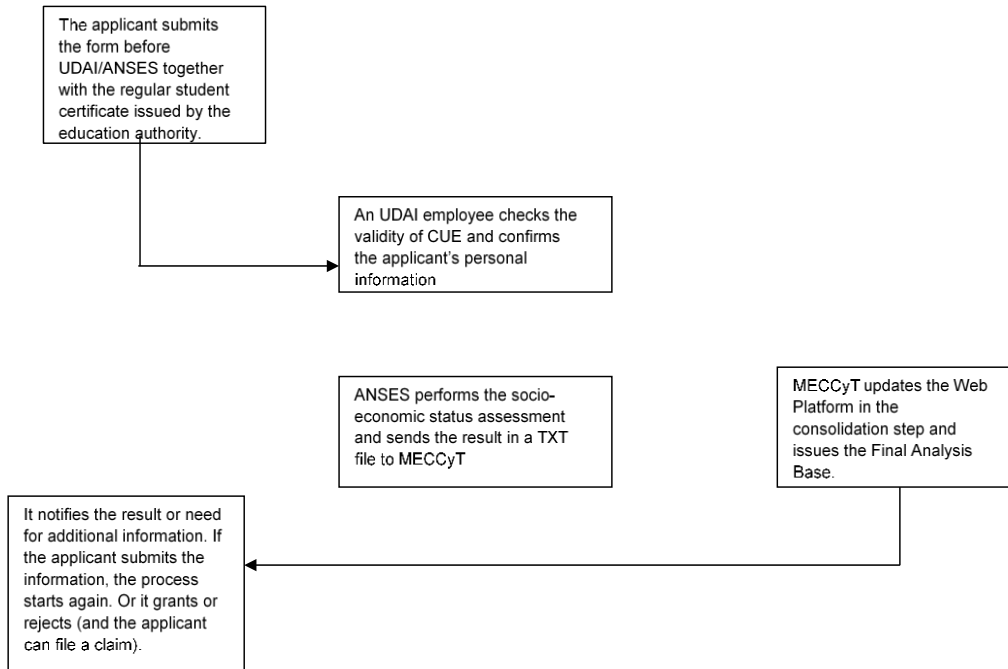




Figure A3.2. Basic and Higher Education Scholarships Online