

International student mobility and attitudes towards inequality

Citation for published version (APA):

Granja, C. D. (2023). *International student mobility and attitudes towards inequality: essays about the Brazilian case*. [Doctoral Thesis, Maastricht University, University of Campinas]. Maastricht University. <https://doi.org/10.26481/dis.20230928cg>

Document status and date:

Published: 01/01/2023

DOI:

[10.26481/dis.20230928cg](https://doi.org/10.26481/dis.20230928cg)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
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International Student Mobility and Attitudes Towards Inequality

Essays about the Brazilian case

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Printing: ProefschriftMaken || www.proefschriftmaken.nl
ISBN: 978-94-6469-475-8

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International Student Mobility and Attitudes Towards Inequality

Essays about the Brazilian case

DISSERTATION

to obtain the degree of Doctor at Maastricht University, on the authority of the Rector Magnificus, Prof. dr. Pamela Habibović and at the University of Campinas, on the authority of the Pro-Rector, Prof dr. Rachel Meneguello in accordance with the decision of the Board of Deans, to be defended in public on Thursday 28 September 2023, at 16:00 hours

by

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SUMMARY

The process of globalization has brought with it major transformations in the panorama of higher education worldwide, which has become increasingly internationalized. Within this context of internationalization, student mobility has become a key element, the component on which programs and policies usually focus. However, despite the increase in the last decade, participation in international mobility programs has not always been distributed equally across beneficiaries. In Brazil, for instance, the release of a massive international student mobility program in 2011 has been followed by severe criticisms regarding its biased selection, which (indirectly) targeted students with more privileged profiles. The figures about inequality in student mobility raise an essential concern for the design of exchange programs. Even though those programs are not necessarily intended to alleviate social and economic inequality, they may lead to unexpected consequences, such as raising discrepancies between participants and non-participants.

This dissertation aims to contribute to the literature on student mobility and inequality by focusing on the case of Brazil. Using a quantitative approach anchored in the economics and higher education literature, it focuses on two dimensions: student mobility's potential to change people's worldviews, specifically their inequality attitudes and its role in improving human capital. The study is structured into five chapters.

Chapter 1 presents the country context and the roadmap of the thesis and introduces the motivation, goal of each chapter, methodology, and data used.

Chapter 2 provides the base to understand the potential determinants of inequality preferences in Brazil. It presents an overview of the literature on the topic, focusing on discussing the role that sociodemographic and economic individual characteristics have in shaping people's views. It uses secondary data from a study on public opinion conducted by OXFAM, an international non-governmental organization, in partnership with Datafolha, a private Brazilian public opinion research institute. Results show that race, an element overlooked in studies about attitudes toward inequality, plays a significant role when investigating inequality preferences in Brazil. White people have lower odds of believing that reducing

inequalities is essential for Brazil's progress compared with black, browns, indigenous, and others. Moreover, we also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, being educated is associated with higher odds of believing that reducing inequality is fundamental for progress, while we do not find a clear association between income and inequality views.

Chapter 3 examines the impact that exchange programs have on changing students' attitudes toward inequality. The chapter focuses on two main dimensions: preference and perception of inequality. It exploits primary data of more than a thousand students from a well-known and internationalized Brazilian university collected through an online survey. Using Propensity Score Matching to construct an artificial control group, results show that going abroad does not affect students' preferences regarding reducing within-country inequality. Still, international mobility affects students' salary preferences, with mobile students expressing a preference for higher salaries for high-skilled jobs. Results also show that mobility affects how individuals perceive current inequality, as mobile students believe within-country inequality is smaller than their non-mobile counterparts.

Chapter 4 provides an empirical analysis of the role international student mobility has in improving human capital by examining the impact that the timing of an exchange experience has on students' academic performance. It focuses on two facets of the temporal dimension: the moment in which students travel and the length of the period spent abroad. To provide causal evidence, the chapter exploits novel data from more than 10,000 students from a highly internationalized Brazilian university from 2010 to 2020. By combining Propensity Score Matching with Difference in Differences techniques, results show that international mobility impacts groups of students differently. Students who travel closer to the end of their undergraduate courses benefit the most from the mobility experience, while negative effects are found for those who travel at the beginning of their university program. Results also show that, while student mobility impacts positively and significantly students who participate in programs lasting from one semester to one year, negative effects are associated with shorter periods abroad.

Finally, Chapter 5 concludes the dissertation by summarizing its main findings and illustrating the policy implications of the study.

SUMÁRIO

O processo de globalização trouxe consigo grandes transformações no panorama da educação superior mundial, que se tornou cada vez mais internacionalizada. Em um contexto de internacionalização, a mobilidade estudantil torna-se um elemento chave, um componente no qual os programas e políticas costumam focar. No entanto, apesar do aumento na última década, a participação em programas de mobilidade internacional nem sempre foi distribuída igualmente entre os beneficiários. No Brasil, por exemplo, o lançamento de um massivo programa de mobilidade estudantil internacional em 2011 foi seguido de severas críticas à sua seleção viesada, que (indiretamente) focou em estudantes com perfis mais privilegiados. Dados sobre a desigualdade na mobilidade estudantil levantam uma preocupação para o desenho de programas de intercâmbio. Mesmo que esses programas não sejam necessariamente destinados a reduzir a desigualdade social e econômica, eles podem levar a consequências inesperadas, como o aumento das discrepâncias entre participantes e não participantes.

A presente tese visa contribuir para a literatura sobre mobilidade estudantil e desigualdade, focando no caso do Brasil. Usando uma abordagem quantitativa ancorada na literatura sobre economia e ensino superior, ela foca em duas dimensões: o potencial da mobilidade estudantil para mudar as visões de mundo das pessoas, especificamente suas atitudes em relação às desigualdades, e seu papel na melhoria do capital humano. O estudo estrutura-se em cinco capítulos.

O Capítulo 1 apresenta o contexto do país e o roteiro da tese, apresentando a motivação da pesquisa, o objetivo de cada capítulo, a metodologia e os dados utilizados.

O Capítulo 2 fornece a base para compreender os potenciais determinantes das preferências por desigualdade no Brasil. Ele apresenta uma visão geral da literatura sobre o tema, com foco na discussão do papel que as características sociodemográficas e econômicas individuais têm na formação da visão dos indivíduos. O capítulo utiliza dados secundários de um estudo de opinião pública realizado pela OXFAM, organização não governamental internacional, em parceria com o Datafolha, instituto privado brasileiro de pesquisa de opinião pública. Os

resultados mostram que a raça, um elemento negligenciado nos estudos sobre atitudes em relação à desigualdade, desempenha um papel significativo na investigação das preferências de desigualdade no Brasil. Brancos têm menos chances de acreditar que a redução das desigualdades é essencial para o progresso do Brasil em comparação com pretos, pardos, indígenas e outros. Além disso, verifica-se também que aqueles que se identificam como pretos e os que classificam sua ocupação como estudantes são os únicos com maior chance de concordar que o governo tem o papel de reduzir as desigualdades, tendência visível principalmente após a pandemia da COVID-19. Desafiando as teorias convencionais sobre escolhas racionais, descobrimos que maiores níveis educacionais estão associados a maiores chances de acreditar que a redução da desigualdade é fundamental para o progresso, enquanto não se encontra uma associação clara entre renda e atitudes com relação à desigualdade.

O Capítulo 3 examina o impacto que programas de intercâmbio têm sobre a mudança de atitudes de estudantes em relação à desigualdade. O capítulo foca em duas dimensões: preferência e percepção de desigualdade. Para fornecer evidências causais, ele explora dados primários de mais de mil alunos de uma renomada e internacionalizada universidade brasileira, coletados por meio de uma pesquisa online. Usando Pareamento por Escore de Propensão para construir um grupo de controle artificial, os resultados mostram que ir para o exterior não afeta as preferências dos alunos em relação à redução da desigualdade dentro do país. No entanto, a mobilidade internacional afeta as preferências salariais dos estudantes, com os estudantes móveis expressando preferência por salários mais altos para profissionais altamente qualificados. Os resultados também mostram que a mobilidade afeta a forma como os indivíduos percebem a desigualdade atual, com os participantes de programas de mobilidade acreditando que a desigualdade dentro do país é menor do que suas contrapartes não móveis.

O Capítulo 4 fornece uma análise empírica do papel que a mobilidade estudantil internacional tem na melhoria do capital humano, examinando o impacto que o tempo de uma experiência de intercâmbio tem no desempenho acadêmico dos alunos. Centra-se em duas facetas da dimensão temporal: o momento em que os alunos viajam e a duração do período passado no estrangeiro. Para fornecer evidências causais, o capítulo explora dados de mais de 10 mil alunos de uma universidade brasileira altamente internacionalizada de 2010 a 2020. Após combinar técnicas de Pareamento por Escore de Propensão com Diferenças-em-Diferenças, os resultados mostram que a mobilidade internacional afeta grupos de alunos de

maneiras diferentes. Estudantes que viajam mais perto do final de seus cursos de graduação são os que mais se beneficiam da experiência de mobilidade, enquanto efeitos negativos são encontrados em aqueles que viajam no início de seu curso universitário. Os resultados também mostram que, enquanto a mobilidade estudantil impacta positiva e significativamente os estudantes que participam de programas com duração de um semestre a um ano, efeitos negativos são associados a períodos mais curtos no exterior.

Finalmente, o Capítulo 5 conclui a tese, resumindo suas principais conclusões e discutindo as implicações do estudo.

“There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.”

— Douglas Adams, *The Restaurant at the End of the Universe*

ACKNOWLEDGMENTS

This Ph.D. has been a mix of feelings for me. It all started in 2018 when I moved from Brazil to the Netherlands and started my journey in a new country to keep studying one of my favorite topics: international student mobility.

The past five years were full of surprises. Among them was a global pandemic which impacted my personal life and my research substantially. The pandemic hit its worse period while I was between the 2nd and 3rd year of my Ph.D. It forced me to change my data collection and methodology and substantially increased the amount of work in all projects of my life, personally and professionally. During several moments of my journey (particularly after the pandemic started), I thought I would not be good enough to finalize a Ph.D. By doubting myself during the whole process, I became my biggest enemy, being super hard and strict with myself.

Having in mind the challenging moments experienced in the past few years, it is almost impossible to not feel nostalgic and super proud to write this section today after finishing my dissertation!

However, this was not an individual journey. If I am here today, it is because of several other people who helped me along the way. First, I must thank my four supervisors: Fabiana Visentin, Ana Carneiro, Eleonora Nillesen, and Robin Cowan.

Fabiana, thanks for being a very present supervisor and a wonderful peer during my Ph.D. I cannot describe how much you helped me during this research. Thanks to you, I became a better researcher, and I achieved places I never thought I could achieve. You saw the best in me and pushed me to become my best version. Thanks for trusting me in this process and for all your encouraging words every time I lost motivation.

Ana, thanks for being with me since my master's. Before we met, I had only a few research experiences, and thanks to your guidance I became a better scientist. Thanks for being so understanding when I moved to the Netherlands and we had to move our meetings to the online setting. Also, thanks for trying to be present during all stages of the research, despite being far geographically.

Lonneke, thanks for sharing all your knowledge and experience with me. Having you as part of my academic life has taught me a lot! Thanks for trusting me to be your tutor for three years and mentoring me in this process. You taught me not just about impact evaluation but also about teaching. It is thanks to the opportunity you gave me that I became a better academic professional.

Last (but not least), Robin, thanks for your support during the development of my thesis. You are one of the smartest people I have ever met, and your wise words were always super important for my progress.

I would also like to thank two other professors, Bruno Martorano and Julieta Marotta, who were not my thesis supervisors but also have a special place in my heart. Julieta, since I met you, you have been a model to me. Your kindness, calm, and serenity in how to deal with your students and tutors are inspiring. Certainly, I became a better teacher just by observing you.

Bruno, I would not be fair if I did not include you in my acknowledgments. Working with you has been an amazing experience for me. Thanks to you, I became a better teacher, a better course coordinator, a better researcher, and a more confident person. You probably don't know how much you changed my life when you trusted me to be part of your teaching/coordinates/research teams. I already told you, but it has been a pleasure to work with you, and I hope we can cross paths in the future.

I also want to thank all my peers who worked with me while teaching Public Policy, Public Economics, Public Policy Analysis, and Program and Policy Evaluation. A special thanks to Iman, who shared the challenges of coordinating a course and transitioning to the online setting during the pandemic. I also want to thank all the students I had in the past years for making me a better person.

A special thanks to some Maastricht University and University of Campinas staff, who helped me along the way. Marko Monteiro and Maria Beatriz Bonacelli (from UNICAMP), and Lisbeth Evers (from UM), thanks for all your help in making my joint-degree possible. Dorina Claessens (from the Knowledge Centre for International Staff at UM), thanks for helping me with the visa process and for not being annoyed with all my e-mails. A very special thanks to Eveline in de Braek, who assisted me so much in adapting to the Netherlands, always having kind and encouraging words when I needed them. The process of transitioning to a new culture was much easier because of you, and I wish every expat in this world had the chance to have an Eveline in their lives. I also want to thank Julia and Micheline,

who were very present during the last stages of my thesis and for helping me with the organization of the promotion process.

To other very special people I met in Maastricht: Rodrigo (my partner in sharing academic experiences and one of my dearest friends), Maisha (my first friend in the Ph.D.), Trang (my bubble tea partner), Maria (one of the sweetest people I've ever met), Lalaine (office mate and an inspiration for me), Raquel (who loves reading fiction books just as I do!), Lorena (my dear Brazilian peer) and Sabrina (who were always kind with me, and who always made me laugh).

Thanks to my dear Brazilian friends who, despite being far, were always there for me. Fernanda (who patiently hears my 10-minute audio complaints every week), Raphaela (a very special friend for over ten years), Nicole (my açaí partner and my 'almost' neighbor), and Erica (my luckiest finding during my masters). Special thanks to Vinicius, Debora, Rafaela, Fran, Erika, and Ana, for always being available to meet me in Brazil and making me feel that time never passes.

To my parents, who always encouraged my sister and me to study, and who understood the role education has in changing lives even without having the chance to complete primary school. To my sister, one of the most generous and kind people I know and the mom of the two most precious kids I have in my life: Rafael and Eduardo.

To my dear therapist Anna, who helped me stay sane over the past two years and was essential in my process of deciding on the next steps of my life. Thanks for helping me recover my energy to survive each day.

And, to finish, to the most important person in my life, my dearest husband Jonatha, who has been part of my acknowledgments sections since my bachelor's thesis. Thanks for being not just my partner for more than one decade but also my best friend. Thanks for moving to the Netherlands and being my supporting network during the pandemic, and for all the adaptations you made in your life to be with me. Without you, I would have never trusted myself to apply for this Ph.D. and would never have had the sanity to finish it.

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1

INTRODUCTION

1.1. International student mobility and inequality

The process of globalization has brought with it major transformations in the panorama of higher education worldwide, which has become increasingly internationalized. Within this context of internationalization, student mobility has become a key element, the component on which programs and policies usually focus (Knight, 2004; Guruz, 2008; Knight, 2012; Altbach & Engberg, 2014; de Wit & Altbach, 2021). It affects not only students but also higher education institutions, faculty, staff, and nations worldwide (UNESCO, 2022a).

Even though government support for exchange programs is not a recent trend, incentives for such programs have expanded recently (Guruz, 2008; Engberg *et al.*, 2014). Data shows that the number of higher-education internationally mobile students has increased considerably in the past century, going from 0.3 million in 1963 to up to 6 million in 2019 (UNESCO, 2022b). Only in Latin America and the Caribbean, the increase was more than 200% between 2000 and 2019, with more than half of mobile students being directed toward the Global North, such as North America and Western Europe countries (Bilecen & Van Mol, 2017; UNESCO, 2022b).

Despite the increase in the last decade, participation in international mobility programs has not always been distributed equally across beneficiaries. For example, in a study about U.S. undergraduate students, the authors show that the intent and participation in exchange programs are interrelated and shaped by factors such as gender, race or ethnicity, major, and involvement in college activities (Luo & Jamieson-Drake, 2015). When looking at Latin America, it is possible to identify similar trends. In Brazil, for instance, the release of a massive international student mobility program in 2011 has been followed by severe criticisms regarding its biased selection, which (indirectly) targeted students with more privileged profiles (Borges, 2015; Gomes, 2020; Lopes, 2020; Feltrin *et al.*, 2021).

Research shows that high inequality in access to student mobility programs could be related to several factors. For example, it can relate to the costs of studying

abroad, students' academic and personal backgrounds, student's different perceptions of the benefits of studying abroad, and also due to different access to higher education institutions and courses (Orr *et al.*, 2011; Luo & Jamieson-Drake, 2015; Lorz *et al.*, 2016; Di Pietro, 2020; Schnepf & Colagrossi, 2020). As Junor and Usher (2008) stated, barriers to student mobility are not entirely different from those preventing individuals from attending post-secondary education.

The figures about inequality in student mobility raise an essential concern for the design of exchange programs. Even though those programs are not necessarily intended to alleviate social and economic inequality, they may lead to unexpected consequences, such as raising discrepancies between participants and non-participants. As the literature points out, mobility programs can generate several advantages for their beneficiaries, including career advantages (Di Pietro, 2013; Zimmermann & Neyer, 2013; Engberg *et al.*, 2014; Meya & Suntheim, 2014; Luo & Jamieson-Drake, 2015; European Commission, 2016; Sorrenti, 2017; Kratz & Netz, 2018; Wang *et al.*, 2019; Di Pietro, 2019; Contu *et al.*, 2020; d'Hombres & Schnepf, 2020).¹ Thus, targeting those programs to already privileged individuals may contribute to transferring inequality from the education system to the labor market (Netz & Finger, 2016).

This dissertation aims to contribute to the literature on both student mobility and inequality by focusing on the case of Brazil. Using a quantitative approach anchored in the economics and higher education literature, it focuses on two dimensions: student mobility's potential to change people's worldviews, specifically regarding inequality attitudes and its role in improving human capital.

Considering the current unequal structure of student mobility in Brazil (described in the next section), as well as the recent changes in its presidency – with the return of the political party responsible for increasing the budget for international mobility in the 2010s – it becomes imperative to understand the impacts of those initiatives, to better inform policymaking. Inequality is one of the core issues in Brazil, and the country has been recording high inequality levels for decades (World Bank, 2018). Recently, the unequal situation has intensified with the COVID-19 pandemic, which increased social and economic disparities in the country (Nassif Pires *et al.*, 2021).

¹ For a more detailed revision of the outcomes of student mobility programs, see Roy *et al.* (2019) and Waibel *et al.* (2017).

1.2. International student mobility in Brazil

The Brazilian case is an interesting case to study since student mobility has been a significant phenomenon in the country during the previous decades. It has been fostered by a massive and costly program implemented between 2011 and 2015 called Science without Borders (SwB)(Brasil, 2016). The program offered scholarships for Brazilian undergraduate and graduate students/researchers and fellowships to attract researchers from abroad (Brasil, 2011). The scholarships were distributed in several disciplines, but priority was given to courses in Science, Technology, Engineering and Mathematics (STEM), and Health Sciences (Brasil, 2013).

The Brazilian program considerably affected the country's internationalization experience, being the most prominent student mobility program ever developed by its federal government (Granja & Carneiro, 2020). During a short period, it offered more than 90 thousand scholarships, of which almost 80% were for the short-term mobility of undergraduate students (Brasil, 2016).

Despite the program's aim to favor human capital development, academics severely criticized the SwB, not just because of its high costs and inefficient use of Brazilian financial resources (Koeller *et al.*, 2016; Marques, 2017; Granja & Carneiro, 2020) but also for its role in increasing Brazilian inequalities. Borges (2015) showed, for instance, that historical disparities in Brazil, such as economic, racial, and gender, were all materialized in the Brazilian program. The author analyzed data about 1.3 thousand students sent to the U.S. and concluded that the program was a privileged space for young men, whites, people with better purchasing power, and from the most industrialized regions of Brazil. Less economically advantaged students, primarily black and coming from public schools, were the most left out by the program.

A similar conclusion was found by Gomes (2020), who focused on 1.5 thousand students from a Brazilian university in 2013 and showed that those students revealed characteristics of intensive school selection. They often came from private secondary schools, which enabled them to enter higher education more easily. Furthermore, they were primarily white and members of families with fewer children, with better family income, from more privileged places of residence, and belonging to families whose adults were highly educated and, for the most part, holders of occupations of great social prestige. The authors stated that the 'school capital' students got during the pre-university period gradually metamorphosed into

‘academic capital’ when they entered university. All of that helped those already privileged students quickly achieve the profile of the eligible participant for the Brazilian program (which gave more weight to students that already had research, academic, and scientific experiences).

Using a large sample of Brazilian students from 2009 to 2013, Lopes (2020) showed that students with more educated parents and higher incomes were more likely to participate in the SwB and tended to study at prestigious host universities abroad. Along the same line, when analyzing the profile of students of one Brazilian university in an aggregate way through the intersection of their characteristics, Feltrin *et al.* (2021) concluded that the program favored a particular student profile: white males with better economic conditions and no special needs.

Unequal uptake, however, is not just a characteristic of the Science without Borders program. Data from the socioeconomic questionnaire applied during the Brazilian National Assessment of Student Achievement (ENADE)² suggests that the same trend also happens with students participating in other exchange programs in the country. For instance, when we expand the study conducted by Feltrin *et al.* (2021), using data from more than 2 million Brazilian students who took the ENADE exam between 2013 and 2019, we notice a similar imbalance.

While the overall group of Brazilians taking the exam is more balanced regarding their race/skin color, mobile students in all exchange programs are predominantly white (Figure 1.1). There are also discrepancies in the gender composition of the two groups, with the share of females participating in mobility programs being generally smaller than that of females in general (Figure 1.2).

Differences also appear in terms of economic background. While the average student responding to the Brazilian socioeconomic questionnaire comes from a more disadvantaged context, with less-educated parents (Figure 1.3), and completes their studies mainly in public schools (i.e., less prestigious institutions and those with more deprived students) (Figure 1.4), those who participated in an

² The ENADE is an exam applied annually to students in the first and last year of selected undergraduate courses, being a mandatory curricular component of higher education in Brazil. The exam aims to assess the performance of higher education students concerning the syllabus provided in the curricular guidelines of their courses. It also considers the development of skills and abilities necessary to deepen general and professional training and the updating of students concerning Brazilian and world reality. The exam includes a socioeconomic questionnaire that offers a comprehensive overview of Brazilian students, including also a question about participation in a student mobility program. The exam is applied in three waves (denominated Assessment Cycles). Each cycle determines the assessment areas and the courses linked to them, evaluating each course triennially.

exchange program have a more advantageous background, having more educated parents and studying outside the public Brazilian education system.

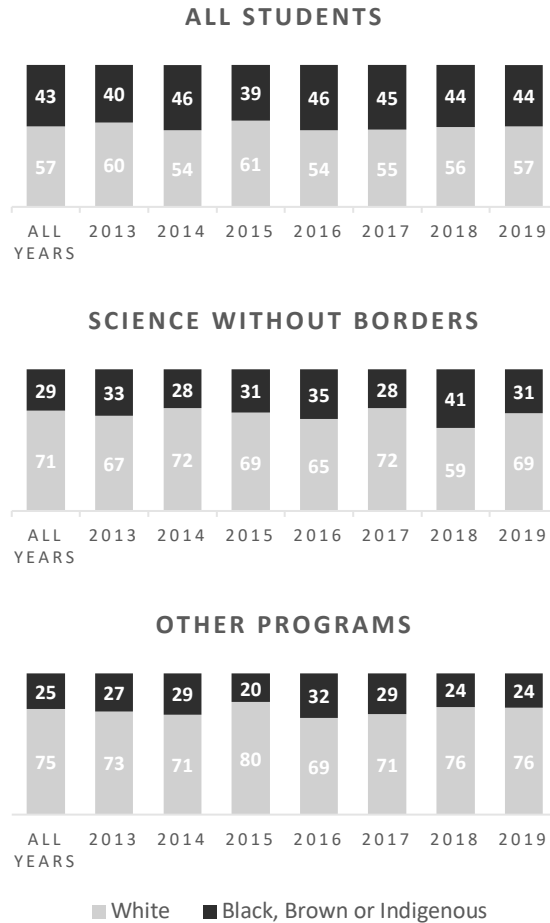


Figure 1.1 – Students’ characteristics by color/race and year

Source: ENADE microdata, 2013 to 2019.

Note. Figures represent percent shares. First Assessment Cycle: 2013, 2016, 2019; Second Assessment Cycle: 2014, 2017; Third Assessment Cycle: 2015, 2018.

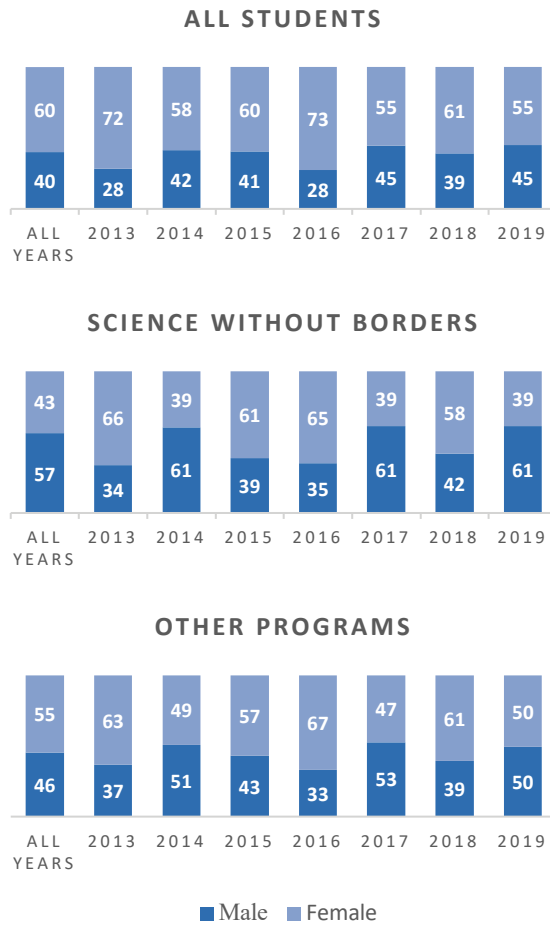


Figure 1.2 – Students’ characteristics by gender and year

Source: ENADE microdata, 2013 to 2019.

Note. Figures represent percent shares. First Assessment Cycle: 2013, 2016, 2019; Second Assessment Cycle: 2014, 2017; Third Assessment Cycle: 2015, 2018.

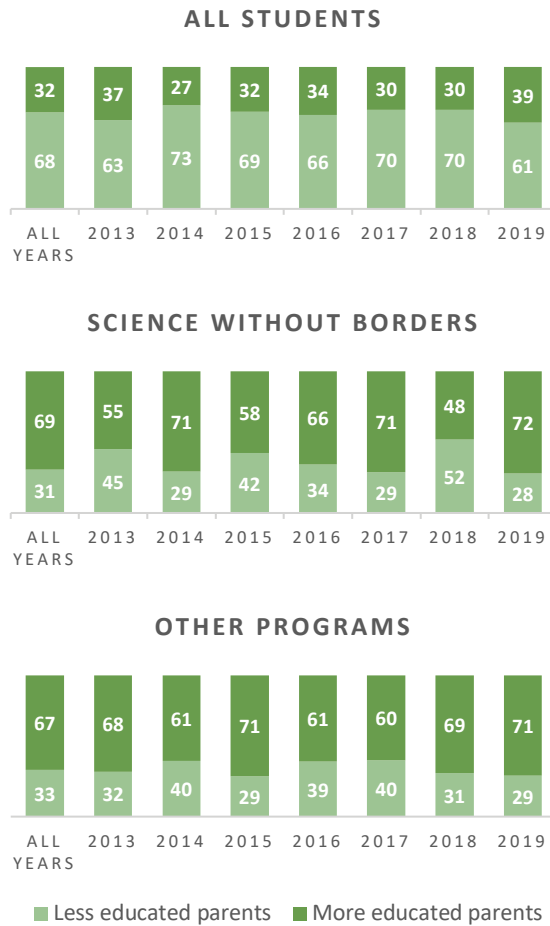


Figure 1.3 – Students’ characteristics by parent’s education

Source: ENADE microdata, 2013 to 2019.

Note. Figures represent percent shares. First Assessment Cycle: 2013, 2016, 2019; Second Assessment Cycle: 2014, 2017; Third Assessment Cycle: 2015, 2018.

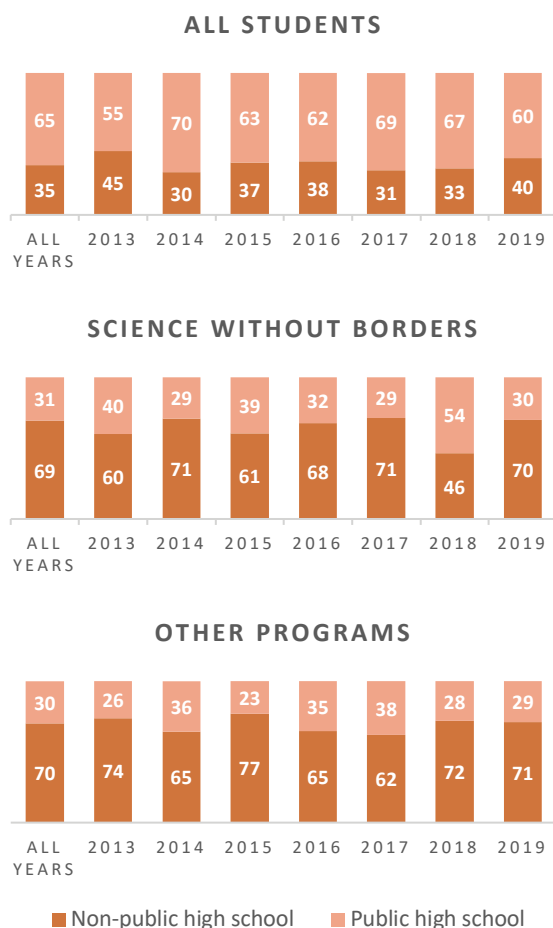


Figure 1.4 – Students’ characteristics by type of high school

Source: ENADE microdata, 2013 to 2019.

Note. Figures represent percent shares. ‘Public’ refers to students who studied only in public secondary high schools, while ‘non-public’ refers to those studying in either private, public/private, or abroad. First Assessment Cycle: 2013, 2016, 2019; Second Assessment Cycle: 2014, 2017; Third Assessment Cycle: 2015, 2018.

When aggregating the students into profiles based on color, gender, parent’s education, and type of high school, data shows that the most dominant profiles of the group responding to the ENADE socioeconomic questionnaire are those composed of women from public secondary schools whose parents did not complete higher education (Figure 1.5). Even though they represent 34% of all tertiary students, these women are significantly less represented in mobility programs (8% for the SwB beneficiaries and 11% for the other programs).

The most dominant female profile in mobility programs is white women with more educated parents, and from private schools, a profile even more predominant outside the SwB scope, most likely due to the SwB focus on more male-dominated courses, such as engineering, production, and construction. A similar trend happens in the case of males. Even though individuals from families with more vulnerable economic conditions constitute almost half of male students and 20% of total students, they represent less than 10% of mobile undergraduates.

In line with Feltrin *et al.* (2021) study, the most dominant profiles of mobiles are white males and females from families with more educated parents and better economic conditions. Even though these profiles are not overly represented when looking at all students replying to ENADE's socioeconomic questionnaire, they account for more than 40% of mobile students of both the SwB and other programs.

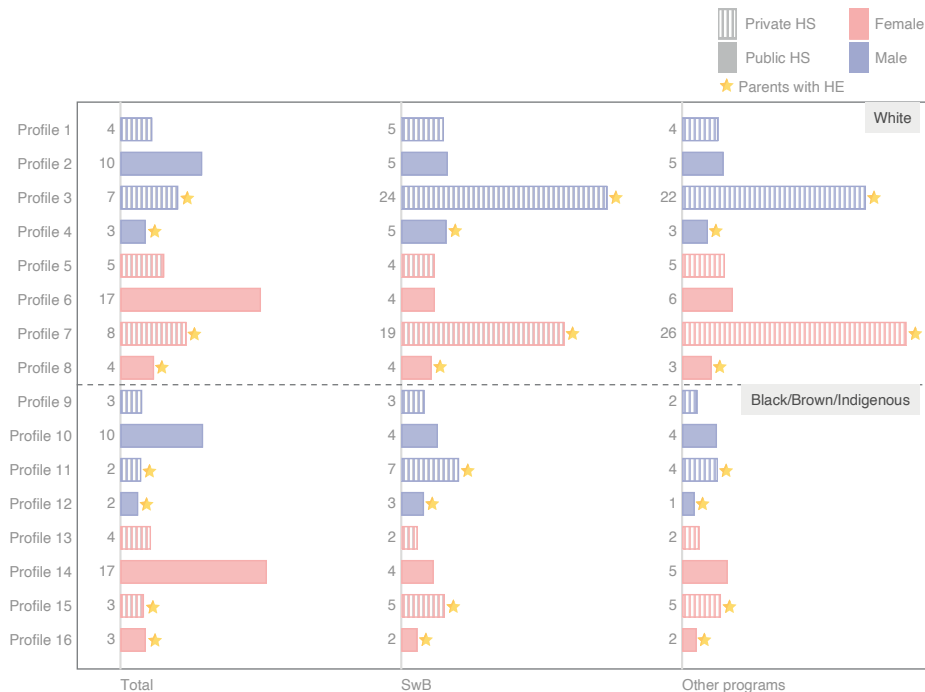


Figure 1.5 – Distribution of profiles of ENADE students by student groups

Source: ENADE microdata from 2013 to 2019.

Note. Figures represent percent shares. HS = high school; HE = higher education.

The ENADE microdata has several limitations,³ but its figures are in accordance with previous literature about student mobility, supporting the idea that exchange programs in the country may indeed be associated with increased inequality, an essential concern for the design of those programs.

1.3. Thesis structure and contribution

This dissertation aims to contribute to the literature on inequality and on student mobility by presenting a series of essays on both topics. In the first part, it analyzes attitudes toward inequality in Brazil, evaluating its potential drivers and the role played by international mobility in changing students' preferences and perceptions of inequality. The second part focuses on assessing the role that exchange programs have in improving human capital, measured through academic performance. The thesis is structured into three main chapters and a final chapter with the conclusions.

Chapter 2 provides the base to understand the potential determinants of inequality preferences in Brazil. It presents an overview of the literature on the topic, focusing on discussing the role that sociodemographic and economic individual characteristics have in shaping people's views. It uses secondary data from more than three thousand observations from a study on public opinion conducted by OXFAM, an international non-governmental organization, in partnership with Datafolha, a private Brazilian public opinion research institute.

Results show that race, an element overlooked in studies about attitudes toward inequality, plays a significant role when investigating inequality preferences in Brazil, with white people having lower odds of believing that reducing inequalities is essential for Brazil's progress compared with black, brown, indigenous, and others. We also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, we find that being educated is associated with higher odds of

³ Since the ENADE microdata does not cover students from all areas in all years (i.e., not all courses are represented every year of the exam), it is important to acknowledge that its sample may not represent the Brazilian population of mobility students yearly, as well as it is not suitable to analyze trends over the years. For this reason, a larger time frame was selected to allow covering each ENADE cycle more than once. It is also important to add that this analysis does not consider those students that did not complete the socioeconomic questionnaire, so bias related to a possible association between students' characteristics and a rejection to complete the questionnaire may occur. Even considering these limitations, the ENADE data is extremely rich, as it is one of the only datasets in Brazil including both socioeconomic information about students and information about participation in international student mobility. It is also rich in terms of its magnitude since it covers a broad range of Brazilian institutions in all regions of Brazil.

believing that reducing inequality is fundamental for progress while not finding a clear association between income and inequality views.

The analysis done in Chapter 2 contributes to the existing literature by focusing on Brazil, a very unequal country not widely explored by previous studies on inequality preferences. It also innovates by adding a racial component to the analysis, an element disregarded in previous studies about inequality perceptions but crucial in the structure of inequalities in Brazil. Given that politicians tend to implement policies that reflect public opinion to maximize their chances of re-election, understanding how people diverge in their views on inequality becomes essential. Identifying and reflecting on how groups react when asked about inequality can help understand its visibility (or lack of) on the public agenda, which is one step toward tackling the issue in the country.

Chapter 3 expands the analysis done in the previous chapter by examining the impact exchange programs have on changing students' attitudes toward inequality. The chapter focuses on two main dimensions: preference and perception of inequality. To provide causal evidence, it exploits primary data of more than a thousand students from a research intensive and internationalized Brazilian university collected through an online survey.

Using Propensity Score Matching to construct an artificial control group, results show that going abroad does not affect students' preferences regarding reducing within-country inequality. Still, international mobility affects students' salary preferences, with mobile students expressing a preference for higher salaries for high-skilled jobs. Results also show that mobility affects how individuals perceive current inequality, as those participating in mobility programs believe within-country inequality is smaller than their non-mobile counterparts.

Even though the literature about the impact of international student mobility is extensive, as well as the literature on attitudes towards inequality, this chapter contributes to the literature by being the first study addressing the effect of a study-abroad experience on students' preferences and perception of inequality empirically. It also fills a gap in studies about the potential impact of international mobility in a Latin American country, presenting empirical evidence that can be used to reflect on the role of those programs in shaping people's views.

Chapter 4 provides an empirical analysis of the role international student mobility has in improving human capital by examining the impact that the timing of

an exchange experience has on students' academic performance. It focuses on two facets of the temporal dimension: the moment in which students travel and the length of the period spent abroad. To provide causal evidence, the chapter exploits novel data from more than 10,000 students from a well-known and internationalized Brazilian university from 2010 to 2020.

By combing Propensity Score Matching with Difference in Differences techniques, results show that international mobility impacts groups of students differently. Students who travel closer to the end of their undergraduate courses benefit the most from the mobility experience, while negative effects are found for those who travel at the beginning of their university program. Results also show that, while student mobility impacts positively and significantly students who participate in programs lasting from one semester to one year, negative effects are associated with shorter periods abroad.

The analysis of this chapter presents empirical evidence that can be used to design or improve international student mobility programs, discussing when and for how long students should move abroad and providing insights to policymakers engaged in maximizing the effects of such programs. This kind of analysis is of utmost importance, given the heterogeneity of mobility programs in Brazil and the varied potential outcomes depending on the type of mobility experience.

The study addresses a gap in the literature, which is the study of the temporal dimension of exchange programs, i.e., timing and duration. Those are parameters that policymakers can adjust when designing or updating those programs to increase their efficiency. Even though the academic literature already acknowledges the temporal dimension of a study-abroad experience, there is a gap in studies asking whether there is a best moment or duration of a student mobility experience to increase students' performance.

