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Impact of Scholarships on Student Success: A Case Study of the University of Turbat, Pakistan

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This study uses data of a public sector university to investigate the impact of government financial aid on students' success outcomes. The estimates of the difference-in-differences (DID) model show that there is a positive and significant relationship between need-based scholarship (NBS) and students' success outcomes while for merit-based scholarship (MBS), the relationship is insignificant. Empirical results reveal that the NBS seemingly increases the academic performance of male students by about 4 percent in subsequent semesters after the award. The t-tests further reveal that a male student when obtains a scholarship is less likely to depend on his parental income for university-related expenses and more likely to focus on his study by taking class notes seriously. This positive and significant difference between NBS holders and non-holders also exists for male students on every measure of success outcomes (e.g. students' retention, engagement, acquisition of skills and competences, and career success). The NBS (i.e. HEC Ehsaas) is designed properly and contributes to reaching out to the targeted students in Balochistan or even in the country, therefore, the findings of this study suggest the government of Pakistan for its continuation while using a more self-sustained financial model just like the BEEF programme in Balochistan and the PEEF programme in Punjab.

JEL Classification: A22
Keywords: Impact Evaluation, Need-Based Scholarship, Merit-Based Scholarship, Academic Success, Academic Performance, Difference-in-Differences, Quasi-Natural Experiment

1. INTRODUCTION

Education is one of the leading instruments for enhancing economic growth. It helps to uplift human capabilities through knowledge and skills and creates a progressive society. The education benefits are not only limited to the national economy but individuals also benefit from it. But unfortunately, one-sixth of the world's children, adolescents, and youth—258.4 million—were out of school in 2018 and shockingly 93 million of them were from South Asia (UNESCO Institute for Statistics (UIS), 2019b). Pakistan has the world's second-highest number of out-of-school children after Nigeria. An estimated 44 percent of the children aged 5-16, i.e., 22.7 million children, were not enrolled in schools in 2017 (Hunter, 2020). Further sizeable disparities among regions, socio-economic statuses, and

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genders exist. For instance, 78 percent of girls from Balochistan and 58 percent of girls and 52 percent of the poorest children in Sindh are out of school (UNICEF, 2020).

The situation of higher education in Pakistan is not commendable compared to its neighboring countries. The chance of getting higher education in Pakistan is only 4 percent, which is much lower than in India and China where the chances are 11 percent and 20 percent, respectively (Nasreen & Afzal, 2020). One reason for the current condition of education in Pakistan is low government spending on education. For instance, government spending on education during the last two decades remained at 2 percent of the GDP (Ali, Hakim, & Abdullah, 2016). The Government of Pakistan reduced its spending on education from 4 percent (target) to 2.9 percent of its GDP in 2017 (Hunter, 2020). In 2019-20 the total education expenditure declined from Rs. 868.0 billion to Rs. 611.0 billion. It decreased by 29.6 percent, which is an alarming situation (see Figure A1). Pakistan has only focused on primary and secondary education, and the tertiary/higher level has been neglected (Aziz, et al. 2008).

Among other socio-economic and cultural constraints, poverty is one of the biggest hurdles to the development of higher education in Pakistan (Razi, 2016). Getting higher education is even much harder for females than males because, inter alia, money or financial constraint is the core hindrance to females' higher education (Abid & Khan, 2017; Amin, Tatlah, & Afghani, 2018; Hashmi, Shahzad, & Kanwal, 2016; Khan, Khan, & Khan, 2020). The lack of financial resources is the key barrier that every marginalised community in Pakistan faces to getting a higher education (e.g., slum dwellers) (Awab-us-Sibtain, Usman, & Husnain, 2020).

Under SDGs Goal 4, 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', some global targets were set by representatives of the global education community, including ensuring equal access to affordable and quality higher education for all genders, persons with disabilities, and indigenous peoples (targets 4.3-4.5) (UNESCO Institute for Statistics (UIS), 2019a). To accomplish these targets by 2030, the global community also committed (target 4. b) that by 2020, the global enrolment of students in higher education should increase significantly by the means of expanding the number of scholarships in developed countries for the students of developing countries. Though there are no such precise records on the number of scholarships, according to one estimate the developed countries provided public scholarships to only 1 percent of students in developing countries in 2015 (UNESCO Institute for Statistics (UIS), 2019a).

To reduce poverty and improve income distribution, the development of higher education could be a viable policy option (Qazi, Raza, Jawaid, & Karim, 2018). To that end, the Government of Pakistan has taken several initiatives on the supply side (e.g., the development of faculty members) of higher education in Pakistan. Both federal and provincial governments of Pakistan have launched several scholarship programmes under the umbrella of the human development programme. The HEC has initiated various merit and need-based scholarships for specific regions (Gwadar-China Scholarship Programme, Indigenous Scholarship, Aghaz-E-Haqooq-E-Balochistan Project, and Undergraduate Scholarship Programme for the students of Gilgit-Baltistan). The HEC also has initiated national-level scholarships such as the Prime Minister Fee Reimbursement scheme for the less developed areas (the scheme

is closed), the Indigenous Ph.D Fellowship Programme, HEC Need-Based Scholarship, and Ehsaas Undergraduate Scholarship Programme.

Though an extensive body of research studies on the subject area is available, a methodologically rigorous study on impact evaluation in the context of Pakistan is missing. For instance, studies highlight that scholarship programmes in general increase the chances of accessibility to educational institutions, increase students' enrolment, and improve survival, retention, and academic performance (Barrow, Richburg-Hayes, Rouse, & Brock, 2014; Bettinger, et al. 2017; Schudde & Scott-Clayton, 2016; Timilsana, 2017). In the context of Pakistan, B. U. Khan, Shah, and Gul (2019) in a survey based on self-administered questionnaires from 350 HEC need-based scholarship holders in four districts of KPK Pakistan and found that the scholarships had a considerably positive effect on education outcomes, i.e., the scholarships increased enrolment, improved attendance, and reduced dropouts.

In terms of a causal relationship between scholarship and students' academic performance, the study of Khan, et al. (2019) has limited policy implications. Although they found a positive impact of scholarships on students' performance, their study did not take into account those students who were not awarded scholarships and were excluded from their study. Also, what would have been the educational performance of observed students if they did not get scholarships? What would have been the academic performance of those students who were enrolled in the same class as the scholarship awardees but were not awarded any scholarships? These and other similar policy-relevant questions motivated us to design this impact evaluation research which will improve our understanding and knowledge base on the effectiveness of government scholarships as interventions for student academic performance and success.

The main objective of the study was to investigate the impact of financial aid on students' success by taking the University of Turbat as a case study. More precisely, it was designed to answer the following four research questions:

(1) What is the impact of government scholarship on students' academic performance?
(2) What is the impact of the scholarship on students' success beyond their academic performance?
(3) Which type of financial aid is a better intervention for undergrad students in the underprivileged regions of Pakistan? Need or merit-based scholarship.
(4) What are the key constraints, challenges, or barriers in the process of implementation, monitoring, and evaluation of the scholarship programmes?

To identify the effectiveness and successes of the government's need- or merit-based scholarship programmes in the province of Balochistan, we conducted a rigorous short- to medium-term impact evaluation by taking the University of Turbat as a case study. In this evaluation, we took the scholarship programmes initiated by both provincial and federal governments as policy interventions. Evidence derived from this impact evaluation helped us understand how these scholarship programmes are contributing by providing opportunities to students in Balochistan to access higher education. The findings of this case study also apply to universities with similar institutional settings and characteristics.

2. LITERATURE REVIEW

In a global context, the significance of scholarships is profoundly acknowledged across all levels of education. Specifically, in the year 2015, it gained more importance when the United Nation Sustainable Development Goals (SDGs) emphasised the inclusion of scholarship programmes as a tool for achieving its goals. The research has also identified scholarships as a significant instrument for the nation's development and growth. In this connection, rigorous research can be found in the literature which establishes the importance and the impact of scholarships on multiple psycho-social and economic variables. According to the literature, financial aid and scholarships can directly affect students' academic motivation, which eventually results in good academic performance. Campbell and Neff (2020) reviewed 105 research articles on international higher education scholarships. They found that the six primary outcomes of these scholarships were building human capital, bringing social change, promoting sustainable development, internationalising institutes, improving diplomatic ties, and enhancing access to education.