Enrollment Process

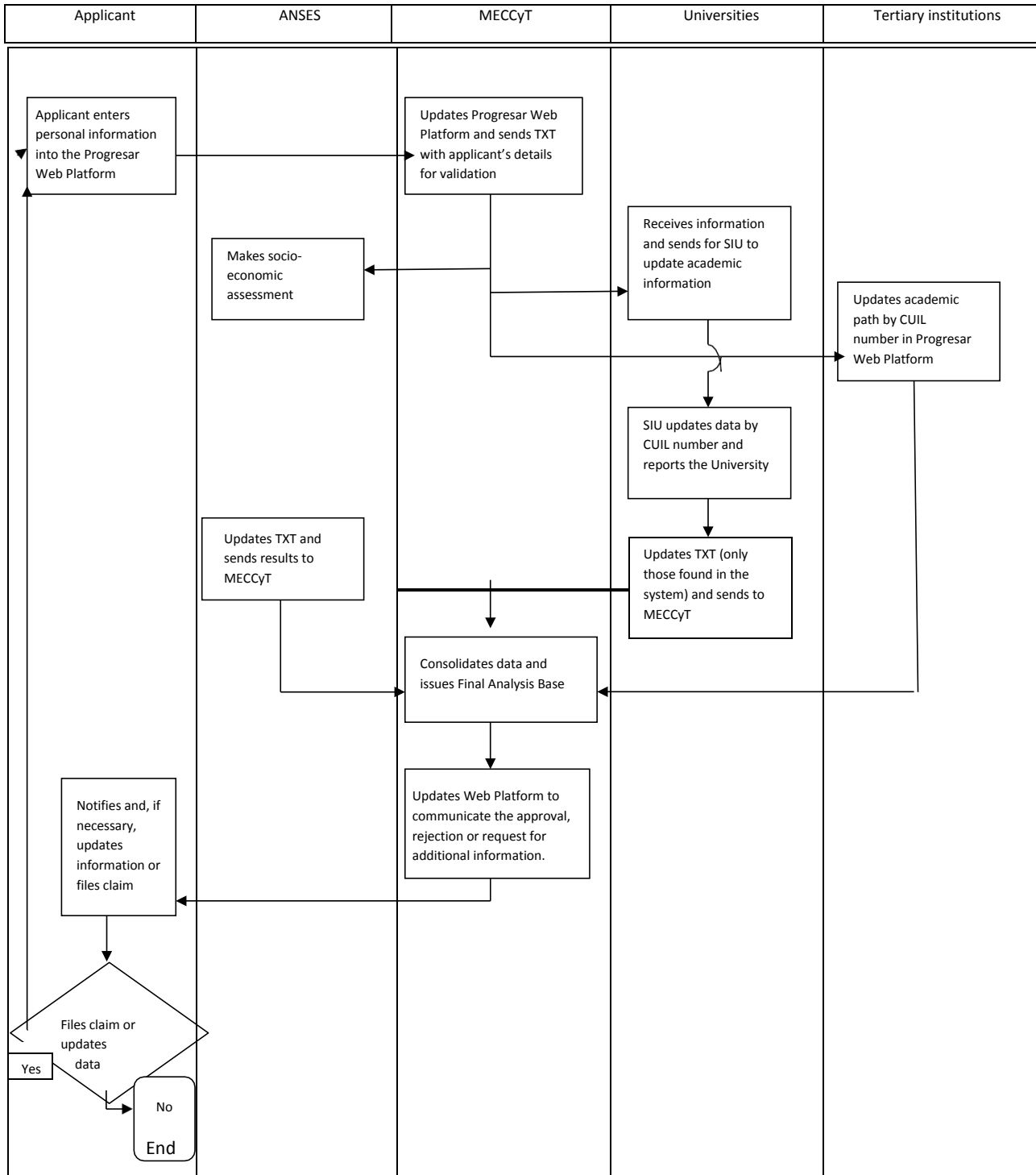
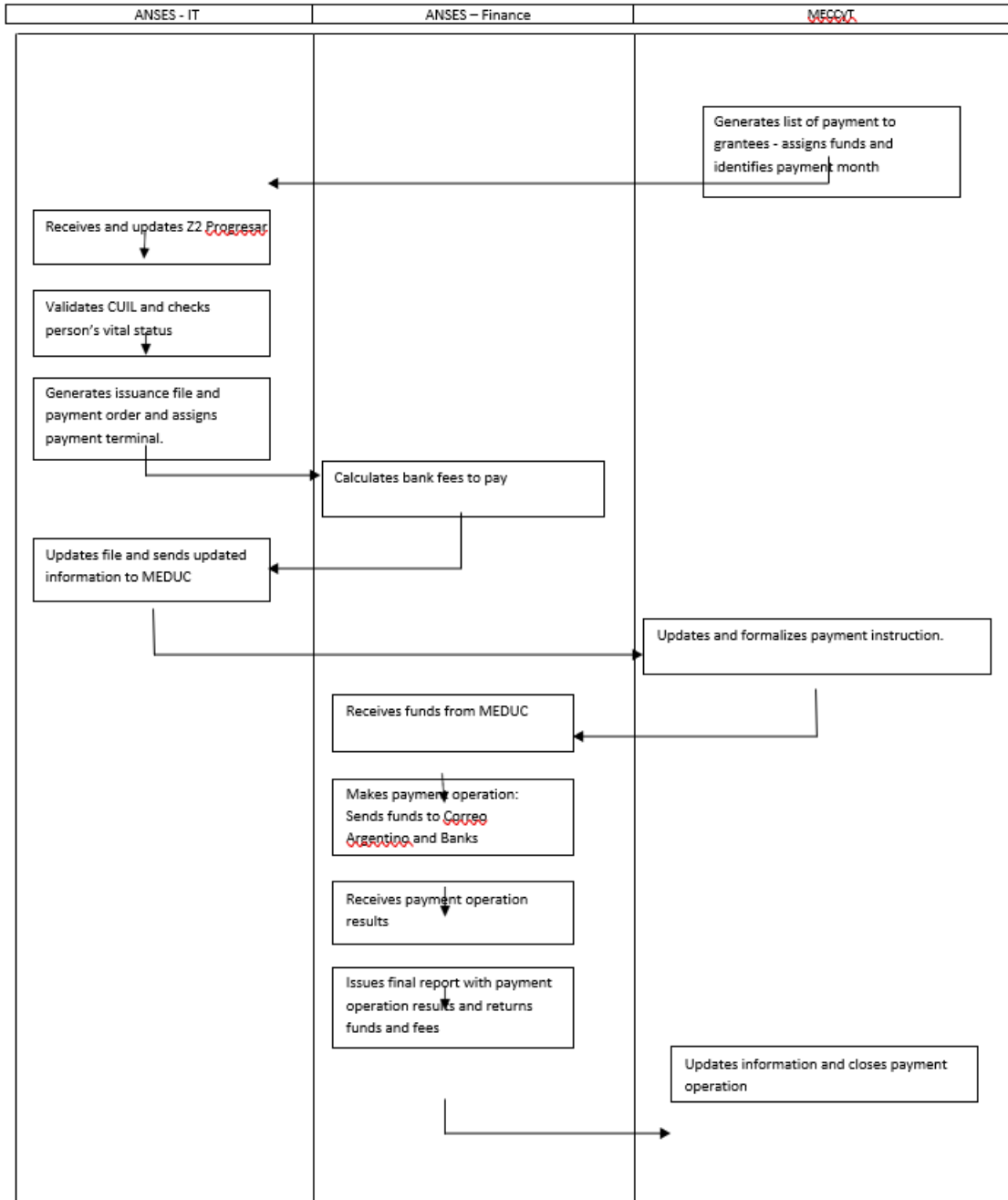