Finally, Chapter 5 presents a final discussion about the main findings of this thesis, making suggestions for future research on the role of international student mobility.

REFERENCES

- Altbach, P. G., & Engberg, D. (2014). Global Student Mobility: The Changing Landscape. *International Higher Education*, 77, pp. 11–13. <https://doi.org/10.6017/ihe.2014.77.5676>
- Bilecen, B., & Van Mol, C. (2017). Introduction: international academic mobility and inequalities. *Journal of Ethnic and Migration Studies*, 43(8), 1241–1255, DOI: 10.1080/1369183X.2017.1300225
- Borges, R. A. (2015). *A interseccionalidade de gênero, raça e classe no Programa Ciência sem Fronteiras: um estudo sobre estudantes brasileiros com destino aos EUA* [Master's thesis, Universidade de Brasília].
- Brasil. (2011). *Decreto n. 7.642, de 13 de dezembro de 2011*. Retrieved February 29, 2016, from http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2011/Decreto/D7642.htm.
- Brasil. (2013). *Portaria Interministerial n.1, de 9 de janeiro de 2013*. Retrieved January 24, 2017, from http://www.cienciasemfronteiras.gov.br/documents/214072/5058435/MEC_MC TI_temas+prioritarios_Csf.pdf.
- Brasil. (2016). *Science without Borders Control Panel*. Retrieved March 21, 2016, from <http://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>.
- Contu, G., Frigau, L., Mola, F., Romano, M., & Conversano, C. (2020). University student achievements and international mobility - The case of University of Cagliari. *Electronic Journal of Applied Statistical Analysis*, 13(2), 474–497.
- d’Hombres, B., & Schnepf, S. V. (2021). International mobility of students in Italy and the UK: does it pay off and for whom? *Higher Education*, pp. 1–22.
- de Wit, H., & Altbach, P. G. (2021). Internationalization in higher education: Global trends and recommendations for its future. *Policy Reviews in Higher Education*, 5(1), 28–46. <https://doi.org/10.1080/23322969.2020.1820898>
- Di Pietro, G. (2013). Do Study Abroad Programs Enhance the Employability of Graduates? *IZA Discussion Papers Series*.
- Di Pietro, G. (2019). University study abroad and graduates' employability. *IZA World of Labor 2019*, 109, <https://doi.org/10.15185/izawol.109.v2>

- Di Pietro, G. (2020). Changes in socioeconomic inequality in access to study abroad programs: A cross-country analysis. *Research in Social Stratification and Mobility*, 66, 100465.
- Engberg, D., Glover, G., Rumbley, L., & Altbach, P. (2014). *The rationale for sponsoring students to undertake international study: an assessment of national student mobility scholarship programmes*. Retrieved August 15, 2022, from http://www.britishcouncil.org/sites/britishcouncil.uk2/files/e002_outward_mobility_study_final_v2_web.pdf
- European Commission. (2016). *The Erasmus Impact Study: Regional Analysis*, Luxembourg, Publications Office of the European Union.
- Feltrin, R. B., Santos, D. F. D., & Velho, L. M. L. S. (2021). O papel do Ciência Sem Fronteiras na inclusão social: análise interseccional do perfil dos beneficiários do programa na Unicamp. *Avaliação: Revista da Avaliação da Educação Superior* (Campinas), 26, pp. 288–314.
- Gomes, C. B. T. (2020). O efeito do capital escolar no acesso ao Programa Ciência sem Fronteiras. *ETD-Educação Temática Digital*, 22(2), 336–353.
- Granja, C. D., & Carneiro, A. M. (2020). EU-Brazil Cooperation: The Science without Borders Programme Experience. In *Building Higher Education Cooperation with the EU* (pp. 129–145). Brill Sense.
- Guruz, K. (2008). *Higher Education and International Student Mobility in the Global Knowledge Economy*. SUNY Press.
- Junor, S., & Usher, A. (2008). *Student Mobility & Credit Transfer: A National and Global Survey*. Educational Policy Institute (NJ1).
- Knight, J. (2004). Internationalization remodeled: Definition, approaches, and rationales. *Journal of Studies in International Education*, 8(1), 5–31. <https://doi.org/10.1177/1028315303260832>
- Knight, J. (2012). Student Mobility and Internationalization: Trends and tribulations. *Research in Comparative and International Education*, 7(1), 20–33. <https://doi.org/10.2304/rcie.2012.7.1.20>
- Koeller, P., Viotti, R. B., & Rauen, A. T. (2016). Dispêndios do Governo Federal em C&T e P&D: esforços e perspectivas recentes. *Radar*, n. 48, pp. 13–18. Retrieved March 21, 2017, from http://www.ipea.gov.br/portal/images/stories/PDFs/radar/20170110_radar_48_art2.pdf
- Kratz, F., & Netz, N. (2018). Which mechanisms explain monetary returns to international student mobility? *Studies in Higher Education*, 43(2), 375–400.
- Lopes, A. D. (2020). International mobility and education inequality among Brazilian undergraduate students. *Higher Education*, pp. 1–18.

- Lörz, M., Netz, N., & Quast, H. (2016). Why do students from underprivileged families less often intend to study abroad? *Higher Education*, 72(2), 153-174.
- Luo, J., & Jamieson-Drake, D. (2015). Predictors of study abroad intent, participation, and college outcomes. *Research in higher education*, 56(1), 29–56.
- Marques, F. (2017). Experiência encerrada: o programa de intercâmbio Ciência sem Fronteiras, que gastou R\$ 13,2 bilhões, a maior parte com bolsas de Graduação no exterior, deixa de existir. *Revista Fapesp*, São Paulo, 256, pp. 2–9.
- Meya, J., & Suntheim, K. (2014). The second dividend of studying abroad: The impact of international student mobility on academic performance. *CEGE Discussion Papers*, (215).
- Nassif Pires, L., Carvalho, L. B. D., & Lederman Rawet, E. (2021). Multi-dimensional inequality and Covid-19 in Brazil. *Investigación económica*, 80(315), 33–58.
- Netz, N., & Finger, C. (2016). New horizontal inequalities in German higher education? Social selectivity of studying abroad between 1991 and 2012. *Sociology of Education*, 89(2), 79–98.
- Orr, D., Gwosc, C., & Netz, N. (2011). *Social and Economic Conditions of Student Life in Europe: Synopsis of indicators-Final report-Eurostudent IV 2008-2011* (p. 228). W. Bertelsmann Verlag.
- Schnepf, S. V., & Colagrossi, M. (2020). Is unequal uptake of Erasmus mobility really only due to students' choices? The role of selection into universities and fields of study. *Journal of European Social Policy*, 30(4), 436-451.
- Sorrenti, G. (2017). The Spanish or the German apartment? Study abroad related outcomes and its recognition by the labour market. *Economics of Education Review*, 60, pp. 142–158.
- UNESCO. (2022a). *Moving minds: Opportunities and challenges for virtual student mobility in a post-pandemic world*. Retrieved August 11, 2022, from https://www.iesalc.unesco.org/wp-content/uploads/2022/03/IESALC_220315_RE_VSM_EN.pdf
- UNESCO. (2022b). *Outbound internationally mobile students by host region*. Retrieved June 18, 2021, from <http://data.uis.unesco.org>
- Waibel, S., Rieger, H., Ette, A., & Sauer, L. (2017). Career consequences of transnational educational mobility: A systematic literature review. *Educational Research Review*, 20, 81-98.
- Wang, Z., Crawford, I., & Liu, L. (2019). Higher achievers? Mobility programmes, generic skills, and academic learning: a U.K. case study. *Intercultural Education*, 31(1).

World Bank. (2018). *Gini index*. World Development Indicators (WDI). Retrieved June 29, from <https://data.worldbank.org/indicator/SI.POV.GINI>

Zimmermann, J., & Neyer, F. J. (2013). Do we become a different person when hitting the road? Personality development of sojourners. *Journal of Personality and Social Psychology*, 105(3), 515–530. <https://doi.org/10.1037/a0033019>

2

INEQUALITY PREFERENCES IN BRAZIL: AN ANALYSIS OF A HIGHLY UNEQUAL COUNTRY⁴

ABSTRACT

This study looks at the elements of inequality preferences, focusing on testing the role of sociodemographic and economic individual characteristics in the Brazilian context. The analysis is performed using micro-data of a survey conducted by an international non-governmental organization in partnership with a Brazilian private research institute. We find that race, an element overlooked in studies about attitudes toward inequality, plays a significant role when investigating inequality preferences in Brazil, with white people having lower odds of believing that reducing inequalities is essential for Brazil's progress compared with black, brown, indigenous, and others. We also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, being educated is associated with higher odds of believing that reducing inequality is fundamental for progress, while we do not find a clear association between income and inequality views. Since elected officials tend to implement policies that reflect public opinion to maximize their chances of re-election, understanding how people diverge in their views on inequality is key, being one step toward tackling the issue in the country.

Keywords: Equality of income; Redistribution; Role of the government; Preferences

JEL Classification: D31; D63; H23; I24

⁴ An alternative version of this chapter, focused on the role of race, is currently in the process of submission to a Brazilian journal. Also, a preliminary version of the chapter was published as a UNU-MERIT working paper (#2021-009).

2.1. Introduction

Understanding public views on what is considered (un)fair is fundamental, as it has several policymaking implications. As the literature suggests, there is increasing evidence that the demand of constituents influences politicians (Lubker, 2004; Kim *et al.*, 2017; Oxfam, 2017), as elected officials tend to implement policies that reflect public opinion to maximize their chances of re-election (Andersen & Yaish, 2012).

Previous literature has identified several potential individual drivers of inequality preferences. Among them, we can mention income and occupation (Ohtake, 2008; Medgyesi, 2013; Guillaud, 2013; Curtis & Andersen, 2015; Jaime-Castillo & Saez-Lozano, 2016; Reeves & Mager, 2018; Roex *et al.*, 2018); subjective social position (Guillaud, 2013); past experiences (Guillaud, 2013); future experiences expectation (Wu & Chou, 2017); gender (Dallinger, 2010; Hjerm & Schnabel, 2012; Guillaud, 2013; Wulfgramm & Starke, 2016); religion (Guillaud, 2013); age (Saar, 2008; Hjerm & Schnabel, 2012); and education (Dallinger, 2010; Hjerm & Schnabel, 2012; Roex *et al.*, 2018).

This chapter conducts a pooled cross-sectional analysis of inequality preferences, focusing on Brazil. We use recent data from two editions of a study conducted by Oxfam – an international non-governmental organization – and Datafolha – a private Brazilian research institute. We focus on testing the role of sociodemographic and economic individual characteristics in the Brazilian context, using Ordered Logistic Regressions. We find that race, an element overlooked in studies about attitudes toward inequality, plays a significant role when investigating inequality preferences in Brazil, with white people having lower odds of believing that reducing inequalities is essential for Brazil’s progress compared with black, brown, indigenous, and others. We also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, we find that being educated is associated with higher odds of believing that reducing inequality is fundamental for progress while not finding a clear association between income (a common explanatory factor) and inequality views.

The study contributes to the existing literature by focusing on Brazil, a particularly well-suited research context, as it is one of the most unequal countries in the world (World Bank, 2018). At the same time, little is known about Brazilians’

preferences on inequality. As pointed out by the literature, studies on public opinion toward redistribution tend to be carried out predominantly in developed countries (Morgan & Kelly, 2010; Franetovic & Castillo, 2022), while ironically, regions such as Latin America are the ones with the greatest problems in terms of distribution (Franetovic & Castillo, 2022).⁵ Understanding people's views on inequality in Brazil is one step toward tackling the issue in the country.

This chapter is divided as follows. First, it summarizes the main drivers of inequality preferences discussed by the academic literature. Then, it sums up the data and empirical strategy used in this study. Last, it shows the most important results, followed by a discussion of the main findings and conclusions.

2.2. The determinants of inequality preferences

Despite the effort to change the current global scenario and narrow disparities of opportunity, income, and power, reducing inequality within and between countries is still a significant concern worldwide and was translated as one of the 17 Sustainable Development Goals (United Nations, 2019).

Economic inequality is one of the many facets of inequality, which has recently received more attention in the media and research (Wiwad *et al.*, 2019). This growing interest is related to the aim of quantifying inequality within society and understanding how it is maintained through perceptions and attitudes (Wiwad *et al.*, 2019). How people perceive inequality can vary between societies (Lubker, 2004; 2007) and over the years, according to individuals' beliefs and their political, economic, and social conditions (Austen, 2002). By looking at the literature on the topic, we can identify several individual factors potentially associated with inequality preferences.

For instance, following a rational approach, it has been shown that people with lower levels of income, as well as those working in occupations that require fewer skills, are more likely to believe that inequality should be decreased (Ohtake, 2008; Guillaud, 2013; Medgyesi, 2013; Curtis & Andersen, 2015; Jaime-Castillo & Saez-Lozano, 2016; Reeves & Mager, 2018; Roex *et al.*, 2018). In studies about redistributive preferences, income is the most traditional determining factor used to express individuals' self-interest (Franetovic & Castillo, 2022).

⁵ Brazil, for instance, does not participate in the International Social Survey Programme (ISSP), one of the most common cross-country studies used to analyze inequality preferences. Currently, among all 44 members of the ISSP, only 4 (out of 33 States) are in the Latin American and Caribbean region (Mexico, Chile, Suriname, and Venezuela).

Subjective factors such as social position and the expectation and experience with social mobility were also identified as potential drivers of inequality preferences. In a study from Guillaud (2013) using data from the International Social Survey Program for 33 democracies, for instance, the author shows that individuals expressing the feeling of belonging to the upper class are less inclined to favor redistribution than those who subjectively belong to the middle class. The author also shows that those who experienced downward mobility in the past are more likely to support redistribution, whereas people who have experienced upward mobility are less likely to support it (Guillaud, 2013). In Wu and Chou (2017), the authors studied Hong Kong society, showing that people who foresee themselves as more economically vulnerable tend to support more governance assistance to reduce income inequality.

Beyond economic factors, sociodemographic characteristics have also been identified as potential determinants of redistributive views. Several studies, for instance, discussed the role of gender, showing that women tend to favor redistribution more than men (Dallinger, 2010; Hjerm & Schnabel, 2012; Guillaud, 2013; Wulfgramm & Starke, 2016). In the same line, Jaime-Castillo *et al.* (2016) indicated that not only a gender gap in attitudes exists, but the size of the gap can differ by country. The authors analyzed data from the World Values Survey from 86 countries and observed that the difference between men and women regarding their attitudes towards redistribution is lower in more religious countries. Studies also found a positive relationship between age and acceptance of redistribution (Saar, 2008; Hjerm & Schnabel, 2012), as well as a negative association between education and support for redistribution (Dallinger, 2010; Hjerm & Schnabel, 2012; Roex *et al.*, 2018).

Concerning social values and ideology, Roex *et al.* (2018) and Garcia-Sanchez *et al.* (2019) showed that beliefs in meritocracy (i.e., that individuals' efforts lead to success) are associated with decreased expectations for income governmental redistribution actions. In addition, there is also evidence regarding the influence of religion and political ideology, with Catholics and Protestants being less in favor of redistribution than people with no religion (Guillaud, 2013) and with those who identify with left-wing parties tending to support redistribution toward the poor while right-wing voters towards the rich (Jaime-Castillo & Saez-Lozano, 2016).

One can say that, overall, the literature on attitudes towards inequality is extensive, identifying several potential economic and social factors associated with preferences for redistribution. However, despite the amount of work on the topic, only a few studies focused on Latin American countries. As mentioned in the Introduction of this chapter, studies on public opinion toward redistribution are carried out mainly in more developed regions (Morgan & Kelly, 2010; Franetovic & Castillo, 2022), while regions such as Latin America are the ones experiencing the most serious distribution problems (Franetovic & Castillo, 2022).

The importance of having empirical studies focused on Latin American countries is because previous evidence shows that the people in the region do not always follow traditional trends. For instance, using data from the Latin American Public Opinion Project (LAPOP) survey between 2008 and 2018, Franetovic and Castillo (2022) find that “people’s income, a traditional determinant in the configuration of redistributive preferences, does not generate major differences in the demand for redistribution within the region” (p. 14). According to the authors, “educational level and ideological factors, such as political ideology and confidence in the political system are much more influential variables” (p.14). Contrasting the literature mentioned above, they found that higher educational levels are actually associated with more (and not less, as those studies suggest) support for redistribution in Latin American countries.

Another example of how considering regional specificities is essential is the work of Morgan and Kelly (2010). They use data from the 2008 Americas Barometer survey data from 22 countries to investigate the factors shaping Latin American attitudes about the state’s role in reducing inequality. Their results show that while factors such as economic evaluations, personal wealth, trust in government, and assessments of government performance follow expected trends, perceptions of crime (i.e., seeing crime as a problem), a neglected element in studies about the topic, are important in increasing support for redistribution in the region. They argue that, while opinions on crime may not be essential to understanding welfare attitudes in wealthier countries, they are an important element in the developing world.

A third example is a study from Berens (2015), where the author investigates the extent to which labor market dualization (i.e., formal vs. informal) polarizes preferences on redistribution in Latin America and the Caribbean, a region with a structural horizontal divide among the working population. Using data from the LAPOP survey in 2008 and 2010, the author finds that informal sector workers in

the region are not driven by short-term economic self-interest. Thus, contrasting the theories about rational choice, their work shows that the insecure labor market position of informal workers is not translated into preferences for redistribution.

This study intends to contribute to the literature on attitudes toward inequality in Latin America by focusing on Brazil, a country with high levels of inequalities between individuals (vertical inequality) and groups (horizontal inequality). Together with Chile, Colombia, Honduras and Paraguay, Brazil can be understood as what Assusa (2022) calls a ‘reactive moral economy’. Countries in this category “combine more unequal social structures with a high perception of and social conflict over inequality, with a state-lead consensus and strong political opposition to inequality, as well as an explicit thematization of inequality in the public arena” (p.200). With the country context in mind, our main motivation is to test the association between inequality preferences and individual characteristics, focusing on sociodemographic and economic objective factors, such as race, age, gender, civil status, education, income, and occupation.

2.3. Methodology

This section details the methodology used for the empirical analysis. It first describes the data source and the variables, followed by explaining the estimation process.

2.3.1. Data

To explore the association between sociodemographic and economic variables and inequality preferences in Brazil, we use data from a study called *Nós e as Desigualdades* (We and the Inequalities, in Portuguese). This study records Brazilians’ public opinion on inequality in the country and is carried out every two years through a partnership between Oxfam (an international non-governmental organization) and Datafolha (a private Brazilian public opinion research institute). This study has been carried out through the personal approach of the interviewees at places with relevant population flow since 2017. Data were collected in more than 100 small, medium, and large cities, including metropolitan regions and cities in the country’s interior and the final sample was selected to reflect the profile of Brazilian society according to the Census in terms of gender, age, schooling, race, region, type, and size of the municipality.⁶

⁶ The full anonymized microdata is publicly available at Oxfam Brazil website, available at: <https://www.oxfam.org.br/um-retrato-das-desigualdades-brasileiras/pesquisa-nos-e-as-desigualdades/>.

The data used in this study correspond to a pooled cross-section composed of the two most recent editions of the survey, published in 2019 (data collected in February 2019) and 2021 (data collected in December 2020).⁷ Different individuals were interviewed in each version of the survey.

As variables of interest, we analyze inequality preferences using two questions from the survey. The first is the individual's opinion on the statement that "reducing differences between rich and poor is fundamental for the progress of Brazil."⁸ The second is their opinion on the statement that "in a country like Brazil, the government must narrow the gap between very rich and very poor people."⁹ Both variables can take the values of 1 (Completely Disagree), 2 (Partially Disagree), 3 (Neither Agree nor Disagree), 4 (Partially Agree) or 5 (Completely Agree).

The figures below show the distribution of answers to both questions. In both years, the majority of the sample agreed (completely or partially) that reducing inequality is fundamental for the progress of Brazil (Figure 2.1), as well as that the government has the role of lowering gaps between very rich and very poor people (Figure 2.2).

⁷ It was not possible to include the dataset of 2017 in the analysis because the documentation about the 2017 dataset available on the institution's website was incomplete (i.e., the survey questions and answers coding were missing). The authors contacted the organization to ask for the missing information, but there has been no reply up to the present moment.

⁸ Statement translated from Portuguese to English by the authors (original version: "*Para o Brasil progredir é fundamental reduzir a diferença econômica entre ricos e pobres*").

⁹ Statement translated from Portuguese to English by the authors (original version: "*Em um país como o Brasil, é obrigação dos governos diminuir a diferença entre as pessoas muito ricas e as pessoas muito pobres*").

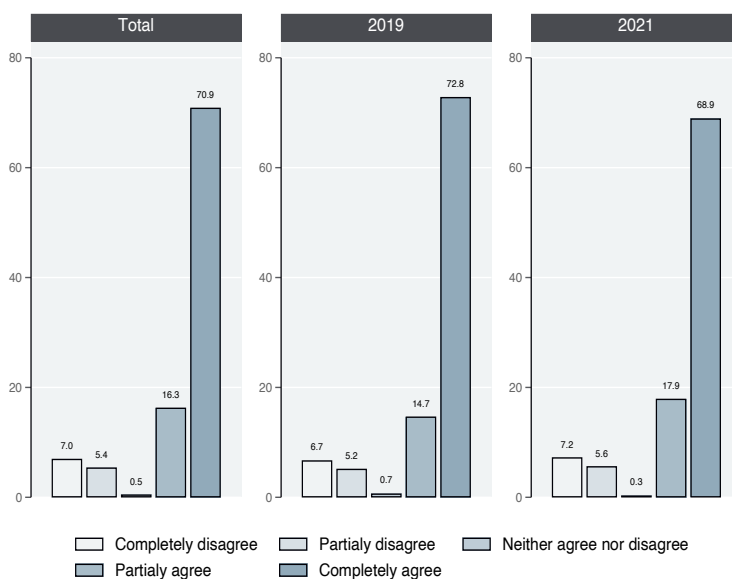


Figure 2.1 – Opinion about the statement that reducing differences between rich and poor is fundamental for the progress of Brazil

Source: Based on OXFAM (2019; 2021).

Note. Figures calculated using sample weights.

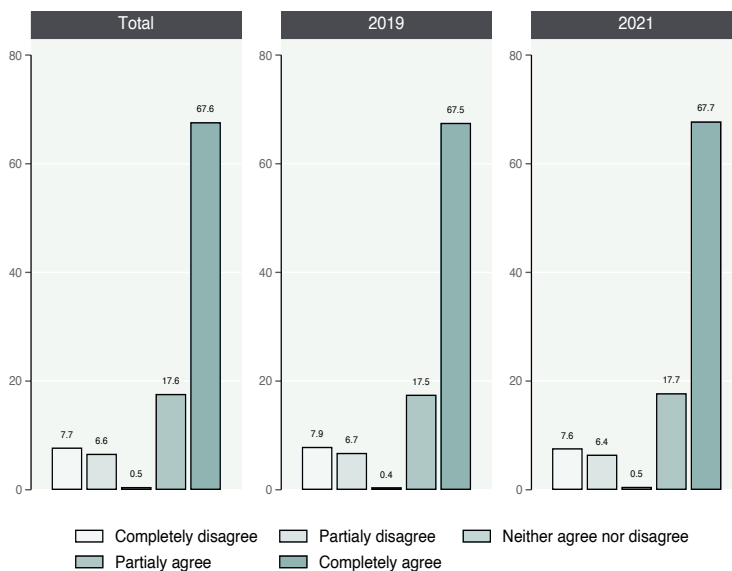


Figure 2.2 – Opinion about the statement that in a country as Brazil, the government must narrow the gap between very rich and very poor people

Source: Based on OXFAM (2019; 2021).

Note. Figures calculated using sample weights.

A set of variables is selected from the dataset to compose the group of explanatory and control factors, considering the data availability (Table 2.1). Table 2.2 presents the summary statistics of all the variables used in our model.

Table 2.1 – Variables description

Variable	Measure
Race	1 if self-reported as white; 0 if otherwise (i.e., black, brown, indigenous and others)
Age	1 if less than 18; 2 if between 18 and 24; 3 if between 25 and 34; 4 if between 35 and 44; 5 if between 45 and 54; and 6 if 55 and over
Gender	1 if female; 0 if male
Civil status	1 if married/living with partner; 0 otherwise
Education level completed	0 if none; 1 if primary; 2 if secondary; 3 if tertiary
Income percapita	Per capita income of the household in Brazilian Reais (BRL), divided into quintiles
Occupation	0 if unemployed; 1 if salaried employee; 2 if civil servant; 3 if self-employed; 4 if freelancer/casual; 5 if student only; 6 if retired; 7 if housewife; 8 if others
Social mobility experienced in the past 5 years	0 if experienced no mobility; 1 if upward mobility; 2 if downward
Expectation of future social mobility in the next 5 years	0 if expects no mobility; 1 if upward mobility; 2 if downward
Religion	0 if the individual does not have a religion; 1 if Catholic (the dominant religion in Brazil); 2 if others
Meritocratic beliefs	1 if agrees (completely or partially) with the statement: “In Brazil, a person from a poor family who works hard has the same chance of having a successful life as a person born rich who works hard;” ¹⁰ 0 if disagrees (completely or partially)

Table 2.2 – Summary statistics

Variables	Total		2019		2021	
	Freq.	%	Freq.	%	Freq.	%
Race						
White	1342	32	686	33	656	32
Black	1750	42	892	43	859	41
Brown	636	15	309	15	327	16
Others	437	10	200	10	237	11
Age						
less than 18	130	3	71	3	59	3
18 - 24	623	15	320	15	303	15
25 - 34	807	19	409	20	398	19
35 - 44	816	20	409	20	408	20
45 - 54	676	16	329	16	348	17
55 and over	1112	27	549	26	564	27
Civil status						
Married	1831	44	943	45	888	43
Otherwise	2334	56	1143	55	1191	57
Gender						
Male	1972	47	988	47	984	47
Female	2193	53	1098	53	1095	53
Education						

¹⁰ Statement translated from Portuguese to English by the authors (original version: “No Brasil, uma pessoa de família pobre e que trabalha muito tem a mesma chance de ter uma vida bem-sucedida que uma pessoa nascida rica e que trabalha muito”).

Variables	Total		2019		2021	
	Freq.	%	Freq.	%	Freq.	%
No education	419	10	247	12	172	8
Primary	1436	34	708	34	728	35
Secondary	1756	42	868	42	888	43
Tertiary	554	13	262	13	292	14
Income percapita quintiles (in BRL)						
1 st quintile	840	21	426	21	413	21
2 nd quintile	809	20	385	19	425	21
3 rd quintile	794	20	385	19	409	21
4 th quintile	799	20	437	22	362	18
5 th quintile	737	19	356	18	382	19
Main occupation						
Unemployed	531	13	270	13	261	13
Salaried employee	1182	28	573	27	609	29
Civil servant	253	6	109	5	144	7
Self employed	371	9	204	10	167	8
Freelancer/Casual	586	14	275	13	311	15
Student	208	5	118	6	90	4
Retired	473	11	219	11	254	12
Housewife	276	7	156	7	121	6
Others	284	7	162	8	122	6
Expectation of future social mobility						
No mobility	1143	28	540	27	604	30
Upward	2704	67	1387	69	1318	65
Downward	173	4	71	4	102	5
Social mobility experienced in the past						
No mobility	2437	59	1198	58	1239	60
Upward	974	24	510	25	464	22
Downward	731	18	362	17	369	18
Meritocratic views						
Disagree	2442	60	1195	58	1247	61
Agree	1662	40	851	42	811	39
Religion						
No religion	546	13	265	13	280	14
Catholics	2149	52	1075	52	1073	52
Other religions	1447	35	736	35	711	34

Source: Based on OXFAM (2019; 2021).

Note. Figures calculated using sample weights. All variables listed in the table are categorical.

2.3.2. Estimation process

The estimation process is done through Ordered Logistic Regressions, inspired by the empirical strategy from Guillaud (2013). The choice of strategy is because our dependent variables encompass discrete choices, which can be ordered on a Likert scale. As pointed by Guillaud (2013, p.65): “the presence of a Likert scale calls for the use of categorical dependent variable regression models.”

The complete equation is defined as follows:

$$\begin{aligned}
 Y_i^* = & \beta_1 Socio_dem_i + \beta_2 Econ_obj_i + \gamma Econ_sub_i + \theta Values_i \\
 & + \mu Region_i + \alpha Year_i + \rho(Region_i * Year_i) \\
 & + \epsilon_i
 \end{aligned} \tag{2.1}$$

Where Y_i^* is the categorical dependent variable for individual i , which can take values in a Likert scale; $Socio_dem_i$ is a vector of sociodemographic explanatory variables (race, age, civil status, gender, education, and interaction between gender and race); $Econ_obj_i$ is a vector of objective economic factors (income per capita quintiles and occupation); $Econ_sub_i$ is a vector of controls for subjective economic factors (social mobility experienced in the past and expectation of future social mobility); $Values_i$ is a vector of social value control variables (meritocratic beliefs and religion); and ϵ_i is the error term. To control for potential differences related to the place of residence and time of the data collection, we also include controls for the Brazilian region, survey year, and interaction between both.

We estimate the model for four different specifications. Specification 1 considers a base model with only sociodemographic explanatory variables. Specification 2 adds the objective economic factors. Specification 3 adds controls for the subjective economic factors. Finally, specification 4 adds controls for people's values. Selecting several specifications for the regressions allows the robustness of the impact of the variables to be assessed.

2.4. Results

This section shows the results of our estimations. We show the regression results, followed by a discussion of the model's main assumption and a robustness test.

2.4.1. Regression results

The tables below present the results for the Ordered Logistic Regressions (based on Equation 2.1). For all specifications, results are shown as odds ratios.

Regarding the opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil,” two results stand out from the analysis. The first is regarding the role of race. In all specifications, being white is associated with lower odds of stating that reducing inequalities is fundamental for the country's progress when compared to black, brown, indigenous, and others (Table 2.3). When detailing the results considering different races (Table 2.4), results show that higher odds of believing that reducing inequalities is fundamental are associated with individuals self-declared as black. Results have similar magnitudes across different specifications, even after adding economic (objective and subjective) factors and values.

In addition to race, education is also a factor showing a significant association with the opinion on the importance of reducing the gap between rich and poor. Results show that those with higher levels of education have higher odds of believing that reducing inequality is essential for the country's progress when compared with those with no education completed. The magnitude of the coefficients varies slightly across different educational levels, with higher odds associated, on average, with individuals who completed tertiary education. The conclusion on the role of education remains consistent even after controlling for economic objective and subjective factors and values.¹¹

Table 2.3 – Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil” (pooled year results)

	(1)	(2)	(3)	(4)
White	0.640*** (0.0745)	0.663*** (0.0776)	0.652*** (0.0766)	0.647*** (0.0764)
Age (ref: less than 18)				
18 - 24	0.815 (0.183)	0.788 (0.179)	0.784 (0.179)	0.784 (0.179)
25 - 34	0.930 (0.209)	0.899 (0.210)	0.893 (0.209)	0.905 (0.213)
35 - 44	1.016 (0.232)	0.984 (0.234)	0.967 (0.231)	0.992 (0.239)
45 - 54	1.185 (0.275)	1.132 (0.275)	1.092 (0.267)	1.097 (0.271)
55 and over	0.950 (0.214)	0.917 (0.222)	0.861 (0.212)	0.867 (0.216)
Married	1.140* (0.0901)	1.135 (0.0905)	1.129 (0.0902)	1.134 (0.0906)
Female	1.196 (0.152)	1.200 (0.156)	1.208 (0.157)	1.228 (0.161)
Non-white female	0.795 (0.124)	0.821 (0.129)	0.815 (0.128)	0.809 (0.128)
Education (ref. no education)				
Primary	1.600*** (0.224)	1.587*** (0.227)	1.608*** (0.232)	1.607*** (0.232)
Secondary	1.721*** (0.237)	1.660*** (0.244)	1.680*** (0.249)	1.666*** (0.247)
Tertiary	1.957*** (0.310)	1.860*** (0.338)	1.859*** (0.340)	1.798*** (0.328)
Income quintiles (ref: 1 st quintile)				
2 nd quintile		1.178 (0.140)	1.165 (0.139)	1.142 (0.137)
3 rd quintile		1.169 (0.143)	1.157 (0.142)	1.146 (0.141)
4 th quintile		1.140 (0.148)	1.133 (0.147)	1.100 (0.144)
5 th quintile		1.050	1.041	1.014

¹¹ A significant association is also found for the “Others” occupation category, those expecting downwards future social mobility, and those who believe in meritocracy. In the case of occupation, since the significant category corresponds to a mix of several different occupations with a small number of respondents each, we decided not to interpret the significant association for this specific variable. Moreover, since this study focuses on objective variables, subjective variables which could be potentially endogenous to the model, like people's expectations/beliefs, are added only as controls for a robustness check and will not be the focus of our analysis.

Inequality Preferences in Brazil

	(1)	(2)	(3)	(4)
		(0.150)	(0.150)	(0.146)
Occupation (ref. unemployed)				
Salaried employee		0.976 (0.125)	0.986 (0.128)	0.970 (0.126)
Civil servant		1.218 (0.244)	1.202 (0.242)	1.191 (0.238)
Self-employed		0.825 (0.137)	0.835 (0.140)	0.843 (0.141)
Freelancer/Casual		0.913 (0.132)	0.925 (0.134)	0.927 (0.134)
Student		0.849 (0.167)	0.845 (0.167)	0.835 (0.166)
Retired		0.946 (0.176)	0.919 (0.172)	0.909 (0.171)
Housewife		0.767 (0.136)	0.768 (0.136)	0.780 (0.139)
Others		0.692** (0.124)	0.700** (0.126)	0.699** (0.126)
Expectation of future social mobility (ref. no mobility)				
Upward			0.939 (0.0890)	0.953 (0.0906)
Downward			1.510** (0.279)	1.486** (0.278)
Social mobility experienced in the past (ref. no mobility)				
Upward			0.896 (0.0798)	0.926 (0.0832)
Downward			0.927 (0.0937)	0.928 (0.0944)
Meritocratic beliefs				0.711*** (0.0535)
Religion (ref. no religion)				
Catholics				0.957 (0.115)
Other religions				0.880 (0.110)
Observations	3735	3735	3735	3735
Pseudo R-squared	0.0107	0.0130	0.0142	0.0177
Chi-squared	66.44	83.01	89.40	111.6

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.4 – Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil” (race disaggregation)

	(1)	(2)	(3)	(4)
Race (ref. white)				
Brown	1.539*** (0.187)	1.491*** (0.182)	1.516*** (0.186)	1.522*** (0.187)
Black	1.850*** (0.271)	1.776*** (0.262)	1.810*** (0.267)	1.823*** (0.271)
Others	1.280 (0.200)	1.237 (0.194)	1.255 (0.197)	1.283 (0.203)
Observations	3735	3735	3735	3735
Pseudo R-squared	0.0116	0.0139	0.0151	0.0185
Chi-squared	72.22	88.31	94.93	116.4

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. (1) is the specification with only sociodemographic variables; (2) includes the objective economic factors; (3) includes the subjective economic factors; and (4) is the complete specification, which includes people’s values. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

When looking at the opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people” (Table 2.5), most socioeconomic variables do not present a significant association that is consistent across all specifications. Still, some interesting trends can be observed.

For instance, in the case of the variable determining race, even though we observe no significant association when comparing whites versus the full group of non-whites, if we disaggregate the non-whites into different races (Table 2.6), results show those self-declared as black actually have higher odds of believing that the government should reduce inequalities, even though the remaining non-whites do not show a significant association with our variable of interest.

We also observe a significant association when looking at the individual’s occupation, with those who classify their occupation as ‘student’ being the only ones with higher odds of agreeing with the statement. The positive association remains even after controlling for subjective views (such as views on economic status and values).

Table 2.5 – Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people” (pooled year results)

	(1)	(2)	(3)	(4)
White	0.883 (0.0985)	0.902 (0.101)	0.894 (0.100)	0.888 (0.0997)
Age (ref: less than 18)				
18 - 24	1.065 (0.225)	1.229 (0.264)	1.235 (0.266)	1.245 (0.269)
25 - 34	1.063 (0.222)	1.299 (0.283)	1.297 (0.283)	1.323 (0.290)
35 - 44	1.208 (0.256)	1.485* (0.331)	1.475* (0.329)	1.531* (0.343)

Inequality Preferences in Brazil

	(1)	(2)	(3)	(4)
45 - 54	1.228 (0.264)	1.511* (0.342)	1.485* (0.338)	1.527* (0.350)
55 and over	1.377 (0.291)	1.772** (0.408)	1.716** (0.399)	1.763** (0.413)
Married	0.892 (0.0670)	0.889 (0.0676)	0.887 (0.0676)	0.885 (0.0675)
Female	0.945 (0.115)	0.946 (0.117)	0.951 (0.118)	0.967 (0.121)
Non-white female	1.009 (0.151)	1.038 (0.156)	1.035 (0.155)	1.023 (0.154)
Education (ref. no education)				
Primary	1.101 (0.161)	1.089 (0.162)	1.093 (0.162)	1.086 (0.162)
Secondary	1.279* (0.187)	1.255 (0.191)	1.256 (0.192)	1.235 (0.190)
Tertiary	1.318* (0.217)	1.310 (0.244)	1.299 (0.242)	1.250 (0.234)
Income quintiles (ref: 1 st quintile)				
2 nd quintile		1.002 (0.114)	0.999 (0.113)	0.985 (0.112)
3 rd quintile		1.076 (0.126)	1.077 (0.126)	1.070 (0.126)
4 th quintile		1.107 (0.137)	1.111 (0.138)	1.092 (0.136)
5 th quintile		0.847 (0.114)	0.854 (0.115)	0.838 (0.113)
Occupation (ref. unemployed)				
Salaried employee		1.042 (0.125)	1.047 (0.126)	1.035 (0.124)
Civil servant		1.231 (0.237)	1.217 (0.235)	1.215 (0.235)
Self-employed		1.153 (0.185)	1.154 (0.186)	1.170 (0.189)
Freelancer/Casual		0.913 (0.126)	0.919 (0.127)	0.921 (0.127)
Student		1.551** (0.317)	1.541** (0.318)	1.536** (0.318)
Retired		0.955 (0.175)	0.939 (0.171)	0.938 (0.171)
Housewife		0.812 (0.140)	0.813 (0.141)	0.825 (0.143)
Others		0.771 (0.133)	0.774 (0.134)	0.769 (0.132)
Expectation of future social mobility (ref. no mobility)				
Upward			0.995 (0.0892)	1.005 (0.0904)
Downward			1.259 (0.252)	1.237 (0.247)
Social mobility experienced in the past (ref. no mobility)				
Upward			0.870 (0.0746)	0.896 (0.0773)
Downward			0.921 (0.0917)	0.918 (0.0917)
Meritocratic beliefs				0.760*** (0.0559)
Religion (ref. no religion)				
Catholics				0.899 (0.105)

	(1)	(2)	(3)	(4)
Other religions				0.905 (0.108)
Observations	3735	3735	3735	3735
Pseudo R-squared	0.00373	0.00708	0.00768	0.00994
Chi-squared	24.96	48.22	51.47	67.65

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.6 – Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people” (race disaggregation)

	(1)	(2)	(3)	(4)
Race (ref. white)				
Brown	1.084 (0.126)	1.065 (0.125)	1.074 (0.126)	1.077 (0.126)
Black	1.361** (0.189)	1.323** (0.185)	1.340** (0.187)	1.348** (0.189)
Others	1.020 1.084	0.997 1.065	1.005 1.074	1.024 1.077
Observations	3735	3735	3735	3735
Pseudo R-squared	0.00451	0.00779	0.00842	0.0107
Chi-squared	30.69	53.18	56.61	72.85

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. (1) is the specification with only sociodemographic variables; (2) includes the objective economic factors; (3) includes the subjective economic factors; and (4) is the complete specification, which includes people’s values. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

2.4.2. The parallel lines assumption and alternative model estimation

Doing an Ordered Logistic Model implies that the parallel lines assumption (also called proportional odds) is met, meaning that the relationship between each pair of outcome groups is the same (UCLA, 2006). However, a key problem with this approach is that its assumptions are often violated, as it is common for the β ’s to differ across different categories of the dependent variable (Williams, 2006).

