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National service and beyond

A panel study of tertiary graduates in Ghana

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National Service and Beyond: A Panel Study of Tertiary Graduates in Ghana

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Abstract

This study tracks a cohort of tertiary graduates in Ghana as they transition from schooling into the labor market. The baseline survey interviewed a sample of 2,036 national service personnel at the start of their national service. Key findings are that there is strong persistence in field of study between the secondary and tertiary level, suggesting that early interventions to address academic specialization could have lasting consequences. Additionally, science, technology, engineering or mathematics (STEM) graduates have a stronger orientation toward the private sector than their peers, suggesting potential avenues for strengthening the match between graduate skills and labor market needs.

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1 Introduction

This project examines the mismatch between graduate skills and industry requirements in Ghana by tracking a cohort of tertiary graduates as they transition from schooling into the labor market. The results provide a foundation for understanding the determinants of selection into various fields of study, documenting differences in preferences and beliefs, and linking these factors to subsequent employment outcomes. Tertiary graduates are of particular importance to study because they represent the highest skilled individuals in the labor market, with the potential to make significant contributions to economic growth in developing countries.

There is a prevailing perception that tertiary graduates are not acquiring the appropriate skills to meet the needs of the economy, and that this in turn limits firms' productive capabilities. For example, Ghana's Education Strategic Plan 2010-2020 envisions that 60 per cent of tertiary students will be enrolled in science and technology-related disciplines by the year 2020 (MOE (2010)); yet, barely 40 per cent of students enrolled in public universities, only 37 per cent of polytechnic students, and 28 per cent of private university students were pursuing a science or technology degree in 2012/2013 (NCTE (2014)). Moreover, several studies have documented employers' complaints about graduates lacking necessary skills both in terms of technical ability as well as in terms of softer skills such as those related to leadership and innovation (e.g., Bawakyillenuo et al. (2013)). Additionally, the unemployment rate of young tertiary graduates is relatively high at 15 per cent for polytechnic graduates and 25 per cent for university graduates under age 30, compared to 9.5 per cent for non-graduates in the same age group (author's calculations using the 2010 census).

Despite these multiple indications of labor market mismatch, existing data sources are largely inadequate to meaningfully examine the determinants of skill acquisition and to identify potential strategies to better align graduate skills with employment opportunities. The ideal data would contain information on educational backgrounds, factors influencing schooling decisions, and subsequent employment outcomes. These data are lacking for Ghana and many other developing countries. Existing data typically do not include a sizable sample of tertiary graduates or contain insufficiently detailed information on educational backgrounds and labor market outcomes.[1]

[1]For example, the most recent Ghana Living Standards Survey only includes 1,544 tertiary graduates in the sample of over 70,000 respondents, and the majority of these observations are of older individuals whose employment experiences do not reflect the current realities facing contemporary youth. The 2010 census covers a much larger population of tertiary graduates but has limited information on educational background and no data on earnings.

The National Service and Beyond (NSB) survey project fills this gap in several ways.

1. By sampling a large number of recent tertiary graduates.
2. By eliciting detailed information on educational backgrounds, employment expectations, and aspirations.
3. By tracking individuals over time to link their educational backgrounds to their labor market outcomes.

Using novel data from the NSB baseline sample of 2,036 tertiary graduates, this paper explores the determinants and consequences of skill acquisition at the tertiary level. Focusing on differences by field of study, the main findings are that:

1. Academic specialization is persistent: program tracks at the secondary school level explain up to 29 per cent of variation in field of study at the tertiary level.
2. Academic specialization is a weak predictor of employment expectations: tertiary field of study explains less than 10 per cent of variation in expected earnings and preferred employment sector.
3. Academic ability is a stronger predictor of expected earnings: science, technology, engineering or mathematics (STEM) graduates expect to earn significantly more than other graduates, but this is largely explained by their higher exam scores.
4. STEM graduates have a stronger orientation towards the private sector than their peers: they are less likely to want to work in a government ministry, department, or agency and significantly more likely to want to work in a private firm.
5. Holding observable background characteristics equal, there are no significant differences in preferences for self-employment based on tertiary field of study.

Taken together, these findings suggest that interventions to address skill acquisition are likely to be more effective if undertaken at earlier stages preceding the tertiary level. Furthermore, STEM graduates appear to be better poised to contribute towards fueling economic growth in the private sector than other graduates.