Figure A3.3. Payment Process



Economic Justification

18. This section presents the economic and financial analysis of the Project. The analysis will focus



on the financing and strengthening of PROGRESAR Scholarships. These activities concentrate most of the Project resources (67 percent).²⁹

19. **The Operation is expected to yield substantial economic and social benefits through its contribution to increased educational attainment, but also through an improvement in educational quality.** The Operation is expected to reduce dropout in Secondary and Higher Education –especially among the poorest households – and therefore to increase the number of years of education in the population. From the individual point of view, the Operation would have a direct positive impact on lifetime earnings of the beneficiaries through an increase in their labor productivity. Other individual labor outcomes are also expected to be affected, since higher educational attainment facilitates labor market entry for youth and increases the probability of being employed and having a better job. From a social perspective, the Operation would raise human capital endowment, having a positive impact on growth³⁰ and therefore reducing poverty rates. Moreover, since it is targeted to vulnerable populations, it would potentially influence the reduction of income inequality. Its impact on the society goes beyond the individual’s outcomes, since a more educated population has better health, less crime, higher democratic participation, more environmental consciousness, etc.³¹ Since the programs involved also aim to improve educational quality, all these effects are largely augmented.³²

20. **The analysis will focus on the monetary private benefits deriving from an increase in the number of years of education of the beneficiaries.** Despite all the individual and social gains resulting from the Operation, many of them cannot be captured in the economic analysis since the available data do not allow it and there is limited evidence on the impact of conditional cash transfers on graduation. PROGRESAR should lead to an increase in the number of years of education. This approach would only capture the most readily quantifiable benefits, as better educated individuals also benefit from improved health and greater life satisfaction, and society enjoys the multiple positive externalities provided by a more educated population. Moreover, the positive effect of the Operation on education quality translates into an increase in the returns to schooling that is more difficult to predict and quantify and is therefore not included in the economic analysis. Bearing this in mind, the economic benefits that are computed are only a lower bound of the Operation’s potential returns.

21. **Efficiency.** The Operation’s efficiency is evaluated with a cost-benefit analysis that compares the estimated costs of each of the Components of the Program with the expected benefits associated to the PDOs. The net effect of the Project on beneficiaries is estimated using a present discounted value (PDV) approach. This approach entails estimating the stream of benefits and costs of schooling over the lifetime of a representative student with and without the Operation. Given the structure of benefits and costs presented, an Internal Rate of Return (IRR) is calculated, which is defined as the discount rate that equates the net present value of the investment per student with the net present value of all earnings differential over a student’s life cycle. Both the PDV and the IRR of the Project allow us to assess whether it is a good investment from an economic point of view.