To assess the differentiated effects of the independent variables on the dependent one, we re-estimate the regressions results of the complete specification using a Partial Proportional Odds (PPO) model, which relaxes the parallel-lines constraint for the variables in which it is not justified (Williams, 2006). For the complete specification, we ran a Wald test of parallel lines to compare the slopes of a series of binary logistic regressions where categories of the dependent variable are combined.¹² The Wald tests after calculating the Partial Proportional Odds models

¹² In this strategy, the first equation compares category 1 (“Completely Disagree”) with all the other categories; the second equation compares categories 1 (“Completely Disagree”) and 2 (“Partially Disagree”) with the others, and so on until the last equation compares the last category (“Completely Agree”) with all the other answers (Williams, 2006). An insignificant test statistic indicates that the final model did not violate the assumption.

indicate that the final models do not violate the assumption for either outcome variable (first outcome variable p-value: 0.4465; second outcome variable p-value: 0.9729).

Constraints for parallel lines are imposed for most explanatory factors. For the outcome variable assessing the opinion on the importance of reducing inequality, however, constraints are not imposed for the following: age (category “55 and over”); gender; education (category “primary education”); occupation (category “Salaried employee”); expected social mobility (category “Downward”); and meritocracy beliefs.

Given that constraints were not imposed for a few categories of the selected variables, we compare the results of the regressions using the PPO estimation with our main estimation. Regression coefficients for the PPO model are shown in Appendix 2.A (Table 2.A1). The previous conclusion that being white and having more education are associated with beliefs on the importance of reducing the gap between rich and poor remains the same even when allowing for variation of the coefficients. In the case of the remaining explanatory variables failing to meet the parallel lines assumption, results from the PPO estimation do not show enough consistency to change the main conclusions about the role of these variables.

In the case of the variable assessing the opinion on the government’s role in reducing inequality, all variables (except for “secondary education”) met the condition of the parallel lines. Given that education level was not an important predictor in the original model and that the PPO estimations do not show a consistent result across different combinations of the outcome variable categories, the role of this variable remains inconclusive and, therefore, will not be interpreted.

2.4.3. The pandemic effect

A concern that may arise in our analysis is that, by pooling the data collected in different editions of the OXFAM survey, we might not capture a potential heterogeneity in the association of the variables related to the timing of the data collection. Since the sample contains information collected in February 2019 (2019 dataset) and December 2020 (2021 dataset), by pooling those two cross-section datasets, we may be neglecting a potential COVID-19 pandemic effect in the association of the selected variables and our outcome of interest. We assume that groups affected differently by the pandemic would have different changes in their inequality views.

Having the potential exogenous effects in mind, we assess the robustness of our results by allowing for different associations before and after the pandemic outbreak. Results are shown in Appendix 2.A (Table 2.A2 and Table 2.A3).

In the case of our first outcome variable (opinion on the importance of reducing inequality), conclusions about the role of race remain consistent in both periods. We observe, however, that even though education levels are significant in both periods, it was in the most recent dataset that tertiary education was a significant predictor. In the 2019 data, only primary and secondary education were significant factors. A similar situation happened in the case of the variable assessing opinions on the government's role in reducing inequalities, with occupation (student category) and race (those as self-declaring as black) being significant only in the more recent dataset.

2.5. Discussion

The results from our analysis suggest some important trends for the analysis of inequality views in Brazil. For instance, race, an element overlooked in studies about attitudes toward inequality,¹³ plays a significant role when investigating inequality preferences in the country, regardless of the period analyzed. We find that white people have lower odds of believing that reducing inequalities is essential for Brazil's progress when compared with black, brown, indigenous, and others, with higher odds of agreeing with the statement associated with those who self-declared as black.

We also observe that, while there are no significant differences between whites and non-whites regarding the belief that the government should reduce inequalities, there is considerable heterogeneity within the non-whites group. When disaggregating the latest as black, brown, and others, we note that although overall results for non-whites are insignificant, black people have significantly higher odds of agreeing with the statement, a trend not followed by brown and other non-whites.

Results on the role of race in the country are not surprising, given that race is a critical factor in the structure of inequalities in Latin America, where racism is a central element of a culture of privilege that replicates itself until the present day (Abramo, 2022). In Brazil, for instance, economic and cultural inequalities between

¹³ By looking at the literature, we can identify the use of race as a control variable in the work from Carnes and Mares (2014), who used data from 15 Latin American countries. Their work, however, use as dependent variable a question which asks individuals about their support for public pension policies, not covering inequality preferences.

ethnic groups relate to the country’s historical formation and the use of non-whites (such as the black and indigenous population) as slave labor (Leivas & Santos, 2018). The country’s history contributes to the fact that, even after the end of slavery, black people in Brazil still live, study and earn less than whites (United Nations Brazil, 2018). In 2021, for instance, although together black and brown people represented more than half of the Brazilian population, they represented 75% of the lower-income individuals (i.e., those in the bottom 10% of household income) and only 28% of the higher-income ones (i.e., the top 10%) (IBGE, 2022). This trend is also evident in our data, as in both years, non-whites are more predominant across the lower income deciles (Figure 2.3).

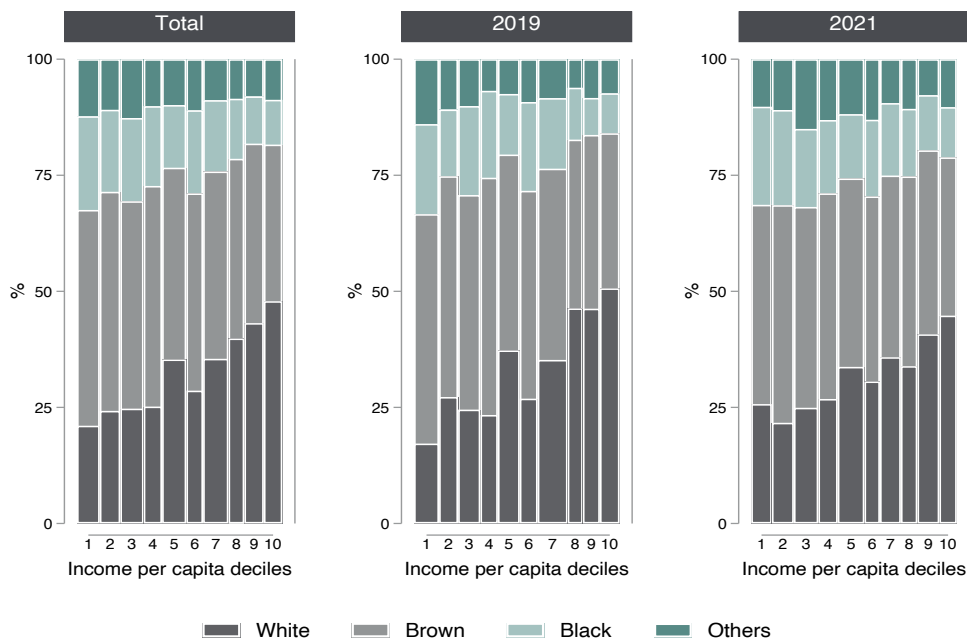


Figure 2.3 – Income per capita deciles by race and year
 Source: Based on OXFAM (2019; 2021).
 Note. Figures calculated using sample weights.

With the country context in mind, it is not shocking that our results suggest that black people are more concerned about inequalities than whites. The role of group identity in shaping people’s views becomes evident when considering that race is significant even after controlling for economic variables (such as occupation and income) and education.

A second important highlight from our results relates to the potential effect of the COVID-19 pandemic on how certain groups view inequality. For instance,

when disaggregating results into before and after the outbreak of the COVID-19 pandemic, we observe that the role of the government in reducing inequalities became a significant issue for students and those who self-declared as black only after the pandemic. We may assume that those groups were affected differently by the external shock, which made them change their views on how the government should behave towards their citizens.

According to a publication from the World Bank (Gopalakrishnan *et al.*, 2021), while all people experienced losses during the pandemic period, the poorest 20 percent experienced the most significant drop in income. In addition to the impacts on income, the pandemic's impact on the most vulnerable also reached the education field, exacerbating inequalities in learning (Gopalakrishnan *et al.*, 2021). In Brazil, the pandemic has intensified the racial, regional, and income inequalities that made the pandemic worse, with minorities and low-income individuals having more exposure to the virus and a higher probability of having worse infection outcomes (Nassif Pires *et al.*, 2021). With those potential effects in mind, it is not surprising that those who have 'student' as an occupation (i.e., those with no job and affected directly by the increased inequality in the educational field) and black people (one of the most vulnerable groups in Brazil) started demanding a more active government after the pandemic started. More research, however, is still needed to understand better the causal mechanisms behind the heterogeneity of our results across different years and the effect of the pandemic on specific subgroups, being outside the scope of this study.

The third highlight from our results relates to the importance of testing traditional theories explaining opinions on inequality in different country contexts. In line with other contemporary authors studying Latin America (Berens, 2015; Franetovic & Castillo, 2022), this study questions the historical predominance of theories based on self-interest to understand attitudes towards inequality, showing that Brazilians are not following all conventional beliefs about rational choices. For instance, contrary to the traditional approach, we did not find a clear association between income (a usual determinant of inequality preferences) and our outcomes of interests.

Our results on education also contrast with the traditional theories but align with studies conducted in Latin America. In agreement with Franetovic and Castillo (2022), we find that being educated is associated with higher odds of believing that reducing inequality is fundamental for progress, contrasting the rational logic that

low exposure to risk would decrease support for redistribution. Given that previous studies using traditional cross-country surveys on attitudes towards inequality (i.e., the International Social Survey Program and the European Social Survey) show a negative (and not positive) association between education and support for redistribution (Dallinger, 2010; Hjerm & Schnabel, 2012; Roex *et al.*, 2018), our results endorse the importance of more studies testing traditional theories in Latin America.

2.6. Conclusion

The globalization process has increased the interest in inequality within and between countries (Lubker, 2004) and income redistribution (Pellicer *et al.*, 2017). In this context, studies – that historically focused on objective realities and measures of poverty – have gained a more subjective approach, focusing on analyzing attitudes toward inequality (Ng & Koh, 2012). Adding to the empirical literature on the field, the present study looks at the elements of inequality preferences, testing the role of sociodemographic and economic individual characteristics in the Brazilian context. The analysis is performed using micro-data of a survey conducted by an international non-governmental organization in partnership with a Brazilian private research institute. Using data from more than 3 thousand Brazilians, we conducted several regressions using an Ordered Logistic Model approach.

We find that race, an element overlooked in studies about attitudes toward inequality, plays a significant role when investigating inequality preferences in Brazil, with white people having lower odds of believing that reducing inequalities is essential for Brazil's progress compared with black, brown, indigenous, and others. We also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, we find that being educated is associated with higher odds of believing that reducing inequality is fundamental for progress while not finding a clear association between income and inequality views.

This study is not exempt from limitations. By including the racial component, we must acknowledge two constraints. First, there may be a potential lack of precision in determining the racial category caused by self-declaration. Still, asking people to classify their race is one of the most common forms of identifying

racial groups in the country, a strategy widely used by both public and private research institutes in the country.

The second limitation is caused by the lack of international classification for races or ethnicities, which limits an exact replication of our study in different national contexts. In different countries, concepts such as ethnicity, tribe, nation, people, and race are defined locally, as the bases for defining boundaries between social groups are produced by the history of each society (Osorio, 2003). For example, the categories used in the first official Brazilian Census in 1872 (which served as based for the subsequent versions of the survey) were first created based on the classification already been used by the Brazilian society, reflecting its national history (Osorio, 2003). Therefore, future research replicating our results in another country should adjust the categories used for the race variable based on the context of the selected region.

The implication for policymaking of our results is clear. Since elected officials tend to implement policies that reflect public opinion to maximize their chances of re-election (Andersen & Yaish, 2012), understanding how groups with different characteristics diverge in their views on inequality is of utmost importance. In the case of Brazil, for example, the mobilization of social movements (in particular, the black activists) generated important results in the last decades, being responsible for introducing certain themes into the country's public debate (Heringer, 2018).¹⁴ Thus, identifying and reflecting on how people react when asked about inequality can help understand its visibility (or lack of) on the public agenda, which is one step toward tackling the issue in the country.

¹⁴ A good example happened in the early 2000s when the increasing demand for affirmative action in higher education by activists influenced the conception of several policies, such as the creation and expansion of federal universities, the increase of student loans, as well as the creation of a scholarship program (Heringer, 2018).

REFERENCES

- Abramo, L. (2022). Racial Inequalities as a Structuring Axis of Social Inequality in Latin America and the Afro-Descendant Population. In *Persistence and Emergencies of Inequalities in Latin America* (pp. 167–184). Springer, Cham.
- Andersen, R., & Yaish, M. (2012). Public opinion on income inequality in 20 democracies: the enduring impact of social class and economic inequality. *Amsterdam Institute for Advanced Labour Studies, GINI Discussion Paper*, 48.
- Assusa, G. (2022). The Most Unequal Region on the Planet? A Sociological Analysis of the Ideas, Evaluations and Attitudes Toward Inequality in Latin America and the Caribbean. In *Persistence and Emergencies of Inequalities in Latin America* (pp. 185–202). Springer, Cham.
- Austen, S. (2002). An international comparison of attitudes to inequality. *International Journal of Social Economics*, 29(3), 218–237
- Berens, S. (2015). Preferences on redistribution in fragmented labor markets in Latin America and the Caribbean. *Journal of Politics in Latin America*, 7(3), 117–156.
- Carnes, M. E., & Mares, I. (2014). Coalitional realignment and the adoption of non-contributory social insurance programmes in Latin America. *Socio-Economic Review*, 12(4), 695–722.
- Curtis, J., & Andersen, R. (2015). How Social Class Shapes Attitudes on Economic Inequality: The Competing Forces of Self-Interest and Legitimation. *International Review of Social Research* 2015, 5(1), 4–19.
- Dallinger, U. (2010). Public support for redistribution: What explains cross-national differences? *Journal of European Social Policy*, 20(4), 333–349.
- Franetovic, G., & Castillo, J. C. (2022). Preferences for Income Redistribution in Unequal Contexts: Changes in Latin America Between 2008 and 2018. *Frontiers in Sociology*, 7.
- Garcia-Sanchez, E., Osborne, D., Willis, G. B., & Rodríguez-Bailón, R. (2019). Attitudes towards redistribution and the interplay between perceptions and beliefs about inequality. *The British Journal of Social Psychology*, 59(1), 111–136.
- Gopalakrishnan, V., Wadhwa, D., Haddad, S., & Blake, P. (2021). *2021 Year in Review in 11 Charts: The Inequality Pandemic*. The World Bank News. Retrieved April 22, 2022, from

- <https://www.worldbank.org/en/news/feature/2021/12/20/year-2021-in-review-the-inequality-pandemic>.
- Guillaud, E. (2013). Preferences for redistribution: An empirical analysis over 33 countries. *Journal of Economic Inequality*, 11(1), 57–78.
- Heringer, R. (2018). Democratização da educação superior no Brasil: das metas de inclusão ao sucesso acadêmico. *Revista Brasileira de Orientação Profissional*, 19(1), 7–17.
- Hjerm, M., & Schnabel, A. (2012). How much heterogeneity can the welfare state endure? The influence of heterogeneity on attitudes to the welfare state. *Nations and Nationalism*, 18(2), 346–369.
- IBGE (2022). Desigualdades sociais por cor ou raça no Brasil. *Estudos e Pesquisas, Informações Demográficas e Socioeconômicas*, 47.
- Jaime-Castillo, A. M., & Saez-Lozano, J. L. (2016). Preferences for tax schemes in OECD countries, self-interest and ideology. *International Political Science Review*, 37(1), 81–98.
- Jaime-Castillo, A. M., Fernández, J. J., Valiente, C., & Mayrl, D. (2016). Collective religiosity and the gender gap in attitudes towards economic redistribution in 86 countries, 1990–2008. *Social science research*, 57, 17–30.
- Kim, H., Huh, S., Choi, S., & Lee, Y. (2017). Perceptions of inequality and attitudes towards redistribution in four East Asian welfare states. *International Journal of Social Welfare*, 27(1), 28–39.
- Leivas, P. H. S., & Santos, A. M. A. (2018). Horizontal inequality and ethnic diversity in Brazil: patterns, trends, and their impacts on institutions. *Oxford Development Studies*, 46(3), 348–362.
- Lubker, M. (2004). Globalization and perceptions of social inequality. *International Labour Review*, 143(1–2).
- Lubker, M. (2007). Inequality and the demand for redistribution: Are the assumptions of the new growth theory valid? *Socio-Economic Review*, 5(1), 117–148.
- Medgyesi, M. (2013). Increasing income inequality and attitudes to inequality: a cohort perspective. *GINI Discussion Paper*, 94(January 2013).
- Morgan, J., & Kelly, N. J. (2010). Explaining public attitudes toward fighting inequality in Latin America. *Poverty & Public Policy*, 2(3), 79–111.
- Nassif Pires, L., Carvalho, L. B. D., & Lederman Rawet, E. (2021). Multi-dimensional inequality and Covid-19 in Brazil. *Investigación económica*, 80(315), 33–58.

- Ng, I. Y., & Koh, G. (2012). Chinese Singaporean attitudes towards poverty and inequality: A comparative analysis. *International Journal of Social Welfare*, 21(2), 149–159.
- Ohtake, F. (2008). Inequality in Japan. *Asian Economic Policy Review*, 3(1), 87–109.
- Osorio, R. G. (2003). O sistema classificatório de cor ou raça do IBGE. *IPEA Discussion Paper*, 996.
- OXFAM. (2017). *Nós e as Desigualdades: Pesquisa OXFAM Brasil/Datafolha, Percepções sobre Desigualdades no Brasil*. OXFAM Brasil, São Paulo.
- OXFAM. (2019). *Nós e as Desigualdades: Pesquisa OXFAM Brasil/Datafolha, Percepções sobre Desigualdades no Brasil*. OXFAM Brasil, São Paulo.
- OXFAM. (2021). *Nós e as Desigualdades: Pesquisa OXFAM Brasil/Datafolha, Percepções sobre Desigualdades no Brasil*. OXFAM Brasil, São Paulo.
- Pellicer, M., Piraino, P., & Wegner, E. (2017). Perceptions of inevitability and demand for redistribution: Evidence from a survey experiment. *Journal of Economic Behavior & Organization*, <https://doi.org/10.1016/j.jebo.2017.12.013>
- Reeves, R., & Mager, F. (2018). *Attitudes Towards Inequality in the UK A review of opinion surveys*. OXFAM Research Report.
- Roex, K. L., Huijts, T., & Sieben, I. (2018). Attitudes towards income inequality: ‘Winners’ versus ‘losers’ of the perceived meritocracy. *Acta Sociologica*, <https://doi.org/10.1177/0001699317748340>
- Saar, E. (2008). Different cohorts and evaluation of income differences in Estonia. *International Sociology*, 23(3), 417–445.
- UCLA. (2006). *Ordered Logistic Regression: STATA data analysis examples*. Retrieved June 29, 2022, from <https://stats.oarc.ucla.edu/stata/dae/ordered-logistic-regression/>
- United Nations Brazil. (2018). *Desigualdades raciais no Brasil comprometem oportunidades de trabalho e desenvolvimento humano*. Retrieved June 29, 2022, from <https://brasil.un.org/pt-br/79885-desigualdades-raciais-no-brasil-comprometem-oportunidades-de-trabalho-e-desenvolvimento>
- United Nations. (2019). *Special edition: progress towards the Sustainable Development Goals - Report of the Secretary-General*. United Nations Economic and Social Council.
- Williams, R. (2006). Gologit2: A program for Generalized Logistic Regression/ Partial Proportional Odds Models for Ordinal Dependent Variables. *Stata Journal*, 6(1), 58–82.

- Wiwad, D., Mercier, B., Maraun, M. D., Robinson, A. R., Piff, P. K., Aknin, L. B., & Shariff, A. F. (2019). The support for economic inequality scale: Development and adjudication. *PLoS ONE*, 14(6), 1–29.
- World Bank. (2018). *Gini index*. World Development Indicators (WDI). Retrieved June 29, 2022, from <https://data.worldbank.org/indicator/SI.POV.GINI>
- Wu, A. M., & Chou, K. L. (2017). Public Attitudes towards Income Redistribution: Evidence from Hong Kong. *Social Policy and Administration*, 51(5), 738–754.
- Wulfgramm, M., & Starke, P. (2016). Divided by the Market, Divided by the State: Distribution, Redistribution and Welfare Attitudes in 47 Countries. *Scandinavian Political Studies*, pp. 1–27.

APPENDICES

2.A Robustness checks

Table 2.A1 – Estimation using a Partial Proportional Odds model

	Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil”			Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people”		
	(1)	(2)	(3)	(1)	(2)	(3)
White	0.642*** (0.0753)	0.642*** (0.0753)	0.642*** (0.0753)	0.887 (0.0998)	0.887 (0.0998)	0.887 (0.0998)
Age (ref: less than 18)						
18 - 24	0.738 (0.170)	0.738 (0.170)	0.738 (0.170)	1.291 (0.279)	1.291 (0.279)	1.291 (0.279)
25 - 34	0.853 (0.201)	0.853 (0.201)	0.853 (0.201)	1.336 (0.292)	1.336 (0.292)	1.336 (0.292)
35 - 44	0.938 (0.227)	0.938 (0.227)	0.938 (0.227)	1.553** (0.348)	1.553** (0.348)	1.553** (0.348)
45 - 54	1.057 (0.261)	1.057 (0.261)	1.057 (0.261)	1.538* (0.351)	1.538* (0.351)	1.538* (0.351)
55 and over	0.559** (0.155)	0.782 (0.203)	0.871 (0.217)	1.779** (0.415)	1.779** (0.415)	1.779** (0.415)
Married	1.130 (0.0910)	1.130 (0.0910)	1.130 (0.0910)	0.871* (0.0666)	0.871* (0.0666)	0.871* (0.0666)
Female	1.682*** (0.295)	1.349** (0.203)	1.201 (0.159)	0.979 (0.123)	0.979 (0.123)	0.979 (0.123)
Non-white female	0.813 (0.129)	0.813 (0.129)	0.813 (0.129)	1.014 (0.153)	1.014 (0.153)	1.014 (0.153)
Education (ref. no education)						
Primary	1.135 (0.208)	1.387** (0.225)	1.735*** (0.254)	1.099 (0.161)	1.099 (0.161)	1.099 (0.161)
Secondary	1.725*** (0.261)	1.725*** (0.261)	1.725*** (0.261)	1.728*** (0.323)	1.490** (0.249)	1.172 (0.179)
Tertiary	1.913*** (0.356)	1.913*** (0.356)	1.913*** (0.356)	1.253 (0.231)	1.253 (0.231)	1.253 (0.231)
Income quintiles (ref: 1 st quintile)						
2 nd quintile	1.159 (0.140)	1.159 (0.140)	1.159 (0.140)	0.967 (0.110)	0.967 (0.110)	0.967 (0.110)
3 rd quintile	1.138 (0.141)	1.138 (0.141)	1.138 (0.141)	1.070 (0.127)	1.070 (0.127)	1.070 (0.127)
4 th quintile	1.104 (0.145)	1.104 (0.145)	1.104 (0.145)	1.073 (0.134)	1.073 (0.134)	1.073 (0.134)
5 th quintile	1.027 (0.149)	1.027 (0.149)	1.027 (0.149)	0.839 (0.114)	0.839 (0.114)	0.839 (0.114)
Occupation (ref. unemployed)						
Salaried employee	0.683** (0.130)	0.979 (0.152)	0.956 (0.127)	1.050 (0.127)	1.050 (0.127)	1.050 (0.127)
Civil servant	1.164 (0.236)	1.164 (0.236)	1.164 (0.236)	1.227 (0.239)	1.227 (0.239)	1.227 (0.239)
Self-employed	0.843	0.843	0.843	1.172	1.172	1.172

	Opinion on the statement that “reducing differences between the rich and poor is fundamental for the progress of Brazil!”			Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people”		
	(1)	(2)	(3)	(1)	(2)	(3)
Freelancer/Casual	0.913 (0.143)	0.913 (0.143)	0.913 (0.143)	0.925 (0.189)	0.925 (0.189)	0.925 (0.189)
Student	0.829 (0.166)	0.829 (0.166)	0.829 (0.166)	1.597** (0.335)	1.597** (0.335)	1.597** (0.335)
Retired	0.878 (0.165)	0.878 (0.165)	0.878 (0.165)	0.944 (0.172)	0.944 (0.172)	0.944 (0.172)
Housewife	0.753 (0.136)	0.753 (0.136)	0.753 (0.136)	0.866 (0.150)	0.866 (0.150)	0.866 (0.150)
Others	0.678** (0.123)	0.678** (0.123)	0.678** (0.123)	0.776 (0.134)	0.776 (0.134)	0.776 (0.134)
Expectation of future social mobility (ref. no mobility)						
Upward	0.942 (0.0898)	0.942 (0.0898)	0.942 (0.0898)	1.014 (0.0913)	1.014 (0.0913)	1.014 (0.0913)
Downward	2.687* (1.468)	3.919*** (1.706)	1.312 (0.264)	1.226 (0.244)	1.226 (0.244)	1.226 (0.244)
Social mobility experienced in the past (ref. no mobility)						
Upward	0.924 (0.0840)	0.924 (0.0840)	0.924 (0.0840)	0.888 (0.0771)	0.888 (0.0771)	0.888 (0.0771)
Downward	0.940 (0.0967)	0.940 (0.0967)	0.940 (0.0967)	0.929 (0.0930)	0.929 (0.0930)	0.929 (0.0930)
Meritocratic beliefs	0.861 (0.119)	0.927 (0.0980)	0.692*** (0.0535)	0.750*** (0.0553)	0.750*** (0.0553)	0.750*** (0.0553)
Religion (ref. no religion)						
Catholics	0.974 (0.117)	0.974 (0.117)	0.974 (0.117)	0.883 (0.104)	0.883 (0.104)	0.883 (0.104)
Other religions	0.893 (0.112)	0.893 (0.112)	0.893 (0.112)	0.901 (0.109)	0.901 (0.109)	0.901 (0.109)
Constant	18.95*** (6.929)	7.660*** (2.733)	2.945*** (1.032)	8.331*** (2.753)	4.312*** (1.412)	1.663 (0.541)
Observations	3719	3719	3719	3720	3720	3720
Pseudo R-squared	0.0274	0.0274	0.0274	0.0120	0.0120	0.0120
Chi-squared	166.4	166.4	166.4	80.73	80.73	80.73

Source: Based on Oxfam (2019; 2021) microdata.

Note. Robust standard errors in parentheses. Coefficients are presented as odds ratio. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Estimations calculated based on the complete specification. Column (1) compares “Completely Disagree” with “Partially Disagree”, “Partially Agree” and “Completely Agree”; column (2) compares “Completely Disagree” and “Partially Disagree” with “Partially Agree” and “Completely Agree”; column (3) compares “Completely Disagree”, “Partially Disagree” and “Partially Agree” with “Completely Agree”. The neutral category (“Neither Agree nor Disagree”) is removed from the regressions, due to the very small number of observations in that category causing a lack of convergence when estimating the results. Figures calculated using sample weights. Coefficients estimated using the package `gologit2` for Stata 17 (Williams, 2006). *** p<0.01, ** p<0.05, * p<0.1.

Table 2.A2 – Ordered Logistic Regressions (year comparison)

	Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil”		Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people”	
	2019	2021	2019	2021
White	0.592*** (0.102)	0.694** (0.115)	0.844 (0.132)	0.934 (0.151)
Age (ref: less than 18)				
18 - 24	1.073 (0.317)	0.528* (0.183)	1.052 (0.306)	1.480 (0.482)
25 - 34	1.338 (0.408)	0.551* (0.196)	1.278 (0.375)	1.371 (0.454)
35 - 44	1.496 (0.471)	0.592 (0.214)	1.568 (0.475)	1.455 (0.490)
45 - 54	1.451 (0.463)	0.724 (0.270)	1.711* (0.530)	1.314 (0.453)
55 and over	1.369 (0.445)	0.483* (0.181)	2.121** (0.668)	1.407 (0.500)
Married	1.197 (0.142)	1.055 (0.117)	0.851 (0.0927)	0.931 (0.101)
Female	1.387* (0.266)	1.117 (0.203)	1.062 (0.190)	0.932 (0.164)
Non-white female	0.678* (0.157)	0.962 (0.211)	1.026 (0.221)	0.987 (0.211)
Education (ref. no education)				
Primary	1.923*** (0.382)	1.310 (0.285)	1.056 (0.215)	1.145 (0.251)
Secondary	1.528** (0.309)	1.683** (0.377)	1.192 (0.250)	1.307 (0.294)
Tertiary	1.363 (0.352)	2.134*** (0.564)	1.097 (0.280)	1.419 (0.390)
Income quintiles (ref: 1 st quintile)				
2 nd quintile	1.031 (0.174)	1.260 (0.215)	0.832 (0.138)	1.185 (0.189)
3 rd quintile	1.311 (0.247)	1.025 (0.172)	0.998 (0.173)	1.155 (0.188)
4 th quintile	1.203 (0.229)	1.101 (0.205)	1.093 (0.196)	1.178 (0.209)
5 th quintile	1.277 (0.276)	0.883 (0.175)	0.888 (0.177)	0.835 (0.158)
Occupation (ref. unemployed)				
Salaried employee	0.965 (0.185)	0.963 (0.174)	0.955 (0.161)	1.099 (0.193)
Civil servant	1.528 (0.480)	1.026 (0.270)	1.701* (0.529)	0.953 (0.243)
Self-employed	0.873 (0.203)	0.780 (0.192)	1.407 (0.320)	0.932 (0.215)
Freelancer/Casual	0.924 (0.193)	0.868 (0.176)	0.916 (0.180)	0.881 (0.173)
Student	0.816 (0.213)	0.823 (0.239)	1.282 (0.352)	1.861** (0.579)
Retired	1.079 (0.304)	0.787 (0.204)	1.071 (0.292)	0.854 (0.215)
Housewife	0.670 (0.173)	0.924 (0.230)	0.714 (0.172)	0.935 (0.238)
Others	0.770 (0.200)	0.579** (0.147)	0.645* (0.147)	0.925 (0.248)
Expectation of future social mobility (ref. no mobility)				
Upward	1.242	0.729**	1.193	0.840

	Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil”		Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people”	
	2019	2021	2019	2021
Downward	(0.169) 1.369 (0.402)	(0.0980) 1.527* (0.381)	(0.151) 1.122 (0.345)	(0.110) 1.294 (0.349)
Social mobility experienced in the past (ref. no mobility)				
Upward	0.941 (0.123)	0.915 (0.117)	0.969 (0.120)	0.839 (0.103)
Downward	0.776* (0.113)	1.128 (0.159)	0.768* (0.108)	1.135 (0.164)
Meritocratic beliefs	0.666*** (0.0741)	0.761*** (0.0794)	0.721*** (0.0758)	0.790** (0.0823)
Religion (ref. no religion)				
Catholics	0.854 (0.153)	1.067 (0.175)	0.785 (0.133)	1.049 (0.172)
Other religions	0.699* (0.130)	1.094 (0.188)	0.861 (0.150)	0.953 (0.160)
Observations	1853	1882	1853	1882
Pseudo R-squared	0.0262	0.0205	0.0191	0.0105
Chi-squared	78.40	68.67	65.43	39.53

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. Controls for Brazilian region included in all specifications. Estimations calculated based on the complete specification. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.A3 – Ordered Logistic Regressions by race (year comparison)

	Opinion on the statement that “reducing differences between rich and poor is fundamental for the progress of Brazil”		Opinion on the statement that “in a country like Brazil, the government must narrow the gap between very rich and very poor people”	
	2019	2021	2019	2021
Race (ref. white)				
Brown	1.635*** (0.290)	1.446** (0.253)	1.179 (0.192)	0.981 (0.166)
Black	1.911*** (0.422)	1.806*** (0.371)	1.171 (0.232)	1.570** (0.315)
Others	1.650** (0.406)	1.034 (0.221)	1.238 (0.295)	0.888 (0.194)
Observations	1858	1886	1858	1886
Pseudo R-squared	0.0266	0.0225	0.0192	0.0134
Chi-squared	79.45	74.87	65.81	50.01

Source: Based on Oxfam (2019; 2021).

Note. Coefficients presented as odds ratio. Robust standard errors in parentheses. Controls for Brazilian region, survey year and interaction between region and year are included in all specifications. Estimations calculated based on the complete specification. Figures calculated using sample weights. *** p<0.01, ** p<0.05, * p<0.1.

3

CAN INTERNATIONAL MOBILITY SHAPE STUDENTS' ATTITUDES TOWARD INEQUALITY? THE BRAZILIAN CASE¹⁵

ABSTRACT

In this study, we examine the impact of international mobility programs on students' attitudes toward inequality, focusing on two dimensions: preference and perception of inequality. To provide causal evidence, we exploit unique survey data about more than a thousand students from a well-known and internationalized Brazilian university. Using Propensity Score Matching to construct an artificial comparison group, we find that going abroad does not affect students' preference to reduce within-country inequality in Brazil. Still, international mobility affects students' salary preferences, with mobile students expressing their preferences for favoring a raise in salaries for high-skilled jobs. Results also show that mobility affects how individuals perceive current inequality, as students who participate in mobility programs believe within-country inequality is smaller than their non-mobile counterparts. Our analysis presents empirical evidence to reflect on the role of international student mobility, providing insights to policymakers engaged in understanding their effects.

Keywords: Exchange Programs; Income Redistribution; Tertiary Education; Impact Evaluation; Propensity Score Matching

JEL Classification: D31; D63; I24

¹⁵ This chapter is currently in the process of revision to be submitted to an academic journal. Also, a preliminary version of the chapter was published as a UNU-MERIT working paper (#2023-001).

3.1. Introduction

Student mobility, defined as “any academic mobility which takes place within a student’s program of study in post-secondary education” (Junor & Usher, 2008, p. 3), is an activity that, although not new, has been receiving more attention from governments in the past decades (Guruz, 2008; Engberg *et al.*, 2014). Between 2011 and 2018, the world experienced an increase of 40% in mobile students at the tertiary level, reaching an estimated 5.6 million students abroad (UNESCO, 2021).

There are several reasons why nations invest in international student mobility programs. Through the provision of education abroad, those programs can contribute to human capacity development, organization improvement, increase global connections, as well as to reduce social inequalities (Engberg *et al.*, 2014).

The literature on student mobility has underlined the benefits of international mobility for beneficiaries. Previous studies have shown that going abroad can impact students in several dimensions. For example, a mobility experience can improve students’ career prospects (Parey & Waldinger, 2011; Di Pietro, 2013), soft skills (European Commission, 2016), the acquisition of new skills (Sorrenti, 2017; Wang, Crawford & Liu, 2019), reputation (Engberg *et al.*, 2014), as well as student performance (Meya & Suntheim, 2014; Gonzalez-Baixauli, Montanes-Brunet & Perez-Vazquez, 2018; Contu *et al.*, 2020; Granja & Visentin, 2021).

It has also been shown that mobility is associated with a change in students’ personal development and cross-cultural skills. A study on American students by Clarke III *et al.* (2009) shows that mobile students reported that going abroad has made them more proficient, approachable, and open to intercultural communication. Zimmermann and Neyer (2013) find that German exchange students are more open and agreeable and less neurotic than non-mobiles. A study by the European Commission (2016) about the impact of the Erasmus program on students’ personalities, skills, and careers found that an international mobility experience is associated with a change in students’ personalities, influencing characteristics considered valuable in the labor market.

Our study contributes to the literature on international student mobility by focusing on its impact on students’ subjective worldviews. We ask: Does participating in exchange programs affect an individual’s attitudes toward inequality? To examine the effects on attitudes towards inequality, we consider two dimensions: preference and perception of economic inequality.

To provide causal evidence, we exploit unique data of more than one thousand (former) students from a well-known and internationalized Brazilian university, the University of Campinas. Administrative data shared by the university's Academic Board and International Office was complemented with data collected through an online survey administered in May 2021.

Using Propensity Score Matching to construct an artificial comparison group, we find that going abroad does not affect students' preferences regarding reducing within-country inequality. Still, international mobility affects students' salary preferences, with mobile students expressing a preference for higher salaries for high-skilled jobs. Results also show that mobility affects how individuals perceive current inequality, as those participating in mobility programs believe within-country inequality is smaller than their non-mobile counterparts. Our main results are not sensitive to changing the matching technique or altering how we measure students' preferences.

Even though the literature about the impact of international student mobility is extensive, this study innovates by addressing empirically the effect of going abroad on students' preferences and perception of inequality. It also contributes to the field as being the first study, to the best of our knowledge, to explore the impact on students' worldviews specifically in a Latin American country. Despite an increase of 40% in tertiary students studying abroad from 2011 to 2018 (UNESCO, 2021), Latin America and the Caribbean is still neglected by studies on international mobility, which usually focus on developed regions, such as North America and Europe.