2 Background and Data

Ghana is a useful setting in which to study the question of mismatch in the labor market for tertiary graduates because the National Service Scheme (NSS) provides an opportunity to observe graduates as they transition from schooling into the labor market. Ghana's

National Service Scheme is a one-year mandatory employment program for all tertiary graduates under the age of 40. The Scheme was introduced in 1973 as a requirement for tertiary graduates upon completion of an accredited degree or diploma, to support the country's manpower needs in the areas of technology, education and agriculture. Participants receive an allowance of approximately $100 a month and are posted to work in public or private sector organizations that request national service personnel.

The National Service and Beyond (NSB) survey interviewed a sample of 2,036 national service personnel between October and November 2015, at the start of their national service posting. The study focused on three regions of the country (Ashanti, Greater Accra, and Northern region). Using administrative data from the National Service Scheme secretariat, we drew a random sample of institutions that had received national service personnel in the previous year and targeted these institutions for participation. We invited up to 10 national service personnel at each selected institution to complete a 45 minute survey administered by a trained enumerator. This survey constitutes the first wave of a longitudinal study on tertiary graduates in Ghana.

Table 1 presents summary statistics on the NSB sample. 57 per cent of the respondents are male and their average age is 25. The majority of respondents followed Ghana's national curriculum in secondary school and took the standardized Secondary School Certification Exam (SSCE). Nonetheless, only 79 per cent of respondents reported their SSCE scores. I take the sum of reported scores on the SSCE Math and English exams and construct and standardized measure of exam performance with mean 0 and standard deviation of 1. As an alternative measure of cognitive ability, the NSB survey also measured critical reasoning using Raven's Matrices (Raven (1936)). In addition, we measured grit using the 8-item grit scale (Duckworth et al. (2007); Duckworth and Quinn (2009)) and self esteem using the Rosenberg self esteem index (Rosenberg (1965)). I also standardize these measures to have mean 0 and standard deviation of 1 within the sample.

The sample contains both graduates with a diploma or higher national diploma (42 per cent) as well as those with a bachelor's degree (58 per cent). Similarly, 30 per cent of respondents graduated from a polytechnic and 70 per cent graduated from a university. Only 17 per cent of respondents studied science, technology, engineering or mathematics (STEM) for their tertiary studies, 39 per cent studied business, and 43 per cent studied some other course (primarily social sciences, arts and humanities, education, or health and allied sciences).

To shed light on the factors influencing selection of tertiary courses, the survey asked respondents why they selected their course of study. Several answers were possible and respondents were not primed about possible options. The most commonly cited factors

were alignment with senior high school programmes (cited by 64 per cent of respondents) and with individual capacities (cited by 39 per cent of respondents). Concerns about employment prospects or earning potential were cited by less then 10 per cent of respondents. These subjective responses align with studies from other contexts suggesting relatively large costs of switching between academic fields and the relatively small role played by expected earnings (Arcidiacono (2004); Wiswall and Zafar (2015)).

Table 2 reports on employment preferences and expectations. At the time of the survey, only 9 per cent of respondents had a job offer for a position they could begin after completing their national service. When asked their expectations of the probability they would have a job within 6 months of completing national service on a scale from 0 to 10, the average expectation was a 66 per cent chance (6.6/10). The survey also asked about minimum and expected monthly earnings in graduates' first job after completing national service. To lessen the impact of outliers, I censor these responses at the 99th per centile response of 5,000 Ghana cedis per month (USD 1282.05 at the prevailing exchange rate of GHc3.9 to $1) for minimum earnings and 10,000 Ghana cedis per month (USD 2564.10) for expected earnings. On average, respondents reported a minimum acceptable income of $299 per month and expected income of $458 per month. Although the NSB data do not yet include information on actual earnings, analysis from longitudinal studies indicates that expected earnings are significantly correlated with actual earnings .

44 per cent of respondents planned to start working at new job in Ghana after completing their national service. Another 30 per cent planned to continue their schooling, with a split between those wanted to remain in Ghana and those wanting to study abroad. 14 per cent of respondents planned to continue working at their national service post and 10 per cent planned to start their own business. The remainder of the sample planned to return to their pre-tertiary employment, travel abroad to work, or to neither study nor work. It will be particularly informative to see how closely these plans align with respondents' eventual outcomes.