In addition, several studies reported empirical evidence of the link between scholarships or financial aid and students' academic success, motivation, satisfaction, retention, and engagement (Alon, 2011; Angrist, et al. 2015; Glocker, 2011; Millea, et al. 2018; Mulyaningsih, et al. 2022; Waskito & Azizah, 2013). In their seminal work, Ganem and Manasse (2011) found that scholarships had a manifold impact on students' academic achievement, motivation, and success. Academic success was measured by students' persistence, progression, and timely completion of degrees (Ganem & Manasse, 2011). Moreover, researchers highlighted the need for institutional scholarships for student success as it is considered an essential tool or predictor for success. Mushtaq and Khan (2012) identified several antecedents of college scholarships that affected student performance and engagement. In another study, Watson, et al. (2014) found an interesting result that scholarship had a positive ripple effect on siblings, parents, relatives, and neighbours. Particularly, it encouraged parents to get other children into education as the burdens or expenses of educating children would be compensated through scholarships. Furthermore, they argued that social distance emerged among the students who were the scholarship recipients and those who were non-recipients of scholarships. They also argued that the scholarship stipend changed the course of students' lives. Over half became the most educated persons in their families and towns. Above all, these findings suggest that the social and economic value of scholarships needs to be evaluated on a greater spectrum (Watson, et al. 2014).

In another empirical study, Cagasan, et al. (2019) found that graduate students' perceived contribution of scholarships to academic success. The findings showed that a majority of the students (89 percent) were able to finish their studies within the prescribed time. Almost all of the students (97.8 percent) believed that scholarships contributed to graduate students' persistence and timely degree completion. The majority of students (93.3 percent) needed financial support to stay at university. Further surveys revealed scholarships reduced students' stress levels (48.9 percent) and that some students claimed that the financial assistance helped them with their living expenses (60 percent) and finish their education on time (Cagasan, et al. 2019).

In a correlation investigation, Bliven and Jungbauer (2021) established that student motivation, self-determination, and persistence were positively related to student recognition programmes, acknowledging the students' efforts and other achievements in university. In addition, Rana, et al. (2021) argued that scholarships enhanced the quality and standards of education among the scholarship recipients and further recommended that some scholarship programmes were less holistic, which may not be able to cover the whole expenses of the students. In a recent empirical investigation, Mulyaningsih, et al. (2022), found that in Indonesia, large-scale targeted government scholarships had a very strong impact on students' performance, in particular, those who were least privileged and lived lives in poor conditions.

3. CONCEPTUAL FRAMEWORK

The conceptual framework of this study was built on the comprehensive meta-analysis of York, Gibson, and Rankin (2015). They defined academic success (which is different from student success) based on Astin's (1991) input-environment-outcome (IEO) model as the theoretical framework for their study. According to the IEO model, the outcomes (O) of higher education are conditioned on inputs (I) and environment (E). Lately, Astin's model has been further expanded by Pascarella and Terenzini (2005) by including demographic characteristics, such as family background and academic and social experience as inputs. The setting of HEIs includes people, programmes, policies, cultures, and institutional experiences in the environment; and finally student characteristics including knowledge, skills, attitudes, values, beliefs, and behaviours after graduation in the outcomes. Combining Astin's model and York et al., analytical review of the literature, this study followed the given conceptual framework (see Figure 1).

3.1. Inputs

Demographic characteristics of students, their family backgrounds, and academic and social experiences are necessary inputs for achieving academic success. We modified the model by including financial aid, the main variable of interest, as an additional input. Financial aid includes additional support from governments, philanthropists, or other sources in terms of scholarships, fee concessions, etc., to students that helped them to concentrate on their studies during degree programmes and achieve a high level of academic success. In this study, we measured financial aid by using government-sponsored scholarships in the form of fees, stipends, etc. Currently, there are two main types of financial aid available for undergraduate students at the University of Tubat, namely, need based scholarships (i.e. HEC need-based, HEC Ehsaas scholarship, and merit-based scholarship (i.e. BEEF merit-based scholarship). The other inputs for this study included students' previous academic records (matric and intermediate percentage marks, age, gender, and parental education).

3.2. Environment

The environment includes people, programmes, policies, cultures, and institutional experiences in HEIs that affect students' academic success. In this study, our research

setting was the University of Turbat (UoT) which is far away from other cities in Pakistan. Hence, it mainly attracts students who mostly belong to poor families in the same region. Therefore, the culture of UoT is less diversified in terms of students' ethnic or family backgrounds. Also, the institutional experiences may influence students' performance and success. To capture the environmental or institutional variation in our analysis, we included degree programmes and district-fixed effects in our model.

3.3. Outcome: Academic Success

In this impact evaluation, we used academic success as our outcome variable. York, et al. (2015) defined academic success as "inclusive of academic achievement, attainment of learning objectives, acquisition of desired skills and competencies, satisfaction, persistence, and post-college performance." Academic achievement is a student's academic performance and ability which is being measured by a student's GPA, or grades in a course (York, et al. 2015). They further separated 'academic achievement' into 'acquisition of skills and competence' and 'attainment of learning objectives', though those were used interchangeably for measuring academic success in the literature. This study opted academic achievement, acquisition of skills and competence, and attainment of learning objectives for measuring academic success in our empirical analysis. Academic achievement was measured by students' GPA, CGPA, or percentage marks in a given semester. Other students' success outcomes were measured by several proxies which were extracted from the College Student Experience Questionnaire (CSEQ)[1] (Pace and Kuh, 1998) and the survey was conducted at the UoT.

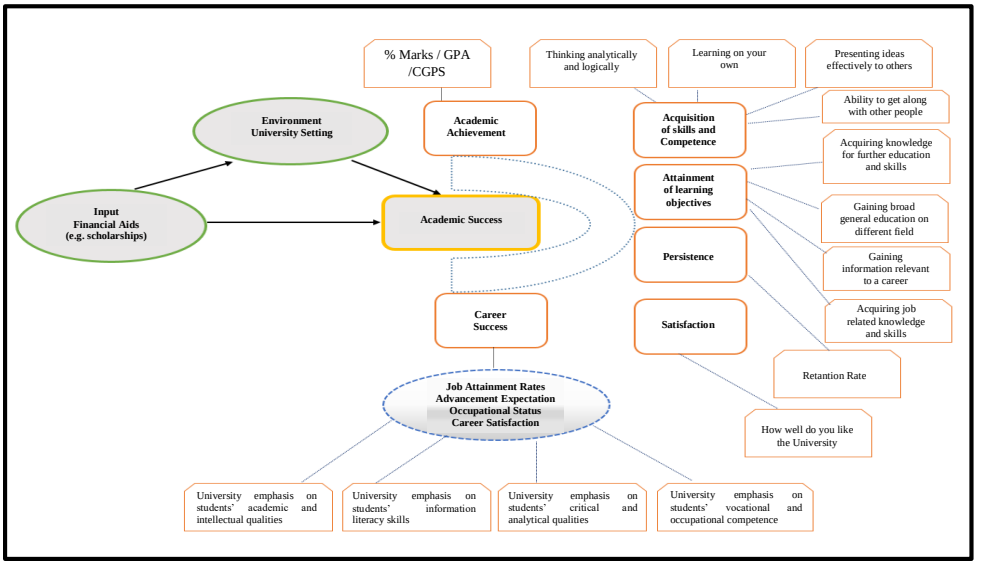
Persistence is an academic success, defined as "persistence corresponds to students' continued progression in an academic degree despite institutional transfers or stopping out" (York, et al. 2015). Usually, it is measured by students' graduation and retention rates, but due to data limitations, we measured it with students' promotion rates to the next semester based on the university's institutional policy of promotion, probation, or dropout.

Satisfaction, though, is not itself a component of academic success but it is an outcome that includes other aspects of students' well-being, such as students' perceptions of the institution and climate, and their goal achievement which affects their ability to succeed at the university level academically (York, et al. 2015). It was measured by students' satisfaction level with the university's facilities and academic environment and also their engagement in educational activities. Student engagement in a university setting is an essential aspect of comprehending students' satisfaction, persistence, and class attendance.

Finally, York, et al. (2015) suggested in their meta-analysis that career success is a part of academic success, which includes both intrinsic and extrinsic measures of it. Due to data limitation, we used students' self-reported responses or perceptions of their educational prospects, prospects of their career in the field, their level of background or specialised knowledge and skills that would help them in the future to find and qualify for their desired jobs.

[1]The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ) : Institutional Research Swarthmore College).