²⁹ The remaining portion correspond to the student and teacher evaluation activities and are not included in the estimations.

³⁰ As in an augmented Solow model.

³¹ See for instance Acemoglu and Angrist (2000) and Moretti (2004) for more on social returns to education.

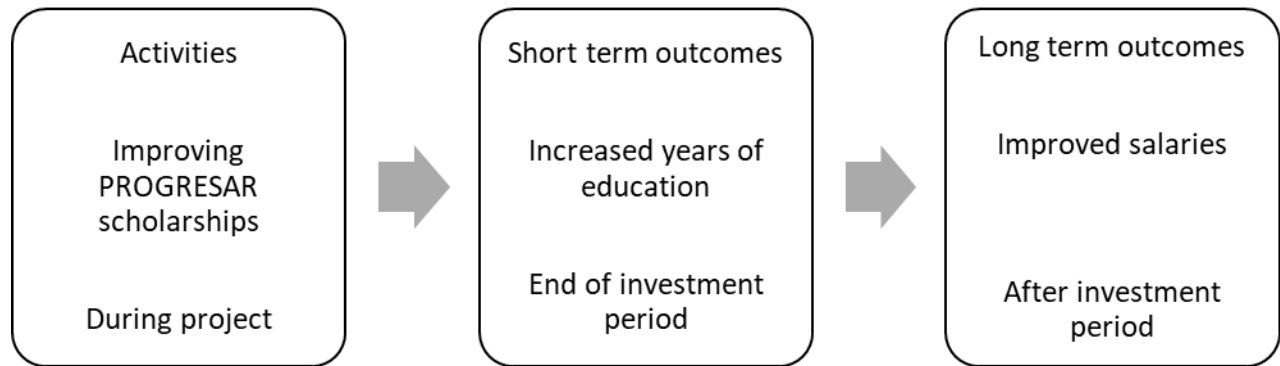
³² See for instance Patrinos and Saellariou (2008) and Bertschy et al. (2009) for more on the impact of quality on earnings and Hanushek and Woessmann (2008) for more on its effect on growth.



22. **Costs.** The cost per scholar of the PROGRESAR Scholarships in the three-year period requires several assumptions. While there is a fixed budget for the program for each year, the students are distributed among 3 modalities: youth aged 18-24 in Basic education and Technical professional training, students aged 18-30 in Tertiary non-university studies, and individuals aged 18-30 pursuing a University degree. Assuming that the PROGRESAR students remain constant during the three years of the Operation in the level achieved in 2022, as well as their distribution across the different modalities of the program, 259,380 students would receive the scholarship in Basic education and Technical professional training, 151,000 in higher non-university education, and 195,000 in university level each year.³³ Under this scenario, the yearly cost per scholar of the PROGRESAR Scholarships remain fixed at US\$350 per scholar in Basic Education and Technical professional training, while the cost per scholar ranges between US\$420 and US\$620 with an even higher cost for teacher training in higher non-university institutes, and between US\$420 and US\$1300 in university. Due to a lack of data on the latter two modalities, we estimate the average cost per scholar for the latter two modalities by dividing all the program resources not devoted to Basic Education and Technical professional training (US\$149.2 millions) by the number of students in these two modalities (346,000) and the resulting cost is US\$431 per scholar each year.

23. **Benefits.** The benefits from the Operation are summarized in Figure A3.4. As previously explained, the social benefits and improvements in quality affecting the returns to schooling are also not considered. Thus, the numbers presented in this economic analysis should be considered as a lower-bound estimate of the Operation’s benefits.

Figure A3.4. Framework of Project Benefits



24. **Estimating the impact of PROGRESAR Scholarships on short-term outcomes.** We rely on rigorous evaluations of the impact of education scholarships to get a sense of the range of the effect

³³ These assumptions imply a political decision of maintaining the amount of the scholarship constant in US dollars across the 4-year period instead of increasing coverage at the expense of a reduction in the amount of money that is transferred.



that PROGRESAR can have on education attainment and other short-term outcomes.³⁴ A review of the literature that evaluates the impact of scholarships is summarized in Table A3.3. Typically, the studies assess the effects of either merit-based or poverty-based scholarships on educational attainment (via enrollment and grade progression) and/or learning outcomes (captured by test scores).³⁵ Poverty-based programs tend to deliver less-promising results in terms of learning outcomes but are still effective to increase the educational attainment of beneficiaries.