Almost 38 per cent of respondents listed their preferred employer as a government ministry, department, or agency (MDA). This was twice as popular as the next most common option; 19 per cent of respondents preferred a large private Ghanaian company (with ten or more permanent workers), followed by multinational companies (16 per cent of respondents), and self employment (13 per cent of respondents). The finance, insurance, and real estate industry was the most popular, listed as a preference for 18 per cent of respondents.

To provide a comparison to typical outcomes of tertiary graduates (with a post-secondary diploma or degree), Table 3 summarizes employment outcomes of tertiary graduates aged

19-29 using data from a 10 per cent sample of the 2010 census (IPUMS (2010)).

3 Results

To analyze the determinants of differences in skill acquisition, I split the sample by the type of tertiary qualification obtained (diploma or degree). Figure 1 displays the fields of study for diploma and degree graduates. Business is the most common field for both sets of graduates. As Figure 2 shows, polytechnic graduates make up 50 per cent of business graduates, 26 per cent of STEM graduates, and 13 per cent of graduates with another field of study.

3.1 Differences in background and training

I estimate a set of linear regressions to determine the correlates of selecting business or STEM as a field of study. Table 4 reports estimates for diploma graduates and Table 5 reports estimates for degree graduates. In line with the subjective responses, these regressions confirm that senior high school programs and secondary school performance are the strongest predictors of tertiary fields of study. The first column of each table regresses an indicator for graduating with a qualification in a STEM field on indicators for SHS fields of study, with graduates who did not pursue the SHS system as the omitted category. The R^2 in the first column of each table indicates that senior high school tracks account for 20 per cent of the variation in STEM field of study for diploma graduates and 29 per cent of the variation for degree graduates. Adding in controls for self-reported scores on the Secondary School Certification Exam (SSCE) in Column 2 indicates positive selection into STEM, with a positive and statistically significant coefficient on the SSCE score, although the R^2 changes very little. Column 3 adds in controls for sex, age, Raven's matrices scores, grit, and self esteem. Males and younger students are significantly more likely to select STEM for both diploma and degree graduates.

The last two columns of each table repeat the final specification in Column 3 but with an indicator for studying business (Column 4) or other fields (Column 5) as the tertiary specialization. Respondents who pursued the business programme in senior high school are significantly more likely to pursue business at the tertiary level, and those who studied agriculture, home economics, and visual arts are significantly more likely to pursue a program that is neither business nor STEM. Overall, this analysis displays the significant persistence of academic specialization at the secondary school level, suggesting that education decisions made relatively early on can have lasting consequences for the skill

acquisition of youth in Ghana.

3.2 Differences in aspirations and expectations

Table 6 reports the correlates of respondents' expected earnings. Despite the significant differences in educational backgrounds and academic preparation of students across tertiary fields, there are much smaller differences in graduates' aspirations and employment expectations based on field of study. Columns (1) and (4) report expected earnings for STEM and business graduates relative to graduates with other fields of specialization, for diploma and degree graduates separately. STEM graduates have significantly higher expected earnings, however the R^2 on both regressions is less than 0.015 indicating that tertiary field of study explains relatively little of the total variation in expected earnings.

Adding controls for student backgrounds in Columns (2) and (5) indicates that much of the variation in expected earnings of STEM graduates can be explained by differences in SSCE scores. The coefficient on STEM falls and is no longer statistically significant for degree graduates. Finally, columns (3) and (6) report coefficients from regressions with minimum acceptable earnings as the dependent variable. Once again, the results indicate the tertiary field of study does not significantly predict reservation wages for degree graduates. In contrast, graduates with higher SSCE scores have higher minimum acceptable earnings. A standard deviation increase in SSCE scores increases expected earnings by \$33 to \$34 a month on a sample mean of \$458 and increases minimum acceptable earnings by \$16 to \$19 per month on a sample mean of \$299. Graduates with higher self esteem have higher expected and minimum acceptable earnings.