Fig. 1. Conceptual Framework for the Impact of Financial Aids on Students' Academic Success



4. RESEARCH SETTING

4.1. Background of the University of Turbat

The University of Turbat (UoT) was established in May 2013 and it is the second public sector general university in the province after the University of Balochistan. Turbat is the second most populous city in the province after Quetta. The establishment of this institute has not only fulfilled the desire of the public in this southern part of Balochistan, but it also covers the majority of districts scattered about the wide geographical. The primary objective of the establishment of this university was to address higher education challenges in the Makran Division of the province consisting of three districts, namely Kech, Gwadar, and Panjgoor besides the adjoining districts of Awaran and others.

Since it establishment, the university expanded its academic departments from three to fifteen with four faculties by offering twentyfive degree programmes in various disciplines. Apart from the main campus in Turbat, it established one sub-campus in Gwadar in 2017 (recently converted into a full-fledged university) and another sub-campus in Panjgoor in 2020. The enrollment status is 3,414 students of which 39.10 percent are female. The dropout rate is 33 percent at the undergraduate level and that is because of inter alia (e.g. the institutional policy), and financial constraints.

4.2. Brief Description of Scholarship Programmes

UoT has two main types of scholarship programmes; need based scholarship (NBS) or merit-based scholarships (MBS); the former includes HEC Need-Based Scholarship and HEC Ehsaas Undergraduate Scholarship, and the latter includes Balochistan Education Endowment Fund (BEEF). Under these programmes, about 901 and 980 scholarships were awarded to students in 2019 and 2020, respectively (see Table 1).

Table 1

HEC and BEEF Scholarship Programmes at UoT in 2019 and 2020

Name of Scholarships	2020	2019
HEC Ehsaas Scholarship Programme	437	657
HEC Need-Based Scholarship Programme	63	38
BEEF Merit-Based Scholarship Programme	480	206

Source: Document Records of UoT.

In this impact evaluation, we used an NBS (i.e. HEC Ehsaas Undergraduate Scholarship) and an MBS (BEEF Merit-Based Scholarship Programme) to estimate the impact of the scholarship on students' success outcomes. The unit of observation is the students at who are/were enrolled in any ungraduated degree programmes (4-5 years) at UoT.

The HEC Ehsaas Undergraduate Scholarship Programme

The federal government has initiated this programme in 2019 for supporting undergraduate students financially (Higher Education Commission Pakistan, 2020a). In its policy brief, it stated that "this is the largest ever need-based undergraduate scholarship programme in the history of Pakistan" (Pakistan, 2020). The programme supports needy students to access higher education in underprivileged areas of Pakistan. The HEC has awarded 657 (40 percent females) and 437 (43 percent females) scholarships to the undergraduate students of the UoT in 2019 and 2020, respectively (see Table 1). Compared to its size, HEC has awarded scholarships to students of UoT more generously than other public sector universities in Balochistan (see Table 2).

Table 2

HEC Ehsaas Scholarships: Four Public Sector University in Balochistan in 2019 and 2020

	2020			2019		
Name of Universities	Total	Male	Female	Total	Male	Female
UOT	437	248	189	657	394	262
UOB	282	156	126	435	227	208
UOL	24	23	1	62	61	1
BUITEMS	235	147	88	594	517	77

Source: Financial aid offices of given universities in Balochistan.

BEEF Scholarship Programme

The Government of Balochistan established an educational endowment fund of Rs. 5 billion and for investment, monitoring, and disbursement of this funds, a company, namely, the Balochistan Education Endowment Fund (BEEF) was registered under the Companies Ordinance, 1984. The main objective of BEEF is to increase the provincial literacy rate, enrolment and retention rates of students, create a talented human resource, and improve socio-economic and poverty conditions in Balochistan (the Government of

Balochistan, 2016a, 2016b, 2017, 2018). From the proceeds of the endowment fund, BEEF has been awarding merit-based scholarships to talented and needy students mainly belonging to Balochistan Province. For undergraduate (4-5 years) degree programmes, BEEF usually selects the top 10 to 20 students from a list of the top 20 to 40 students provided by the universities in Balochistan. BEEF awarded scholarships to 480 and 206 students of UoT in 2019 and 2020 respectively (see Table 1).

5. EMPIRICAL ANALYSIS STRATEGY

In this impact evaluation, we utilised a mixed method for estimating the short- to medium-term impacts of government-sponsored scholarship on students' success outcomes in a public sector university in Balochistan. Below we present a simple model for analysing the impact of scholarships (T) on students' success outcomes (Y):

$$Y = \beta_0 + \beta_1 T + \mu$$

Furthermore, we expanded the above model by using the outcome model of Albouy (2004) through which we evaluated the government NBS and MBS programmes' impact on students' success outcomes (such as academic performance that was measured by % change in marks or GPA/CGPA) Y_{ijt}:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \varepsilon_{ijt}.$$

In the above difference-in-differences (DID) model, where T_i is the treated group (T = 1, 0), 1 indicates students who were/are enrolled in a degree programme *j* and awarded a scholarship (i.e., the treatment group), and 0 indicates similar students who were not awarded any type of scholarship because they enrolled before the scholarship programmes were launched or were not awarded scholarships due to financial constraints (i.e., the control or comparison group). We extracted students' performance outcomes (i.e., students' GPA/CGPA or percentage marks) for two time periods or semesters ($Post_t$ = 1, 0). 1 indicates the periods (i.e. the semester(s)) during and after the treatment group received scholarships (post-treatment) and 0 indicates the periods (or semester(s)) before that the students received their scholarships. The index *i* represents students ($i = 1, 2 \ldots, N$) having observations for at least two time periods ($t = 1, 2, \ldots, 8$), one for the semester(s) before the award and the other for the semester(s) during or after the award. ε_{ijt} is the idiosyncratic error term.

Furthermore, in this quasi-experimental design the treatment assignments (scholarships) were not made by a randomised process but were rather made on some arbitrary criteria (they were either selected based on a need or merit). Due to the selection criteria, the comparison group was possibly a sandwich between two possible treatment groups (i.e. need- and merit-based scholarships). At one extreme, students who were eligible for merit-based scholarships probably had better standards of living than the rest. For example, the students who availed of BEEF merit-based scholarship awards probably got the same awards for each succeeding year due to their higher academic achievements (e.g. CGPA), which would also be highly correlated with their family social status. On the other extreme, the students who availed of a need-based scholarship probably had lower standards of living because of the prescribed eligibility criteria that made them eligible for the award. The HEC Ehsaas scholarship programme is an example of such a programme that selects students based on the need assessments.

To avoid biased estimates that was possible due to the selection bias and also given the availability of data, we expanded the model by including other control variables or the student level baseline characteristics, S_i, programme level characteristics, P_j, and district level controls, D_d. Thus, the functional form of the estimation model became:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \sum_l \gamma_l S_i + \sum_k \delta_k P_j + \sum_m \theta_m D_d + \varepsilon_{ijt}.$$

In the above equation, S_i is the student background information (i.e., students' previous academic records (percentage marks in matric and intermediate), parents' education, gender, age, etc.). P_j is a set of dummy variables that control for departmental level variations and degree programmes (*j = 1, 2,…,13 representing BBA, BS Economics, etc.*), and D_d is a set of dummy variables for districts that control the variation in students' domicile. The difference-in-differences (DID) estimation technique is applicable when there are sufficient numbers of observations in both treatment and control groups and the two periods (in the semesters before and after the scholarship intervention). We used students' records who were enrolled in sessions 2017-20 and 2018-21 for our main DiD analysis. The model was estimated by OLS and standard errors were robust. In other cases, (such as using survey-based datasets), though we still had observations on both treatment and control groups (students with scholarship and without scholarship), due to losing the pre- and post-intervention interactions, we either applied a t-test or multiple regression model to estimate the impact of scholarships on other dimensions (quantitative-nature) of student academic success, such as student retention rate, their engagement, satisfaction, etc.

6. DATA AND METHODOLOGY

To understand the impact of scholarships on students' academic performance and success, we used a triangulation of mixed methods by using administrative data, a survey conducted at UoT, key informant interviews (KIIs), focused group discussions (FGDs), and policy documents from the scholarship monitoring bodies (Higher Education Commission of Pakistan (HEC) and Balochistan Educational Endowment Fund (BEEF)).

6.1. Quantitative Data

This study used a wide range of secondary quantitative data (e.g., students' academic performance measured by students' marks in percentage, GPA, and CGPA; students' retention rates, and students' percentage marks in matric and intermediate levels) collected from several sources at the UoT. These sources included students' semester gazettes from the office of the controller examinations, MIS records from the IT section, lists of awardees, and other scholarship documents from the financial aid office (FAO). These sources also provided us with information on other control variables, which were used in the analysis, including gender, age, district, BS programmes, and sessions (2017-20 to 2021-24).