Table A3.3. Summary of Evaluations of the Impact of Scholarships on short-term outcomes

Study	Type of scholarship	Level of intervention	Effect on educational attainment	Effect on test scores
Filmer, D. & Shady, N. (2009). "School Enrollment, Selection and Test Scores". Development Research Group, The World Bank.	Poverty-based	Basic education (secondary)	0.24 years of schooling	not significant
Blimpo, M. P. (2014) "Team Incentives for Education in Developing Countries: A Randomized Field Experiment in Benin." <i>American Economic Journal: Applied Economics</i> 6(4): 90-109	Merit-based	Basic education (secondary)	-	0.66 years of schooling (0.27 sd)
Behrman, J., Parker, S., Todd, p., and Wolpin, K. (2015). "Aligning Learning Incentives of Students and Teachers: Results from a Social Experiment in Mexican High Schools." <i>Journal of Political Economy</i> 123 (2): 325-364.	Merit-based	Basic education (secondary)	-	0.41 years of schooling (0.17 sd)
Angrist, J., Autor, D., Hudson, S., and Pallais, A. "Evaluating Post-Secondary Aid: Enrollment, Persistence, and Projected Completion Effects." NBER working paper 23015.	Poverty and Merit-based	Higher education (college)	0.52 years of schooling	-
Duflo, E., Dupas, P. and Kremer, M. (2017). The Impact of Free Secondary Education: Experimental Evidence from Ghana.	Poverty and Merit-based	Basic education (secondary)	0.32 years of schooling (annualized)	0.09 years of schooling (0.15 sd annualized)

25. **There are limitations to using this literature review to estimate the impact of PROGRESAR on short-term outcomes.** First, the experiments evaluated in the literature have limited external validity. Second, PROGRESAR scholarships are different to the programs evaluated in the literature in several dimensions. For instance, the age group that is covered is different, and more importantly, the majority of PROGRESAR beneficiaries attend either tertiary university education or tertiary non-university. To the best of our knowledge, however, no rigorous evidence exists in developing countries on the impact of scholarships at the Tertiary level, while the existing evidence for developed countries is not conclusive.³⁶ In an effort to avoid possible upward biases in the estimation of the benefits, we chose to use the lowest effect found in the literature. Under this conservative assumption, the impact of the financial support of PROGRESAR scholarships is estimated as 0.24 years of schooling per year of exposure to the program.

³⁴ There is not a rigorous impact evaluation of PROGRESAR Scholarships.

³⁵ In the Table, we express the estimated effects on learning outcomes (always reported as standard deviations of the exam score) in terms of years of schooling. To that end, we use the PISA equivalence between learning outcomes and school attainment (0.41 standard deviations equals the effect of 1 year of schooling).

³⁶ Evidence from the U.S. on merit-based scholarships suggest either a positive effect on academic achievement (Dynarski 2008, Castelman 2014, Scott-Clayton 2011, Scott-Clayton and Zafar 2016, Bettinger et al. 2016) or no effect at all (DesJardins and McCall 2014, DesJardin et al. 2010, Sjoquist and Winters 2012, Sjoquist and Winters 2015). Quasi-experimental identification strategies on poverty-based scholarships find either positive or null effects (see Deming and Dynarski 2009 (US), Nielsen et al. 2010 (Denmark), Dearden et al. 2014 (UK) for positive effects and Baumgartner and Steiner 2005 (Germany) for null effects).



26. **This effect does not include the expected impact of the complementary activities included in the Operation.** The effect of these complementary activities comes from a literature review of the effect of selected interventions on students that is averaged and multiplied by a correction factor of 0.1 trying to capture the relatively lower intensity of these activities in PROGRESAR Scholarships with respect to those found in the literature. This additional effect is included in the sensitivity analysis.