The peculiarities of Brazil make it an interesting case study to investigate the relationship between mobility and attitudes toward inequalities. First, students' mobility is a relevant phenomenon for the country. Mobility has been promoted by a massive and costly exchange program that has sent more than 90 thousand Brazilians to study abroad, called Science without Borders (Brasil, 2016). In the last decades, the number of Brazilian exchange students has risen drastically: going from 18.5 to 58.9 thousand between 2000 and 2017, growing by more than 200 percent (UNESCO, 2021). However, more recently, the country has experienced a trend shift. Following an economic and political crisis, the Brazilian higher education system suffered severe budget cuts that reduced the resources allocated to international mobility programs (Andrade, 2019; De Negri, 2021). Consequently, it

became important to investigate the impact of mobility programs and warn (if needed) about the consequences of cutting them.

Second, inequality is one of the core issues for Brazil. Brazil has recorded a high inequality level for decades, and the situation has been exacerbated due to the recent COVID-19 pandemic. The pandemic has intensified social and economic inequalities in the country, with minorities and low-income individuals being more exposed to the disease and more likely to have worse infection outcomes (Nassif Pires *et al.*, 2021). In addition, the World Bank has also raised concerns about the post-pandemic recovery (World Bank, 2019). According to its statistics, even though all people experienced losses during the pandemic, the poorest 20 percent were the ones who experienced the most significant drop in income (Gopalakrishnan *et al.*, 2021).

In this context, understanding the factors driving the attitudes towards inequalities of the young generation (especially university students) might help find solutions to improve the country's current conditions. Given that university students tend to be drawn from or to be mobile to the higher echelons, where there is more political influence, understanding the sources and effects on their views about inequality becomes essential. Additionally, since elected officials tend to implement policies that reflect public opinion (Lubker, 2004; Andersen & Yaish, 2012; Kim *et al.*, 2017; OXFAM, 2017; Becker, 2021), understanding how individuals perceive and react to economic inequality becomes crucial. The citizens' perceptions might drive political behavior in favor or against income-redistributing policies.

Our study digs into attitudes towards inequality in Brazil and sets the basis for further research on the effect of international student mobility, providing insights to policymakers engaged in understanding its consequences.

The chapter is structured as follows. First, it presents a literature review on attitudes toward inequality. Second, it describes our data and chosen methodology. Third, it illustrates our results, including a set of heterogeneity analyses. Finally, the chapter discusses the results and highlights the main conclusions.

3.2. Subjective views on inequality: preference and perception

Economic inequality, understood as the income/wealth gap between the richest and poorest segment of the population (Jetten *et al.*, 2021; Casara *et al.*, 2022), has intensified considerably in the last decades, capturing the attention of academics and becoming part of the agenda of many politicians (Becker, 2021; Jetten *et al.*, 2021).

Facing inequality, individuals might have different subjective views, which could be related either to their beliefs about how inequality should be (inequality preferences) or to how they estimate inequality (inequality perceptions).

Inequality Preferences

We understand inequality preferences in this study as the same as beliefs about inequality, which can be defined as “normative ideas about just inequality (i.e., thoughts about what should be)” (Janmaat, 2013, p.359).

When looking at individual preferences, previous studies showed that how people judge inequality depends on several contextual factors, such as sociodemographic characteristics or the social values and ideology embraced.

As sociodemographic factors, extant works have considered the role occupied by the individual in society, economic conditions, level of education, gender, and age. For instance, considering the economic conditions, using data from the World Values Survey and the European Values Study from 102 countries, Medgyesi (2013) observed that people in higher positions in the income distribution tend to accept greater income disparities while manual workers are the group with less acceptance of inequality. In the same line, also using data from the World Values Survey and national-level statistics for 24 OECD countries, Curtis and Andersen (2015) noticed that, in most countries, people with lower levels of income (i.e., belonging to the working class) are more likely to believe that inequality should be reduced. The conclusion that lower-income groups, as well as those occupying occupations that require less training, have more egalitarian preferences when compared with higher-income groups was confirmed by other studies, such as in Guillaud (2013), Andersen and Yaish (2012), Reeves and Mager (2018), Roex *et al.* (2018), Ohtake (2008), and Jaime-Castillo and Saez-Lozano (2016).

In addition to objective economic status, subjective factors may also influence people's preferences for inequality. Guillaud (2013) found, for instance, that people who express the feeling of belonging to the upper class are less inclined to favor redistribution than those who place themselves in the middle class. The author also found that those who reported downward mobility in the past ten years are more likely to support redistribution. In contrast, those who have experienced upward mobility are less likely to support it. Along the same line, Wu and Chou (2017) found that in Hong Kong, people who foresee themselves as more economically vulnerable and identify as being from lower social classes tend to

support more government assistance to reduce income inequality. Finally, considering the social values and ideology embraced, Roex *et al.* (2018) and Garcia-Sanchez *et al.* (2019) argued that beliefs in meritocracy, i.e., that individuals' efforts lead to success, might reduce the expectations for income governmental redistribution actions.

Beyond the economic conditions, several studies found a significant and negative impact of each additional year of education in support of equality, indicating that an increase in education years tends to reduce the support for redistribution (Dallinger, 2010; Hjerm & Schnabel, 2012; Roex *et al.*, 2018). Other studies mentioned the role of gender, showing that women tend to favor redistribution more than men (Dallinger, 2010; Hjerm & Schnabel, 2012; Guillaud, 2013; Wulfgramm & Starke, 2016). In a study about the Estonian society, Saar (2008) discussed the role of age, showing that older cohorts in the country tend to be more critical concerning income inequality, with the most important mediator of this effect being justice beliefs (i.e., the perception of existential justice, egalitarian principles, government intervention, capitalist principles, and fair pay ratio). Using data from the European Social Survey, Hjerm and Schnabel (2012) also showed a positive relationship between age and acceptance of taxation and redistribution.

Inequality Perceptions

Perception can be understood as a type of cognition referring to an individual's comprehension of an issue (Aalberg, 2003). In theory, how people perceive the world should be similar to reality. However, studies have identified that there is not always a direct link between changes in real inequality and change in individuals' perceptions of it. For instance, in a study using data from the International Social Survey Program, Osberg and Smeeding (2006) find that subjective estimations of inequality in pay deviate considerably from actual data. When looking at differences between real values and people's estimates, the authors find that actual pay gaps are much larger than what individuals believe.

When looking at the literature on the topic, we can observe that its determinants at the individual level are overall similar to those related to inequality preferences. As Marandola and Xu (2021) indicate, studies examining inequality show a high correlation between perceptions and individuals' observable characteristics, such as their personal income, wealth, education level, and perceived social status. For instance, Poppitz (2018) analyzes data from 18 European countries to investigate the determinants of inequality perceptions measured through

subjective social status. Their results show that perceived social status is correlated with higher values of income, wealth, years of education, occupation prestige, and parents' social status. In a study using data from the International Social Survey Program conducted by Bavetta *et al.* (2017), the authors find that older respondents and those who consider themselves left in politics tend to report more inequality, while those with middle or high incomes, with a middle or top-class social position, and strong religiosity report low levels of perceived inequality.

The studies mentioned above support the idea that, similar to inequality preferences, inequality perceptions are not only determined by objective and subjective economic factors but also by other individual characteristics, such as social capital, values, and sociodemographic characteristics. In our study, we take a step further and analyze a relationship not yet explored by the literature: the role going abroad has in influencing people's attitudes towards inequality, focusing on a sample of Brazilian students.

Based on the previous evidence about the importance of going abroad in affecting people's personalities, in which mobile students are considered more proficient, approachable, open, agreeable, and less neurotic individuals (Clarke III *et al.*, 2009; Zimmermann & Neyer, 2013; European Commission, 2016), we investigate if participating in an exchange program affects students' preferences and perceptions about inequality in their country.

3.3. Data and methodology

3.3.1. Data: empirical setting and data sources

We use data from 1,527 (former) students from the University of Campinas (UNICAMP), Brazil, who entered the university between 2010 and 2018. The university was chosen given its tradition of internationalization and the high number of students who go abroad. Since its establishment in the 1960s, internationalization has been part of the university's institutional strategies (Granja & Carneiro, 2020). For instance, between 2010 and 2017, UNICAMP signed more than 500 agreements with foreign institutions involving more than 60 countries (Granja, 2018). UNICAMP was also one of the top ten sending institutions of the Brazilian Science without Borders program, an initiative sponsored by the federal government between 2011 and 2015, which provided more than 90 thousand international mobility grants (Brasil, 2016).

UNICAMP also provides a very well-suited case study given the possible generalization of the research results to the broader Brazilian context. Despite the heterogeneity of higher education institutions in Brazil, UNICAMP is part of an ‘elite’ group of large research-intensive public universities in the country (Schwartzman *et al.*, 2021), which offer the most study opportunities abroad. For example, out of the top ten sending institutions for the Science without Borders program, nine were in the same category as UNICAMP (Brasil, 2016). Thus, considering the involvement of UNICAMP in student mobility programs, we trust that its students can represent Brazilian exchange students and be replicable to other similar institutions in Brazil.

We use two data sources for this study. First, students’ demographic and socioeconomic data at the moment of entering the university and academic information were shared by the university’s Academic Board and International Office after we received the approval of the Brazilian Research Ethics Committee.¹⁶ The remaining data were collected through an online survey administered in May 2021. Using Qualtrics, an invitation was sent to all students who entered university between 2010 to 2020 and had a valid e-mail address.

A total of 18,408 invites were sent, from which we received 2,947 replies (16% response rate).¹⁷ Of those, 2,280 students shared sufficient information. Among those students, 44.6% participated in a student mobility program (treated group), most of them (804 students) during or after university. Among the remaining 55% of students who did not experience mobility (non-treated), more than one-third (473 students) had no intention of applying for an exchange program at any point in their student life. The remaining students applied for a mobility program in the past (327 students), plan to apply in the future (380 students), or both (83 students).

Of the total students sharing sufficient information, we selected the students for our analysis based on two criteria: mobile students who traveled only during or after university and non-mobiles who either applied for exchange programs in the past or showed interest in applying for one in the future (or both). The choice for

¹⁶ Protocol 25285919.6.0000.8142.

¹⁷ Even though we received almost 3 thousand responses to our online survey, we are aware that a response rate of 16% may impose an issue for the generalization of our results. Thus, in the Appendix 3.A we test the sampling bias, by comparing the exchange students answering the survey to the overall population of exchange student at UNICAMP. The result from our test shows that both samples are very similar in most of their characteristics, having similar academic performance, skin color/race, parents’ education, type of high school, and previous internal mobility experience. Our sample had, however, more females and slightly more students that entered university when they were older. There were also some differences between both groups in their course area, with our sample having more students from Biology and Health Sciences and Humanities.

selecting those students is explained in detail in the Methodology section. We also restricted the analysis to the region of common support, as explained when we discuss the Propensity Score Matching methodology. After applying our inclusion criteria and the selected methodology, our final sample of students narrowed down to 1,527, of which 776 are in the treated and 751 are in the control group.

Table 3.1 reports the summary statistics of all students in the final sample. We can observe that the sample of students has an average standardized grade in the admission exam of 0.153¹⁸ and entered university at 20 years old on average. Fifteen percent of the students are black/brown/indigenous, 51% are females, 64% with parents that had access to tertiary education, 22% come from public schools (i.e., less prestigious educational institutions in the county), and 15% experienced mobility within the country before entering university. In addition, 51% of the students attended courses in the fields of exact (i.e., hard sciences), technological, and earth sciences, 26% in humanities, 17% in biology and health, and 6% in arts. Most of the students in the sample entered university between 2010 and 2012, and most concluded their courses between 2016 and 2018.

Table 3.1 – Summary statistics (final sample)

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Academic ability (grade admission exam, standardized by year and course)	1527	.153	1.063	-2.5	4.651
Race/Skin color (if black, brown or indigenous)	1527	.153	.36	0	1
Gender (if female)	1527	.513	.5	0	1
Age when entering university	1527	19.749	2.62	17	42
Education of the parents (if one or more parents had access to tertiary education)	1527	.64	.48	0	1
Type of high school (if studied only in non-technical public schools)	1527	.216	.412	0	1
Previous internal mobility experience (if completed high school outside the state where UNICAMP is located)	1527	.151	.358	0	1
Course area					
Arts	1527	.058	.234	0	1
Biological Sciences and Health Sciences	1527	.174	.379	0	1
Exact, Technological and Earth Sciences	1527	.509	.5	0	1
Humanities	1527	.259	.438	0	1
Year of admission to university					
2010	1527	.152	.359	0	1
2011	1527	.164	.371	0	1
2012	1527	.152	.359	0	1
2013	1527	.126	.332	0	1
2014	1527	.117	.322	0	1
2015	1527	.116	.32	0	1
2016	1527	.107	.309	0	1

¹⁸ The average standardized grade in the admission exam is calculated using the following formula: $(G - A) / SD$, where G is the grade of the student (which ranges between 0 and 1000); A is the average grade of the student's cohort (i.e., those entering university in the same year and course); and SD is the standard deviation of the cohort. This standardization strategy is widely used by UNICAMP in recruitment processes (for exchange scholarships, for instance), since it allows for comparison of students from different years and courses.

Variable	Obs.	Mean	Std. dev.	Min.	Max.
2017	1527	.054	.225	0	1
2018	1527	.012	.111	0	1
Year when leaving university					
2010	1527	.001	.036	0	1
2011	1527	.005	.068	0	1
2012	1527	.006	.077	0	1
2013	1527	.031	.175	0	1
2014	1527	.064	.244	0	1
2015	1527	.11	.313	0	1
2016	1527	.138	.345	0	1
2017	1527	.136	.343	0	1
2018	1527	.138	.345	0	1
2019	1527	.116	.32	0	1
2020	1527	.003	.051	0	1
Still enrolled	1527	.253	.435	0	1

Data source: Authors' estimation from administrative and survey data.

3.3.2. Outcome variables

We investigate attitudes towards inequality by looking at two dimensions of subjective inequality views: preference and perception.

Inequality Preferences

Inspired by Andersen and Yaish (2012) and Osberg and Smeeding (2005), we estimate an individual coefficient to measure preferences for inequality based on the Gini index.¹⁹

We consider inequality in terms of salary distribution among different occupations. Respondents are asked how much they believe people with different occupations should earn in Brazil (in local currency per month, before taxes). Those opinions of pay are used to calculate a coefficient representing each respondent's acceptable degree of inequality.

In our study, we use opinions on the incomes of five occupations: general practitioner, president of a large national company, store clerk, unskilled factory worker, and governor of a Brazilian state.²⁰ The list of occupations is inspired by the approach used in the social inequality questionnaire developed by the International Social Survey Program.²¹ The formula used to calculate the coefficient for each

¹⁹ The Gini coefficient is one of the most common measures used to summarize inequality in terms of a single number, ranging from 0 (perfect equality) to 1 (perfect inequality) (Jenkins & Van Kerm, 2011).

²⁰ An English version of the survey question used to measure inequality preference and perception is shown in Appendix 3.B.

²¹ The International Social Survey Program is a cross-national program conducting annual surveys about social science topics worldwide. The program currently covers 44 countries and it does not include Brazil as a member state.

individual i is the same one used to calculate the Gini index, and it can be written as follows:

$$G_i = \frac{\sum_{j=1}^n \sum_{k=1}^n |x_j - x_k|}{2n^2 \bar{x}} \quad (3.1)$$

Where $x_j - x_k$ is the income differences of all pairs of occupations, n is the total number of occupations and \bar{x} corresponds to the mean of the individual's desired income for all occupations. The index ranges from 0 to 1, with lower values corresponding to a preference for less inequality. A value of zero indicates that the respondent aspires to have all the occupations paid the same.

We chose to use the measure based on the Gini coefficient formula to be able to decompose the index and dig into the mechanisms leading to a certain level of inequality preference. However, we are aware that there are different possible measures for inequality preferences, ranging from more direct questions (such as those used in the World Values Survey²² and the International Social Survey) to behavioral experiments (such as using a list experiment to measure sensitive topics).²³ Given the lack of consensus on what is the best way to measure inequality preferences, we test the sensitivity of our results to alternative definitions of inequality preference measures that we extracted from our survey. Appendices 3.C to 3.E report the construction of the alternative measures. Appendix 3.F reports the sensitivity analyses showing that our main conclusions are not sensitive to changes in the individual's inequality preference measure used.

Inequality Perceptions

To measure an individual's perception of inequality, we replicate the strategy detailed above but with a slight variation of the question asked to respondents based on the work done by Andersen and Yaish (2012) and Osberg and Smeeding (2005). In this case, respondents are asked how much they believe people earn in Brazil (instead of how much they should earn). The coefficient calculated represents each respondent's perceived current degree of inequality.

Figure 3.1 shows the distribution of the preferred and perceived inequality index for mobile and non-mobile students. As we can observe, on average, both

²² The World Values Survey is a cross-country study providing a popular dataset with information about attitudes towards inequality worldwide. It is one of the most used data sources for studies on the topic, given its broad geographical scope (Jaime-Castillo *et al.*, 2016).

²³ More information about (double-) list experiments can be found in Glynn (2013), Lépine *et al.* (2020), Blair and Imai (2012) and Droitcour *et al.* (1991).

mobile and non-mobile students perceive inequality to be higher than they would prefer. Differences between mobile and non-mobile are very small, with mobiles having very similar preferred inequality when compared to non-mobiles while having slightly smaller averages for the perceived inequality coefficient.

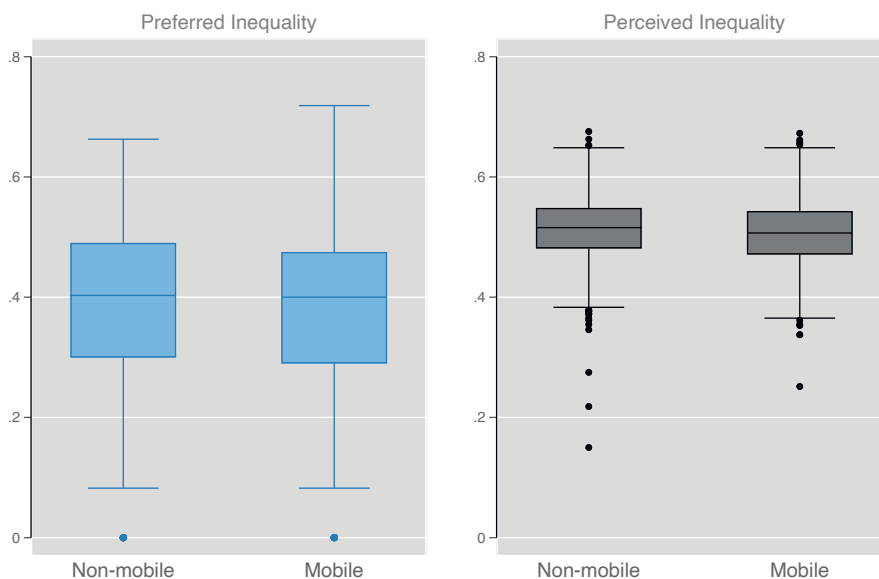


Figure 3.1 – Preference and perception of inequality by treatment status

Data source: Authors' estimation from administrative and survey data.

Note. Coefficients can take values between 0 (perfect equality) and 1 (perfect inequality). Bars: interquartile range, line: median, dots: outside values. Preference and perception are measured after treatment participation.

Figure 3.2 shows the disaggregation of the preferred and perceived inequality indexes to the different components, i.e., the salary (preferred and perceived) by occupation. On average, we can observe that both mobile and non-mobile students believe that occupations such as store clerk and unskilled factory worker should earn more than they currently do while acknowledging that the remaining careers should earn less. Differences between mobile and non-mobiles are less visible for occupations requiring lower skills (i.e., store clerk and unskilled factory worker).

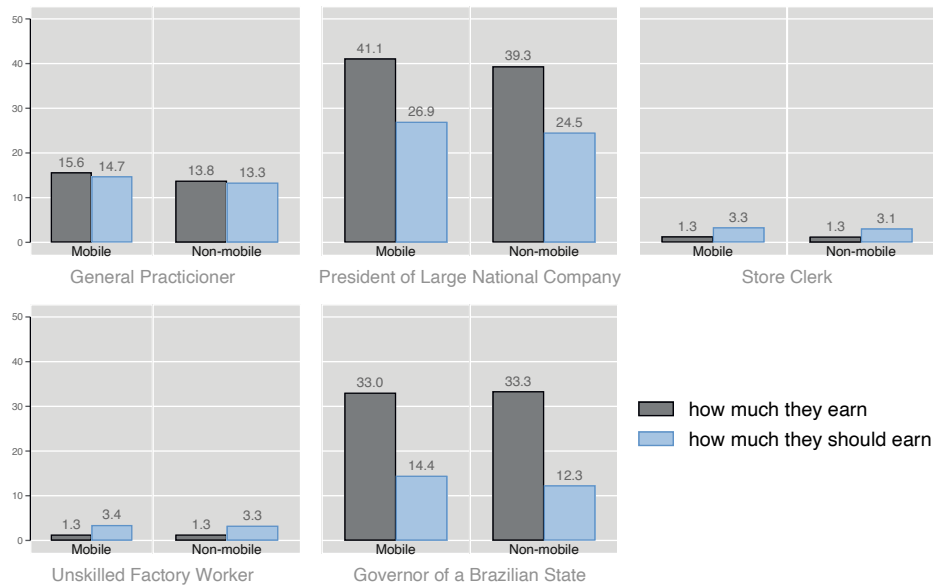


Figure 3.2 – Disaggregation of preference and perception of inequality by treatment status

Data source: Authors' estimation from administrative and survey data.

Note. Figures represent values in terms of minimum wage.

Interestingly, when comparing the values reported in our sample with the real values earned by those professions in Brazil,²⁴ we observe that although both groups can estimate properly the values earned by occupations that require less training (such as a store clerk and an unskilled factory worker – that earns approximately 1.4 times the Brazilian minimum wage), they largely underestimate the amount made by a large company president (which is more than 800 times the minimum wage in Brazil). In addition, both groups overestimate the salary of a general practitioner (8.2 times the minimum wage) and a State Governor (21 times).

3.3.3. Methodology

It is expected that mobile students have different characteristics than non-mobile students due to selection effects. Minimizing selection effects is one of the biggest challenges in impact evaluation and is already acknowledged in empirical studies

²⁴ Real salaries are calculated considering the minimum wage in 2021 of 1100 Brazilian Reals (R\$). Salary of a general practitioner, store clerk, and unskilled factory worker retrieved from the portal Salario.com.br (Salário, 2022), which aggregates salary data from official Brazilian sources between August 2021 and July 2022. Salary for State Governor retrieved from the Department of Budget and Management of the Central Unit for Human Resources of the State of São Paulo (UCRH, 2022). Information about the salary of a president of a large national company is estimated using Alvarenga (2020). All salaries (except for the president of a large national company) refer to the average value in the Brazilian State of São Paulo (where UNICAMP is located).

assessing the impact of mobility programs (Meya & Suntheim, 2014). To reduce the possible bias due to self-selection and account for the fact that those programs are targeted to a population of students with certain characteristics (e.g., those with better academic performance), we create a control group using Propensity Score Matching (PSM).

PSM is a very flexible statistical impact evaluation technique that can be applied in almost any program, as long as there is a group of nontreated units (Gertler *et al.*, 2016). It works by estimating a probability (propensity score) that each treated unit has of receiving the treatment and using this probability to find one or more similar matches within a control group of nontreated units (Caliendo & Kopeinig, 2008; Gertler *et al.*, 2016). We predict the propensity score through the following equation:

$$E(\textit{treatment}|X) = P(\textit{treatment} = 1|X) \quad (3.2)$$

Where *treatment* is a dummy variable that takes the value of 1 if the student participated in a student mobility program; *X* is a set of individual covariates, and *E()* denotes the mathematical expectation operator.

To identify potential mobile students, we consider as relevant matching characteristics the following: grades on the university admission exam, color/race, gender, age when entering university, parent's education, type of secondary school (public vs. private), previous internal mobility experience, and course area.

We consider color/race, gender, and age as students' demographic characteristics. Those characteristics are added to account for any possible systematic differences between students with different demographic profiles in their choice of going abroad.

Parent's education and type of secondary school (public vs. non-public) are added to account for students' socioeconomic background since students from higher-income families may be more likely to pursue part of their studies abroad (Junor & Usher, 2008; Meya & Suntheim, 2014; European Commission, 2016). Studies also show that first-generation college students may have many responsibilities, such as working full-time or being married, that can compete with the time devoted to study (Warburton, Bugarin & Nuñez, 2001; Eveland, 2020) and affect participation in mobility programs. In addition, highly educated parents might indirectly influence their children to go abroad by highlighting the benefits of international mobility to them (Meya & Suntheim, 2014; Di Pietro, 2019).

Socioeconomic characteristics are also added because they may correlate to people's opinions on reducing inequality, as the literature discussed previously shows.

Previous internal mobility experience is added because this kind of experience might affect students' participation in mobility programs. For example, students who have already left their social environment once may be more likely to move to another country and invest a great number of resources in finding the perfect match regarding university and field of study (Meya & Suntheim, 2014).

Grades on the admission exam are added to account for students' academic ability, as those who apply for an exchange may be academically more able and motivated than others (Meya & Suntheim, 2014), having higher chances of being awarded a grant to go abroad.

Finally, we account for the course area. During 2011 and 2015, the Brazilian government implemented a massive exchange program called Science without Borders, which sent more than 90 thousand Brazilians to study abroad (Brasil, 2016). Since the program offered more scholarships for students in Biological Sciences, Health, Exact, Technological, and Earth Sciences, a dummy variable is added to account for those subject areas.

Table 3.2 shows that mobile and non-mobile students of the full list of respondents differ significantly in their baseline characteristics. For example, mobile students have higher pre-university grades, are younger when entering university, have better economic conditions (i.e., more educated parents and study more in private schools), and experience more mobility before entering university than non-mobile students. There are also differences in the distribution of the areas of their studies. For instance, Exact, Technological, and Earth Sciences students tend to be more mobile. Male students and black/brown/indigenous students tend to move less.

Table 3.2 – Comparison between mobile and non-mobile students (baseline variables)

	(1) Mobile students	(2) Non-mobile students	t-value (1) vs. (2)
Grade admission exam (standardized)	0.325	0.008	6.700***
Black, brown, or indigenous	0.117	0.179	-3.730***
Female	0.524	0.458	2.930***
Age when entering university	19.662	20.263	-3.950***
One or more parents had access to higher education	0.707	0.576	5.980***
Public high school	0.170	0.263	-4.920***
Previous internal mobility experience	0.175	0.127	3.010***
Course area			

	(1) Mobile students	(2) Non-mobile students	t-value (1) vs. (2)
Arts	0.056	0.058	-0.170
Biological Sciences and Health Sciences	0.129	0.201	-4.220***
Exact, Technological and Earth Sciences	0.570	0.481	3.930***
Humanities	0.245	0.260	-0.750

Data source: Authors' estimation from administrative and survey data.

Note. Figures calculated using the full sample of the survey respondents (n = 2,280). *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

To ensure that none of the matching variables could be affected by having participated in mobility programs, which could bias our results (Gertler *et al.*, 2016), we restrict the sample of mobility students to those who traveled only after entering university. By focusing on those students, we guarantee that treatment participation does not affect the variables included in the propensity score calculation (that are measured when students enter university). In addition, to reduce the bias due to potential self-selection into mobility programs caused by unobserved or omitted factors, the control group only contains non-mobile students who either applied for mobility programs in the past or show interest in applying for one in the future.²⁵ By doing that, we control for the fact that students interested in mobility may be more motivated than those not interested in going abroad.

We explore the impact of student mobility programs on our outcomes of interest by the average treatment effect on the treated (ATT) students, i.e., those who benefited from a mobility program. The ATT for our main outcome variables (Y) can be formally specified as follows:

$$ATT = E(Y^T | D = 1) - E(Y^C | D = 0) \quad (3.3)$$

Where Y^T denotes the potential outcomes for the treated individuals; Y^C denotes the potential outcomes for the nontreated individuals; D is a dummy for student mobility status; $E()$ indicates the mathematical expectation operator.

Our model is given by:

$$Y_i = \beta_1 + \beta_2 treatment_i + X_i + \varepsilon_i \quad (3.4)$$

Where Y_i stands for the outcome variable of student i ; $treatment$ is a dummy variable that takes the value of 1 if student i participated in a student mobility program; X_i is a set of individual covariates of student i ; and ε_i is the error term. β_2 represents the average treatment effect. To apply PSM, the regression uses

²⁵ To capture that, we included a question in the survey asking whether the person has applied for mobility in the past or plan to apply in the future.

weights based on the propensity score (p), which is $1/p$ for a treated participant and $1/(1-p)$ for a control participant. Propensity score weighting is equivalent to a weighted analysis treating propensity score weights as sampling weights (Guo & Fraser, 2015).²⁶

The rationale for using PSM to create an artificial control group instead of doing a pure experiment is mainly that doing an experimental framework (such as a Randomized Control Trial), where students are randomly assigned to study abroad, is not feasible in our case. Moreover, since at UNICAMP there is no threshold at which students become automatically eligible to participate in student mobility, empirical strategies like regression discontinuity designs also cannot be applied. UNICAMP has several mobility programs, and students are not limited to only applying to one. Using Difference in Differences is also not possible in this case since there is no baseline information on our outcomes of interest, and it was not feasible to collect data prior to mobility, given that this research was conducted during the COVID-19 pandemic when most mobility programs were suspended or postponed.

Nevertheless, we are aware that using PSM leads to unbiased and robust results only if two assumptions hold: conditional independence (also called unconfoundedness or selection on observables) and common support (also called overlap). We discuss those two assumptions below.

Conditional independence

The first assumption states that differences in outcomes (Y) between treated (T) and comparison (C) individuals with the same values for pre-treatment covariates (X) are attributable to treatment (D) (Caliendo & Kopeinig, 2008). It can be written as follows:

$$(Y_T, Y_C) \perp\!\!\!\perp D \mid X \quad (3.5)$$

Where $\perp\!\!\!\perp$ denotes independence.

²⁶ We are aware that there are several other possible matching techniques that can be used when doing matching, that may differ in the way the neighborhood for each treated unit is defined, and the common support is handled, and regarding the weights that are assigned to these neighbors (Caliendo & Kopeinig, 2008). With that in mind, in Appendix 3.G, we test the robustness of our main results regarding the choice of different matching methods. We compare results from the original linear model calculated using sample weights based on the propensity score with other matching techniques such as Kernel, 5-Nearest Neighbors, and Coarsened Exact Matching. Our results show that our main conclusions remain the same regardless of the choice of algorithm/technique to perform the matching.

The conditional independence assumption cannot be directly tested. However, extensive information on treatment selection helps define a set of covariates, which makes the assumption more probable, with the model including variables that determine the probability of going abroad (Rosenbaum & Rubin, 1983; González & Pazó, 2008; Gertler *et al.*, 2016).

Even without the possibility of testing this assumption empirically, we are confident that, in our case, the most important pre-treatment characteristics to determine participation in mobility programs are considered. For instance, by including the grades in the admission exam, we are accounting for students' academic performance, one of the most important criteria used by higher education institutions to select their exchange students. When adding socioeconomic variables, we account for one of the main challenges preventing students from going abroad: the lack of financial resources (Junor & Usher, 2008). By adding demographic characteristics, we account for possible 'hidden' criteria affecting less privileged students' motivation and access to study-abroad opportunities. Finally, when adding a variable to account for the course area, we capture the differences in the number of scholarships available for each field of study.

By adding all those variables, we believe that the relevant factors that might impact treatment assignment are observed. In addition, by limiting the control group only to students interested in going abroad (i.e., those who applied for a program in the past or plan in the future), we control for potential self-selection to mobility caused by factors not observed in this study.

Common support

The common support assumption states that units with a given set of characteristics (X) have a positive probability (P) of being both participants and nonparticipants of the program (D) (Heckman *et al.*, 1999). The assumption can be written as follows:

$$0 < P(D = 1|X) < 1 \quad (3.6)$$

We test this assumption by visualizing the density distribution of the propensity score in both the treatment and control groups, as discussed by Caliendo and Kopeinig (2008). Figure 3.3 shows the distribution of the propensity scores for both groups. As expected, the treated group has their distribution of propensity scores more skewed to the left, while the controls are more skewed to the right when compared to the treated group. Overall, the common support assumption is fulfilled, with 96.5% (776 out of 804) treated observations within the common support area.

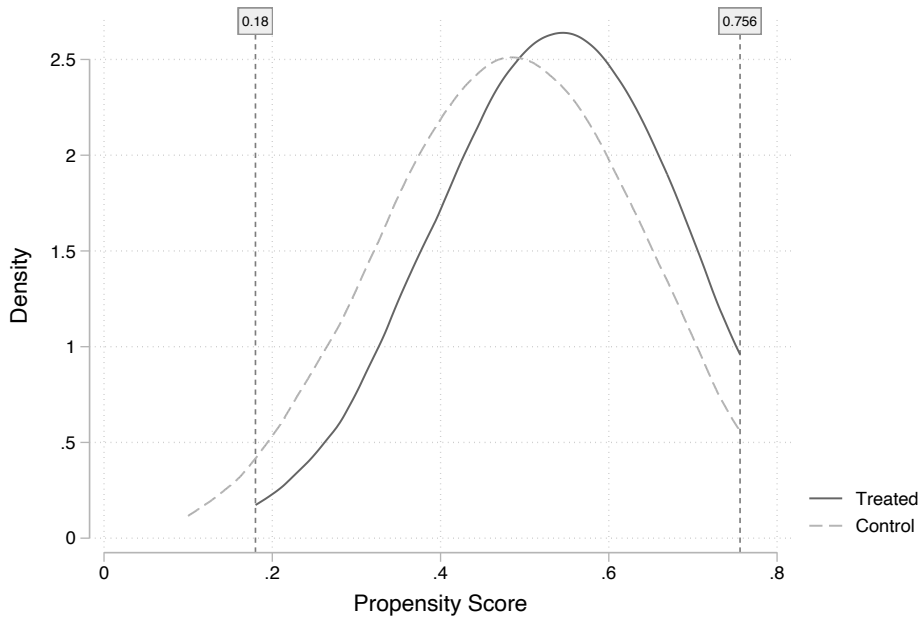


Figure 3.3 – Distribution of the propensity scores for treatment and control groups (Common Support Assumption)

Data source: Authors' estimation from administrative and survey data.

3.4. Results

3.4.1. Propensity score estimation

Table 3.3 displays the model's results used to predict the propensity score (through Equation 3.2). The dependent variable is a binary variable taking the value 1 if the student participated in a mobility program and 0 otherwise. The set of independent variables used are those discussed in the Methodology section.

Table 3.3 – Participation in student mobility programs (probit model)

Dependent variable: Pr(Student Mobility = 1)	Coefficients		Marginal Effects		Sig.
	coef.	std. err.	dy/dx	std. err.	
Academic ability (if the grade in the admission exam is higher than the average of the same year and course)	0.288	0.066	0.115	0.026	***
Race/Skin color (if black, brown or indigenous)	-0.302	0.093	-0.121	0.037	***
Gender (if female)	0.131	0.067	0.052	0.027	*
Age when entering university	0.021	0.082	0.008	0.033	
Age when entering university (squared)	-0.001	0.002	-0.000	0.001	
Education of the parents (if one or more parents had access to tertiary education)	0.309	0.07	0.123	0.028	***
Type of high school (if studied only in non-technical public schools)	-0.207	0.083	-0.082	0.033	**

Dependent variable: Pr(Student Mobility = 1)	Coefficients		Marginal Effects		Sig.
	coef.	std. err.	dy/dx	std. err.	
Previous internal mobility experience (if completed high school outside the state where UNICAMP is located)	0.252	0.094	0.101	0.037	***
Course area (if eligible for the SwB program, i.e., enrolled in Biological Sciences, Health, Exact, Technological or Earth Sciences)	0.084	0.074	0.034	0.029	
Constant	-0.473	0.989			
Number of observations			1527		
Pseudo r-squared			0.039		
Chi-square			77.540		
Prob > chi ²			0.000		

Data source: Authors' estimation from administrative and survey data.

Note. Marginal effects are calculated at the means of covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Results show that all variables, except age and course area, significantly correlate to the probability of participating in a student mobility program. Higher pre-university grades, being female, having more educated parents, and having previous mobility experience are all associated with a positive effect on the conditional probability of being treated, holding all other regressors constant at their means. On the other hand, those who self-declared as black/brown/indigenous and those who attended only public schools before entering university are negatively associated with the conditional probability of being in the treatment group. Those results are not surprising, given that mobility programs in Brazil tend to benefit students from more privileged backgrounds (Borges, 2015; Gomes, 2020; Lopes, 2020; Feltrin *et al.*, 2021).

3.4.2. Balancing test for PSM estimations

After estimating the propensity scores for each sample unit, we test the balancing property of the observed covariates between the treatment and control groups and the overall balance. The goal is to check if the sampling bias is reduced through matching.

The results presented in Table 3.4 show a bias reduction after matching. It indicates that the matching sufficiently balances most covariates (except for academic ability and parent's education) and considerably reduces initial differences of both treated and untreated. The table also compares the joint significance of all matching variables of the probit model. The Pseudo R-squared of results after matching is lower for the matched sample than for the unmatched one. The mean and the median of the absolute standardized bias are reduced.

Additionally, Rubins' B (the absolute standardized difference of the means of the linear index of the propensity score in the treated and nontreated group) and

Rubin's R (the ratio of treated to nontreated variances of the propensity score index) fall within the bounds suggested by Rubin (2001). Results indicate that the samples became sufficiently balanced after matching. Nevertheless, to account for any remaining imbalance (especially caused by the academic ability and parent's education variables), all variables used to estimate the propensity score will be added to one of the specifications of the outcome regression model as a robustness check.