6.2. Survey Data

This study was complemented with survey data, which we conducted at the UoT by using the survey questionnaire of CSEQ[2] (Pace and Kuh, 1998). The survey questionnaire

[2] The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ): Institutional Research: Swarthmore College).

included students' background information, their experiences using a library, computer labs, course learning materials, writing, their experiences with faculty, using campus facilities, personal experiences, scientific and quantitative experiences, opinions about the university, the environment of the university, level of their knowledge, skills, and competence.

The total population consisted of 1,826 students who were enrolled in 13 undergrad degree programmes of four faculties in sessions 2018-21, 2019-22, 2020-23, and 2021-24 (see Table A2 for programmes). We distributed 1,780 questionnaires and collected 960 (53.93 percent) responses successfully. After cleaning and merging this dataset with other datasets, 579 (60.31 percent) questionnaires were finally used for this analysis.

6.3. Other Instruments for Data Collection

In addition to the survey and secondary data of UoT, we also conducted key informant interviews (KIIs) with the concerned officials of BEEF, University of Turbat, University of Loralai, University of Balochistan, SBK Women's University, and BUITEMS. We conducted 17 KIIs, including 13 from the universities (i.e. focal person of the Financial Aid Office, chairpersons or deans of departments or faculties, and members of the Institutional Scholarship Award Committee (ISAC)) and 4 concerned officials from the monitoring agency (BEEF). The survey tools for this analysis were taken from MacAuslan *et al.* (2019). In addition, we also conducted four FGDs with students who were awarded any type of scholarship in the given four public sector universities of Balochistan (UOB, BUITEMS, SBKWU, and UOL). Each FGD comprised 10-12 students. The key questions in FGDs or interviews were based on the scholarships' impact other than the students' cognitive learning skills (i.e., academic performance) such as scholarships' spillover effect or externalities (both positive and negative) in the form of supporting their siblings' education, part-time jobs, reasonable stipend amount, pressure for retaining scholarship, etc. In addition to that, the main focus of discussions and interviews was on the areas of need assessment, programmes' monitoring and process evaluation, budget constraints, barriers to implementation, delays in payments, knowledge and information dissemination, data recording, maintaining and updating, etc.

6.4. Descriptive Statistics

We made a huge dataset by combining four datasets, namely student information system (SIS), result gazettes, scholarship lists, and survey datasets. Though we lost a huge number of observations due to combining all the datasets, we still had a sufficient number of observations for analyses. The unit of observation for this analysis was students who were/are enrolled in any of the thirteen undergraduate programmes (4-5 years) at UoT (see Table A2). After cleaning the data, overall the dataset consisted of 1,740 individual observations, of which 66.84 percent were male and 33.16 percent were female. Out of the total, about 55.86 percent were awarded any type of scholarship with 51.07 percent and 65.51 percent of males and females respectively. According to the district-wise distribution of scholarships, about 61, 70, 75, and 92 percent of students were from Turbat, Punjgoor, Gwadar, and Awaran, respectively. Natural sciences (e.g. biochemistry, biotechnology, and botany) were very popular subjects among female students, and above 70 percent of females received scholarships (see Table A2 for further detail).

Table 3 shows descriptive statistics of the students' academic performance. On average, students secured 60.29 percent marks (2.35 and 2.47 in terms of GPA and CGPA, respectively) in the comparison group, whereas students secured 75.74 percent marks (3.24 in terms of both GPA and CGPA) in the control group.

Table 3 shows a significant difference between outcome variables of interest in the treatment group (students having scholarships) and control group (students having no scholarships) that were observed before the scholarship programmes were launched at UoT. For instance, among enrolled students in different undergraduate programmes, the average percentage marks of students without any expected scholarship were 55.40, whereas it was 75.89 percent for students with an expected scholarship before the scholarship programmes were launched.

On average, the percentage of marks of students increased by 10.16 points in the control group but surprisingly the marks reduced by 0.25 points after the award of scholarships. In addition, the students' academic performance in both treated and control groups either before or after the awards varied significantly when disaggregated by gender (male vs. female) (see Table 3).

Table 3

Descriptive Statistics of Students' Academic Performance (in Percent, CGPA and CGPA): Session 2017 and 2018

	Percentage Marks				GPA				CGPA			
Outcome	Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships	
Variable	Obs.	%	Obs.	%	Obs.	mean	Obs.	mean	Obs.	mean	Obs.	mean
Before the Award												
Total	542	55.40	778	75.89	552	1.98	782	3.21	548	2.06	777	3.22
Male	423	55.14	500	75.16	431	1.96	504	3.19	429	2.05	502	3.18
Female	119	56.31	278	77.20	121	2.04	278	3.25	119	2.11	275	3.28
During and After the Award												
Total	1922	61.67	3938	75.70	1929	2.46	3940	3.25	1930	2.56	3939	3.24
Male	1403	58.93	2415	73.94	1407	2.35	2415	3.15	1408	2.42	2415	3.16
Female	519	69.08	1523	78.49	522	2.86	1525	3.41	522	2.91	1524	3.36
Scholarship Types												
Total	2464	60.29	4716	75.74	2481	2.35	4722	3.24	2478	2.47	4716	3.24
HEC			4064	75.47			4070	3.22			4065	3.21
Ehsaas												
BEEF			342	79.02			342	3.52			342	3.57
HEC Need			310	75.54			310	3.27			309	3.28

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardees' lists.

7. RESULTS AND DISCUSSION

This rigorous short- to medium-term impact evaluation was carried out to assess the impact of need (i.e. HEC Ehsaas Scholarship) and merit (i.e. BEEF Scholarship) programmes on students' academic success at the University of Turbat (UoT). Our variable of interest in this study was student academic performance, which we measured by students' percentage marks in the semester. The percentage of marks of students at the university level was higher for the students who received scholarships than for those who did not receive any scholarship, both before and after the intervention (see Table 3 for further detail). Students' matric and intermediate percentage marks along with their parental education were included in the regression for controlling the variation in their

background. Also, the fixed effects of degree programmes, semesters, and district levels were also included for further controlling the institutional or district-level variations in the datasets. The regression model is estimated by the ordinary least square (OLS).

7.1. Impact of Scholarship on Students' Academic Performance (Research Question 1)

Starting with the baseline regression (Column 1, Table 4), the estimated coefficients of βs indicate that overall there was no seemingly significant impact of parental education or students' intermediate marks on students' academic performance while students' matric marks were seemingly a better predictor for students' performance in the undergraduate programmes.

Table 4

Programme-Semester Fixed Effect Estimates of Government Scholarships on Students' Academic Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall Sample			Need-Based Scholarship (Ehsaas Programme)			Merit-Based Scholarship (BEEF Programme)		
Outcome Variables: Semester Marks (in percent)	Total	Male	Female	Total	Male	Female	Total	Male	Female
Educated Parents (at least one Graduated from School)	–0.00	0.30	–2.20*	–0.42	–0.33	–1.87	0.18	0.01	1.45*
	(0.63)	(0.84)	(1.26)	(0.71)	(0.91)	(1.30)	(0.61)	(0.94)	(0.80)
Intermediate Marks (%)	0.05	0.06	–0.011	0.03	0.07	–0.028	–0.06	–0.13**	–0.07
	(0.03)	(0.06)	(0.06)	(0.04)	(0.06)	(0.07)	(0.03)	(0.06)	(0.05)
Matric Marks (%)	0.21***	0.14***	0.56**	0.21***	0.12**	0.61**	0.14***	0.15***	0.00
	(0.05)	(0.05)	(.23)	(0.05)	(0.06)	(0.24)	(0.04)	(0.05)	(0.11)
Scholarship Holders	4.58***	4.95***	1.92	2.43**	1.21	4.52**	9.39***	10.31***	9.18***
	(0.90)	(1.10)	(1.60)	(1.17)	(1.31)	(2.26)	(0.90)	(1.21)	(1.26)
Post-Scholarship Semester	5.20***	4.5**	7.18***	4.41**	3.01	8.75***	4.27***	3.37**	6.61**
	(1.69)	(1.90)	(2.51)	(1.86)	(1.96)	(3.17)	(1.51)	(1.69)	(2.61)
Scholarship Holders x Post-Scholarship Semester	0.39	–0.15	0.54	3.10**	4.10***	–2.58	–0.75	–1.58	–0.13
	(1.46)	(1.78)	(2.02)	(1.39)	(1.55)	(2.51)	(1.47)	(1.86)	(1.98)
Observations	869	603	266	759	529	230	634	436	198
R- square	0.2943	0.2743	0.3809	0.2940	0.2928	0.3683	0.4597	0.4290	0.5983
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Programme Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data Source: Authors' calculations based on the UoT result gazettes, awardee lists, and survey at the UoT.