27. To translate the expected increase in years of schooling for a student into wage improvements, we will use the standard labor economics model to estimate the returns of education, namely the Mincer (1974) equation:

$$W_i = \hat{\alpha} + \hat{\beta}_1 S_i + X_i' \hat{\theta} + \hat{\varepsilon}_i$$

Where W_i is the logarithm of the hourly wage of individual i ; S_i is the years of schooling of i ; X is a vector of controls; $\hat{\alpha}$, $\hat{\beta}$, and $\hat{\theta}$ are the estimated parameters; and $\hat{\varepsilon}$ is the error term.

28. The yearly monetary benefit of the Project can be captured by the increase in the years of schooling times the estimated returns to education, as described in the following equation:

$$B_t = Y_t * \hat{\beta} * \Delta S_t$$

where B_t are the monetary benefits of the Project at time t , ΔS_t captures the impact in years of schooling; $\hat{\beta}$ corresponds to the returns to education, and Y_t stands for the expected labor income in year t for a student without the Project.

29. The Mincer equation for Argentina is estimated using microdata from EPH corresponding to the second semester of 2017. For the estimation, the set of controls we include comprises a sex dummy, potential experience, potential experience squared, regional dummies, a wage-earner dummy, and six sectorial variables. The parameters in the equation are estimated by Heckman full maximum likelihood using individuals aged 25–55. The selection equation includes the same covariates in the wage equation plus number of children, number of children interacted with the gender dummy, a marriage indicator and a school attendance binary variable. However, alternative estimations of the returns to schooling in Argentina are used to check the robustness of the results. We use the yearly labor income per capita (US\$) as the reference income Y_i .³⁷ Multiplying this Y_i by the estimated returns in the Mincer equation $\hat{\beta}$ and the estimated impact on short-term outcomes ΔS_t we obtain the yearly benefits of the Project per student B_t .³⁸ which are summarized in the Table below. The yearly benefits of ASISTIRÉ amount to US\$15 per year, while the benefits of PROGRESAR total US\$186 per year.

³⁷ Other alternatives are explored in the sensitivity analysis section.

³⁸ An implicit assumption in this estimation is that the hours of work are not affected by the Operation.



Table A3.4. Benefits per student each year by Program Component and Results Area

	Expected labor income without the project	Return to education	Impact in years of schooling	Yearly benefits of the project
	Y_t	β	ΔS_t	B_t
PROGRESAR Scholarships	\$9,915	0.0814	0.240	\$194

Sources: (1) Expected labor income without the project computed as the average monthly labor income in nominal LCU (computed from SEDLAC microdata - second semester 2017) * 12 * average nominal exchange rate in second semester of 2017: \$14386.84*12*(1/17.413). (2) Return to education estimated from a Mincer equation estimated by Heckman full maximum likelihood. (3) Impact in years of schooling of comes from the minimum effect found in the literature of scholarships.

30. **Cost-benefit analysis.** The last step of the analysis is to compare costs and benefits. Using a discount rate, the yearly cost per student is brought to the present, as well as the whole stream of yearly future benefits B_t . We assume that students benefited from the Operation enter the workforce at age 21 and retire at age 61 (after 40 years of work) earning US\$ B_t per year more than their peers. For the PROGRESAR scholarships, we maintain the 40-year timeframe but delay the entrance to the workforce until the age of 25.³⁹ With a conservative discount rate (5 percent), the Net Present Value of the income benefits of the average Operation beneficiary are compared with its cost, and the IRR is computed. The Table below summarizes the results. Results from the economic analysis suggest that benefits from PROGRESAR scholarships in Basic Education and Technical Professional Training exceed 7 times its cost. The Benefit/Cost ratio for improving PROGRESAR scholarships in higher education is a bit lower than in the other level (5.8), which is explained by the relatively higher cost of these types of scholarships. However, the robustness of this result to the possible presence of heterogeneous impacts on short-term outcomes (i.e. a non-linear return to education) is explored in the sensitivity analysis.

Table A3.5. Results of the economic analysis

	Benefit/Cost Ratio	Internal Rate of Return (IRR)
PROGRESAR scholarships Basic Education	7.1	19 %
PROGRESAR scholarships Higher education	5.8	17 %

³⁹ More specifically, we assume that the benefits of the project start after 8 years for PROGRESAR. Moreover, all the computations are expressed per year of investment to avoid having to make additional assumptions regarding the number of years of exposure to the program.