Table 3.4 – Balancing results before and after matching

Variable	Sample	Mean		Bias (%)	↓ Bias (%)	p>t	
		Treated	Control				
Academic ability (if the grade in the admission exam is higher than the average of the same year and course)	Unmatched	.56095	.45316	21.7		0.000	
	Matched	.55541	.50163	10.8	50.1	0.090	
Race/Skin color (if black, brown or indigenous)	Unmatched	.11705	.19346	-21.2		0.000	
	Matched	.11727	.14754	-8.4	60.4	0.153	
Gender (if female)	Unmatched	.52363	.48987	6.8		0.178	
	Matched	.53093	.51331	3.5	47.8	0.580	
Age when entering university	Unmatched	19.662	19.956	-10.7		0.032	
	Matched	19.585	19.723	-5.0	53.2	0.366	
Age when entering university (squared)	Unmatched	393.05	406.78	-10.0		0.047	
	Matched	389.02	395.29	-4.5	54.3	0.394	
Education of the parents (if one or more parents had access to tertiary education)	Unmatched	.70738	.57106	28.7		0.000	
	Matched	.70747	.64495	13.1	54.1	0.034	
Type of high school (if studied only in non-technical public schools)	Unmatched	.1704	.26456	-23.0		0.000	
	Matched	.17397	.21237	-9.4	59.2	0.122	
Previous internal mobility experience (if completed high school outside the state where UNICAMP is located)	Unmatched	.17537	.13165	12.1		0.015	
	Matched	.17526	.14553	8.3	32.0	0.210	
Course area (if eligible for the SwB program, i.e., enrolled in Biological Sciences, Health, Exact, Technological or Earth Sciences)	Unmatched	.699	.66456	7.4		0.140	
	Matched	.69845	.67919	4.1	44.1	0.513	
Sample	Pseudo R ²	LR chi ²	p>chi ²	Mean Bias	Median Bias	B	R
Unmatched	0.039	82.30	0.000	15.7	12.1	47.1*	0.88
Matched	0.009	13.28	0.150	7.5	8.3	23.3	1.01

Data source: Authors' estimation from administrative and survey data.

Note. * if B>25% or R outside [0,5; 2].

3.4.3. Average treatment effects on the treated

In our analysis, we consider the impact of students' mobility on preferred and perceived inequality, respectively.

The impact of students' mobility on preferred inequality

Table 3.5 shows the propensity score weighted linear regression results for the variable measuring preferred inequality. It indicates that, on average, mobility has no significant effect on preferred inequality at any acceptable significance level. Despite the insignificant overall results, we can observe some interesting trends when investigating the impact of mobility on the five components used to calculate the preferred inequality coefficient (Table 3.6). Results show that although mobility does not affect preference to reduce inequality, it affects the preferences on the incomes of several occupations. In general, mobile students prefer higher salaries than non-mobile, with those who go abroad preferring to see higher salaries for higher-skilled jobs, such as general practitioners, company presidents, and politicians.

Table 3.5 – Average treatment effect on the treated, preferred inequality

	(I)	(II)
Preferred inequality	-.0037983 (.0074413)	-.0038001 (.007199)
Untreated	751	751
Treated	776	776
PSM covariates	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Table 3.6 – Average treatment effect on the treated, preferred income disaggregation

Preferred income	General practitioner		President large nat. company		Store clerk		Unskilled factory worker		Brazilian state governor	
	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)
	1.446 *** (.476)	1.446 *** (.474)	2.433 *** (.786)	2.428 *** (.759)	.231 *** (.113)	.230 *** (.112)	.164 (.122)	.161 (.121)	1.946 *** (.554)	1.953 *** (.548)
Untreated	751	751	751	751	751	751	751	751	751	751
Treated	776	776	776	776	776	776	776	776	776	776
PSM covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

The impact of students' mobility on perceived inequality

In Table 3.7, we show the results for the average treatment effects of international mobility on perceived inequality. Contrary to the preferred inequality variable, in this case going abroad significantly impacted people's view on perceived inequality, with the treatment group believing that current inequality in the country is slightly smaller than non-mobile students with similar pre-treatment characteristics.

Table 3.7 – Average treatment effect on the treated, perceived inequality

	(I)	(II)
Perceived inequality	-.0089182*** (.0029684)	-.0089028*** (.0029578)
Untreated	751	751
Treated	776	776
PSM covariates	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

When investigating the results further (Table 3.8), we can observe some differences in income perceptions, with mobile students believing, on average, that the current income of some occupations (such as a general practitioner and a company president) is higher than what their matched counterparts observe.

Table 3.8 – Average treatment effect on the treated, perceived income disaggregation

Perceived income	General practitioner		President large nat. company		Store clerk		Unskilled factory worker		Brazilian state governor	
	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)
	1.780 ***	1.774 ***	1.459 **	1.448 **	.021	.021	.012	.012	-.415	-.413
	(.510)	(.508)	(.613)	(.602)	(.076)	(.076)	(.043)	(.042)	(.618)	(.611)
Untreated	751	751	751	751	751	751	751	751	751	751
Treated	776	776	776	776	776	776	776	776	776	776
PSM covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

3.4.4. Digging into group heterogeneity

To capture potential heterogeneity among different groups of students, in this section, we disaggregate the results by the characteristics of the mobility experienced and students' characteristics.

3.4.4.1. Characteristics of the mobility experienced

When disaggregating the treatment effects by the characteristics of the mobility experienced (i.e., factors that policymakers can adjust when designing their programs) such as destination region, date of the exchange, and course area, we observe that results for the preferred inequality variable remain insignificant for most student subgroups (Table 3.9). The only exception happens in the case of students traveling to North America, who show higher acceptance of inequality.

Results for the perceived inequality variable, however, show some subgroup variations. Students traveling to North America and Europe, those who returned from the exchange less than five years ago (or who are still abroad), and those not enrolled in arts and humanities all observe less inequality compared to the remaining subgroups. Coefficients, however, are small.

Table 3.9 – Average treatment effect on the treated by characteristics of the mobility experienced

	Region of destination			End of last exchange		Course area	
	North America	Europe	Others	More than 5 years	Last 5 years	Biology, Health, Exact, Technology and Earth	Arts and Humanities
Preferred inequality	.024** (.012)	-.012 (.008)	-.006 (.015)	.003 (.009)	-.011 (.009)	-.010 (.008)	.009 (.014)
Perceived inequality	-.015*** (.005)	-.011*** (.003)	.007 (.005)	-.006* (.004)	-.012*** (.004)	-.011*** (.004)	-.005 (.005)

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; estimations based on the model with no covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level; course area aggregated based on eligibility to the Science without Borders program.

3.4.4.2. Pre-treatment variables

Table 3.10 shows the results of the disaggregation based on pre-treatment socioeconomic characteristics. Almost all subgroups show insignificant effects of going abroad on the preferred inequality variable. The only exception happens in the

case of the respondent's age, with older mobile students preferring slightly less inequality.

In the case of the perceived inequality variable, we observe that students coming from more disadvantaged economic backgrounds (i.e., with less educated parents and coming from public schools), as well as females, non-black/brown/indigenous, and those that are less than 30 years old respond differently from going abroad when compared to the remaining subgroups. Students with those characteristics, when going abroad, present slightly smaller coefficients for the perceived inequality variable when compared with non-mobiles with similar characteristics.

Table 3.10 – Average treatment effect on the treated by socioeconomic characteristics

	Parents education		Secondary school type		Gender		Skin color/race		Current age	
	More educ.	Less educ.	Public	Non-public	Fem.	Male	Black, brown or ind.	Others	< 30	≥ 30
Preferred inequality	-0.002	-0.007	-0.005	-0.003	-0.010	.003	-0.008	-0.003	.005	-.045**
	(.010)	(.012)	(.016)	(.008)	(.010)	(.010)	(.019)	(.008)	(.008)	(.019)
Perceived inequality	-0.006	-.014***	-.012*	-.008**	-.013***	-.005	.002	-.011***	-.011***	-.000
	(.004)	(.005)	(.006)	(.003)	(.004)	(.004)	(.008)	(.003)	(.003)	(.007)

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; estimations based on the model with no covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

3.4.4.3. Post-treatment variables

In this section, we investigate possible heterogeneous effects of treatment participation on subgroups with different post-treatment economic statuses (Table 3.11) and distinct perceptions of their well-being (Table 3.12).

Results show that the effect of going abroad is overall insignificant for most subgroups. However, it varies depending on the individual current income and occupation. Mobility is associated with preferences to reduce inequality only in groups reporting lower current incomes and working outside the private sector.

In the case of the variable measuring perceptions, we observe negative and significant coefficients in students in the middle of the income distribution and those working outside the private sector. Along the same line, when classifying the students into different groups according to their self-reported current well-being, treated respondents who regarded themselves as having higher well-being believe that inequality is smaller in Brazil compared to the control group. In contrast, no difference is found for those who rate themselves as having lower or medium well-being. A similar trend happens for those who believe they experienced upward social mobility in the past five years and those who expect upward social mobility in the near future. Both mobility groups perceive inequality to be lower, whereas there are no significant effects of mobility on those that experienced or expected downward or no change in their social mobility.

Table 3.11 – Average treatment effect on the treated by economic status

	Current per capita income [†]			Occupation	
	< 5 min. wage	5-10 min. wage	> 10 min. wage	Private sector	Others
Preferred inequality	-.026*** (.010)	.009 (.014)	-.017 (.023)	-.001 (.009)	-.022* (.013)
Perceived inequality	-.006 (.004)	-.010* (.006)	-.005 (.010)	-.005 (.004)	-.013** (.005)

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; estimations based on the model with no covariates; [†] current per capita income calculated dividing the monthly household income (in minimum wages at the date of the survey) by the number of people in the household; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Table 3.12 – Average treatment effect on the treated by well-being perception²⁷

	Experienced social class change (past 5 years)			Expected social class change (future 5 years)			Current well-being		
	Down	None	Up	Down	None	Up	Low	Middle	High
Preferred inequality	.009 (.020)	-.013 (.017)	-.008 (.009)	-.008 (.042)	.005 (.020)	-.008 (.008)	-.003 (.021)	-.015 (.019)	-.010 (.009)
Perceived inequality	-.007 (.007)	-.002 (.007)	-.011*** (.004)	-.013 (.012)	-.003 (.008)	-.009*** (-.009)	-.000 (.007)	-.006 (.007)	-.009*** (.004)

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; estimations based on the model with no covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

²⁷ The three groups are defined based on the answers to the question: "On a scale of 0 to 10, in which 0 are the people with the lowest income and quality of life, and in 10 are the people with the highest income and quality of life, in what position would you put yourself following moments of your life?". Respondents have to select a number from 0 to 10 for their position in the 'current moment', '5 years ago' and '5 years from now'. By comparing those values, we know if respondents experienced/expect an improvement or not in their social class.

While results from the heterogeneity analysis on post-treatment variables seem interesting, we emphasize that they should be interpreted exclusively as correlation and not as causal as those variables were measured after students went abroad, being potential outcome variables per se. Given that they could have been affected by treatment participation (but not affect treatment status), they were not considered in our main propensity score matching estimation, only being added to investigate potential heterogeneous effects.

3.5. Discussion

Inequality Preferences

The literature on student mobility claims that going abroad can improve people's personalities and cross-cultural skills. Mobile students appear more proficient, approachable, open, agreeable, and less neurotic individuals (Clarke III *et al.*, 2009; Zimmermann & Neyer, 2013; European Commission, 2016). However, our results point us in a different direction when looking at students' inequality preferences. Against our expectations, our results show that going abroad does not affect students' preference to reduce inequality.

Still, we observe interesting trends when grouping students based on selected pre- and post-treatment characteristics. For instance, when looking at economic characteristics, we observe that mobility affects the inequality preferences of students reporting lower current incomes. For those students, mobility is associated with significant preferences to reduce inequality.

Even though our data does not allow us to determine precisely the causal mechanisms behind this result, economic theory can help us build a possible explanation. The self-interest approach states that even when the current level of inequality is seen as legitimate by individuals, people tend to support a decrease in inequality if they might benefit from it (Meltzer & Richard, 1981; Curtis & Andersen, 2015; Garcia-Sanchez *et al.*, 2019). Inspired by this approach, we argue that self-interest is one possible reason mobility affects the preferences of those students in worse economic conditions more than the preferences of other groups.

When looking at the effect of student mobility on current income and perceived well-being, we observe that, in line with previous studies (Di Pietro, 2013; Engberg *et al.*, 2014), exchange students have higher current incomes and higher self-assessed well-being (Appendix 3.H). Students who fail to meet their financial

expectations towards mobility programs might believe that inequality affects them directly, becoming more concerned about inequality than others.

When disaggregating the inequality measures, we observe that mobile students prefer higher salaries for more skilled occupations. This latter result might be explained by the tendency to interpret the fact of being awarded a mobility grant as a proxy for academic excellence (Engberg *et al.*, 2014). Considering the competitive nature of mobility programs, awardees might put themselves in the shoes of the most successful individuals, i.e., those with privileged occupations, and express their preferences for advantaging those occupations believing they would benefit from a rise in those salaries.

Inequality Perceptions

When looking at the impact of going abroad on mobile students' perceived inequality, we find that both mobile and non-mobile students underestimated the real wage inequality in Brazil. However, mobile students believe that the current income disparities in the country are slightly smaller than non-mobile students.

Several scholars tried to explain why people underestimate economic inequality. Those scholars attribute the reason to either ignorance or indifference, suggesting that since an individual's perception of reality is limited to their immediate social and geographic environment, an underestimation of inequality can happen if one's reality has fewer disparities than the national context (Becker, 2021). It might be the case that mobile students, while abroad (or even upon returning), mostly interact with peers with better economic conditions, generating a detachment from their country's reality and leading them to underestimate inequality more than the non-mobiles.

For instance, mobile students believe that the current income of some highly skilled occupations is higher than what their non-mobile matched counterparts observe. It might be that mobile students observe the lifestyles of professionals abroad, where salaries are usually higher than the Brazilian ones, and detach from their national reality.

Interestingly, we also observe that individuals' attitudes affect perceptions toward inequality. In particular, students who are more 'positive' towards their economic status (i.e., those with higher self-assessed well-being and those who either experienced or expected upward social mobility) are the ones for which mobility significantly affected perceived inequality. We may conjecture that more

optimistic students are more inclined to 'view the world through a better lens' and are more susceptible to changing their inequality views after experiencing a different reality.

*

The literature on both student mobility and people's attitudes toward inequality is extensive, and the interpretation of the causal mechanisms behind human preferences and perceptions is not straightforward. In this section, we provided some conjectures to explain part of our results. Still, further research is needed to test our theories in a more empirical setting and explain the remaining heterogeneity of its effects.

3.6. Conclusion

This study investigates the role of international mobility on students' attitudes towards inequality, focusing on two dimensions: preference and perception of inequality. We complement secondary data with data collected by interviewing more than a thousand former students from a Brazilian university. To assess the causal impact of mobility, we implement Propensity Score Matching and construct an artificial group of non-mobile students to compare with the mobile ones.

Results show that going abroad does not affect students' preference to reduce within-country inequality. Still, it affects salary preferences, with exchange students expressing their preferences favoring higher salaries for high-skilled jobs. We also found a significant effect of going abroad on individuals' perception of current inequality, with mobile students underestimating inequality more than their non-mobile counterparts.

Mobility programs are understood in the academic literature as a policy instrument that can positively impact students in several aspects, including personal development (Clarke III *et al.*, 2009; Zimmermann & Neyer, 2013; European Commission, 2016). Our results present empirical evidence that challenges this idea since mobility does not affect students' preference to reduce inequality. Considering the unequal Brazilian society, our results are worrying, and they invite us to reflect on student mobility programs' role in generating caring future decision-makers.

This study is not exempt from limitations. First, the data collection was performed during the COVID-19 pandemic, a period during which mobility programs were either postponed or canceled. Hence, the PSM technique was the

most appropriate methodology for comparing groups of mobile and non-mobile students. Even though PSM is a widely used and flexible statistical impact evaluation technique, we believe future research should validate our results using different (quasi-) experimental designs, such as randomized control trials (if feasible), difference in differences, and/or a regression discontinuity design. For that, having information on students' views on inequality before mobility would be desirable to improve the statistical model. Another limitation is that, even though UNICAMP's exchange students can represent the average mobile student in Brazil (as discussed in the Data and Methodology section), students (mobile or not) at Brazilian 'elite' institutions usually come from more privileged strata of society. At those universities, enrolment is typically associated with students' socioeconomic backgrounds. In our sample, for instance, most students had parents that had access to tertiary education, with the minority being black/brown/indigenous or coming from public schools (i.e., less prestigious institutions and those with more deprived students). Having that in mind, we believe it would be beneficial for policy purposes if future research about the effects of mobility on inequality attitudes focus also on more underprivileged students.

To the best of our knowledge, our study is the first to address the impact of mobility on inequality views. Hence, conducting the same study in countries other than Brazil is crucial to understanding the possible (if any) heterogeneity of the impacts on students from different country contexts.

REFERENCES

- Aalberg, T. (2003). Perceived Distributions: The Public Understanding of Reality. In *Achieving Justice: Comparative Public Opinion on Income Distribution* (Chapter 5). Brill.
- Alvarenga, D. (2020). *No Brasil, CEO de empresa de capital aberto ganha em média 75 vezes mais que funcionários*. G1. Retrieved September 14, 2022 from <https://g1.globo.com/economia/noticia/2020/09/30/no-brasil-ceo-de-empresa-de-capital-aberto-ganha-em-media-75-vezes-mais-que-funcionarios.ghtml>
- Andersen, R., & Yaish, M. (2012). Public Opinion on Income Inequality in 20 Democracies: The Enduring Impact of Social Class and Economic Inequality. *AIAS, GINI Discussion Paper*, 48.
- Andrade, R. O. (2019). Brazil budget cuts threaten 80,000 science scholarships. *Nature*, 572(7771), 575–576.
- Bavetta, S., Donni, P. L., & Marino, M. (2017). An empirical analysis of the determinants of perceived inequality. *Review of Income and Wealth*.
- Becker, B. (2021). Temporal change in inequality perceptions and effects on political attitudes. *Political Research Exchange*, 3(1), 1860652.
- Blackwell, M., Iacus, S., King, G., & Porro, G. (2009). cem: Coarsened exact matching in Stata. *The Stata Journal*, 9(4), 524–546.
- Blair, G., & Imai, K. (2012). Statistical analysis of list experiments. *Political Analysis*, 20(1), 47–77.
- Borges, R. A. (2015). *A interseccionalidade de gênero, raça e classe no Programa Ciência sem Fronteiras: um estudo sobre estudantes brasileiros com destino aos EUA* [Master's thesis, Universidade de Brasília].
- Brasil. (2016). *Science without Borders Control Panel*. Retrieved March 21, 2016, from <http://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>.
- Bullock, J. G., Gerber, A. S., Hill, S. J., & Huber, G. (2015). Partisan bias in factual beliefs about politics. *Quarterly Journal of Political Science*, 10(4), 519–578.
- Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of economic surveys*, 22(1), 31–72.
- Cappelen, A. W., Haaland, I. K., & Tungodden, B. (2018). *Beliefs about Behavioral Responses to Taxation*. Mimeo, pp. 1–21.

- Casara, B. G. S., Filippi, S., Suitner, C., Dollani, E., & Maass, A. (2022). Tax the elites! The role of economic inequality and conspiracy beliefs on attitudes towards taxes and redistribution intentions. *British Journal of Social Psychology*.
- Clarke III, I., Flaherty, T. B., Wright, N. D., & McMillen, R. M. (2009). Student intercultural proficiency from study abroad programs. *Journal of Marketing Education*, 31(2), 173–181.
- Contu, G., Frigau, L., Mola, F., Romano, M., & Conversano, C. (2020). University student achievements and international mobility - The case of University of Cagliari. *Electronic Journal of Applied Statistical Analysis*, 13(2), 474–497.
- Curtis, J., & Andersen, R. (2015). How Social Class Shapes Attitudes on Economic Inequality: The Competing Forces of Self-Interest and Legitimation. *International Review of Social Research* 2015, 5(1), 4–19.
- Dallinger, U. (2010). Public support for redistribution: What explains cross-national differences? *Journal of European Social Policy*, 20(4), 333–349.
- De Negri, F. (2021). *Políticas Públicas para Ciência e Tecnologia no Brasil: cenário e evolução recente*. Instituto de Pesquisa Econômica Aplicada (Ipea), Brasilia, Brazil.
- Di Pietro, G. (2013). Do Study Abroad Programs Enhance the Employability of Graduates? *IZA (Institute for the Study of Labor) Discussion Papers Series*.
- Di Pietro, G. (2019). University study abroad and graduates' employability. *IZA World of Labor* 2019, 109, <https://doi.org/10.15185/izawol.109.v2>
- Droitcour, J., Caspar, R. A., Hubbard, M. L., Parsley, T. L., Visscher, W., & Ezzati, T. M. (1991). The item count technique as a method of indirect questioning: A review of its development and a case study application. In *Measurement errors in surveys*, pp. 185–210.
- Engberg, D., Glover, G., Rumbley, L., & Altbach, P. (2014). *The rationale for sponsoring students to undertake international study: an assessment of national student mobility scholarship programmes*. Retrieved August 15, 2022, from http://www.britishcouncil.org/sites/britishcouncil.uk2/files/e002_outward_mobility_study_final_v2_web.pdf
- European Commission. (2016). *The Erasmus Impact Study: Regional Analysis*. Luxembourg, Publications Office of the European Union.
- Eveland, T. J. (2020). Supporting first-generation college students: analysing academic and social support's effects on academic performance. *Journal of Further and Higher Education*, 44(8), 1039–1051.
- Feltrin, R. B., Santos, D. F. D., & Velho, L. M. L. S. (2021). O papel do Ciência Sem Fronteiras na inclusão social: análise interseccional do perfil dos

- beneficiários do programa na Unicamp. *Avaliação: Revista da Avaliação da Educação Superior*, 26, 288–314.
- Garcia-Sanchez, E., Osborne, D., Willis, G. B., & Rodriguez-Bailon, R. (2019). Attitudes towards redistribution and the interplay between perceptions and beliefs about inequality. *British Journal of Social Psychology*, pp. 1–26.
- Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. J. (2016). *Impact evaluation in practice*. The World Bank, Second edition.
- Glynn, A. N. (2013). What can we learn with statistical truth serum? Design and analysis of the list experiment. *Public Opinion Quarterly*, 77, 159–172.
- Gomes, C. B. T. (2020). O efeito do capital escolar no acesso ao Programa Ciência sem Fronteiras. *ETD-Educação Temática Digital*, 22(2), 336–353.
- Gonzalez-Baixauli, C., Montañes-Brunet, E., & Pérez-Vázquez, P. J. (2018). Effects of mobility programmes on university students' academic performance. In *4th International Conference on Higher Education Advances (HEAD'18)*, Editorial Universitat Politecnica de Valencia, pp. 553–562.
- González, X., & Pazó, C. (2008). Do public subsidies stimulate private R&D spending? *Research Policy*, 37(3), 371–389.
- Gopalakrishnan, V., Wadhwa, D., Haddad, S., & Blake, P. (2021). *2021 Year in Review in 11 Charts: The Inequality Pandemic*. The World Bank News. Retrieved April 22, 2022, from <https://www.worldbank.org/en/news/feature/2021/12/20/year-2021-in-review-the-inequality-pandemic>
- Granja, C. D. (2018). *Internacionalização e mobilidade estudantil: o programa Ciência sem Fronteiras na Universidade Estadual de Campinas* [Master's thesis, University of Campinas].
- Granja, C. D., & Carneiro, A. M. (2020). EU-Brazil Cooperation: The Science without Borders Programme Experience. In *Building Higher Education Cooperation with the EU* (pp. 129–145). Brill Sense.
- Granja, C. D., & Visentin, F. (2021). International student mobility and academic performance: Does timing matter? *Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT) Working Paper*, 2021-049.
- Guillaud, E. (2013). Preferences for redistribution: An empirical analysis over 33 countries. *Journal of Economic Inequality*, 11(1), 57–78.
- Guo, S., & Fraser, M. W. (2015). Propensity score analysis: Statistical methods and applications. *SAGE publications*, 2nd edition.

- Guruz, K. (2008). *Higher Education and International Student Mobility in the Global Knowledge Economy*. SUNY Press.
- Heckman, J. J., LaLonde, R. J., & Smith, J. A. (1999). The economics and econometrics of active labor market programs, In O. Ashenfelter and D. Card (eds), *Handbook of Labor Economics*, Vol. III, pp. 1865–2097, Amsterdam: Elsevier.
- Hjerm, M., & Schnabel, A. (2012). How much heterogeneity can the welfare state endure? The influence of heterogeneity on attitudes to the welfare state. *Nations and Nationalism*, 18(2), 346–369.
- Jaime-Castillo, A. M., & Saez-Lozano, J. L. (2016). Preferences for tax schemes in OECD countries, self-interest and ideology. *International Political Science Review*, 37(1), 81–98.
- Jaime-Castillo, A. M., Fernández, J. J., Valiente, C., & Mayrl, D. (2016). Collective religiosity and the gender gap in attitudes towards economic redistribution in 86 countries, 1990–2008. *Social science research*, 57, 17–30.
- Janmaat, J. G. (2013). Subjective inequality: A review of international comparative studies on people’s views about inequality. *European Journal of Sociology*, 54(3), 357–389.
- Jenkins, S. P., & Van Kerm, P. (2011). The measurement of economic inequality. *The Oxford Handbook of Economic Inequality*, Oxford University Press.
- Jetten, J., Peters, K., Álvarez, B., Casara, B. G. S., Dare, M., Kirkland, K., ... , & Mols, F. (2021). Consequences of economic inequality for the social and political vitality of society: A social identity analysis. *Political Psychology*, 42, 241–266.
- Junor, S., & Usher, A. (2008). *Student Mobility & Credit Transfer: A National and Global Survey*. Educational Policy Institute.
- Kim, H., Huh, S., Choi, S., & Lee, Y. (2017). Perceptions of inequality and attitudes towards redistribution in four East Asian welfare states. *International Journal of Social Welfare*, 27(1), 28–39.
- Lépine, A., Treibich, C., & d’Exelle, B. (2020). Nothing but the truth: Consistency and efficiency of the list experiment method for the measurement of sensitive health behaviours. *Social Science & Medicine*, 266, 113326.
- Leuven, E., & Sianesi, B. (2003). PSMATCH2: *Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing*. Retrieved August 2022, from <http://ideas.repec.org/c/boc/bocode/s432001.html>.
- Lopes, A. D. (2020). International mobility and education inequality among Brazilian undergraduate students. *Higher Education*, pp. 1–18.

- Lubker, M. (2004). Globalization and perceptions of social inequality. *International Labour Review*, 143(1-2).
- Marandola, G., & Xu, Y. (2021). *(Mis-)perception of inequality: measures, determinants and consequences*. Publications Office of the European Union, <https://data.europa.eu/doi/10.2760/444832>
- Medgyesi, M. (2013). Increasing income inequality and attitudes to inequality: a cohort perspective. *GINI Discussion Paper*, 94(January, 2013).
- Meltzer, A. H., & Richard, S. F. (1981). A rational theory of the size of government. *Journal of Political Economy*, 89(5), 914–927.
- Meya, J., & Suntheim, K. (2014). The second dividend of studying abroad: The impact of international student mobility on academic performance. *CEGE Discussion Papers*, 215.
- Nassif Pires, L., Carvalho, L. B. D., & Lederman Rawet, E. (2021). Multi-dimensional inequality and Covid-19 in Brazil. *Investigación económica*, 80(315), 33–58.
- Ohtake, F. (2008). Inequality in Japan. *Asian Economic Policy Review*, 3(1), 87–109.
- Osberg, L., & Smeeding, T. (2005). *Fair inequality? An international comparison of attitudes to pay differentials*. Retrieved August 2022, from <https://www.russellsage.org/sites/all/files/u4/Osberg%20&%20Smeeding.pdf>
- Osberg, L., & Smeeding, T. (2006). “Fair” Inequality? Attitudes toward Pay Differentials: The United States in Comparative Perspective. *American Sociological Review*, 71, 450–473.
- OXFAM. (2017). *Nós e as Desigualdades: Pesquisa OXFAM Brasil/Datafolha, Percepções sobre Desigualdades no Brasil*. OXFAM Brasil, São Paulo.
- Parey, M., & Waldinger, F. (2011). Studying Abroad and the Effect on International Labour Market Mobility: Evidence from the Introduction of Erasmus. *The Economic Journal*, 121(551), 194–222.
- Poppitz, P. (2016). Does self-perceptions and income inequality match? The case of subjective social status, *IMK Working Paper*, 173.
- Reeves, R., & Mager, F. (2018). *Attitudes Towards Inequality in the UK A review of opinion surveys*. OXFAM Research Report.
- Roex, K. L., Huijts, T., & Sieben, I. (2018). Attitudes towards income inequality: ‘Winners’ versus ‘losers’ of the perceived meritocracy. *Acta Sociologica*.
- Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41–55.

- Rubin, D. B. (2001). Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation. *Health Services & Outcomes Research Methodology*, 2, 169–188.
- Saar, E. (2008). Different cohorts and evaluation of income differences in Estonia. *International Sociology*, 23(3), 417–445.
- Salário. (2022). *Cargos e Salários*. Salário. Retrieved September 14, 2022, from <https://www.salario.com.br>
- Schwartzman, S., Silva, R. L., & Coelho, R. R. (2021). Por uma tipologia do ensino superior brasileiro: teste de conceito. *Estudos Avançados*, 35, 153–186.
- Sorrenti, G. (2017). The Spanish or the German apartment? Study abroad related outcomes and its recognition by the labour market. *Economics of Education Review*, 60, 142–158.
- Tsai, C. (2019). Statistical analysis of the item-count technique using Stata. *Stata Journal*, 19, 390–434.
- UCRH. (2022). *Teto Salarial no âmbito da Administração Direta e Autarquias do Estado*. Unidade Central de Recursos Humanos, Secretaria de Orçamento e Gestão. Retrieved September 14, 2022, from http://www.recursoshumanos.sp.gov.br/teto_salarial.html
- UNESCO. (2021). *Outbound internationally mobile students by host region*. UNESCO Institute for Statistics. Retrieved June 18, 2021, from <http://data.uis.unesco.org>
- Wang, Z., Crawford, I. & Liu, L. (2019). Higher achievers? Mobility programmes, generic skills, and academic learning: a U.K. case study. *Intercultural Education*, 31(1).
- Warburton, E. C., Bugarin, R., & Nunez, A. M. (2001). *Bridging the Gap: Academic Preparation and Postsecondary Success of First-Generation Students*. U.S. Department of Education, National Center for Education Statistics, 153.
- World Bank (2019). *Gini index (World Bank estimate) – Brazil*. World Development Indicators (WDI). Retrieved June 16, 2022, from https://data.worldbank.org/indicator/SI.POV.GINI?most_recent_value_desc=true&locations=BR
- Wu, A. M., & Chou, K. L. (2017). Public Attitudes towards Income Redistribution: Evidence from Hong Kong. *Social Policy and Administration*, 51(5), 738–754.
- Wulfgramm, M., & Starke, P. (2016). Divided by the Market, Divided by the State: Distribution, Redistribution and Welfare Attitudes in 47 Countries. *Scandinavian Political Studies*, pp. 1–27.

Zimmermann, J., & Neyer, F. J. (2013). Do we become a different person when hitting the road? personality development of sojourners. *Journal of Personality and Social Psychology*, 105(3), 515–530, <https://doi.org/10.1037/a0033019>

APPENDICES

3.A Investigation of sampling bias

Table 3.A – Sample of exchange students versus all exchange population at UNICAMP

	(1) Sample mobile students	(2) All mobile students	t-value (1) vs. (2)
Grade admission exam (standardized)	.32459	.26718	1.33
Black, brown or indigenous	.11705	.12077	-0.28
Female	.52363	.43388	4.40***
Age when entering university	19.662	19.115	7.08***
One or more parents had access to higher education	.70738	.71134	-0.21
Public high school	.1704	.15347	1.13
Previous internal mobility experience	.17537	.1663	0.59
Course area			
Arts	.05597	.05396	0.22
Biological Sciences and Health Sciences	.12935	.09421	2.81***
Exact, Technological and Earth Sciences	.56965	.67404	-5.34***
Humanities	.24502	.17249	4.50***

Data source: Authors' estimation from administrative and survey data.

Note. *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

3.B Preference and perception survey question

Table 3.B – Preference and perception survey question

How much do you think people with the following professions earn in Brazil? And how much do you think they should earn? We know that it is difficult to make an exact calculation, but try to give an approximate value (in Brazilian reais per month, before taxes).		
	How much they earn	How much they should earn
A general practitioner	List A presented as a dropdown menu	List A presented as a dropdown menu
A president of a large national company	List A presented as a dropdown menu	List A presented as a dropdown menu
A store clerk	List A presented as a dropdown menu	List A presented as a dropdown menu
An unskilled factory worker	List A presented as a dropdown menu	List A presented as a dropdown menu
A governor of a Brazilian state	List A presented as a dropdown menu	List A presented as a dropdown menu

Note. List A has the following options: Less than 1 min. wage (to R\$ 1.045,00); Between 1 and 2 min. wage (R\$ 1.045,00 to R\$ 2.090,00); Between 2 and 3 min. wage (R\$ 2.091,00 to R\$ 3.135,00); Between 3 and 5 min. wage (R\$ 3.136,00 to R\$ 5.225,00); Between 5 and 10 min. wage (R\$ 5.226,00 to R\$ 10.450,00); Between 10 and 20 min. wage (R\$ 10.451,00 to R\$ 20.900,00); Between 20 and 50 min. wage (R\$ 20.901,00 to R\$ 52.250,00); More than 50 min. wage (more than R\$ 52.251,00).

3.C Preference for inequality alternative measure I: the World Values Survey

The first alternative measure was inspired by the World Values Survey (WVS) strategy. Based on the WVS, we asked students where they would place themselves on a scale between 1 and 7 (Table 3.C), in which the minimum value corresponds to “incomes should be made more equal” and the maximum to “we need larger income differences as incentives for individual effort.” For this measure, low values mean accepting inequality.

Table 3.C – Inequality preference alternative measure (World Values Survey)

How would you place your views on this scale? (if your opinion falls in between both, choose a point in the middle)							
0	1	2	3	4	5	6	7
Incomes should be made more equal						We need larger income differences as incentives for individual effort	

3.D Preference for inequality alternative measure II: the preferred NGO

As a second alternative measure, we listed three non-profit organizations (NGOs) operating in Brazil, including a short description of each one (Table 3.D). Respondents were informed that the research team would donate 200 Brazilian reais (corresponding to approximately 40 US dollars) to the NGO that obtained the most votes. Students had the choice to select one (or none) of the organizations to donate to.

For this measure, we decided to use real NGOs operating in Brazil instead of listing some hypothetical organizations to increase the accuracy of our results. Studies have already acknowledged the role of monetary incentives in reducing biases in reported beliefs about economic and political facts (Bullock *et al.*, 2015; Cappelen *et al.*, 2018). Even though we did not pay respondents directly to answer this question in the survey nor ask students to donate their own money, giving respondents the option of donating real money is a transparent way of incentivizing them to inform true preferences.

Table 3.D – Inequality preference alternative measure (preferred NGO)

Below we list three NGOs that operate in Brazil, including a short description of each one (extracted from their official sources).

SOS Amazônia (www.sosamazonia.org.br)

Mission: Promote the conservation of biodiversity and the growth of environmental awareness in the Amazon.

Abrace (www.abrace.com.br)

Mission: To permanently seek excellence in social assistance to the families of children and adolescents with cancer and blood disorders, in addition to valuing volunteers and supporters.

CENPEC (www.cenpec.org.br)

Mission: Contribute to the reduction of inequalities in the country, through the production of knowledge and impact on public policies in the field of education and in its articulation with other rights.

The research team is committed to donating R\$200,00 to the NGO that obtains the most votes. Which of these NGOs would you like to contribute to?

- SOS Amazônia
- Abrace
- CENPEC
- None

3.E Preference for inequality alternative measure III: the double-list experiment

For our last measure of inequality preference, we decided to run a double-list experiment, a variation of the more known list-experiment (or item-count technique). We chose to include a small experiment in our survey, given that asking questions about sensitive topics (such as inequality preferences) can make respondents hesitant to report their true opinions (Glynn, 2013; Lépine *et al.*, 2020).

In this type of social experiment, respondents are randomly assigned to two groups (treatment and control) and asked how many of a list of questions apply to them without reporting which ones. The individuals in the control group are presented with a list of statements, while those in the treatment group receive the same list plus a sensitive item. Comparing the average response given by both groups provides an estimate of the prevalence of the sensitive behavior in the treatment group.

An advantage of this kind of method is that, as long as the complete list does not apply to the individual, they can be assured that their answer to the sensitive question is unknown (Glynn, 2013), reducing the level of self-disclosure that a truthful response requires (Droitcour *et al.*, 1991; Blair & Imai, 2012). Moreover, if answers are recorded across many individuals, it provides a statistically unbiased

prevalence estimate for the population and its selected subgroups (Droitcour *et al.*, 1991).

To increase the efficiency of the estimators and reduce their variance, a double-list version of the list-experiment was used (Droitcour *et al.*, 1991). In this case, two lists were used instead of one, with each group serving as treated for the first experiment and control for the second or vice versa (Droitcour *et al.*, 1991; Lépine *et al.*, 2020). All respondents, regardless of group, had to provide information about the key item (Tsai, 2019), and the answers to both experiments were averaged to provide a single estimate (Droitcour *et al.*, 1991). The statements used in the two list-experiments were presented to respondents randomly and are listed in Table 3.E.²⁸

Table 3.E – Inequality preference alternative measure (double-list experiment setting)

Below are listed some items that sometimes make people angry or upset. After reading them, tell us HOW MANY of them upset you. We do not want to know which ones, just how many.	
<p>Group 1 – list A (control)</p> <ul style="list-style-type: none"> • Large corporations polluting the environment • Government demanding seat belts when driving • The increase in the fossil fuel tax <p>Number of agreed statements: X_{1A} (max: 3)</p>	<p>Group 2 – list A (treatment)</p> <ul style="list-style-type: none"> • Large corporations polluting the environment • Government demanding seat belts when driving • The increase in the fossil fuel tax • <u>Income inequality in Brazil</u> <p>Number of agreed statements: X_{2A} (max: 4)</p>
<p>Group 1 – list B (treatment)</p> <ul style="list-style-type: none"> • The prohibition of same-sex marriage • People who consume meat • The government installing more speed cameras • The adoption of children by a homosexual individual or by a homosexual couple • <u>Income inequality in Brazil</u> <p>Number of agreed statements: X_{1B} (max: 5)</p>	<p>Group 2 – list B (control)</p> <ul style="list-style-type: none"> • The prohibition of same-sex marriage • People who consume meat • The government installing more speed cameras • The adoption of children by a homosexual individual or by a homosexual couple <p>Number of agreed statements: X_{2B} (max: 4)</p>

Note. Respondents assigned to Group 1 served as control units for list A and as treated for list B, while respondents assigned to Group 2 served as treated for list A and as the control for list B.