Note: Observations comprise students enrolled in the sessions 2017–20 (5th to 8th) and 2018–21 (3rd to 8th). Each session starts in January and ends in December. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Models estimated by OLS.

Results in Table 4 indicate that students who held scholarships obtained 4.58 percent higher marks compared to those students who did not have any scholarships (see Column 1); for need and merit-based scholarship programmes it is 2.43 percent and 9.39 percent respectively (see Column 4 and 7, Table 4).

The estimated coefficients of interest indicate that overall the scholarships seemingly did not affect the academic performance of undergraduate students on average (see Column 1, Table 4). In addition, though the female students in our sample performed significantly better than the male students after the scholarship intervention (7.18 percent

vs. 4.5 percent), the overall intervention of the scholarship did not have any significant short- to medium-term impact on students' academic performance (see Table 4, Columns 2 and 3).

7.2. Need vs Merit-based Scholarship (Research Question 2)

Which type of intervention is a better tool for students to access higher education: need - or merit-based scholarship? Given the variation in eligibility criteria or the nature of scholarship programmes (see Table A1), the study splited the sample into two; need-based scholarships (see Table 4, Columns 4 to 5) and merit-based scholarships.

Results in Column 4 of Table 4 show that the need-based scholarship (i.e. HEC Ehsaas scholarship programme) increased the academic performance (in percentage marks) of those students who held a scholarship compared with those who did not. On average, a student who held the need-based scholarship obtained 3.10 percent more marks compared to a student who did not hold any type of scholarship in the subsequent semesters of the intervention (i.e. third to eighth). By doing further analysis, our results show that the impact of the need-based scholarships on students' academic performance in overall sample was due to the sample of male students only as the estimated coefficient for the sample of female students is insignificant (see Columns 5 and 6, Table 4). The award of need-based scholarship increased the academic performance of male students by 4.10 percent of marks and this increase could protect a student from dropout or it can change a student's grade from B to B+, for example. On the other hand, the estimated coefficients of our variables of interest show that there is seemingly no significant relationship between merit-based scholarship (i.e. BEEF programme) and students' academic performance (see Table 4, Columns 7 to 9).

7.3. Impact of Scholarships on Students' Other Success Outcomes (Research Question 3)

Persistence (or Retention)

With the given data, direct measures for retention rate were not available. We measured it by using the University of Turbat's policy for the minimum requirement of the degree award (i.e. minimum CGPA shall be 2 or more out of 4). The expected retention is a dummy variable with a value of 1 if the CGPA of a student was greater and/or equal to 2, and 0 otherwise. We did a t-test mean comparison and found that overall 17.76 percent more students without any scholarship were vulnerable and expected to drop out. On average, male students were seemingly more vulnerable than females to drop out of the university's enrolment if they did not have any scholarships with about 19 percent and 12 percent of male students and female students respectively (see Column 4, Table A3).

Student Engagement and Satisfaction

Students' satisfaction was measured on a scale of 0 to 3. Overall, those students liked the UoT more (mean 0.19 points) if they had a need-based scholarship than those who did not, however, the difference in their preference for UoT was significant only for the male sample only (see R1 of Table A5).

Four indicators were used to measure students' engagement in activities in their academic pursuit on a Likert-type scale of 0 to 3 (where; 0=never and 3=very often). a) When we asked students how often they talked with their instructors about their course materials, grades, and assignments, we found a significant difference in mean scores (0.37 points = 2.08-1.71) between students with and without scholarships (see R2 Table A5). Though a significant difference was observed for both genders, it was much higher for the male sample (0.46) than the female sample (0.21). b) Similarly, we asked students how often they discussed their career plans and ambitions with a faculty member. Though the average score was low overall, interestingly it was much higher for male students who held a scholarship (see R3 of Table A5). c) Further, we also asked them how often they asked a friend for help with a personal problem and it was observed that students, when held a scholarship, most likely asked their friends for helping them with their problems and this was held for male sample only (see R4, Table A5). d) Finally, we asked students about their engagement in learning activities by using campus facilities on the same scale and found that students who had scholarships and particularly male students used more computer labs and learning centers to improve their studies or academic skills such as reading and writing (see R5, Table A5).

The Attainment of Learning Objectives

We used four indicators (on a 4-point scale, where 1=very little and 4 =very much) to measure students' perception of the learning objectives of the programmes they were enrolled in by linking them with their potential career prospects. We asked students to what extent they feel they had (a) acquired knowledge and skills applicable to a specific job or type of work, and (b) acquired background and specialisation for further education in a professional, scientific, or scholarly field. Overall they responded to these questions very positively; we found no significant difference in the mean scores of the students with and without scholarships and that is because positive and negative mean score differences were respectively observed in male and female samples (see R6 and R7, Table A5). To further strengthen and validate our findings, we asked two additional similar questions (c) and (d) to students using the same scale. The responses were positive in both treated and control groups and their mean score differences were significantly high for both genders (see R8 and R9, Table A5).

Acquisition of Skills and Competences

The acquisition of skills and competence is another concept that explains the academic success of students. We asked students several questions (on a scale of 1 to 4, where 1= very little and 4=very much) that were related to the acquisition of skills and competence to support the argument that scholarships make a difference in students in terms of focusing and acquiring skills and knowledge that are necessary for career success. (a) We asked students to rank their experiences to the extent they felt that they gained the ability to think analytically and logically and we observed a significant difference in the mean scores (0.17 points) existed between treated and control groups and that was because of the male sample (see R10, Table A5). (b) We asked another question about their ability to learn on their own to pursue ideas, find information when they needed it, etc. Overall, the mean scores in all of the cases were above 3 on the 4-point scale but a significant

difference in mean scores (0.12) was observed in the male sample only (see R11, Table A5). (c) Similarly, the students were asked about their ability to present ideas and information effectively when speaking to others and we found a 0.23 point difference in the mean scores of male students with and without scholarships (see R12, Table A5). d) Finally, to the question on the ability to get along with different kinds of people, the average response was about 3 on the 4-point scale, however, a statistically significant positive (negative) difference in the mean scores for the male (female) sample was observed (see R13, Table A5).

Career Success

We asked students to share their experiences or feelings (on a 7-point scale; where 1=lowest and 7=highest) about the emphasis of the University of Turbat on various aspects of student development. For example, when we asked them to express their feelings about the emphasis on academic, scholarly, and intellectual qualities, we found that the overall mean scores were above the expected mean score (3.5) in all cases, however, a significantly huge difference in the mean score (0.24 points) in the male sample was observed (see R14, Table A5). On the questions about how the UoT emphasised students' information literacy skills (see R15, Table A5) and students' critical, evaluative, and analytical qualities (see R16, Table A5), the differences in mean scores were positive and significant for both samples (i.e. male and female).

7.4. Robustness Checks on Main Findings

Alternative Measures of Academic Performance

In our main analysis, we measured academic performance with percentage marks obtained in a semester to capture the maximum variation in the dependent variable. However, there are other measures available that are important in the semester system, which are grade point average (GPA) and cumulative grade point average (CGPA). We did not choose these measures for our main analysis because in the semester system once a student attained a GPA or CGPA of 4 in a semester and maintained it in the subsequent semesters, the outcome variable of interest would not vary for that student. On the other hand, percentage marks might have varied according to the student's performance in each succeeding semester. Columns 1 to 3 and 4 to 6 of Table A4 present the findings of the need-based scholarship impact on students' academic performance in terms of GPA and CGPA, respectively. As expected, according to both the measures, the GPA and CGPA of male students improved by 0.313 and 0.183, respectively after the scholarship awards compared to the GPA and CGPA of their counterpart male students who had no scholarship. On the other hand, there was no sufficient evidence that the academic performance of female students according to these measures improved after the awards of scholarships.

Placebo Experiment

A serious concern is that if a time trend existed in the data we used due to numerous confounding factors, the estimated coefficients we got from our DiD analysis would be

biased. Therefore, we ran a placebo experiment to check the robustness of our results, especially for the need-based scholarship for which we got a positive impact of scholarships on male students' academic performance. The basic assumption of the placebo experiment was that the scholarships were awarded to students in the first and the third semesters of sessions 2018-2021 and 2017-20 rather than being awarded in the third and fifth semesters of sessions 2018-2021 and 2017-20 respectively. Since we had a sufficient number of observations for both pre- and post-intervention scenarios, we were able to estimate the impact of the pseudo-scholarship awards on students' academic performances.

The findings from this placebo exercise further strengthen our initial findings. Here the estimated coefficients of our variable of interest in all cases remained statistically insignificant (see Columns 7 to 9 of Table A4). Based on evidence extracted from this placebo experiment further proposes that need-based scholarships could improve the academic performance of male students by reasonable percentage points.

7.5. Possible Channels for Better Academic Performance of Male Students Due to Scholarship

To investigate the possible causes of getting higher marks in the semester by male students due to the need-based scholarship, we used our survey data. Given the regional socio-economic conditions and cultural constraints, one can think of several reasons but we limit our analysis and discussion here to two possible channels. First, in a male-dominated society where a marketplace job is mostly an option for male students only; financing their university-level education comes with the added pressure of concentrating on their education and academic performance. Our survey data also show that there was a significant difference between how males and females met their university expenses. Male students mostly financed their expenses by themselves and females' expenses were mostly met by their parents or spouses. It is clear that, on average, 19.35 percent more females than males depended on parental income for their university expenses (see Column 1, Table A3). However, the statistics also show that though parental support decreased due to scholarships awarded to their children, the reduction was twice as much for females than for males (see Column 1, Table A3). Elaborating the case further, it is quite clear from the self-reported survey data that, on average, 9.26 percent of male students and 5.66 percent of female students met their university expenses mostly by themselves (Column 2 of Table A3). Moreover, the scholarship awards seemingly helped about 4.91 percent of the male students. However, for female students the difference in the percentage between scholarships awarded and non-awarded was insignificant. We also observed from our survey data that the scholarship awards had seemingly reduced the attitude of female students toward taking notes of their class lectures. However, the awards did not bring any significant difference in their attitude between students with scholarships and students without scholarships in taking notes of their lectures (see Column 3, Table A3).

We tried to disentangle the potential causes for justifying why the male students in our sample got better results compared to the female students. One possible explanation could be that the male students because of getting scholarships got extra time from their working hours to focus on their studies. To check the validity of this argument, we ran two regressions. We regressed the dependent variables, namely, the

parents meeting the university expenses of their children and students taking detailed class notes on dummy variables for scholarship holders and gender, and including control variables, i.e., district, semester, age, and parental education (see Columns 1 and 2 of Table 5). The results show that 14 percent of the students who held a scholarship were less likely to depend on their parental income for their university expenses compared to the students without any scholarships. Compared to female students, male students were also less likely to depend on their parental income for their education expenses.

Coming to our variable of interest, i.e., the interaction term (scholarship holder x male), 12 percent of male students with a scholarship, reduced their dependency on their parental income for university education compared to female students who got a scholarship as well as those students who did not get any type of scholarship. To further strengthen the argument, we also investigated whether there was a significant difference between the attitude of male students with scholarships towards class participation or note-taking and their counterparts and female students. The DiD estimates show a difference of 0.69 points between male students with scholarships and other students with or without scholarships (see Column 2 of Table 5). These results, together with the results presented in Column 3 of Table A3, show that this difference is not because of being a male student with a scholarship, rather the difference is because female students who got scholarships were less likely to take class notes. It can be inferred from this analysis that the scholarship likely made a difference in the academic performance of male students because of reduced dependency on self and parental financial means.

Table 5

Possible Causes/Channels of Scholarship that Improve Male Students' Academic Performance

Outcome Variables	Parents Meeting Students' University Expenses (Value = 1, and 0 otherwise)	Students Took Detailed Class Notes during Class (never, Occasionally, often, very often)
Scholarship Holders	–0.14***	–.031
	(0.05)	(0.23)
Male	–0.13***	–1.10***
	(0.04)	(0.20)
Scholarship Holders x Male	–0.12*	0.69**
	(1.06)	(0.28)
Observations	863	849
District Fixed Effects	Yes	Yes
Semester Fixed Effects	Yes	Yes

Data Source: Authors' calculations based on the UoT's result gazettes, awardee list, and survey data.

Note: Observations comprise students enrolled in sessions 2018–21 to 2021–24. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Model (1) is a linear regression model (2) is an ordered logistic regression.

7.6. Extension: Findings on Process and Monitoring Evaluation (Research Question 4)

Using OECD's evaluation criteria, viz. relevance, efficiency, sustainability and effectiveness and impact (OECD, 2021) and the qualitative data extracted from the FGDs, KIIs, and policy documents of public sector universities in Balochistan, HEC, and BEEF, this study did a thematic analysis and found the following evidence on the scholarship programmes.

Relevance

While reviewing the relevant policy drafts of both scholarship sponsoring bodies, it was observed that these scholarship programmes are not only vividly relevant but also aligned with national and global level policies and are focused on underprivileged and talented students, further these scholarships are also aligned with SDGs.

Since the BEEF programme is designed to focus on the socioeconomic conditions of Balochistan but according to our thematic analysis, it concentrates on the talented students only. In other words, the previous academic performance in terms of CGPA of a financially sound background student can compete to achieve these criteria only as generally affluent students have better academic records than the financially challenged students who cannot compete for the merit-based inclusion criteria. Therefore, as per the finding of this study, it is recommended to redesign the BEEF scholarship in line with the HEC Ehsaas programme.

Efficiency

To check the cost-effectiveness of these scholarship programmes, our findings through KIIs and FGDs depicted that there are various types of constrains from the announcement of such scholarships till the disbursement to the recipients. For instance, the award of the HEC Ehsaas scholarship was completed after two semesters, and we observed a huge dropout ratio in the first and second semesters this seemingly happened due to financial constraints of the undergrad students, and the same was also endorsed by KIIs.

This study also found several reasons for delays in these scholarships including a lack of coordination among various stakeholders i.e., the funding agencies, universities, and the financial institutions concerned. Most of the FAOs are under-resourced, and the traditional role of the administrative staff in universities are some of the obstacles observed during the FGDs and KIIs. For the HEC Ehsaas scholarship, the stipulated account opening with NBP was a major bottleneck for remotely located students, whereas BEEF awardees for the 2016-19 session received their cheques in 2020 when the students graduated from a university a year earlier, therefore, the objective of the scheme was not met. For the efficiency of the HEC scholarship process see further details in Table A6.

Sustainability

In KIIs, the officials raised concern about the sustainability of the HEC Ehsaas programme as the disbursed amount is from the annual recurring budget, and discontinuation of the scheme might jeopardise the financial means of a huge number of undergraduate students as was the case of the Prime Minister Fee Reimbursement

Programme(PMFRP). On the other hand, BEEF has a more sustainable financial model due to its endowment fund, and its proceedings are utilised for scholarships and meeting the operational costs of the entity (see Table A7).

Effectiveness and Impact

The qualitative data from the FGDs and KIIs revealed that these scholarship programmes not only helped the recipients to continue higher education but supported their siblings' education, purchasing books and other reading materials. It was also found that many students utilise their stipends for buying capital assets.

8. CONCLUSION AND RECOMMENDATIONS

Access to higher education is inadequate mainly in the underprivileged areas of Pakistan. The federal and provincial governments of Pakistan have initiated several scholarship programmes for undergraduate students in the underprivileged regions of Pakistan. This study aimed to examine the short-to-medium-term impact of government-sponsored scholarships on undergraduate students' academic success. Using a quasi-experimental research design and DID estimation technique, the findings of this study revealed that the short to medium-term impact of a need-based scholarship programme (i.e., HEC Ehsaas Programme) is effective only for male students in improving their academic performance (improved semester percentage marks).

In contrast, this study found no evidence on the impact of merit-based scholarship (i.e. BEEF) on students' success outcomes and that may be due to the fact that it provides incentives to those students who are already performing better academically. Further analysis showed that need-based scholarships likely reduced the burden of university-related costs for male students that were previously covered either by their parents or by themselves. As a result, these students had more time to focus and engage in academic activities at university.

On every measure of students' success—students' retention rate, engagement in campus-related activities such as talking with course instructors about the course, career plans, and ambitions; using campus labs and centers; satisfaction with the university and degree programmes, acquisition of knowledge and skills; and career success indicators – the need based scholarship programme appeared to be a better-targeted programme for male students in the underprivileged region of Balochistan. In light of the above findings, the following are some policy recommendations.