In this case, any individual in the treatment group reporting less than four items for list A (X_{2A}) or less than five items for list B (X_{1B}) could dislike income inequality in Brazil. If both groups are honest when answering the question, the randomization into control and treatment groups allows estimating the proportion of

²⁸ To reduce the so-called floor and ceiling effects i.e., when respondents honestly respond “no” or “yes” to all items, we included in both lists a pair of statements that are expected to be negatively correlated with each other. Floor and ceiling effects are undesirable in list-experiments since it harms respondents’ confidentiality and reveal their true preferences, reducing their motivation to report an honest response to the sensitive item. In list A, it is expected that people who are agree with large corporations polluting the environment are more likely to disagree with the increase in the fossil fuel tax and vice versa. For list B, those who agree with the prohibition of same-sex marriage would be more likely to disagree with the adoption of children by a homosexual individual or by a homosexual couple and vice versa.

subjects involved in the sensitive behavior (p) by taking the difference between the average response among the treatment and the control groups (Equation 3.A). In our case, our estimate reports the estimated prevalence of inequality aversion in our sample, meaning that if p is equal to 0.1, then 10% of respondents would be upset about income inequality in the country.

$$estimate(p) = \frac{1}{2}[(\bar{X}_{2A} - \bar{X}_{1A}) + (\bar{X}_{1B} - \bar{X}_{2B})] \quad (3.A)$$

3.F Preference for inequality alternative measures: average treatment effects

Table 3.F – Average treatment effect on the treated, alternative inequality preference measures

Preferred inequality	World Values Survey		Preferred NGO		Double list-exp.	
	(I)	(II)	(I)	(II)	(I)	(II)
	.036	.035	.151	.150	.028	.019
	(.095)	(.096)	(.108)	(.108)	(.046)	(.046)
Untreated	751	751	739	739	751	751
Treated	776	776	741	741	776	776
PSM covariates	No	Yes	No	Yes	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; the variable based on the World Values Survey was estimated using an Ordered Logistic Regression; the variable about the preferred NGO was estimated using a Logistic Regression; the double-list experiment was calculated using the module kict for Stata 17 (Tsai, 2019); (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

3.G Sensitivity to different matching algorithms/techniques

We test the robustness of our main results regarding the choice of different matching methods, comparing results from the original linear model calculated using sample weights based on the propensity score with other matching techniques such as Kernel, 5-Nearest Neighbors, and Coarsened Exact Matching.²⁹ Results for our two main outcome variables are presented in Table 3.G1 and Table 3.G2. They show that our conclusions remain the same regardless of the choice of algorithm/technique for matching.

²⁹ While for k-Nearest Neighbors (NN) matching, k units from the comparison group are selected as matching partners for a treated unit that has the closest propensity score, in Kernel matching the algorithm uses weighted averages of (nearly) all individuals in the control group to construct the counterfactual outcome (Caliendo & Kopeinig, 2008). Coarsened Exact Matching (CEM), on the other hand, presents an alternative to propensity score matching, which works by temporarily coarsening the data according to pre-selected variables and performing exact match on the coarsened data and then running the analysis on the uncoarsened, matched data (Blackwell *et. al*, 2009).

Table 3.G1 – Average treatment effect on the treated, preferred inequality, alternative matching algorithms/techniques

Preferred inequality	Original model		Other matching algorithms		
	(I)	(II)	Kernel	NN(5)	CEM
	-0.0037983 (.0074413)	-0.0038001 (.007199)	-0.0047261 (.0078229)	-0.0106664 (.0097758)	-0.0032168 (.0092074)
Untreated	751	751	751	751	598
Treated	776	776	776	776	657
PSM covariates	No	Yes	No	No	No

Data source: Authors' estimation from administrative and survey data.

Note. Kernel and Nearest Neighbors (NN) estimated using the module psmatch2 for Stata 17 (Leuven & Sianesi, 2003); Kernel matching estimated with bootstrap standard errors (200 repetitions) and 0.06 bandwidth; 5-Nearest Neighbors calculated with replacement and with sample standard error (i.e., heteroskedasticity-consistent analytical standard errors); Coarsened Exact Matching coefficients calculated through a linear model using weights estimated with the module cem for Stata 17 (Blackwell *et al.*, 2009) and robust standard errors; standard errors in parentheses; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Table 3.G2 – Average treatment effect on the treated, perceived inequality, alternative matching techniques

Perceived inequality	Original model		Other matching algorithms		
	(I)	(II)	Kernel	NN(5)	CEM
	-0.0089182 *** (.0029684)	-0.0089028 *** (.0029578)	-0.009237 *** (.0030636)	-0.0073090 * (.0039126)	-0.0095596 *** (.0036596)
Untreated	751	751	751	751	598
Treated	776	776	776	776	657
PSM covariates	No	Yes	No	No	No

Data source: Authors' estimation from administrative and survey data.

Note. Kernel and Nearest Neighbors (NN) estimated using the module psmatch2 for Stata 17 (Leuven & Sianesi, 2003); Kernel matching estimated with bootstrap standard errors (200 repetitions) and 0.06 bandwidth; 5-Nearest Neighbors calculated with replacement and with sample standard error (i.e., heteroskedasticity-consistent analytical standard errors); Coarsened Exact Matching coefficients calculated through a linear model using weights estimated with the module cem for Stata 17 (Blackwell *et al.*, 2009) and robust standard errors; standard errors in parentheses; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

3.H Impact of an exchange program on students' incomes and well-being

Table 3.H – Average treatment effect on the treated, income and well-being perception

	Current per capita income		Current well-being	
	(I)	(II)	(I)	(II)
	2.378031*** (.2817712)	2.377722*** (.2761086)	.6722307*** (.0924138)	.6724732*** (.0875248)
Untreated	734	734	751	751
Treated	723	723	775	775
PSM covariates	No	Yes	No	Yes

Data source: Authors' estimation from administrative and survey data.

Note. Average treatment effect calculated through a linear model using weights based on the propensity score; standard errors in parentheses; only observations on common support are used; (I) corresponds to the model with no covariates and (II) corresponds to the regression including all matching covariates; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

4

INTERNATIONAL STUDENT MOBILITY AND ACADEMIC PERFORMANCE: DOES TIMING MATTER?³⁰

ABSTRACT

We examine the impact of credit mobility exchange programs' timing on students' academic performance, focusing on the moment in which students travel and the length of the period spent abroad. To provide causal evidence, we exploit unique data from more than 10,000 students from a well-known and internationalized Brazilian university from 2010 to 2020. By combining Propensity Score Matching with Difference in Differences techniques, we find that international mobility impacts groups of students differently. Students who travel closer to the end of their undergraduate courses benefit the most from the mobility experience, while negative effects are found for those who travel at the beginning of their university program. Results also show that, while student mobility impacts positively and significantly students who participate in programs lasting from one semester to one year, negative effects are associated with shorter periods abroad. Our findings also reveal heterogeneity across destination countries. Mobility has a positive impact on students' grades for those students traveling to English-speaking countries. Our analysis presents empirical evidence that can be used to design international student mobility programs, providing insights to policymakers engaged in maximizing their effects.

Keywords: Tertiary education; Grades; Student achievement; Human capital

JEL Classification: I23; I26; J24

³⁰ This chapter is currently in the second round of revision (R&R) in the journal "Research in Higher Education". Also, a preliminary version of the chapter was published as a UNU-MERIT working paper (#2021-049).

4.1. Introduction

A growing number of students are experiencing stay-abroad periods during their tertiary education. Credit mobility is defined as a short-term mobility experience of up to one academic year in a foreign country for study or for an internship, during which a student gains credits that will be recognized upon their return to the home country to complete their degree (Junor & Usher, 2008; Teichler, Ferencz, & Wächter, 2011).³¹ Student mobility is one of the components of transnational higher education with the most significant socio-economic, cultural, and political implications (Guruz, 2008).

Although government support for student mobility programs is not a recent phenomenon, incentives for mobility have expanded in recent years in terms of resources and people involved, and territories covered (Guruz, 2008; Engberg *et al.*, 2014). For example, the total budget for the Erasmus+ program, the largest and most reputed European credit mobility program, nearly doubled its financial resources from 2014-2020 to 2021-2027, with a total estimated investment of 26.2 billion euros for the latest period (European Commission, 2021). The program started in 1987 with only 3,244 students and now involves more than 300,000 students yearly (European Commission, 2019). Temporal mobility experiences growth has been recorded across all regions globally, with North America and Western Europe as the favorite destinations welcoming almost half of all mobility students yearly.

It is already well established in the literature that international temporal mobility experiences benefit students. For instance, it has been shown that going abroad boosts student's soft skills (Meya & Suntheim, 2014; European Commission, 2016), reputation (Engberg *et al.*, 2014), career prospects (Parey & Waldinger, 2011; Di Pietro, 2013), acquisition of new skills (Sorrenti, 2017; Wang, Crawford, & Liu, 2019), and student performance (Meya & Suntheim, 2014; Gonzalez-Baixauli, Montanes-Brunet, and Perez-Vazquez, 2018; Contu *et al.*, 2020). However, despite the amount of work on the general impacts, little attention has been dedicated to exploring heterogeneity across mobility programs (Van Mol, Caarls, & Souto-Otero, 2021). For this reason, this work focuses on one of the dimensions differentiating international credit mobility programs, the temporal one.

Students can experience mobility in different moments of their academic careers and stay abroad for short or extended periods. We ask, (i) does the impact of

³¹ It differs from degree mobility for which the student aims to acquire the whole qualification in the foreign country (Teichler, Ferencz, & Wächter, 2011).

student mobility on student performance vary across students traveling in different periods of their undergraduate program? In other words, is there a best moment to participate in student mobility?; (ii) does the impact of student mobility on student performance vary across programs with different durations? In other words, is there a best duration of a student mobility experience?

To answer those questions, we use unique data on more than ten thousand undergraduate students who graduated between 2010 and 2020 from one of the most internationalized Brazilian universities, the University of Campinas. The country choice is because, so far, most studies have focused on the impact of exchange programs using samples of European students, mainly from the Erasmus program (Parey & Waldinger, 2011; Di Pietro, 2013; Meya & Suntheim, 2014; European Commission, 2016; Sorrenti, 2017; Gonzalez-Baixauli, Montanes-Brunet, & Perez-Vazquez, 2018; Wang, Crawford, & Liu, 2019; Contu *et al.*, 2020; Czarnitzki, Joosten, & Toivanen, 2021). To the best of our knowledge, there is no study evaluating the impact of student mobility on academic performance in any Latin American country. Still, data reveal that Latin America and the Caribbean registered an increase of 40% in the number of tertiary students studying abroad from 2011 to 2018, behind only the Arab States (72%) and the Asia and Pacific region (51%) (UNESCO, 2021). Studying the impacts of student mobility in developing countries is extremely important, especially given the role of education in the development of those countries (Szirmai, 2015).

Brazil also constitutes a very suitable research context due to the process that the country has been experiencing recently. After a period of growth in the mobility phenomena, Brazil is experiencing a trend shift. Between 2000 and 2017, the population of Brazilian students studying abroad increased by more than 200%, going from 18.5 to 58.9 thousand students (UNESCO, 2021). The Science without Borders initiative, sponsored by the federal government between 2011 and 2015, granted more than 90 thousand international mobility scholarships, of which 79% were for undergraduate students (Brasil, 2016). Moreover, positive spillovers generated by the initiative, the so-called “Science without Borders effect,” boosted the number of scholarships even in areas not covered by the program (Manços, 2017; Granja & Carneiro, 2020). More recently, however, the growing trend slowed down. The change in the Brazilian federal administration and the economic and political crisis experienced by the country has resulted in severe budget cuts in the higher education system and the financial resources dedicated to international student mobility programs (Andrade, 2019; De Negri, 2021). According to a recent report

from the Institute for Applied Economic Research, a national public institution supporting the Brazilian federal government's public policies, federal investments fell about 37% between 2013 and 2020 (De Negri, 2021). The Ministry of Education suffered the most critical budget cut, and it is expected that this cut will directly impact the training of Brazilian researchers, both in Brazil and abroad (De Negri, 2021). Thus, it is crucial to investigate the impact of mobility programs to understand the consequences (if any) of such education budget cuts on students' future.

By applying a combination of Propensity Score Matching and Difference in Differences, we explore the causal relationship between a mobility experience and students' academic performances. This study offers empirical evidence on when and for how long students should go abroad, providing insights to policymakers engaged in maximizing the effects of mobility programs. This kind of analysis is of utmost importance, given the heterogeneity of mobility programs in the country and the varied potential outcomes depending on the type of mobility experience. Recently, Van Mol, Caarls, & Souto-Otero (2021) have recognized the importance of analyzing differences across mobility experiences. They distinguished between study levels when going abroad (Bachelor versus Master), the scope of the experience (study versus internship), and the destination country. Differently from them, we focus our attention on programs offering students the opportunity to go abroad at different moments during their studies and choose how long to stay. Moreover, while Van Mol, Caarls, & Souto-Otero (2021) consider the impact of mobility on labor market returns, we look at the performance of the students when completing their studies upon return. The temporal parameters (time and duration of mobility) are variables that funding agencies and governments can adjust when designing or updating study programs.

This chapter is structured as follows. First, it reviews previous studies about the impact of an exchange program on students. Second, it details the data and the methodology chosen for the analysis. Third, it presents and discusses the main results of the analysis. Last, the conclusions are presented.

4.2. International student mobility and students' outcomes

Extensive literature has discussed the impact of international student mobility (Roy *et al.*, 2019). In reviewing the literature, we group those studies along five outcome dimensions: soft skills, reputation, career prospects, acquisition of new skills, and student academic performance.

Looking at the impact of international student mobility on soft skills, Meya & Suntheim (2014) review the literature on the field and list multiple benefits of studying abroad, namely: i) positive impact on the development of students' personalities and cross-cultural skills; ii) transformation of these students into more independent, approachable and agreeable people; and iii) increased acceptance of new cultures and new ways of working. Along the same line, a study by the European Commission (2016) about the impact of the Erasmus program on students' personalities, skills, and careers found that an international mobility experience generated positive changes in students' personalities, influencing characteristics considered valuable to employers.³² According to the study, "the average change achieved in six months through the Erasmus program can be considered equivalent to a personality change that would normally happen over four years of life without Erasmus experience" (European Commission, 2016, p. 16).

Studying abroad also has a reputation effect on students. For instance, Engberg *et al.* (2014) pointed out that receiving a mobility scholarship is already an advantage in itself. They argued that the award is usually seen as a proxy for academic excellence, which guarantees benefits in the labor market for those who obtained it. In addition, receiving high-quality training abroad and developing relationship networks could positively impact scholarship holders. The authors argue that having contact with another language and culture and expanding the beneficiaries' worldview could also be translated into personal and professional advantages.

Other studies also showed that studying abroad has several benefits in terms of career prospects. For example, Di Pietro (2013) investigated how participation in study abroad programs during university impacted subsequent employment likelihood. By drawing on a sample of Italian graduates, the author found that the probability of being employed three years after graduation increased by about 22.9 percentage points due to studying abroad. The effect was mainly driven by students from disadvantaged backgrounds (those with one or both parents with lower or upper secondary education). Amendola & Restaino (2017) explored data from a web survey on a cohort of students from the University of Salerno in the South of Italy who participated in the Erasmus program and found that students are generally motivated to go abroad because they believe in benefiting from a boost in their

³² The study used an approach called memo©, that measured the level of six selected personality traits of students: "Tolerance of Ambiguity", "Curiosity", "Confidence", "Serenity", "Decisiveness" and "Vigour" (problem-solving skills) before and after mobility.

employability, with 61.87% of the surveyed students revealing that prospective employers perceived the mobility experience very positively during job interviews.

Bryla (2015) leveraged a large-scale survey among Polish students who participated in mobility programs, finding that one-third attributed a very important role to the mobility experience in their professional career development over 5-6 years after their return. Moreover, the author found an association between mobility experiences and some characteristics of the employers. For instance, mobile students are more likely to be employed in companies with a higher level of internationalization. Also, in the same Polish context, Gajderowicz, Grotkowska, & Wincenciak (2012) found that employers perceive mobility as a signal of adaptiveness, motivation, and good learning skills. Employers prefer mobile students, and students who experienced a period abroad during their studies record a higher probability of finding a job and shorter search times than students who pursued their entire studies in Poland. Kratz & Netz (2018) found that facilitated access to job opportunities allows mobile students to obtain higher wage growth through employer changes. Additionally, the higher probability of working in large and multinational firms assures mobile students higher medium-term wages (Kratz & Netz, 2018).

Waibel, Petzold, & Ruger (2018) explored heterogeneities among groups of individuals experiencing mobility. They found that those who benefited the most from mobility were those with the lowest propensity to study abroad, i.e., those from disadvantaged economic, social, and cultural groups. The positive effect of student mobility on early career occupational status is limited to graduates from generalist fields of study, while graduates from specialized fields have smooth access to the job market, regardless of their experiences in foreign countries. Netz & Gruttner (2020), when analyzing if the effect of studying abroad on graduates' labor income varies across social groups in the German labor market, found that graduates from a high social origin benefit slightly more from international student mobility than those coming from a low social origin, concluding that student mobility tends to foster the reproduction of social inequalities in the labor market.

In turn, Parey & Waldinger (2011) investigated the effect of studying abroad on international labor market mobility later in life for university graduates. Using a sample of five cross-sections of German students, they found that studying abroad increased the probability of working in a foreign country by about 15 percentage points. They also found that the most disadvantaged students (those who were credit-

constrained and had less educated parents) had the highest returns from studying abroad, showing the importance of focusing on those students to increase the return from exchange programs. However, not all studies converge in finding positive returns to mobility concerning students' careers. For instance, Van Mol, Caarls, & Souto-Otero (2021), having controlled for selectivity into student mobility, found that mobility does not impact early career outcomes, either in terms of wages or the time to find a job after graduation.

One way studying abroad can impact employability is by acquiring new skills, especially language skills. Sorrenti (2017) used a sample of Italian graduates from 2007 to 2010 and found that studying abroad was essential for foreign language acquisition. However, the author found a substantial heterogeneity across languages since higher effects happened for languages close to students' native tongue, the latter being the languages less rewarded by the labor market in terms of wage premium. Similarly, Wang, Crawford, & Liu (2019) evaluated the benefits of a yearlong study abroad program on developing linguistic and multicultural skills measured by their academic results (overall and on languages) before and after international mobility. They used a sample of students at a British university from 2008 to 2014 and found statistically positive effects of studying abroad on academic learning.

The closest branch of studies to ours investigates how participating in an international study program affects students' academic performance. Meya & Suntheim (2014) investigated how studying abroad affects success at university, focusing on students from a German university between 2006 and 2011. They found that a brief study-related visit abroad significantly increased the final university grade. However, the grade increase was mainly driven by the mere transfer of grades obtained abroad. They also showed that studying abroad reduced the probability of finishing university within the standard period, suggesting that higher grades came at a cost. Another example is Contu *et al.* (2020), which investigated if exchange programs positively impacted the graduation bonus of students, focusing on those from the Erasmus program enrolled at an Italian university from 2015 to 2017. They found that the effect of international mobility on the graduation bonus was context-specific and depended on the faculty and the type of degree.

The majority of existing studies have found that students benefit from mobility programs concerning their academic performance. However, there is no full convergence of results. For instance, Gonzalez-Baixauli, Montanes-Brunet, &

Perez-Vazquez (2018) analyzed a dataset of students from a Spanish university from 2001 to 2013 and found that, even though student mobility positively affected students' grades, the impact was not homogeneous across mobility programs or geographical areas. They also found that the increase in grades partially vanished upon returning to their home university after the mobility period. On the other hand, Czarnitzki, Joosten, & Toivanen (2021) focused on a sample of Belgian students from 2006 to 2010 and found that, on average, exchange students had a decrease of 7 percent in their final grade compared to non-mobile students. That effect was heterogeneous regarding the field of study, type of exchange, and the host institution. The authors stated that the negative effect could be due to a possible mismatch between the courses taken abroad and the home university curricula, leading to exchange students not learning the required content for upcoming courses, reducing their grades.

*

Our study adds to the work by Meya & Suntheim (2014); Gonzalez-Baixauli, Montanes-Brunet, & Perez-Vazquez (2018); Contu *et al.* (2020); and Czarnitzki, Joosten, & Toivanen (2021) by focusing on student mobility programs' impact on student academic performance. It addresses a gap in the literature, which is the study of the temporal dimension of exchange programs (such as timing and duration), parameters that policymakers can adjust to increase the efficiency of those programs. Even though the academic literature already acknowledges the temporal dimension of exchange programs,³³ to the best of our knowledge, no studies asked whether there is a best moment or duration of a student mobility experience to increase students' performance.

4.3. Data

4.3.1. Empirical setting

Our sample comprises 11,432 students from the University of Campinas (UNICAMP), Brazil, from 2010 to 2020. UNICAMP is a well-known research-intensive university that stands out in the Brazilian higher education system. In 2019, it was among the best Brazilian universities evaluated by the Brazilian Ministry of Education (Brasil, 2020a). According to the Times Higher Education Latin America ranking, it was ranked third among Latin American universities in 2020 (THE,

³³ An example is the report from the European Commission developed by Rodrigues (2013), in which the author identified heterogeneous effects on career outcomes depending on the duration of the mobility experience.

2020). The university is located in São Paulo state, the Brazilian state with the highest Gross Domestic Product in the country (Brasil, 2020b).

The choice for UNICAMP is because the university has broad experience with internationalization initiatives such as international cooperation and student mobility. Since its foundation in the 1960s, internationalization has been part of its primary institution strategy (Granja & Carneiro, 2020). The university is highly involved in the population of mobility programs in the country. For example, in the case of the Science without Borders program, UNICAMP placed itself in seventh place among the top 10 universities in terms of the number of students sent abroad (Brasil, 2016). Most universities ranked in this top 10 were large research-intensive public universities with similar characteristics to UNICAMP in terms of size and type (Schwartzman *et al.*, 2021).³⁴

UNICAMP offers a varied range of exchange programs to its students, both at the undergraduate and postgraduate levels. Even though the selection criteria and the activities planned abroad are similar, programs have different natures and settings. For example, in addition to the mobility carried out via agreements with foreign institutions to exempt tuition fees (the majority aimed at undergraduate students), UNICAMP also participates in programs financed by either private or public agencies, such as the Santander private bank, the Association of Universities of the Montevideo Group (AUGM) and the Brazilian Ministry of Education.

Between 2010 and 2017, the university had more than 500 agreements with foreign institutions, covering more than 60 countries (Granja, 2018). A part of those agreements was fostered by the university's participation in Science without Borders, a program created by the Brazilian federal government between 2011 and 2015. Additionally, some university courses, such as engineering, also offer the possibility of taking a double degree at foreign universities. The exchange duration varies depending on the university's agreements with the host university and the external funding agency, usually lasting between one semester and two years.

Given its tradition of internationalization and the program variety, the number of UNICAMP students in mobility programs in the previous decade was elevated. Of the 11,432 students considered in this study, 1,943 participated (at least

³⁴ In addition to UNICAMP, the other universities in the top 10 were the following: University of São Paulo, Federal University of Minas Gerais, Federal University of Rio de Janeiro, University of Brasília, Federal University of Santa Catarina, São Paulo State University Júlio de Mesquita Filho, Federal University of Rio Grande do Sul, Federal University of Pernambuco and Federal University of Ceará.

once) in an institutional student mobility program (17% of the entire sample), while 9,489 were in the nontreated (nonparticipants) group.³⁵

4.3.2. Variables

The main dependent variable of this study is students' academic performance, measured by the grades achieved in the university undergraduate program. Specifically, as an academic performance measure, we consider the standardized Performance Coefficient of the last semester students attended university. At UNICAMP, grades are calculated on a scale of 0 to 1, with 1 being the maximum grade. The grade for a semester is the average of the grades obtained in the course subjects taken during that semester, weighting by the course load (credits). The resulting aggregated grade is called Performance Coefficient. Since undergraduate courses and course subjects have different difficulty levels, all grades used in the analysis were standardized by course and year of admission at the university. The standardization strategy helps compare students from different cohorts and courses, and it is also widely used by UNICAMP in recruitment processes (for exchange scholarships, for instance) since it makes clear whether students' grades fall below or above their cohort average.³⁶

Our final sample includes students who met one of the following criteria: 1) students who completed their courses; 2) students who abandoned university or did not renew their registration; and 3) students who were dismissed from the university (for instance, due to low grades or low progression). For students who met criteria 2 or 3, we considered the standardized Performance Coefficient of the last semester attended before quitting the university. We included them in our sample since the decision to drop a course is often the result of obtaining low grades, so excluding them might determine a selection problem. As a robustness check, we run our analysis on the subsample of students who completed their courses (students satisfying the first criterion only).

³⁵ The dataset structure did not allow us to capture students who traveled outside an institutional mobility program, as only those who were properly registered for an exchange at UNICAMP were categorized as mobility students. Therefore, this chapter focuses only on the impact of exchange programs under the management of the university.

³⁶ The Standardized Performance Coefficient (SPC) formula is $SPC = (PC - PCM) / SD$, where PC is the Performance Coefficient of the student; PCM is the mean of the PC of the student's class; and SD is the standard deviation of the Performance Coefficient of the student's class. It is important to highlight that there is a small difference between our calculation of the Standardized Performance Coefficient and the one officially used by UNICAMP in recruitment processes. This is because the university standardizes the grades by class (students who share the same starting year, course, and group). Since the dataset shared by them does not allow us to have the information on the group that students studied (only year and course), we standardized using the variables available. Therefore, in this chapter, students' grades are compared with the mean PC of those who joined the same course in the same year, but not necessarily were taking the courses in the same class with the same teachers.

Students who were still enrolled at the end of our observation period were not considered, as we aim to evaluate the impact of mobility on the overall student's career, and those students do not have a final semester grade. Moreover, for the students who have not completed their study path, it is impossible to determine either the amount of time spent abroad or the participation in a mobility program if they go abroad later in their studies.

To ensure that each student was considered only once in the sample, only students registered for only one undergraduate course (did not do more than one program at UNICAMP) were considered in the analysis. Moreover, due to the lack of complete information on non-regular students, only those who entered university through the regular selection process (through an entrance exam) were considered.³⁷

Figure 4.1 shows the distribution of the grades for the last semester at university for mobility students (also referred to from now on as the treatment group) and non-mobility students (nontreated or nonparticipants group). As we can observe, students who participated in international mobility programs had slightly higher final grades than the nonparticipants.³⁸ However, those differences cannot yet be attributed only to mobility.

³⁷ Removing those students should not bias our results, as the proportion of students registered for more than one course, as well the proportion of those who entered university through a non-regular selection process is small (less than 10% in both cases).

³⁸ Difference between participants and nonparticipants of mobility programs is statistically significant at the 1% level ($|t\text{-value}| = 8.400$, $p\text{-value} = 0.0000$).

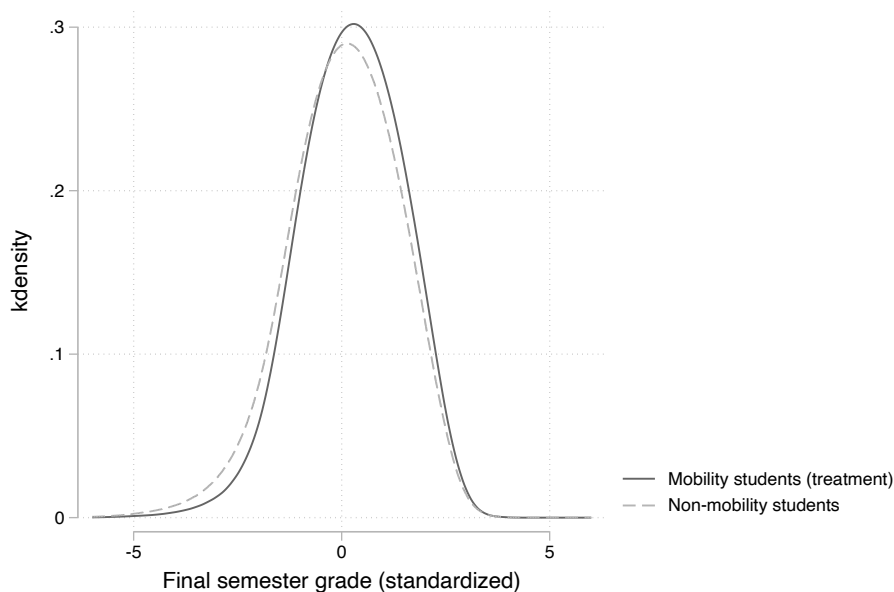


Figure 4.1 – Dependent variable kernel density (mobility vs. non-mobility students)

Data source: Authors' estimation from UNICAMP's microdata.

Table 4.1 lists and describes all the variables included in our analysis. The rationale for choosing the independent variables is explained in detail when discussing the empirical strategy. Students' academic, demographic, and socio-economic information was shared directly by the UNICAMP's Academic Board and International Office after the approval of the Brazilian Research Ethics Committee.³⁹

Table 4.1 – Variables description

Variable	Measure
Grade last semester (standardized)	The Performance Coefficient that the student has received in the last semester that they attended their undergraduate program (before graduating or leaving university), standardized by course and year of admission in the university
Participation in an international mobility program	1 if the student participated in an institutional international mobility program and 0 otherwise
Gender	1 if the student was female and 0 otherwise
Race/Skin color	1 if the student self-declared as black, brown or indigenous and 0 otherwise
Age	Age when entering university
Income per capita of household before entering university (in minimum wages)	1 if the per capita income was higher than the media of the sample (top 50 th percentile) and 0 otherwise ^a

³⁹ Protocol number 25285919.6.0000.8142.

Variable	Measure
Education of the parents	1 if at least one of the parents had access to university (regardless of obtaining a university degree) and 0 otherwise
Previous internal mobility experience	1 if the student completed high school outside São Paulo (Brazilian state where UNICAMP is located)
Student's pre-university academic ability	Grade in the university entrance exam, standardized by course and year of admission in the university
If eligible for the Science without Borders (SwB) program	<i>Eligible year:</i> 1 if the student started university at least one year before the SwB program was cancelled
	<i>Eligible area:</i> 1 if the student was enrolled in Biological Sciences, Health, Exact, Technological or Earth Sciences courses (main areas of the SwB program)

Note. ^aTo calculate this variable, the household income was divided by the total number of people in the household. If the total number of people in the household was unknown, the mean of the dataset was used (3.8 people in a household).

Table 4.2 shows the summary statistics for our sample of students. Not surprisingly, treated and nontreated students differ significantly in all baseline characteristics. Mobility students have, on average, better academic performance both before and during university. They also have, on average, higher incomes (55% were in the top 50th income percentile when entering university) than the students who do not participate in any institutional mobility program (45%). Moreover, mobility students have more educated parents than the non-mobility group (71% and 60%, respectively).

There are also other differences regarding the composition of the groups. For example, females represent 46% of mobile students and 49% of non-mobile students. Black/brown/indigenous students are 11% of the mobility sample and 14% of the non-mobility one. Mobility students also have more previous internal mobility experience and are one year younger than nonparticipants when entering university. Those figures suggest self-selection in the sample, meaning that participants and nonparticipants in mobility programs would differ even without treatment (Caliendo & Kopeinig, 2008). The self-selection challenge is well-known in the study abroad literature (Meya & Suntheim, 2014; Kim & Lawrence, 2021) and will be discussed in the next section.

Table 4.2 – Summary statistics of participants and nonparticipants

	Total			(1) Participants (Mobility students)			(2) Nonparticipants			t-value (1) vs. (2)
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	
Grade last semester (standardized)	9,340	0.076	0.881	1,749	0.235	0.759	7,591	0.04	0.903	8.400***
Grade first semester (standardized)	11,432	0.104	0.886	1,943	0.504	0.699	9,489	0.022	0.898	22.280***
Student's pre-university academic ability (standardized grade in the entrance exam)	11,432	0.013	0.983	1,943	0.288	1.029	9,489	-0.043	0.964	13.630***
Income per capita of household before entering university (if top 50th percentile)	11,432	0.469	0.499	1,943	0.552	0.497	9,489	0.451	0.498	8.090***
Education of the parents (if parents had access to tertiary education)	11,432	0.62	0.485	1,943	0.706	0.456	9,489	0.603	0.489	8.590***
Gender (if female)	11,432	0.487	0.5	1,943	0.461	0.499	9,489	0.492	0.5	-2.520**
Race/Skin color (if black, brown or indigenous)	11,432	0.137	0.344	1,943	0.108	0.311	9,489	0.143	0.35	-4.040***
Age when entering university	11,432	19.951	3.141	1,943	19.127	1.372	9,489	20.12	3.366	-12.780***
Previous internal mobility experience	11,432	0.133	0.34	1,943	0.172	0.378	9,489	0.125	0.331	5.620***
Year eligible for the SwB program (if yes)	11,432	0.901	0.299	1,943	0.976	0.152	9,489	0.885	0.318	12.290***
Area eligible for the SwB program (if yes)	11,432	0.668	0.471	1,943	0.76	0.427	9,489	0.649	0.477	9.480***

Data source: Authors' estimation from UNICAMP's microdata.

Note. Not all students had their final semester grades available in the dataset since not all the students were enrolled in courses in their last semester. Even though those students were not considered when calculating the difference in difference models, they were included when calculating the propensity scores so that the probability of participating in an exchange program was more precisely calculated. *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

4.4. Empirical strategy

To reduce the possible bias due to the selection of mobility programs, the methodology chosen for the analysis is a combination of Propensity Score Matching (PSM) and Difference in Differences (DiD). The sections below explain how both techniques were used in this study.

4.4.1. Searching for a group of potential applicants

The final control group for our analysis was selected using Propensity Score Matching within the sample of all non-mobile students. Propensity Score Matching is a very flexible statistical technique used for impact evaluation that can be applied in the context of almost any program, as long as there is a group of non-treated units (Gertler *et al.*, 2016). It works by comparing treated and non-treated units with a similar probability (propensity score) of receiving a specific treatment (Caliendo & Kopeinig, 2008; Gertler *et al.*, 2016). As stated by Netz & Grüttner (2020), in the international student mobility literature, PSM has become a very popular technique for several reasons. One reason is that, unlike many regression techniques, it forces researchers to reflect upon the process of selection into international mobility by identifying the factors increasing the probability of experiencing mobility. A second reason is that it has the advantage of only comparing very similar treated and not treated individuals. Third, by presenting a non-parametric method of causal inference, it makes no assumptions about how variables are distributed and what the functional form of their relationships is.

To identify potential mobile students within the group of non-mobile students, we considered as relevant matching characteristics the following: students' demographic and family characteristics, previous internal mobility experience, students' academic performance, and access to study abroad scholarships. To ensure that none of the variables could be affected by participating in mobility programs (therefore biasing our results) (Gertler *et al.*, 2016), all variables included in the propensity score calculation are either time-invariant or measured before any mobility could occur.

We considered gender, age when entering university, and race/skin colour as students' demographic characteristics. Those variables were added to account for any possible systematic differences between students with different demographic characteristics concerning their choice of going abroad and their academic performance.

As for family characteristics, we included the income per capita of their household before entering university and their parent's education. Those two variables were added to account for students' socio-economic background since students from higher-income families may be more likely to pursue part of their studies abroad (Junor & Usher, 2008; Meya & Suntheim, 2014; European Commission, 2016). Additionally, first-generation college students have many responsibilities that compete with the university for time and attention, such as working full-time or being married (Warburton, Bugarin, & Nuñez, 2001; Eveland, 2020). Parent's education was also added to account for social capital, as highly educated parents might support an exchange financially and highlight the benefits of learning about other countries, languages, and cultures (Meya & Suntheim, 2014; Di Pietro, 2019).

Previous internal mobility experience was added because such an experience might affect students' final grades. For example, students who have already left their social environment once may be more likely to move to another country and spend more effort finding the perfect match regarding university and field of study (Meya & Suntheim, 2014).

As for students' academic performance, we added the grades in the first semester of university⁴⁰ and grades in the entrance exam. Academic performance at the university is the most important criterion considered by UNICAMP to select exchange students. Grades in the entrance exam were also added to account for students' pre-university academic ability, as students who apply for mobility programs may be academically more able than others. Thus, pre-university grades may predict university success and measure students' commitment (Meya & Suntheim, 2014).

Finally, we also accounted for access to scholarships to go abroad. During 2011 and 2015, as already mentioned, the Brazilian government implemented a massive exchange program called Science without Borders, which sent more than 90 thousand Brazilians to study abroad (Brasil, 2016). Since the program offered more scholarships for students in selected areas (such as Biological Sciences, Health, Exact, Technological, and Earth Sciences) that entered university between 2010 and

⁴⁰ Since students can apply for mobility and travel in different periods of their undergraduate courses, and since the data shared by the university did not allow us to capture the grade immediately prior to the application for mobility, only the first semester of university was considered as baseline university grade. The grade in the first semester was registered prior to any student mobility, therefore not affected by the participation in mobility programs.

2014, dummies to account for the year of admission and area of the course were added.

We predict the propensity score using a binary Probit linear probability model (predicted through Equation 4.1)⁴¹ that has as independent variables the following: grade in the first semester; student's pre-university academic ability; income per capita of household before entering university; education of the parents; gender; race/skin color; age when entering university; previous internal mobility experience; year eligible for the SwB program; area eligible for the SwB program.

$$E(\text{treatment}|X) = P(\text{treatment} = 1|X) \quad (4.1)$$

Where *treatment* is a dummy variable that takes the value of 1 if the student is in the treatment group; *X* is a set of individual pre-treatment covariates (i.e., the independent variables mentioned before), and $E()$ denotes the mathematical expectation operator. Table 4.3 shows the binary Probit model results used to predict the propensity score. In the model, the dependent variable is a binary that took the value 1 if the student participated in an institutional mobility program in the period between 2010 and 2020 and 0 otherwise.

Table 4.3 – Participation in student mobility programs (probit results)

Dependent variable: Pr(Student Mobility = 1)	Coefficients		Marginal Effects	
	Coef.	Std.Err.	Coef.	Std.Err.
Grade first semester (standardized)	0.384***	0.021	0.081***	0.004
Student's pre-university academic ability (standardized grade in the entrance exam)	0.076***	0.016	0.016***	0.003
Income per capita of household before entering university (if top 50 th percentile)	0.164***	0.032	0.035***	0.007
Education of the parents (if parents had access to tertiary education)	0.136***	0.034	0.029***	0.007
Gender (if female)	-0.05*	0.03	-0.010*	0.006
Race/Skin color (if black, brown or indigenous)	-0.039	0.047	-0.008	0.010
Age when entering university	0.072	0.112	0.015	0.023
Age when entering university (squared)	-0.004	0.003	-0.001	0.001
Previous internal mobility experience	0.13***	0.042	0.027***	0.009
Year eligible for the SwB program (if yes)	0.846***	0.075	0.178***	0.015
Area eligible for the SwB program (if yes)	0.186***	0.033	0.039***	0.007
Constant	-1.923	1.179		

⁴¹ A possible concern that may arise in our analysis regards the choice of the binary model (probit instead of logit). As observed by Caliendo & Kopeinig (2008, p.37): "For the binary treatment case, where we estimate the probability of participation versus nonparticipation, logit and probit models usually yield similar results." Indeed, we tested logit versus probit in our sample and we observed that both models resulted in the exact same conclusions.

Number of observations	11,432
Pseudo r-squared	0.110
Chi-square	840.470
Prob > chi2	0.000

Data source: Authors' estimation from UNICAMP's microdata.

Note: Marginal effects calculated at the means of covariates. *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

The results show that all variables, except for skin color and age, significantly impacted the probability of participating in a student mobility program. Higher grades in the entrance exam and in the first semester of university, high income per capita, more educated parents, previous internal mobility experience, and eligibility to the Science without Borders program are all associated with a positive effect on the conditional probability of being treated, holding all other regressors constant at their means. On the other hand, being female has a negative effect on the conditional probability of being in the treatment group.

After estimating the propensity scores for each unit of our sample, we then tested the balancing property of each observed covariate between the treatment and control groups, as well as the overall balance. The idea of checking the balance is to verify if there was a reduction in sampling bias achieved through matching.

The results presented in Table 4.4 indicate that there was indeed a reduction in the bias after matching. The first part of the table shows that the matching sufficiently balanced most observable covariates and reduced considerably initial differences of both treated and untreated. The second part of the table shows the results from comparing the joint significance of all matching variables in the Probit model. The Pseudo R-squared of results after matching was much lower for the matched sample than for the unmatched one. Both the mean and the median of the absolute standardized bias have been reduced substantially. Additionally, Rubins' B (the absolute standardized difference of the means of the linear index of the propensity score in the treated and nontreated group) and Rubin's R (the ratio of treated to nontreated variances of the propensity score index) fell within the bounds suggested by Rubin (2001). Those results indicate that the samples became sufficiently balanced after matching.

Table 4.4 – Balancing results before and after matching

Variable	Sample	Mean		Bias (%)	t-test		
		Treated	Control		t	p>t	
Grade first semester (standardized)	Unmatched	0.50378	0.02244	59.8	22.28	0.000	
	Matched	0.5006	0.42887	8.9	2.87	0.004	
Student's pre-university academic ability (standardized grade in the entrance exam)	Unmatched	0.2882	-0.04293	33.2	13.63	0.000	
	Matched	0.2829	0.21619	6.7	1.87	0.062	
Income per capita of household before entering university (if top 50 th percentile)	Unmatched	0.55172	0.45147	20.1	8.09	0.000	
	Matched	0.55155	0.53049	4.2	1.22	0.223	
Education of the parents (if parents had access to tertiary education)	Unmatched	0.70612	0.60259	21.9	8.59	0.000	
	Matched	0.70619	0.68727	4.0	1.19	0.235	
Gender (if female)	Unmatched	0.46063	0.49204	-6.3	-2.52	0.012	
	Matched	0.46134	0.48597	-4.9	-1.42	0.155	
Race/Skin color (if black, brown or indigenous)	Unmatched	0.10808	0.14259	-10.4	-4.04	0.000	
	Matched	0.10825	0.1129	-1.4	-0.43	0.669	
Age when entering university	Unmatched	19.127	20.12	-38.6	-12.78	0.000	
	Matched	19.128	19.221	-3.6	-1.88	0.060	
Age when entering university (squared)	Unmatched	367.71	416.13	-33.8	-10.88	0.000	
	Matched	367.76	371.62	-2.7	-1.88	0.061	
Previous internal mobility experience	Unmatched	0.17241	0.12499	13.4	5.62	0.000	
	Matched	0.17165	0.15666	4.2	1.16	0.245	
Year eligible for the SwB program (if yes)	Unmatched	0.97633	0.88545	36.4	12.29	0.000	
	Matched	0.97629	0.96758	3.5	1.54	0.125	
Area eligible for the SwB program (if yes)	Unmatched	0.75965	0.64886	24.5	9.48	0.000	
	Matched	0.75928	0.72981	6.5	1.95	0.051	
Sample	Pseudo R-squared	LR chi ²	p>chi ²	Mean Bias	Median Bias	B	R
Unmatched	0.110	1150.93	0.000	27.1	24.5	77.2*	0.29*
Matched	0.004	20.75	0.036	4.6	4.2	15.9	1.07

Data source: Authors' estimation from UNICAMP's microdata.

Note. * if B>25%, R outside [0,5; 2]

4.4.2. Estimation strategy

Since baseline data on our outcome of interest (student performance) was available, we decided to combine the matching with a Difference in Differences estimation, a method that compares the changes in outcomes over time between treated and nontreated units (Gertler *et al.*, 2016). The advantage of combining both methodologies is to reduce bias since the combination controls not only for observable differences between groups but also solves the issue of any unobserved characteristic constant across time between both groups (Caliendo & Kopeinig, 2008; Gertler *et al.*, 2016). This combination is useful as selecting a control group using PSM can only tackle observed selection into international student mobility, not dealing with selection bias occurring from unobserved heterogeneity between individuals going abroad and staying at home (Netz & Grüttner, 2020).

We explore the impact of student mobility programs on student academic performance as measured by the average treatment effect on the treated (ATT) students (those who benefited from a mobility program). The ATT for our main outcome variable before and after participation (ΔY) can be formally specified as follows:

$$ATT = E(\Delta Y^T | D = 1) - E(\Delta Y^C | D = 0) \quad (4.2)$$

Where Y^T denotes the potential grades for the treated individuals; Y^C denotes the potential grades for the nontreated individuals; D is a dummy variable for student mobility status; and $E()$ denotes the mathematical expectation operator.

Our model is given by:

$$Y_{it} = \beta_1 + \beta_2 treatment_i + \beta_3 time_t + \gamma(treatment_i * time_t) + X_i + \varepsilon_{it} \quad (4.3)$$

Where Y_{it} stands for grades of student i at time t ; $treatment$ is a dummy variable that takes the value of 1 if student i participated in a student mobility program; $time$ is a dummy variable that takes the value of 1 at the end of the student's i course; $treatment * time$ is the interaction between the treatment variable and time; X_i is a set of individual pre-treatment covariates of student i in time $t = 0$; and ε_{it} is the error term. γ is calculated by the model and represents the average treatment effect in a Difference in Difference estimation.

To combine DiD with PSM, the regression used weights derived from the propensity score,⁴² and considered only the region of common support, i.e., where there is overlap in the propensity score distribution for both treated and non-treated students.

The combination of PSM and DiD is the best possible methodology that could be used in our setting. The rationale for using quasi-experimental methods for this analysis is mainly because doing an experimental framework (such as a Randomized Control Trial), where students are randomly assigned to study abroad (as in a lottery), was not feasible in our case. Moreover, since at UNICAMP there is no threshold at which students become automatically eligible to participate in student mobility, empirical strategies like regression discontinuity designs also cannot be applied. In fact, UNICAMP has several different mobility programs, and students are not restricted to only applying to one of them.

4.4.3. Propensity Score Matching Assumptions

4.4.3.1. Conditional Independence (CI)

The Conditional Independence assumption (also called unconfoundedness or selection on observables) states that differences in outcomes between treated and comparison individuals with the same values for pre-treatment covariates are attributable to treatment (Caliendo & Kopeinig, 2008). The main challenge with the CI is that it is a very strong assumption, and it cannot be tested. Since it is crucial to match based on the characteristics that determine participation, it is essential to understand the criteria used for participant selection (Gertler et al., 2016).

In the case of our sample, we believe that the most important pre-treatment characteristics to determine participation in mobility programs were included in our model. At UNICAMP, the selection criteria for student mobility programs are overall well established, as mobility students must: 1) be a regular student at the university; 2) have completed between 25% and 85% of the course load at the time of application and attended at least two semesters in their undergraduate program; 3) have a ‘profile of excellence,’ based on good academic performance; 4) have the

⁴² In this study, we use Kernel Propensity Score Matching. Kernel matching is a non-parametric matching estimator which uses weighted averages of all individuals in the control group to construct the counterfactual outcome. The weights used depend on the distance between each individual from the control group and the participant’s observation for which the counterfactual is estimated. Kernel matching has the advantage of lowering the variance, which is achieved because more information is used (Caliendo & Kopeinig, 2005).

application approved by the course coordinator; 5) meet the requirements requested by the destination institution.

Criteria 1 and 2 were met for all students in the dataset, as all of them were regular, started university before 2018, and completed at least their first year at university. Criterion 3 was measured by the grade in the 1st year of university and the student's pre-university academic ability (grades in the entrance exam). Criterion 4 was not directly observable, as there was no feasible way to know if the coordinator would have approved the application of a non-mobility student if they had asked for it. Therefore, we assume that the coordinator's approval was conditional on good academic performance. Criterion 5 varies from student mobility programs but usually relies on academic performance.

Since Criteria 4 and 5 were not directly observed in our dataset, we looked for other possible 'hidden' criteria that may have affected both participation and the outcome of interest by adding socio-economic and demographic variables in the model. Even if they were not directly considered in the selection process, they might still have affected students' motivation to apply for an exchange program. They could also be related to students' final grades. Besides, those characteristics could also have indirectly affected the course coordinator's approval (for instance, if there was any prejudice in the selection regarding skin color, gender, or socio-economic status). Finally, we also added two variables to account for eligibility to the Science without Borders program since those eligible students had more choices of scholarships and destination countries.

Additionally, as discussed before, we combined PSM with DiD, to account for any possible selection based on time-invariant unobservables (Caliendo & Kopeinig, 2008). Therefore, grades in the last semester were compared with those in the first semester of university, when students were still not eligible to apply for any institutional mobility program. By adding all those variables and combining methodologies, we are confident that we have controlled for characteristics that might have impacted both the assignment to the treatment and the outcome variable.

4.4.3.2. Common Support

The second assumption of PSM is called common support (or overlap). For Propensity Score Matching to produce estimates of a program's impact for all treated observations, each treatment unit must be successfully matched to a nontreated unit (Gertler *et al.*, 2016). In practice, however, it may be that for some treated

individuals, there is no untreated with a similar propensity score (which is called lack of common support) (Gertler *et al.*, 2016). The common support assumption says that persons with the same characteristics (X) have a positive probability (P) of being both participants and nonparticipants of the program (D) (Heckman, LaLonde, & Smith, 1999). The assumption can be written as follows:

$$0 < P(D = 1|X) < 1 \quad (4.4)$$

Several ways are suggested in the literature to validate this assumption. However, the most straightforward one is a visual analysis of the density distribution of the propensity score in both groups (Caliendo & Kopeinig, 2008). Figure 4.2 shows the distribution of the propensity scores for both the treatment and control groups in the sample. As expected, control units had their distribution of propensity scores more skewed to the right compared to the treated units. The graph shows that the common support assumption was satisfied, with 99.8% treated observations within the common support area.

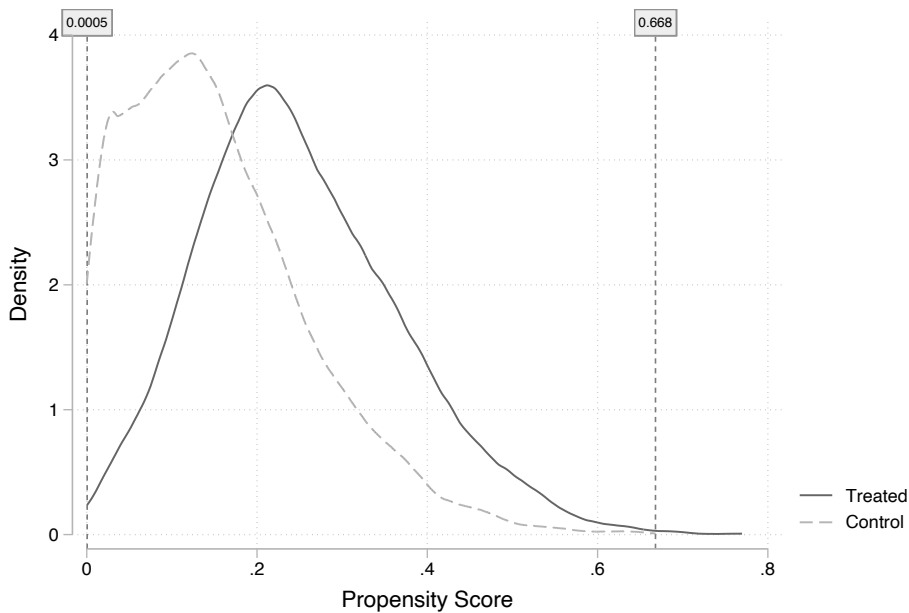


Figure 4.2 – Distribution of the propensity scores for treatment and control groups (Common Support Assumption)

Data source: Authors' estimation from UNICAMP's microdata.

4.5. Results and Discussion

4.5.1. Impact of mobility programs on academic performance

Results from the Kernel-based propensity score matching difference in differences (Table 4.5) show that, overall, participation in international student mobility programs does not significantly increase students' standardized final grades.⁴³

As stated before, most existing studies on the impact of academic mobility find that students benefit from mobility programs. However, there is no full convergence of results in the literature regarding the impact on grades. Still, overall researchers on this topic agree that the impact of a mobility program on students is context-specific, not always homogeneous across mobility programs and students' characteristics.

For that reason, in the next subsections, we investigate the possible heterogeneous impacts of student mobility programs on academic performance across different subgroups of students. Two main questions guide our analysis: 1) does the impact vary across students traveling in different periods of their undergraduate courses? (that is, is there a best moment to participate in student mobility?); 2) does the impact vary across programs with different durations? (that is, is there a best duration of a student mobility experience?). We also investigate possible economic and demographic heterogeneous effects and effects related to the destination region.

Table 4.5 – Average treatment effect on the treated

	(I)	(II)	(III)
Dependent variable: Final grade	0.010 (0.021)	0.012 (0.020)	0.006 (0.020)
Untreated	9,489	9,489	9,489
Treated	1,940	1,940	1,940
Included the covariates of the PSM model	No	Yes	Yes
Included control for year of admission at university	No	No	Yes
Included control for undergraduate course	No	No	Yes

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; column (I) shows the results of the difference in differences estimation without covariates; column (II) shows the results of the difference in differences estimation including all the covariates used to estimate the propensity score (except for grades in the first semester); column (III) shows the results of the difference in differences estimation including all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

⁴³ All average treatment effects in this chapter are calculated using the DIFF (Villa, 2016) and the PSMATCH2 (Leuven & Sianesi, 2003) packages for Stata 16.

4.5.1.1. Is there a best moment for participating in a student international mobility program?

To answer the first question, we disaggregate the effects of student mobility by three different types of students, based on the time of the mobility experience (measured by the time elapsed between the starting year at the university and the year of the first mobility).

In Brazil, most undergraduate programs last for eight semesters (4 years), which may vary according to the schedule offered by the institution and upon request for an extension. Based on the structure of Brazilian undergraduate programs, we identify three types of students:

- Type I: students who traveled at the beginning of their undergraduate studies. UNICAMP does not allow students to participate in international institutional mobility during their first year. Considering that just a few students traveled between the first and the second year (Figure 4.3), those who attended university for one or two years before mobility were considered Type I;
- Type II: students who traveled in the middle of their undergraduate studies (3 years after starting university);
- Type III: students who traveled closer to the end of their undergraduate studies (more than three years after starting university).

Figure 4.3 shows the distribution of the students in our sample by the number of years before the first international mobility, indicating that most students at UNICAMP traveled between the second and the third year after they started university.

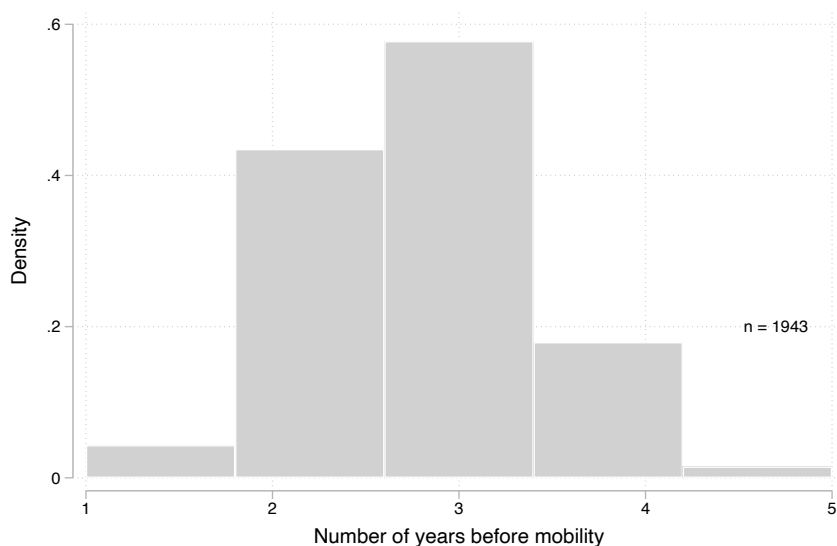


Figure 4.3 – Distribution of students by the number of years before the first mobility (mobility students only)

Data source: Authors' estimation from UNICAMP's microdata.

Considering the above three student types, Table 4.6 reports the results from the kernel-based propensity score matching difference in differences analysis. While negative effects on grades are found for those who traveled at the beginning of university (-0.05 points), positive and significant effects are found for students who traveled closer to the end of their courses (0.06 points). Those results suggest that the time of mobility matters when it comes to increasing final grades.

Table 4.6 – Average treatment effect on the treated by student type (students who traveled at the beginning of the university, in the middle or at the end of their courses)

	Beginning of the course (Type I)	Middle of the course (Type II)	End of the course (Type III)
Dependent variable: Final grade	-0.048** (0.021)	0.033 (0.021)	0.062*** (0.022)
Untreated	9,489	9,489	9,489
Treated	755	878	307

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; the model includes all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

At UNICAMP, most of the grades obtained abroad are registered as proficiency, therefore, not incorporated into the student's Performance Coefficient.

This rule guarantees that differences in grades are due to changes in students' performances and not due to different grading systems at the host institutions. With that in mind, a possible explanation for our results can be found in students' behavior. Students in their first university years are still adapting to university life, taking more courses, learning about their courses' challenges, and familiarizing themselves with their peers. By traveling at the beginning of their courses, students may suffer from a twofold adaptation challenge: adapting to university and a different country.

Moreover, traveling before being wholly integrated into their home universities may impose difficulties in re-entering the home education system when returning, impacting exam performance. On the contrary, those who travel closer to graduation are older and may have a more mature mindset. Those students are already more integrated into university life and most likely have a clearer idea of what they expect from their degrees, which may affect their grades positively.

While UNICAMP's data does not allow the testing of these mechanisms empirically, anecdotal data support our interpretations. According to a Type I student from our sample,⁴⁴ a bad experience abroad had a crucial negative impact on their adaptation after returning:

“I ended up having the worst grades of my life during the exchange program. (...) some colleagues tried to convince me that it was not so bad, but I was super dissatisfied. I came back a little frustrated, I guess. I traveled during my best moment and then when I came back, I had to face some insecurities like ‘maybe I am bad, dumb, weak (...)’. I returned and did only four courses, a low number compared to what I was used to, and still got a score below 8 [out of 10], which was also completely atypical. (...) it was generally being a difficult semester. The return of the exchange also affected my friendships, my mood, it was a combo.”⁴⁵

⁴⁴ All student quotes in this chapter were collected by approaching UNICAMP's most representative student group in an online social media platform at the time of the data analysis (Nov. 2021). We asked students if they could provide the authors with some insights into the impact (positive or negative) of their exchange program on their grades and the reasons for their opinion. The idea of this extra data collection was to gather some anecdotal storytelling to help in the elaboration of an explanation of our results. Therefore, they should not be considered representative of the whole population of exchange students, but as a starting point to understand our results and guide future research.

⁴⁵ All quotes in this chapter were translated and adapted from Portuguese by the authors.

While the choice of the cutoffs for distinguishing the three types of students was based on the structure of undergraduate courses in Brazil, in the section “Robustness checks”, we report a sensitivity analysis of our results to our cutoff choice.

4.5.1.2. Is there a best duration for a student international mobility program?

To answer the second question, we disaggregated the effects by three different mobility types based on the duration of the mobility program (measured by the time elapsed between the starting and the ending date of the exchange period).⁴⁶ The thresholds were chosen based on the structure of the courses at UNICAMP, where the academic year is split into two academic semesters. Consequently, the majority of the academic activities in the university (such as internships, courses, and most exchange programs) are offered for at least one academic semester. We considered the following three types of students:

- Type A: students who experienced short-term mobility (up to one semester);
- Type B: students who experienced mid-term mobility (one semester to one year);
- Type C: students who experienced long-term mobility (more than one year).

Figure 4.4 illustrates the distribution of students in our sample by the total mobility duration and indicates that most students at UNICAMP stayed abroad for about 12 months (two semesters).

⁴⁶ If the student participated in more than one mobility program, all the periods were added together.

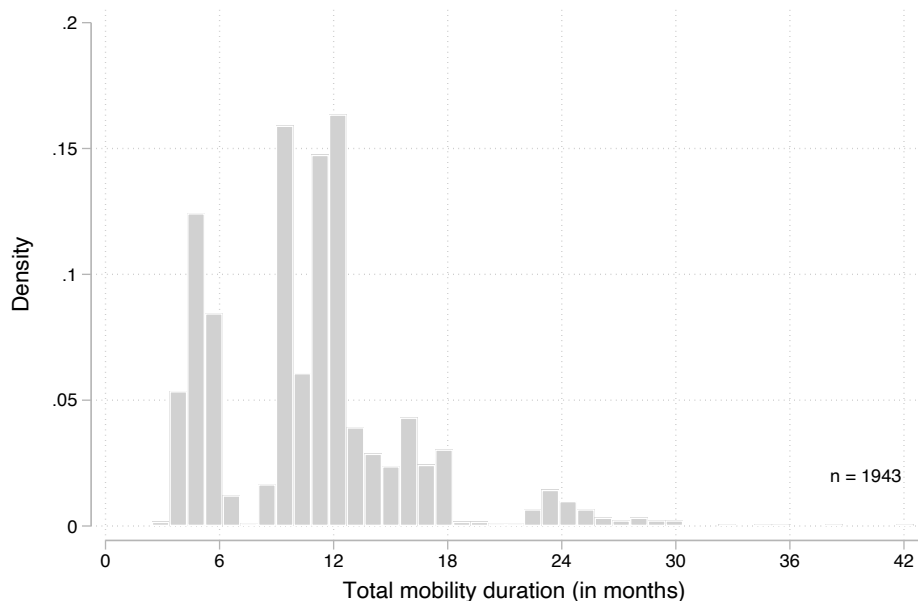


Figure 4.4 – Distribution of students by mobility duration (in months)

Data source: Authors' estimation from UNICAMP's microdata.

Results from the estimations (Table 4.7) indicate that while international mobility positively and significantly impacted students who participated in programs lasting from one semester to one year, negative effects were associated with shorter periods abroad. That suggests that mobility duration also plays a role in academic performance. On average, students who participated in mid-term programs experienced an increase in their standardized final grades of 0.08 points, while students spending shorter periods abroad had a decrease of 0.1 in their standardized last semester grades.

Table 4.7 – Average treatment effect on the treated by student type (students who stayed abroad for a short, mid-term, or long period)

	Short-term (Type A)	Mid-term (Type B)	Long-term (Type C)
Dependent variable:	-0.099***	0.082***	-0.024
Final grade	(0.022)	(0.021)	(0.021)
Untreated	9,488	9,489	9,489
Treated	497	912	531

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; the model includes all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Those results may be explained by the fact that short-period stays can distract students since adapting to a new country and a different higher education system usually takes some time. Therefore, spending more time abroad gives students more chances to re-evaluate their relationship with their courses, as stated by two Type B students from our sample:

“After returning, a factor that positively influenced academic performance in other disciplines of the course was the contact I had abroad with other sub-areas of my course (which I would not have at UNICAMP), other ways of thinking about the content of the disciplines and also other more inclusive ways of building the teacher-student relationship.”

“It was a matter of ‘commitment culture’. (...) I have never had too many problems with the courses at UNICAMP, but I was very uncommitted. (...) I returned from the exchange much more punctual and taking things more seriously. (...) I’m sure my grades went up.”

While more extended stays may be needed if students want the benefits of mobility programs to enrich their academic curriculum, there seems to be a threshold where students stop benefiting from mobility (after one year). The fact that long-term programs do not positively impact students’ grades could be related to the fact that students may face challenges in readjusting to their home universities after spending a long time abroad. However, additional research is still needed to test those hypotheses empirically.

4.5.1.3. Other heterogeneous effects: economic/demographic and destination country

In addition to the subgroups described above, we also disaggregated the analysis by some pre-treatment economic and demographic variables, such as gender, skin color/race, parent’s education, and income per capita (Table 4.8), and into region and language of the destination country (Table 4.9).

Our estimations suggested that, while there seem to be no differences between students coming from different economic and demographic settings, there are differences between students by destination countries.⁴⁷ A positive impact on

⁴⁷ The results in Table 4.9 are based on a subsample of treated students who had detailed information about their mobility programs in the dataset (1,583 out of 1,943 students who participated in mobility programs). To be able to isolate the effects, students who had more than one destination region, as well as those that traveled to more than one country with different languages were not considered.

grades was found for students traveling to North America (the United States and Canada), Oceania (Australia and New Zealand), and English-speaking countries. In contrast, negative impacts were associated with students traveling to Portuguese-speaking countries (i.e., with the same language spoken in Brazil).

Table 4.8 – Average treatment effect on the treated: economic and demographic heterogeneous effects

	Gender		Skin color/race		Parent's education		Income per capita	
	Female	Male	Black, Brown or Indigenous	Otherwise	Less educated parents	More educated parents	Lower income per capita	Higher income per capita
Dependent variable:	0.009	0.005	0.018	0.004	-0.052	0.027	-0.045	0.041
Final grade	(0.029)	(0.027)	(0.057)	(0.021)	(0.033)	(0.025)	(0.027)	(0.029)
Untreated	4,669	4,820	1,353	8,136	3,771	5,718	5,205	4,284
Treated	895	1,045	210	1,730	570	1,370	870	1,070

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; the model includes all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

Table 4.9 – Average treatment effect on the treated: region of destination

	Region of destination					Main language of destination country		
	Europe	Asia	Latin America	North America	Oceania	English	Portuguese	Spanish
Dependent variable:	-0.007	-0.008	-0.016	0.116***	0.138***	0.107***	-0.153***	0.032
Final grade	(0.021)	(0.020)	(0.022)	(0.021)	(0.021)	(0.021)	(0.022)	(0.021)
Untreated	9,489	9,440	9,479	9,488	9,477	9,489	9,471	9,488
Treated	974	42	51	334	180	752	170	138

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; the model includes all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

The discussion about the role of the country of destination and the selection of universities based on language skills is not new in the Brazilian literature on student mobility. For instance, in a study about the Science without Borders program at the University of Campinas, Granja & Carneiro (2020) mentioned the case of Portugal, saying that despite the preference of Brazilian students to study in Portuguese universities (at the earlier stages of the program one out of five fellows chose Portugal), public calls to the country were officially cancelled in the following years, when it became clear to policymakers that students were choosing Portugal

due to its language. That is because applying for an exchange program to go to Portugal usually does not require knowledge of another language other than Portuguese. In contrast, calls for countries where Portuguese is not the primary language typically require proof of language proficiency.

Even though our data does not allow us to test analytically if the observed country heterogeneity is explained by the language spoken, data on English proficiency at entry in the university programs seems to confirm that those students who chose a Portuguese-speaking language destination country are those students who had lower grades in English in the university admission exam (Figure 4.5).⁴⁸ They also had slightly lower grades in the entrance exam, on average (Figure 4.6), and lower income per capita when entering university (Figure 4.7). We might assume that those students are either less committed or have had fewer opportunities to learn a second language. On the other hand, studying in English might result from strategic thinking, a willingness to invest extra effort, and an ambition to have a prestigious institution mentioned in the curricula. Further investigation, however, is still needed in that regard.

⁴⁸ The authors chose not to include the grades in the English exam at the university entry as a control in our original model because UNICAMP's mobility programs do not target exclusively English-speaking countries. For instance, Portuguese universities do not require a language other than Portuguese, the official language in Brazil. Other countries typically require proof of language proficiency, but UNICAMP does not record the results of those language tests. The English tests recorded by the university are those part of the university selection exam and not the official English proficiency tests used to select mobility students (e.g., TOEFL or IELTS). Moreover, having high grades in English does not necessarily guarantee a higher probability of participating in mobility because the student could travel to non-English speaking countries or could improve the English skills in the period between entering university and applying for mobility.

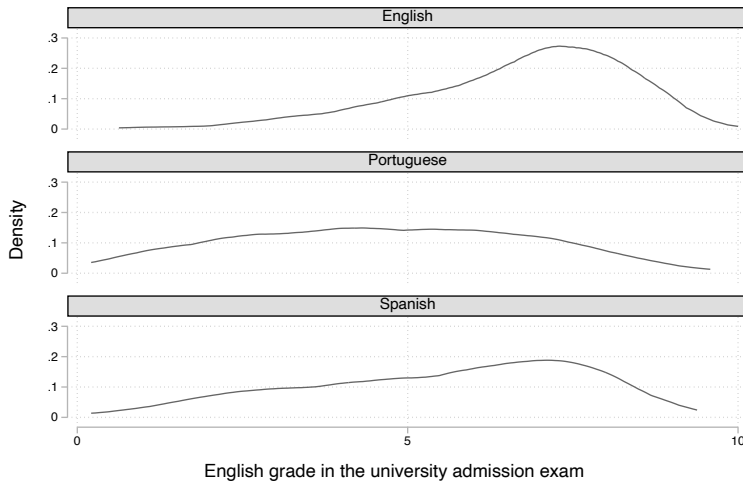


Figure 4.5 – Distribution of English grades in the university entrance exam by the language of the destination country

Data source: Authors' estimation from UNICAMP's microdata.

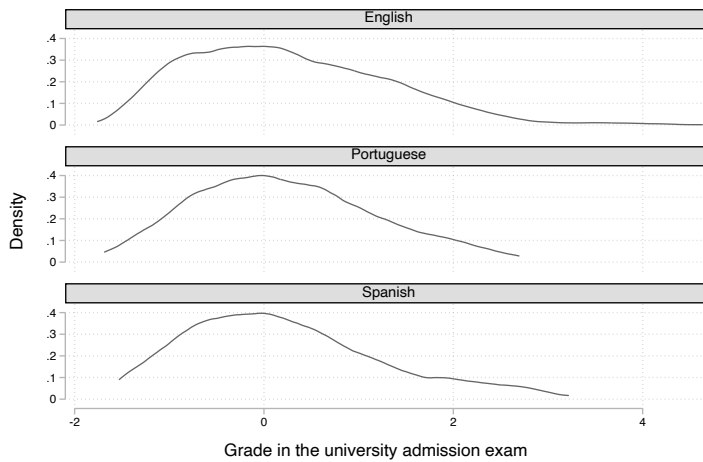


Figure 4.6 – Distribution of general grades in the university entrance exam by the language of the destination country

Data source: Authors' estimation from UNICAMP's microdata.

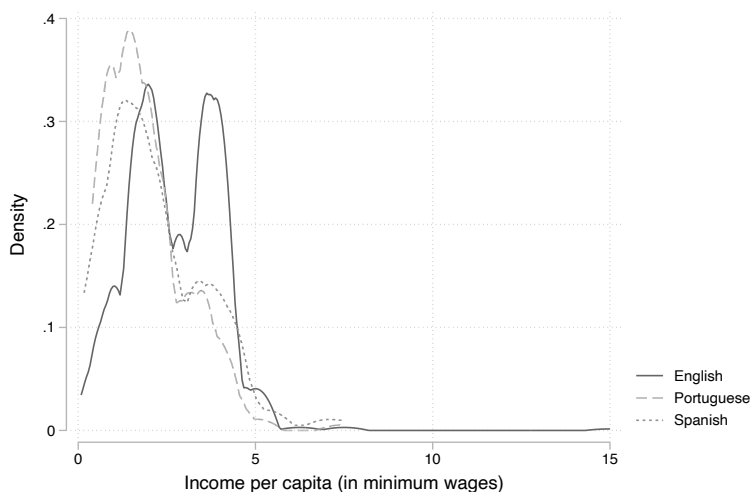


Figure 4.7 – Distribution of income per capita when entering university by the language of the destination country

Data source: Authors' estimation from UNICAMP's microdata.

4.5.2. Robustness checks

4.5.2.1. Subsample results

A possible concern that may arise in our analysis regards the internal validity of the results due to the sample selection, since our sample included both students who completed their courses and those who abandoned university/were dismissed. The latter group was considered in the sample because dropping a course or being dismissed from the university may directly correlate with the student's grades. Since students who graduated may differ from those who did not complete their courses, which could correlate both to the treatment assignment and students' final grades, we ran a robustness check considering only the subsample of graduated students. Results are shown in Table 4.10.

Results show that our results are overall robust to the sample selection. Considering the full subsample of students who completed their courses, participation in international student mobility programs does not significantly increase students' overall standardized final grades. However, the temporal dimension still plays a role in changing grades. While negative effects on grades are found for those who traveled at the beginning of university, positive and significant effects are found for students who traveled closer to the end of their courses.

We also find that the only students who benefit from mobility are those who experience mid-term mobility. Short-term mobility, as well as long-term mobility, are detrimental to students. Therefore, our main conclusions regarding the temporal dimension of mobility are consistent with the main findings reported previously. The only difference is that the negative sign of long-term mobility turns significant in the subsample of students who completed their courses, while it is insignificant in the original model.

Table 4.10 – Average treatment effect on the treated robustness checks: subsample of students with completed courses

	Overall results			Time of mobility			Duration of mobility		
	(I)	(II)	(III)	Beg.	Mid.	End	Short-term	Mid-term	Long-term
Dependent variable:	-0.000	-0.003	-0.006	-0.054**	0.016	0.041*	-0.126***	0.078***	-0.039*
Final grade	(0.021)	(0.021)	(0.020)	(0.021)	(0.022)	(0.023)	(0.022)	(0.021)	(0.022)
Untreated	7,836	7,836	7,836	7,836	7,836	7,836	7,831	7,836	7,836
Treated	1,912	1,912	1,912	722	897	293	491	899	522
Covariates of PSM model	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control for year of admission at university	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control for course	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; column (I) shows the results of the difference in differences estimation without covariates; column (II) shows the results of the difference in differences estimation including all the covariates used to estimate the propensity score (except for grades in the first semester); column (III) shows the results of the difference in differences estimation including all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course; *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

4.5.2.2. Changing cutoffs

Another concern that may arise in our analysis is the sensitivity of our results to the choice of cutoffs for the heterogeneity analysis, especially regarding the timing factor (period elapsed between the starting year at university and the year of the first mobility). To check robustness to different cutoffs, we recalculated the average treatment effect on the treated for different specifications. In the first specification, we grouped together the students who moved after 1 or 2 years after starting university, while the students who traveled in the remaining years (3, 4 and 5) were grouped as a second category. In the second specification, students moving after 1, 2 and 3 years were grouped together, while students going abroad during their 4th and 5th year were considered as a separate group. Lastly, we calculated the impact for all years individually. All results are shown in Table 4.11.

Results show that changing the cutoffs do not affect our main conclusions. Overall, students traveling at a later stage of their courses benefit more from mobility, while those traveling closer to the beginning of their courses benefit less.

Table 4.11 – Average treatment effect on the treated robustness checks: time elapsed between the starting year at university and year of first mobility

	1 or 2 years	3, 4 or 5 years	1, 2 or 3 years	4 or 5 years	1 year	2 years	3 years	4 years
Dependent variable:	-0.048 **	0.039*	-0.005	0.067 ***	-0.344 ***	-0.018	0.032	0.095 ***
Final grade	(0.021)	(0.021)	(0.020)	(0.022)	(0.022)	(0.020)	(0.021)	(0.022)
Untreated	9,489	9,489	9,489	9,489	9,473	9,489	9,489	9,489
Treated	742	1,198	1,638	302	67	675	896	279

Data source: Authors' estimation from UNICAMP's microdata.

Note. Kernel-based propensity score matching difference in differences estimation; standard errors in parentheses; average treatment effect calculated using the DIFF and the PSMATCH2 packages for Stata; only observations on common support are used; propensity score matching calculated using kernel bandwidth of 0.06; the model includes all the covariates used to estimate the propensity score (except for grades in the first semester) and also controls for year of admission and course. Results for five years were omitted due to the small number of observations (only 23 treated units). *** significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

4.6. Conclusion

In this chapter, we evaluate the impact of international student mobility programs on academic performance (measured by students' grades), focusing on the temporal dimension of those programs. We address two main sub-questions: 1) Does the impact of student mobility on student performance vary across students traveling in different periods of their undergraduate courses? (in other words, is there a best moment to participate in student mobility?); and 2) Does the impact of student mobility on student performance vary across programs with different durations? (in other words, is there a best duration of a student mobility experience?). To the best

of our knowledge, this is the first study to address the temporal dimension of the impact of student mobility on undergraduate students' academic performance. It is also the first to focus on Brazil.

To address these research questions, we use microdata shared directly by the University of Campinas, one of Brazil's most internationalized universities. The average treatment effects on the treated are calculated using Propensity Score Matching combined with Difference in Differences to minimize the selection problem.

Our results suggest that both the time of mobility and duration matter for student performance. While negative effects on grades are found for those students who traveled at the beginning of university, positive and significant effects are found for students who traveled closer to the end of their courses. Regarding duration, we found that mobility duration also plays an important role in academic performance. On average, while student mobility positively impacts students who participated in programs lasting from one semester to one year, negative effects are associated with shorter periods abroad.

Overall, our analysis presents empirical evidence that can be used to design international student mobility programs, providing insights to policymakers engaged in maximizing the effects of their programs. For example, focusing on one-year programs and targeting students after their third year of university may be good strategies to enhance academic performance. Our results also suggest that, while there seem to be no differences between students from different economic and demographic settings, there are differences between students by destination countries. However, additional research is still needed in that regard.

This study is not exempt from limitations. Regarding the strategy used, the matching between treated and not treated students can only be performed based on observed characteristics, requiring the strong assumption that no unobserved differences in the treatment and comparison groups are also associated with the outcomes of interest. We minimized this bias by adding different covariates to estimate the propensity score and the final model. The long time span and the detailed information shared by UNICAMP's administration allowed for a robust matching. Furthermore, we also combined PSM with DiD to account for any unobserved characteristics that were constant over time.