First, the Ehsaas Scholarship programme is designed properly and contributes to reaching out to the targeted students in Balochistan and even in the country. It seems to support the poor and underserved families in Balochistan to meet their children's educational expenses. There is evidence that such financial supports seemingly reduce the burden of those male students who usually do jobs to finance their education. On the other hand, though the merit-based BEEF scholarship programme provides incentives to brilliant students in Balochistan due to its policy, it incentivises only those whose family status and their socio-economic conditions are already much better than the rest. Given the scarce resources and socio-economic conditions of people in Balochistan, we recommend that the need-based scholarship programmes should be given more attention in the province.

Second, though the objectives of the scholarship programmes are well defined, a slight revision in their policies makes them more effective to target the deprived population of Balochistan. For example, we observed that the threshold of Rs.45000 of family income as its initial inclusion criteria in the Ehsaas programme was inappropriate given that the demographics of the rural population of Pakistan (i.e. joint family structure with large family size and few earning hands is common). Therefore, we suggest a new threshold for its initial inclusion criteria which is per capita family income (i.e. family income /family size). Similarly, without revision of its policy, the BEEF scholarship programme rarely supports needy or underserved students of the province due to its merit-based assessment for eligibility. Though its financial model is more sustainable because it does not only provide scholarships to students but also covers the operational and other costs of the proceedings. Combining the positive points of both merit and need-based scholarship programmes, a better programme design for students in Balochistan Province could be the one that aligns the eligibility criteria of the Ehsaas programme with its threshold modification with the autonomous financial model of the BEEF programme.

Third, the discontinuation of such scholarship programmes in Pakistan is a very common phenomenon due to political rivalry and revenge—a crucial concern raised by stakeholders in public sector universities of Balochistan by illustrating the recent example of the discontinuation of the Prime Minister Fee Reimbursement Programme(PMFRP) that severely reduced the enrolments of postgraduate degree programmes in their universities. Since the ongoing Ehsaas scholarship programme is providing financial support to underprivileged students of Pakistan and if it is discontinued just like the PMFRP, its unprecedented impact on higher education could be disastrous across the country. Therefore, we suggest the government of Pakistan should continue the HEC Ehsaas scholarship programmes but think of a more self-sustained financial model just like the BEEF programme in Balochistan and the PEEF programme in Punjab.

Fourth, the results of this study may be generalisable to other universities in Pakistan with characteristics similar to those of the UoT (e.g., similar location, less diversified students based on ethnic, lingual, and socio-economic conditions). Since the HEC Ehsaas scholarship programme is a national-level programme, which is operating in 135 universities and 87 campuses of degree awarding institutes, it may be possible to conduct an experimental research design for identifying the causal impact of the scholarship on students' academic success.

APPENDICES

Table A1

Comparison between BEEF and HEC Ehsaas Undergrad Programmes

Components	BEEF Scholarship Programme	HEC Ehsaas Programme
Eligibility Criteria	Student academic performance-based, measured by CGPA	Need-based, measured by different indicators including family income is less than Rs.45,000
Duration	Each year based on previous academic performance	Continue throughout the undergraduate programme subject to the student's satisfactory academic progress
Funding	Balochistan Government	Federal Government
Monitoring body	Balochistan Education Endowment Fund (BEEF), Quetta	Higher Education Commission (HEC), Pakistan
Funding Detail	Total Endowment Fund Rs. 8 Billion. Award scholarships from the proceedings of investment	Total Budget Rs.24 Billion over four years. Total scholarships = 200,000 (50,000 each year)
Scholarship Coverage	Stipend Rs. 60,000	100% Tuition Fee Stipend 4000 per month
Bifurcation based on Gender/	Gender Free merit at Institutional Level.	50% Quota for Female 48% Quota for Male 2% Quota for differently abled
Level	All degree programmes	Undergrad programmes (4-5years)
Likely Outcome	Motivate students or create a competitive environment	Attract needy students to higher education
Evaluation Process	It is simple to evaluate the performance of students based on student CGPA	It is difficult to evaluate student's needs which is somehow subjective and requires a lot of procedures, documents, and efforts
Impact	Recipients of the scholarships seemingly continue their education without the scholarship award. It is observed that high-performing students most likely belong to families with a better socio-economic background. Their early education was better, they have better accessibility to current resources (internet, books, etc.)	A huge number of scholarship recipients seemingly could not continue their education without the scholarship award. Due to the extreme poverty and low HDI of the province, the design of the programme is suitable for under-served students in the province to access higher education in public sector universities of Balochistan.
Payment Procedures	BEEF provides cheques or other means of payment to students' stipend amounts directly to them.	Initially, HEC accepted account numbers from any bank in Pakistan. Now, it is strictly bound for students to open their accounts in the NBP, which was observed from interviews and FGD, the biggest hurdle for the smooth operation of the programme and caused delayed payment. Opening accounts in NBP is either inaccessible to students or difficult for them since officials at NBP do not entertain students politely.
Sustainable Model	The scholarship programme is operating based on a self-sustainable financial model which not only provides students with scholarships but also covers its operating cost. BEEF is operating as a company which invested in the Endowment Fund and uses its proceeding only.	Since the programme is initiated by the incumbent government with an annual budget of Rs.6 billion which is projected to continue for four to five years. There is no guarantee that the programme will continue after the tenure of the incumbent government.

Table A2

Distribution of Scholarships at UoT: District and Programme Wise

	Total		Male		Female	
	No of Obs.	%	No of Obs.	%	No of Obs.	%
Overall	1740	55.86	1163	51.07	577	65.51
Districts						
Turbat	1232	60.55	802	55.49	430	70.00
Punjgoor	61	70.49	51	68.63	10	80.00
Gwadar	127	74.80	68	67.64	59	83.05
Awaran	25	92.00	23	91.30	2	100.00
Others	10	80.00	9	77.78	1	100.00
Programmes						
BBA	194	50.52	169	49.11	25	60.00
BS Commerce	49	65.30	42	61.90	7	85.71
BS Economics	180	51.11	149	49.66	31	58.06
BS Political Science	90	41.11	65	41.54	25	40.00
BS Computer Science	152	53.28	134	52.99	18	55.56
BS Education	354	61.30	194	54.12	160	70.00
BS Balochi	91	58.24	59	59.32	32	56.25
BS English	131	49.62	77	46.75	54	53.70
BS Chemistry	120	61.67	62	48.39	58	75.86
BS Bio-Chemistry	77	72.73	32	62.50	45	80.00
BS Bio-Technology	49	73.47	17	76.47	32	71.88
BS Botany	69	68.12	27	59.26	42	73.81
LLB (5 Years)	159	52.83	115	50.43	44	59.09

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardee lists. The normal duration of all degree programmes are 4 years except the LLB.

Table A3

Additional Descriptive Statistics

	Parent meet their University Expenses (1)		Students meet their University Expenses by themselves (Part-time Job, Saving, etc.) (2)		Took Detailed Class Notes during Class (0 = never, 1= Occasionally, 2=Often, 3=Very Often) (3)		Expected Retention (if the CGPA of a Student is Greater than 2) (4)	
Group of Students	No of Obs.	% of Students	No of Obs.	% of Students	No of Obs.	Mean	No of Obs.	% of Students
Female	424	79.00	424	5.66	417	2.55	3250	78.18
Male	518	59.65	518	9.26	505	2.25	4117	95.94
Difference		*19.35****		*3.61****		*0.30****		*17.76****
Male Students								
Without Scholarship	312	70.19	312	11.21	302	2.20	2399	75.99
With Scholarship	206	43.69	206	6.31	203	2.30	2506	95.37
Difference		*26.50****		*4.91***		*0.10*		*19.38****
Female Students								
Without Scholarship	264	84.47	264	6.06	259	2.61	851	84.37
With Scholarship	160	70.00	160	5.00	158	2.45	1568	96.75
Difference		*14.47****		*–1.06*		*–0.16***		*12.37****

Data Source: Authors' calculations based on the UoT result gazettes, SIS, scholarship awardees' lists and survey at the UoT. * p<0.1, ** p<0.05, *** p<0.01.

Table A4

Robustness Check: Programme-Semester Fixed Effect Estimates of the Need Based Scholarship on Students' Academic Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Grade Point Average			Cumulative Grade Point Average			Placebo Effect Semester Marks (%)		
Outcome Variable	Total	Male	Female	Total	Male	Female	Total	Male	Female
Scholarship Holders (SH)	0.131	0.021	0.407**	0.196**	0.080	0.354	4.14***	2.63*	4.59**
	(0.092)	(0.097)	(0.192)	(0.075)	(0.082)	(0.157)	(1.18)	(1.40)	(2.24)
Post Scholarship Semester (PSS)	0.340***	0.215*	0.823***	-0.011	-0.084	0.258	-0.93	-1.25	7.81**
	(0.122)	(0.125)	(0.249)	(0.127)	(0.134)	(0.182)	(1.44)	(1.64)	(3.15)
Scholarship Holders x Post Scholarship Semester	0.209**	0.313***	-0.356*	0.118	0.183**	-0.198	1.66	2.28	-2.93
	(0.101)	(0.110)	(0.201)	(0.080)	(0.088)	(0.158)	(1.85)	(2.13)	(3.35)
Observations	760	530	230	759	530	229	324	221	103
R – square	0.2364	0.2322	0.3853	0.2738	0.2902	0.4606	0.2577	0.3063	0.4759
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Programme Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data Source: Authors' calculations based on the UoT's result gazettes, awardee list and survey at the UoT.

Note: Observations comprise of students enrolled in session: 2017-20 (5th to 8th) and session 2018-21 (3rd to 8th). Other control variables are parents' education (at least one graduated from school), intermediate marks (%) and matric marks (%). In the placebo effect analysis, 1st semester in session 2018-21 and 1st and 2nd in session 2017-20 were assumed pre-scholarship semesters and 2nd in session 2018-21) and 3rd and 4th in session 2017-20 were supposed post-scholarship semesters. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Models estimated by OLS.

Table A6

Relationship between Need based Scholarship Students' Success Outcomes

	Overall Sample (Mean Socre)			Male Sample (Mean Socre)			Female Sample (Mean Socre)		
Variables	SWS	SNBS	Diff.	SWS	SNBS	Diff.	SWS	SNBS	Diff.
Students' Engagement and Satisfaction									
R1. Students Like the University of Turbat	1.59	1.78	*0.196* ***	1.50	1.76	*0.26* ***	1.75	1.81	*0.062*
R2. Students talked with Instructor about their course materials including grades make-up classes etc.	1.71	2.08	*0.37***	1.62	2.08	*0.46***	1.88	2.09	*0.21***
R3. Students discussed their career plans and ambitions with a faculty member	1.05	1.13	*0.08**	1.06	1.28	*0.22***	1.03	0.93	*-0.10*
R4. Student Asked for a friend for help with a personal problem	1.84	1.94	*0.10***	1.80	1.92	*0.12***	1.90	1.97	*0.07*
R5. Students used computer learning labs or centres to improve their study or academic skills such as reading, writing, etc.	0.74	0.92	*0.18***	0.71	0.97	*0.26***	0.81	0.86	*0.06*
Attainment of Learning Objectives									
R6. Acquiring knowledge and skills applicable to a specific job or type of work	2.94	2.94	0.00	2.80	2.90	*0.10**	3.22	3.01	*-0.21***
R7. Acquiring background and specialisation for further education in a professional, scientific, or scholarly field	2.95	2.98	*0.03*	2.79	2.91	*0.13***	3.28	3.08	*-0.20***
R8. Gaining a broad general education about different fields of knowledge	2.76	2.95	*0.18***	2.71	2.86	*0.15***	2.87	3.07	*0.20***
R9. Gaining a range of information that may be relevant to a career	2.88	3.10	*0.23***	2.80	3.00	*0.19***	3.01	3.24	*0.24***
Acquisition of Skills and Competences									
R10. Thinking analytically and logically	2.85	3.03	*0.17***	2.76	2.99	*0.22***	3.02	3.09	*0.07*
R11.Learning on your own, pursuing ideas, and finding the information you need	3.08	3.15	*0.06*	3.00	3.12	*0.12***	3.27	3.20	*0.07*
R12. Presenting ideas and information effectively when speaking to others	2.93	3.05	*0.12***	2.75	2.98	*0.23***	3.30	3.14	*-0.16***
R13. Developing the ability to get along with different kinds of people	3.06	3.09	*0.03*	2.97	3.06	*0.10***	3.24	3.11	*-0.13***
Career Success									
R14. UoT emphasised students' academic, scholarly and intellectual qualities	3.50	3.73	*0.23***	3.51	3.75	*0.24***	3.50	3.72	*0.22***
R15. UoT emphasised students' information literacy skills using computers, other information resources	3.37	3.41	*0.04*	3.25	3.58	*0.33***	3.62	3.17	*0.45***
R16. UoT emphasised students' critical, evaluative, and analytical qualities	3.41	3.73	*0.32***	3.44	3.84	*0.39***	3.34	3.58	*0.24**

Data Source: Authors' calculations based on the UoT result gazettes, SIS, scholarship awardees' lists and survey at the UoT. R1: scale 0 to 3; 1=they don't like it to 3= they are enthusiastic about it. R2-R5: scale: 0 to 3; 0 = never to 3=very often. R6-R13: scale: 1 to 3; 1=very little to 3=very much. R14-R16: scale: 1 to 7, with lowest to highest points. SWS = students without scholarship and SNBS = students on need based scholarship. * p<0.1, ** p<0.05, *** p<0.01.

Table A6

The Process of the HEC Ehsaas Scholarship Programme

Stage	Date
Online HEC Ehsaas portal opened for applications	01-Oct-20
The deadline for online application submission	30-Oct-20
The deadline for online application submission was extended to	30-Nov-20
Collection of hard copies of applications from the students	21-Jan-21
Pre-ISAC meeting held on	24-Feb-21
The actual ISAC meeting held on	13-Apr-21
Minutes of the meeting along with the list of recommended and waiting students was shared with the HEC	13-Apr-21
Disbursement of the fund by HEC to the University's account happened on	23-Jun-21
Fund disbursed to the scholarship recipient students	25-Aug-21

Data Source: Focal person at FAO UoT.

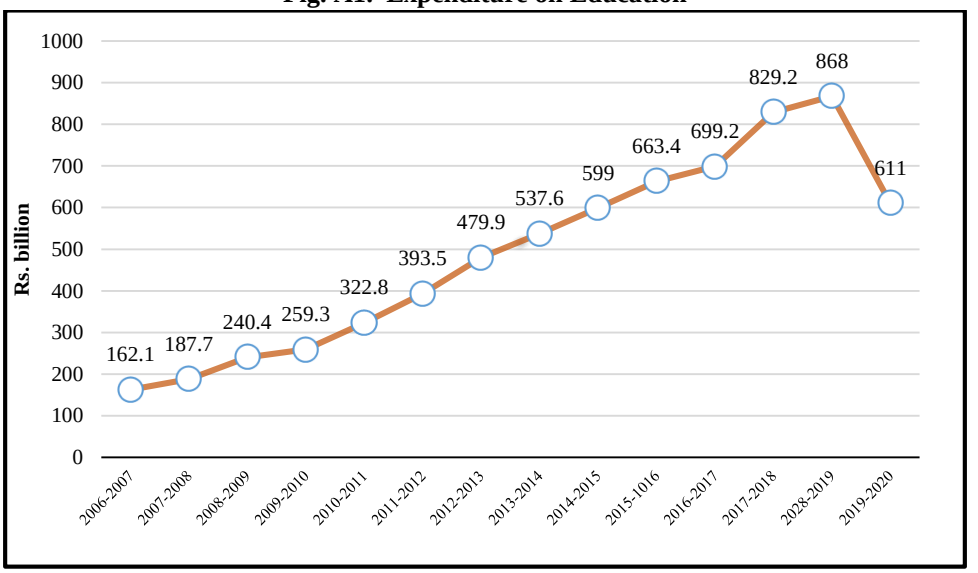
Table A7

BEEF Financial Position during 2015-16 to 2018-19

Year	2015-16	2016-17	2017-18	2018-19
Endowment Fund	Rs. 5 (B)	Rs. 6 (B)	Rs. 8 (B)	Rs. 8 (B)
Income From Endowment Fund	Rs. 346 (M)	Rs. 347 (M)	Rs. 373 (M)	Rs. 547 (M)
Income Generated from Re-investments	Rs. 11 (M)	Rs. 20 (M)	Rs. 41 (M)	Rs. 81.7 (M)
Programme Cost	Rs. 131 (M)	Rs. 406 (M)	Rs.29.7 (M)	Rs. 420 (M)
Administrative Operational Expenses	Rs. 17 (M)	Rs. 27 (M)	Rs. 45 (M)	Rs. 13 (M)

Data Source: The Government of Balochistan, 2016a, 2016b, 2017, 2018).
Note: B and M stand for Billion and Million respectively.

Fig. A1. Expenditure on Education



Source: Economic Survey of Pakistan (various issues).

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