Additionally, due to data constraints, it was not possible to analytically test the mechanisms behind the results of the heterogeneity analysis, in particular, the findings on the temporal dimension and destination region/language. As a future research agenda, we believe that understanding the processes behind the heterogeneity of results is key to providing improved recommendations for program design. For that, it would be valuable to have more detailed data on a) the country and institution where the student traveled to; b) students' motivations for participating in an exchange program and for the choice of the destination university; c) activities carried out abroad (including the list of courses taken at the host university and the received grades); d) academic challenges that the students faced both during and after traveling; and e) language proficiency in languages other than English immediately prior to traveling.

Finally, in this study, we focus only on academic performance. Even though we believe that student academic performance is a valuable indicator of human capital, individual, institutional, and national outcomes should also be considered when designing an academic mobility program. Those factors include but are not limited to student employability, university improvement, and national development. Further research is needed to capture the effects of student mobility on those dimensions, both in the short and long run.

REFERENCES

- Amendola, A., & Restaino, M. (2017). An evaluation study on students' international mobility experience. *Qual Quant*, 51, 525–544.
- Andrade, R. de O. (2019). Brazil budget cuts threaten 80,000 science scholarships. *Nature*, 572(7771), 575–576.
- Brasil. (2016). *Science without Borders Control Panel*. Retrieved March 21, 2016, from <http://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>
- Brasil. (2020a). *Indicadores de Qualidade da Educação Superior*. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. Retrieved June 25, 2021, from <https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/indicadores-educacionais/indicadores-de-qualidade-da-educacao-superior>
- Brasil. (2020b). *Produto Interno Bruto*. Instituto Brasileiro de Geografia e Estatística. Retrieved June 25, 2021, from <https://www.ibge.gov.br/explica/pib.php>
- Caliendo, M., & Kopeinig, S. (2005). Some practical guidance for the implementation of propensity score matching. *IZA Discussion Paper Series*, 1588.
- Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of economic surveys*, 22(1), 31–72.
- Bryla, P. (2015). The impact of international student mobility on subsequent employment and professional career: a large-scale survey among polish former Erasmus students. *Procedia Soc. Behav. Sci.*, 176, 633–664.
- Contu, G., Frigau, L., Mola, F., Romano, M., & Conversano, C. (2020). University student achievements and international mobility - The case of University of Cagliari. *Electronic Journal of Applied Statistical Analysis*, 13(2), 474–497.
- Czarnitzki, D., Joosten, W., & Toivanen, O. (2021). International Student Exchange and Academic Performance. *ZEW discussion paper*, 21-011.
- De Negri, F. (2021). *Políticas Públicas para Ciência e Tecnologia no Brasil: cenário e evolução recente*. Instituto de Pesquisa Econômica Aplicada (Ipea), Brasília, Brazil.

- Di Pietro, G. (2013). Do Study Abroad Programs Enhance the Employability of Graduates? *IZA (Institute for the Study of Labor) Discussion Papers Series*.
- Di Pietro, G. (2019). University study abroad and graduates' employability. *IZA World of Labor 2019*, 109, <https://doi.org/10.15185/izawol.109.v2>
- Engberg, D., Glover, G., Rumbley, L., & Altbach, P. (2014). *The rationale for sponsoring students to undertake international study: an assessment of national student mobility scholarship programmes*. Retrieved August 15, 2022, from http://www.britishcouncil.org/sites/britishcouncil.uk2/files/e002_outward_mobility_study_final_v2_web.pdf
- European Commission. (2019). *Nine things you didn't know about Erasmus!* Retrieved April 15, 2023, from <https://europeancommission.medium.com/10-things-you-didnt-know-about-erasmus-41bb2c8ebd9c>
- European Commission. (2021). *Erasmus+ 2021-2027: enriching lives, opening minds*. Publications Office of the European Union.
- European Commission. (2016). *The Erasmus Impact Study: Regional Analysis*. Luxembourg, Publications Office of the European Union.
- Eveland, T. J. (2020). Supporting first-generation college students: analysing academic and social support's effects on academic performance. *Journal of Further and Higher Education*, 44(8), 1039–1051.
- Gajderowicz, T., Grotkowska, G., & Wincenciak, L. (2012). Does students' international mobility increase their employability? *Ekon. J.*, 30, 59–74.
- Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. J. (2016). *Impact evaluation in practice*. The World Bank, Second edition.
- Gonzalez-Baixauli, C., Montañes-Brunet, E., & Pérez-Vázquez, P. J. (2018). Effects of mobility programmes on university students' academic performance. In *4th International Conference on Higher Education Advances (HEAD'18)*, Editorial Universitat Politecnica de Valencia, pp. 553–562.
- Granja, C. D. (2018). *Internacionalização e mobilidade estudantil: o programa Ciência sem Fronteiras na Universidade Estadual de Campinas* [Master's thesis, University of Campinas].
- Granja, C. D., & Carneiro, A. M. (2020). EU-Brazil Cooperation: The Science without Borders Programme Experience. In *Building Higher Education Cooperation with the EU* (pp. 129–145). Brill Sense.
- Guruz, K. (2008). *Higher Education and International Student Mobility in the Global Knowledge Economy*. SUNY Press.
- Heckman, J. J., LaLonde, R. J., & Smith, J. A. (1999). The economics and econometrics of active labor market programs, In O. Ashenfelter and D. Card

- (eds), *Handbook of Labor Economics*, Vol. III, pp. 1865–2097, Amsterdam: Elsevier.
- Junor, S., & Usher, A. (2008). *Student Mobility & Credit Transfer: A National and Global Survey*. Educational Policy Institute.
- Kim, H. S., & Lawrence, J. H. (2021). Who studies abroad? Understanding the impact of intent on participation. *Research in Higher Education*, 62.7.
- Kratz, F., & Netz, N. (2018). Which mechanisms explain monetary returns to international student mobility? *Studies in Higher Education*, 43(2), 375–400.
- Leuven, E., & Sianesi, B. (2003). *PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing*. Retrieved from <http://ideas.repec.org/c/boc/bocode/s432001.html>
- Manços, G. de R. (2017). *Mobilidade acadêmica internacional e colaboração científica: subsídios para avaliação do programa Ciência sem Fronteiras* [Master's thesis, Universidade de São Paulo].
- Meya, J., & Suntheim, K. (2014). The second dividend of studying abroad: The impact of international student mobility on academic performance. *CEGE Discussion Papers*, 215.
- Netz, N., & Grüttner, M. (2020). Does the effect of studying abroad on labour income vary by graduates' social origin? Evidence from Germany. *Higher Education*.
- Parey, M., & Waldinger, F. (2011). Studying Abroad and the Effect on International Labour Market Mobility: Evidence from the Introduction of Erasmus. *The Economic Journal*, 121(551), 194–222.
- Rodrigues, M. (2013). Does student mobility during higher education pay? Evidence from 16 European countries. *JRC scientific and policy reports*, Luxemburg: European Commission.
- Roy, A., Newman, A., Ellenberger, T., & Pyman, A. (2019). Outcomes of international student mobility programs: A systematic review and agenda for future research. *Studies in Higher Education*, 44(9), 1630–1644.
- Rubin, D. B. (2001). Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation. *Health Services & Outcomes Research Methodology*, 2, 169–188.
- Schwartzman, S., Silva, R. L., & Coelho, R. R. (2021). Por uma tipologia do ensino superior brasileiro: teste de conceito. *Estudos Avançados*, 35, 153–186.

- Sorrenti, G. (2017). The Spanish or the German apartment? Study abroad related outcomes and its recognition by the labour market. *Economics of Education Review*, 60, 142–158.
- Szirmai, A. (2015). *Socio-economic development*. Cambridge University Press.
- Times Higher Education (THE). (2020). *Latin America University Rankings 2020*. Retrieved June 25, 2021, from https://www.timeshighereducation.com/world-university-rankings/2020/latin-america-university-rankings#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/undefined
- UNESCO. (2021). Outbound internationally mobile students by host region. UNESCO Institute for Statistics. Retrieved June 18, 2021, from <http://data.uis.unesco.org>
- Van Mol C., Caarls, K., & Souto-Otero, M. (2021). International student mobility and labour market outcomes: an investigation of the role of level of study, type of mobility, and international prestige hierarchies. *Higher Education*, 82.
- Villa, J. M. (2016). diff: Simplifying the estimation of difference-in-differences treatment effects, *The Stata Journal*, 16(1), 52–71.
- Wang, Z., Crawford, I., & Liu, L. (2019). Higher achievers? Mobility programmes, generic skills, and academic learning: a U.K. case study. *Intercultural Education*, 31(1).
- Waibel, S., Petzold, K., & Rüger, H. (2018). Occupational status benefits of studying abroad and the role of occupational specificity - A propensity score matching approach. *Social Science Research*, 74.
- Warburton, E. C., Bugarin, R., & Nunez, A. M. (2001). *Bridging the Gap: Academic Preparation and Postsecondary Success of First-Generation Students*. U.S. Department of Education, National Center for Education Statistics, 153.

5

CONCLUSIONS

5.1. Summary

This dissertation contributes to the literature on student mobility and inequality by discussing the case of Brazil, a highly unequal country where student mobility has been a relevant phenomenon in the past decade. Using a quantitative approach anchored in the economics and higher education literature, it looks at two dimensions: student mobility's potential to change people's worldviews, specifically regarding inequality views and its role in improving human capital.

To accomplish its goals, the essays are divided into two parts. The first part analyzes attitudes toward inequality in Brazil, evaluating its potential individual drivers (Chapter 2) and the role of international mobility in changing students' preferences and perceptions of inequality (Chapter 3).

In Chapter 2, we provide the base to understand the potential determinants of inequality preferences in Brazil. The chapter presents an overview of the literature on the topic, focusing on discussing the role that sociodemographic and economic individual characteristics have in shaping people's views. We use secondary data from more than three thousand observations from a study on public opinion conducted by OXFAM, an international non-governmental organization, in partnership with Datafolha, a private Brazilian public opinion research institute.

The analysis conducted in this chapter shows that race, an element overlooked in studies about attitudes toward inequality but essential in the structures of inequality in the country, plays a significant role when investigating inequality preferences in Brazil, showing that white people have lower odds of believing that reducing inequalities is essential for Brazil's progress compared with black, brown, indigenous, and others. We also find that those identifying themselves as black and those classifying their occupation as students are the only individuals having higher odds of agreeing that the government has the role of reducing inequalities, a trend visible mainly after the COVID-19 pandemic. Challenging conventional theories about rational choices, we find that being educated is associated with higher odds of believing that reducing inequality is fundamental for progress. Finally, we do not find a clear association between income and inequality views.

The analysis of attitudes towards inequality in Brazil is continued in Chapter 3, where we include a new component to the analysis of its determinants: participation in an international student mobility program. Considering that previous studies on international student mobility show that exchange programs are policy instruments that can positively impact students' personal development, the chapter looks at the effects of exchange programs on two dimensions: preference and perception of inequality. To provide causal evidence, it exploits primary data of more than a thousand students from a well-known and internationalized Brazilian university collected through an online survey.

Using Propensity Score Matching to construct an artificial control group, results from this chapter show that going abroad does not affect students' preferences regarding reducing within-country inequality. Still, it affects students' salary preferences, with mobile students expressing a preference for higher salaries for high-skilled jobs. Results also show that mobility affects how individuals perceive current inequality, as those participating in mobility programs believe within-country inequality is smaller than their non-mobile counterparts.

In the second part of the thesis, we move from analyzing individuals' perceptions to looking at the impact of international student mobility in a different dimension: improving human capital. For that, Chapter 4 examines the effect that the timing of an exchange experience has on students' academic performance. The chapter focuses on two facets of the temporal dimension: the moment in which students travel and the length of the period spent abroad. To provide causal evidence, the chapter exploits novel data from more than 10,000 students from a well-known and internationalized Brazilian university between 2010 and 2020.

By combining Propensity Score Matching with Difference in Differences techniques, results show that international mobility impacts groups of students differently. Students traveling closer to the end of their undergraduate courses benefit the most from the mobility experience, while negative effects are found for those who travel at the beginning of their university program. Results also show that, while student mobility impacts positively and significantly students who participate in programs lasting from one semester to one year, negative effects are associated with shorter periods abroad.

5.2. Contribution and Policy Implications

Overall, the essays presented in this dissertation provide information to inform better policymakers concerned with the effects of international student mobility on students. It also provides updated information about inequality preferences in Brazil.

The analysis performed in Chapter 2 contributes to the existing literature by focusing on Brazil. Brazil is a particularly unequal country which has not been widely explored by previous studies on inequality preferences. It innovates by adding a racial component to the analysis, an element disregarded in previous studies about inequality perceptions but crucial in the structure of inequalities in Brazil. By considering the country's ethnic history, we found race to be an essential driver of people's opinions, which is a key finding when we consider the role of black activists in introducing topics into the country's public debate in the past decades.

Another contribution of the chapter is regarding the potential role of the recent COVID-19 pandemic in changing people's views on inequality, a concern not yet widely explored by the literature.

Finally, the chapter contributes to the field by questioning the historical predominance of theories based on self-interest. It shows that Brazilians are not following all conventional beliefs about rational choices, such as that income affects inequality preferences. Contrasting the rational logic that low exposure to risk would decrease support for redistribution, it also shows that education is positively (and not negatively) associated with support for redistribution.

Given that politicians tend to implement policies that reflect public opinion to maximize their chances of re-election, understanding how people diverge in their views on inequality is essential. Identifying and reflecting on how groups react when asked about inequality can help understand its visibility (or lack of) on the public agenda, which is one step toward tackling the issue in the country.

Chapter 3 contributes to the literature by, to the best of our knowledge, being the first to address empirically the effect of going abroad on students' preferences and perception of inequality. It fills a regional gap by contributing to understanding its impact on students' worldviews in a Latin American country, an unequal region neglected by studies on international mobility. Understanding the factors driving the attitudes towards inequalities of the young generation (especially university students) might help find solutions to improve the country's current conditions. Given that university students tend to be part of (or move to) the higher income

groups, where there is more political influence, understanding the sources and effects on their views about inequality is necessary.

The results presented in the chapter provides empirical evidence that challenges the widespread idea that mobility is an instrument that positively impacts individuals' personal development. By showing that, in Brazil, going abroad does not affect students' preference to reduce within-country inequality and that mobile students underestimate inequality more than non-mobiles, we hope this chapter contributes to the discussion on the impacts of mobility on students' worldviews. Considering that inequality is one of the core issues in Brazil and that social and economic inequality is also highly present in exchange programs in the country, the results from this chapter are worrying, and they invite us to reflect on student mobility programs' role in generating a more caring society.

Chapter 4 contributes to the current knowledge about the impacts of international student mobility by exploring the heterogeneity across types of mobility programs. It addresses a gap in the literature, which is the study of the temporal dimension of exchange programs (i.e., timing and duration), parameters that policymakers can adjust to increase their efficiency. Even though the academic literature already acknowledges the temporal dimension of exchange programs, to the best of our knowledge, no studies asked whether there is a best moment or duration of a student mobility experience to increase students' performance.

The chapter presents empirical evidence that can be used to design international student mobility programs, providing insights to policymakers engaged in maximizing its effects. For example, focusing on one-year programs and targeting students after their third year of university are good strategies for enhancing academic performance. The analysis done in this chapter is important given the heterogeneity of mobility programs in Brazil and the varied potential outcomes depending on the type of mobility experience.

5.3. Limitations and Future Research

This thesis is not exempt from limitations. In Chapter 2, the main constraints are caused by adding a racial component to the analysis, which has a potential risk of lack of precision caused by self-declaration. Still, asking people to classify their race is one of the most common forms of identifying racial groups in Brazil, widely used by both public and private research institutes in the country.

The second limitation of the chapter is caused by the lack of an international classification for races/ethnicities, which limits the replication of our study in other national contexts. Given that race is defined locally and is dependent on the history of each society, future research replicating our results in another location should adjust the categories for the race variable to reflect the country's racial history.

In Chapter 3, the main limitation is related to the choice of the impact evaluation methodology used in the chapter. The data was collected during the COVID-19 pandemic, a period during which mobility programs were either postponed or canceled. Hence, the matching technique was the most appropriate methodology for comparing groups of mobile and non-mobile students. Even though propensity score matching is a widely used and flexible statistical impact evaluation technique, we believe future research should validate our results using different (quasi-) experimental designs, such as randomized control trials (if feasible), difference in differences, and/or a regression discontinuity design. For that, having information on students' views on inequality before mobility would be desirable to improve the statistical model.

Another limitation is related to the sample chosen to represent the population of Brazilian students. Even though UNICAMP's exchange students can represent the current average mobile student in Brazil, students (mobile or not) at Brazilian 'elite' institutions (such as UNICAMP) usually come from more privileged strata of society. At those universities, enrolment is typically associated with students' socioeconomic backgrounds. In our sample, for instance, most students had parents that had access to tertiary education, with the minority being black/brown/indigenous or coming from public schools (i.e., less prestigious institutions and those with more deprived students). Considering that Chapter 2 shows that race is an important predictor of inequality preferences in the country, we believe it would be beneficial for policy purposes if future research about the effects of mobility on inequality attitudes validates our results by focusing on a bigger sample of more underprivileged students.

To the best of our knowledge, the study conducted in this chapter is the first to address the impact of mobility on inequality views. Hence, conducting the same research in countries other than Brazil would be crucial to understanding the possible (if any) heterogeneity of the impacts on students from different country contexts.

Chapter 4's main limitation is that data constraints did not allow us to analytically test the mechanisms behind the results of the heterogeneity analysis,

particularly the findings on the temporal dimension and destination region/language. As a future research agenda, we believe that understanding the processes behind the heterogeneity of results is key to providing improved recommendations for program design. For that, it would be valuable to have more detailed data on a) the country and institution where the student traveled to; b) students' motivations for participating in an exchange program and for the choice of the destination university; c) activities carried out abroad (including the list of courses taken at the host university and received grades); d) academic challenges that the students faced both during and after traveling; and e) language proficiency in languages other than English immediately before traveling.

It is also important to point out that, in Chapter 4, we focus only on the impact of mobility on academic performance. Even though student academic performance is a valuable indicator of human capital, another individual, institutional and national outcomes should be considered when designing an educational mobility program. Those factors include but are not limited to student employability, university improvement, and national development. Thus, more research is needed to capture the effects of student mobility on those dimensions, both in the short and long run.

*

In sum, this dissertation contributes to the literature exploring the potential effects of international student mobility, providing tools for informing policy discussions on the outcomes of exchange programs. We find that international student mobility, when designed properly (i.e., considering the appropriate timing and duration), can potentially improve human capital by increasing students' academic performance. On the other hand, contrasting our expectations of the outcomes of exchange programs, going abroad does not necessarily translate into changes in students' preference for a decrease in inequality, being translated mainly into changes in inequality perceptions.

In our research, we explored two important dimensions of the outcomes of international mobility (i.e., attitudes toward inequality and human capital). Still, we believe future research aiming to provide an in-depth analysis of the Brazilian context should explore more dimensions, such as attitudes towards racial and gender gaps, opinions on corruption and crime, as well as exploring the impacts of mobility on the Brazilian labor market.

DISSERTATION APPENDIX

Original questions used to collect the data from Chapter 3

Note: not all questions were used when developing the chapters added to this dissertation.

Start of Block: Termo de Consentimento Livre e Esclarecido

Você está sendo convidado a participar de uma pesquisa sobre as percepções e experiências de estudantes e ex-estudantes da UNICAMP. Este documento, chamado Termo de Consentimento Livre e Esclarecido, visa assegurar seus direitos como participante da pesquisa. Caso deseje, você pode solicitar uma via em papel assinada deste documento. Esta pesquisa foi aprovada pelo Comitê de Ética, sob o número CAAE 25285919.6.0000.8142. Por favor, leia com atenção e calma, aproveitando para esclarecer suas dúvidas. Não haverá nenhum tipo de penalização ou prejuízo se você não aceitar participar da pesquisa ou se desejar retirar sua autorização em algum momento.

Procedimentos: Participando do estudo você está sendo convidado a responder a um questionário online, com duração de aproximadamente 10 minutos.

Desconfortos e riscos: A pesquisa não envolve danos físicos aos participantes. O único risco identificável corresponde a possível quebra de confidencialidade. No entanto, o risco social é mínimo, já que as informações obtidas serão divulgadas de forma agregada, não sendo possível identificar os respondentes nos resultados divulgados. Em adição, também é mínimo o risco de vazamento dos dados desagregados, já que os mesmos poderão ser acessados somente pela equipe de pesquisadores, e seu armazenamento será protegido por senha. Se o número de respondentes for baixo o suficiente para a identificação dos mesmos nas análises agregadas, a equipe de pesquisa será cautelosa no trato e na divulgação das informações, de modo que seja respeitada a confidencialidade dos participantes e para que não haja comunicação inapropriada dos resultados da pesquisa.

Benefícios: A participação na pesquisa não acarretará benefícios diretos ao participante. Do ponto de vista social, os resultados desta pesquisa pretendem contribuir tanto para a literatura sobre o tema, quanto com o aprendizado institucional da UNICAMP.

Acompanhamento e assistência: Você tem o direito à assistência integral e gratuita devido a danos diretos e indiretos, imediatos e tardios, pelo tempo que for necessário.

Sigilo e privacidade: Você tem a garantia de que sua identidade será mantida em sigilo e nenhuma informação será dada a outras pessoas que não façam parte da equipe de pesquisadores. Na divulgação dos resultados desse estudo, seu nome não será citado.

Ressarcimento e indenização: A pesquisa não prevê ressarcimento de despesas, pois será realizada via questionário online. Você terá a garantia ao direito à indenização diante de eventuais danos decorrentes da pesquisa.

Contato: Em caso de dúvidas sobre a pesquisa, você poderá entrar em contato com os pesquisadores Cintia Denise Granja (granja@merit.unu.edu) e Ana Maria Alves Carneiro Silva (anamacs@unicamp.br). Em caso de denúncias ou reclamações sobre sua participação e sobre questões éticas do estudo, você poderá entrar em contato com a secretária do Comitê de Ética em Pesquisa em Ciências Humanas e Sociais (CEP-CHS) da UNICAMP das 08h30 às 11h30 e das 13h00 as 17h00 na Rua Bertrand Russell, 801, Bloco C, 2º piso, sala 05, CEP 13083-865, Campinas – SP; telefone (19) 3521-6836; e-mail: cepchs@unicamp.br.

O Comitê de Ética em Pesquisa (CEP): O papel do CEP é avaliar e acompanhar os aspectos éticos de todas as pesquisas envolvendo seres humanos. A Comissão Nacional de Ética em Pesquisa (CONEP), tem por objetivo desenvolver a regulamentação sobre proteção dos seres humanos envolvidos nas pesquisas. Desempenha um papel coordenador da rede de Comitês de Ética em Pesquisa (CEPs) das instituições, além de assumir a função de órgão consultor na área de ética em pesquisas.

Após ter recebido esclarecimentos sobre a natureza da pesquisa, seus objetivos, métodos, benefícios previstos, potenciais riscos e o incômodo que esta possa acarretar, aceito participar da pesquisa.

- Sim
- Não

Skip To: End of Survey If Você está sendo convidado a participar de uma pesquisa sobre as percepções e experiências de estu... = Não

End of Block: Termo de Consentimento Livre e Esclarecido

Start of Block: Perguntas iniciais

Atualmente você reside:

- No Brasil
 - No exterior
-

Qual é o seu estado conjugal?

- Casado(a) / Morando com parceiro(a)
 - Solteiro(a)
 - Viúvo
 - Separado/ Divorciado
 - Prefiro não declarar
-

Você está empregado agora?

- Sim
 - Não
-

Você está trabalhando para o governo, para uma empresa privada/indústria, ou para uma organização sem fins lucrativos? Se não está trabalhando atualmente, considere seu principal trabalho no passado.

- Governo ou instituição pública
- Empresa privada ou indústria
- Organização sem fins lucrativos
- Outro (especifique)

End of Block: Perguntas iniciais

Start of Block: Percepções e valores

Neste bloco faremos algumas perguntas relacionadas às suas opiniões e valores sobre temas diversos.




Quanto você acha que ganham as pessoas com as seguintes profissões no Brasil? E quanto você acha que elas deveriam ganhar? Sabemos que é difícil fazer um cálculo exato, mas tente dar um valor aproximado bruto em reais por mês.

	Quanto ganham Quanto deveriam ganhar							
	Até 1 salário mínimo (até R\$ 1.045,00)	De 1 a 2 salários mínimos (R\$ 1.045,00 a R\$ 2.090,00)	De 2 a 3 salários mínimos (R\$ 2.091,00 a R\$ 3.135,00)	De 3 a 5 salários mínimos (R\$ 3.136,00 a R\$ 5.225,00)	De 5 a 10 salários mínimos (R\$ 5.226,00 a R\$ 10.450,00)	De 10 a 20 salários mínimos (R\$ 10.451,00 a R\$ 20.900,00)	De 20 a 50 salários mínimos (R\$ 20.901,00 a R\$ 52.250,00)	Mais de 50 salários mínimos (acima de R\$ 52.251,00)
Médico de clínica geral								
Presidente de uma grande empresa nacional								
Balconista de loja								
Operário de fábrica não qualificado								
Governador estadual no Brasil								

Como você classificaria seu ponto de vista usando a seguinte escala? 1 significa que você concorda totalmente com a afirmação à esquerda; 7 significa que você concorda totalmente com a declaração à direita; Se seu ponto de vista está entre as duas afirmações, escolha um ponto entre elas.

	1	2	3	4	5	6	7	
No futuro, a pessoa trabalhadora consegue uma vida melhor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Ser uma pessoa trabalhadora não necessariamente traz sucesso. É mais uma questão de sorte e de contatos
Os salários dos trabalhadores deveriam ser mais parecidos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	As diferenças salariais deveriam ser maiores para incentivar o esforço individual

Em uma escala de 0 a 10, em que em 0 estão as pessoas com a menor renda e qualidade de vida, e em 10 as pessoas com renda e qualidade de vida mais altas, em que posição você se colocaria nos seguintes momentos de sua vida?

Momento atual	
5 anos atrás	
Daqui a 5 anos (expectativa)	

End of Block: Percepções e valores

Start of Block: LIST EXPERIMENT - GROUP 1

Abaixo estão listadas quatro coisas que às vezes deixam as pessoas com raiva ou chateadas. Depois de ler todas, diga QUANTAS delas te chateiam. Não queremos saber quais, apenas quantas.

O aumento do imposto sobre combustíveis fósseis

O governo exigindo cintos de segurança ao dirigir

Grandes corporações poluindo o meio ambiente

A desigualdade de renda no Brasil

Quantidade de itens que te chateiam

- 0
- 1
- 2
- 3
- 4

Abaixo estão listadas outras quatro coisas que às vezes deixam as pessoas com raiva ou chateadas. Depois de ler todas, diga QUANTAS delas te chateiam. Não queremos saber quais, apenas quantas.

A adoção de crianças por um indivíduo homossexual ou por um casal homoafetivo

A proibição do casamento homoafetivo

O governo instalando mais radares de velocidade

Pessoas que consomem carne

Quantidade de itens que te chateiam

- 0
- 1
- 2
- 3
- 4

End of Block: LIST EXPERIMENT - GROUP 1

Start of Block: LIST EXPERIMENT - GROUP 2

Abaixo estão listadas três coisas que às vezes deixam as pessoas com raiva ou chateadas. Depois de ler todas, diga QUANTAS delas te chateiam. Não queremos saber quais, apenas quantas.

O aumento do imposto sobre combustíveis fósseis

O governo exigindo cintos de segurança ao dirigir

Grandes corporações poluindo o meio ambiente

Quantidade de itens que te chateiam

- 0
 - 1
 - 2
 - 3
-

Abaixo estão listadas outras cinco coisas que às vezes deixam as pessoas com raiva ou chateadas. Depois de ler todas, diga QUANTAS delas te chateiam. Não queremos saber quais, apenas quantas.

A adoção de crianças por um indivíduo homossexual ou por um casal homoafetivo

A proibição do casamento homoafetivo

O governo instalando mais radares de velocidade

Pessoas que consomem carne

A desigualdade de renda no Brasil

Quantidade de itens que te chateiam

- 0
- 1
- 2
- 3
- 4
- 5

End of Block: LIST EXPERIMENT - GROUP 2

Start of Block: Perguntas sobre intercâmbio

Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem)

- Não, mas já me inscrevi em processos seletivos no passado
 - Não, mas vou me inscrever em processos seletivos no futuro
 - Não, e não pretendo fazer intercâmbio
 - Sim, durante o ensino fundamental/médio
 - Sim, durante a graduação
 - Sim, outros (especifique):
-

Display This Question:

If Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, durante o ensino fundamental/médio

Or Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, durante a graduação

Or Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, outros (especifique):

Em que ano você terminou o seu intercâmbio mais recente?

- Ainda estou no exterior
 - 2021
 - 2020
 - 2019
 - 2018
 - 2017
 - 2016
 - 2015
 - 2014
 - 2013
 - 2012
 - 2011
 - 2010 ou anterior
-

Display This Question:

If Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, durante o ensino fundamental/médio

Or Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, durante a graduação

Or Você já fez intercâmbio? (escolha todas as alternativas que se aplicarem) = Sim, outros (especifique):

Qual foi a região de destino de seu intercâmbio? (selecione todas as alternativas que aplicarem)

- América do Norte
- América Latina e Caribe
- África
- Ásia
- Europa
- Oceania

End of Block: Perguntas sobre intercâmbio

Start of Block: Valores e renda

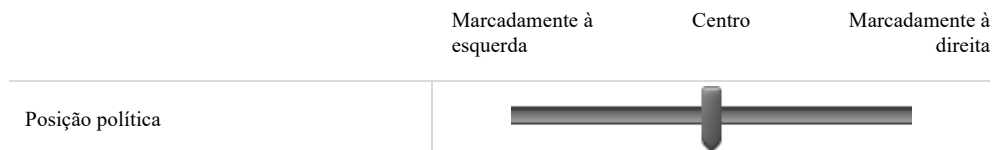
Você pertence a alguma religião ou grupo religioso?

- Sim
- Não

Em que medida você se interessa por política?

- Não sou interessado
- Não muito interessado
- Um pouco interessado
- Muito interessado

Quando se trata de política, as pessoas falam de “esquerda” e de “direita”. De um modo geral, onde você colocaria sua visão nesta escala?



Qual a sua renda mensal aproximada? (em reais por mês, no valor bruto antes dos descontos).

- Não tenho renda
 - Até 1 salário mínimo (até R\$ 1.045,00)
 - De 1 a 2 salários mínimos (R\$ 1.045,00 a R\$ 2.090,00)
 - De 2 a 3 salários mínimos (R\$ 2.091,00 a R\$ 3.135,00)
 - De 3 a 5 salários mínimos (R\$ 3.136,00 a R\$ 5.225,00)
 - De 5 a 10 salários mínimos (R\$ 5.226,00 a R\$ 10.450,00)
 - De 10 a 20 salários mínimos (R\$ 10.451,00 a R\$ 20.900,00)
 - De 20 a 50 salários mínimos (R\$ 20.901,00 a R\$ 52.250,00)
 - Mais de 50 salários mínimos (acima de R\$ 52.251,00)
-

Somando a sua renda com a renda das pessoas que moram com você, quanto é aproximadamente a renda familiar na sua casa?

- Até 1 salário mínimo (até R\$ 1.045,00)
 - De 1 a 2 salários mínimos (R\$ 1.045,00 a R\$ 2.090,00)
 - De 2 a 3 salários mínimos (R\$ 2.091,00 a R\$ 3.135,00)
 - De 3 a 5 salários mínimos (R\$ 3.136,00 a R\$ 5.225,00)
 - De 5 a 10 salários mínimos (R\$ 5.226,00 a R\$ 10.450,00)
 - De 10 a 20 salários mínimos (R\$ 10.451,00 a R\$ 20.900,00)
 - De 20 a 50 salários mínimos (R\$ 20.901,00 a R\$ 52.250,00)
 - Mais de 50 salários mínimos (acima de R\$ 52.251,00)
-

Quantas pessoas moram na sua casa, incluindo você?

Qual a sua participação na vida econômica da família?

- Trabalho, mas recebo ajuda financeira da família ou outras pessoas
 - Trabalho e sou responsável pelo meu próprio sustento, não recebendo ajuda financeira
 - Trabalho, sou responsável pelo meu próprio sustento e contribuo parcialmente para o sustento da família ou de outra pessoa
 - Trabalho e sou o principal responsável pelo sustento da família
 - Não trabalho
-

Para finalizar nosso questionário, abaixo listamos três ONGs que atuam no Brasil, assim como uma curta descrição de cada uma delas (extraída de suas fontes oficiais).

SOS Amazônia (www.sosamazonia.org.br)

Missão: Promover a conservação da biodiversidade e o crescimento da consciência ambiental na Amazônia.

Abrace (www.abrace.com.br)

Missão: Buscar permanentemente a excelência na assistência social às famílias de crianças e adolescentes com câncer e hemopatias, além de valorizar voluntários e apoiadores.

CENPEC (www.cenpec.org.br)

Missão: Contribuir para a redução das desigualdades do País, por meio da produção de conhecimento e de incidência nas políticas públicas no campo da educação e em sua articulação com os demais direitos.

A equipe de pesquisa se compromete em doar R\$200,00 para a ONG que obtiver mais votos.

Com qual dessas ONGs você gostaria de contribuir?

- SOS Amazônia
- Abrace
- CENPEC
- Nenhuma

End of Block: Valores e renda

IMPACT

This section presents the impact of this doctoral dissertation, in compliance with article 22.5 of the “Regulations for obtaining the doctoral degree at Maastricht University,” decreed by a resolution of the board of deans dated 1 October 2020.

This dissertation aims to contribute to the literature on student mobility and inequality by discussing two main topics: student mobility’s potential to change people’s worldviews, specifically regarding inequality attitudes and its role in improving human capital. Overall, the essays presented in this dissertation provide information to inform better policymakers concerned with the effects of international student mobility on students. It also provides more recent information about inequality preferences in Brazil, advancing the knowledge of inequality attitudes in Latin America, a region not widely explored by previous literature in the field.

In Chapter 2, we discuss the potential drivers of inequality attitudes in Brazil. Reflecting on how different groups react when asked about inequality is key, and it can help understand its visibility on the public agenda, which is one step toward solving the issue in the country. One of the main findings of this chapter is regarding the importance of race. By considering the country’s ethnic history, we found it to be an essential driver of people’s opinions, a key finding considering the role of black activists in introducing social concerns into Brazil’s public debate in the past decades. Another important finding from this chapter is regarding the potential effect of the recent COVID-19 pandemic in changing people’s views on inequality in the country, a very recent concern not yet widely explored by the literature. In this chapter, we also present empirical evidence that challenges traditional theories about rational choices by finding that being educated is associated with higher odds of believing that reducing inequality is fundamental for progress and not finding a clear association between income and inequality views.

Chapter 3 is, to the best of our knowledge, the first to analyze the effect of going abroad on students’ preferences and perceptions of inequality. By finding that in Brazil, going abroad does not affect students’ preference to reduce within-country inequality and that mobile students underestimate inequality more than non-mobiles, we provide empirical evidence that challenges the widespread idea that mobility is

an instrument that positively impacts individuals' personal development, starting a reflection on student mobility programs' role in generating a more caring society.

Chapter 4 contributes to the current knowledge about the impacts of international student mobility by exploring the heterogeneity across types of mobility programs in terms of timing and duration. It presents empirical evidence that can be used to design exchange programs, providing insights to policymakers engaged in maximizing its effects.

This dissertation has two main target groups. The first is the academics in the fields of higher education and socioeconomic inequality, who will benefit from the empirical evidence presented in the three essays of this thesis. The second is policymakers concerned with attitudes towards inequality in Brazil and those interested in understanding the effects of international student mobility in students.

The research in this dissertation has been disseminated at several academic conferences, benefiting from discussions and comments from many scholars.

An extended version of the text presented in the Introduction of this thesis was presented at the "11th FORGES Conference" about the cooperation in higher education in Portuguese-speaking countries (Nov 2021) and at the "GEOPI Webinar 2022" about the effects of international student mobility (Jul 2022). Its data was also used by Ana Carneiro, one of the thesis supervisors, on two different occasions: 1) in a short presentation at one of the biggest television channels in Brazil during a news report about international student mobility in the country (title of the media article, in Portuguese: "*Estudantes de Baixa renda lutam para realizar o sonho de estudar for a do país*") (Jun 2021); and 2) during a presentation at the main conference on social sciences in Brazil, the "46th ANPOCS Annual Meeting" about gender equity in science (Oct 2022).

The first version of Chapter 2 was presented at the "UNU-MERIT Internal Conference 2020" (Jun 2020) and at the "SBE Conference 2021" (Apr 2021). Preliminary findings of Chapter 3 were presented at the UNU-MERIT Internal Conference 2022 (Sep 2022). Chapter 4 was presented at the "GPAC2 Workshop" (Nov 2021), at the "UNU-MERIT Seminar Series" (Mar 2022), at the "3rd Research Policy Online Conference for Early Career Researchers" (Apr 2022), and at the "UNU-MERIT May Event Series – Research Seminars" (May 2022).

In addition to the presentations mentioned above, preliminary versions of all the chapters were published as UNU-MERIT working papers. Chapter 2 was published as “Attitudes towards inequality in Brazil: An analysis of a highly unequal country” (#2021-009), Chapter 3 as “Can International Mobility Shape Students’ Attitudes Toward Inequality? The Brazilian Case” (#2023-001), and Chapter 4 as “International student mobility and academic performance: Does timing matter?” (#2021-049). All chapters are currently in the process of sending to academic journals in the fields of higher education and inequality.

ABOUT THE AUTHOR

Cintia Denise Granja was born and raised in Brazil. She is an Economist and has a master's in Science and Technological Policy from the University of Campinas (UNICAMP). She started her Ph.D. at both UNICAMP and UNU-MERIT in 2018, under a double-degree agreement between the two universities. Her doctoral thesis is about international student mobility and attitudes toward inequality, with a focus on Brazil.

Cintia has been researching international student mobility and impact evaluation for over six years. She has experience participating in quantitative and qualitative research in education and economics in several countries, including Brazil and the Netherlands. Since joining UNU-MERIT, she has been actively participating in several other academic activities, including coordinating and teaching courses about Public Policy, Policy Evaluation, Public Economics, and Quantitative Analysis.

Besides the topics mentioned above, her research interests include higher education studies, impact evaluation techniques, public policy, inequality, and poverty.

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