Table 7 reports the correlates of respondents' preferred employment sector. Columns (1) and (4) analyze preferences for working in a government ministry, department, or agency (MDA). This is the most commonly prefered employer, cited by 38 per cent of respondents. Graduates in business are significantly more likely to express an interest in working for government MDAs relative to graduates from other fields. In contrast, STEM graduates are less likely to express an interest in working for government. Students with lower Raven's scores are also significantly more likely to express and interest in working for government. Columns (2) and (5) analyze preferences for working in a big private firm (a multinational or a private firm with 10 or more workers). Both STEM and business graduates have a stronger preference for working in big private firms relative to other graduates. Younger workers and those with higher performance on the SSCE and Raven's matrices are also more likely to want to work in the private sector. Columns (3) and (6) analyze preferences for self-employment. Across both diploma and degree graduates,

tertiary field of study is not significantly correlated with preference for self-employment. However, males are significantly more likely to express a preference for self-employment.

4 Conclusions

This study provides new evidence on the employment prospects of tertiary graduates in Ghana. The first key finding is that there is a strong persistence in fields of study – specialization at the secondary school level is a strong predictor of the field of study at the tertiary level. This suggests that efforts to increase the study of science and technology at the tertiary level must first address the selection into academic fields at the secondary school level (see Ajayi and Buessing (2015) for an analysis of gender differences in choices at this level).

The second key finding is that there is little variation in employment expectations based on tertiary field of study, however STEM graduates do appear to have a stronger orientation towards the private sector than that of other graduates. Interestingly, tertiary field of study does not appear to be a strong predictor of preferences for self-employment. Given the increasing emphasis on entrepreneurship as a potential avenue for growth, it would be important to understand the determinants of selection into this sector.

In future work, the National Service and Beyond project will conduct follow-up surveys of study participants at the end of the national service year (in June 2016) and an additional two years later (in June 2018) to solicit information on the education and labor market outcomes of graduates as they complete their national service year and seek further education or long-term employment. The primary objective will be to compare post-graduate schooling, employment rates, wages, and job characteristics of graduates by field of study. This ongoing analysis will also examine variation based on the types of tertiary institutions attended, the academic performance of graduates, their socio-economic backgrounds, gender, national service assignments, and initial perceptions of the labor market. Altogether, the study will provide an opportunity to objectively confirm or reject competing hypotheses about the relationship between graduate skills and firm capabilities, and to assess implications for economic growth in developing economies.

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Table 1: Summary Statistics (Educational Background)

	Mean	Median	Standard Deviation	Min.	Max.	Obs.
Individual Characteristics						
Male	0.569	1.000	0.495	0	1	2036
Age	25.318	25.000	3.190	19	55	2036
Took Secondary School Certificate Exam (SSCE)	0.965	1.000	0.185	0	1	2036
SSCE score	-0.000	0.069	1.000	-3	2	1617
SHS program = Agriculture	0.028	0.000	0.164	0	1	2036
SHS program = Business	0.306	0.000	0.461	0	1	2036
SHS program = General Arts	0.328	0.000	0.469	0	1	2036
SHS program = General Science	0.180	0.000	0.384	0	1	2036
SHS program = Home Economics	0.050	0.000	0.218	0	1	2036
SHS program = Technical	0.026	0.000	0.158	0	1	2036
SHS program = Visual Arts	0.048	0.000	0.214	0	1	2036
Raven's score	-0.000	0.365	1.000	-2	1	2036
Grit	-0.000	-0.110	1.000	-4	2	2036
Self esteem	-0.000	0.108	1.000	-4	2	2036
Tertiary Qualification Type						
Diploma or Higher National Diploma	0.420	0.000	0.494	0	1	2036
Bachelor's Degree	0.580	1.000	0.494	0	1	2036
Polytechnic graduate	0.303	0.000	0.459	0	1	2036
University graduate	0.697	1.000	0.459	0	1	2036
Tertiary field of study = STEM	0.173	0.000	0.379	0	1	2036
Tertiary field of study = Business	0.394	0.000	0.489	0	1	2036
Tertiary field of study = Other	0.432	0.000	0.496	0	1	2036
Reason Selected Tertiary Course						
Aligned with high school studies	0.638	1.000	0.481	0	1	2036
Aligned with my capacities	0.393	0.000	0.489	0	1	2036
I enjoy or have interest in this field	0.148	0.000	0.356	0	1	2036
Will lead to a good salary	0.074	0.000	0.262	0	1	2036
Will make it easy to find work	0.057	0.000	0.233	0	1	2036
My parents or guardians wanted me to	0.028	0.000	0.164	0	1	2036
Did not select it, was given by my institution	0.003	0.000	0.059	0	1	2036
Other reasons	0.019	0.000	0.137	0	1	2036

Table 2: Summary Statistics (Employment Expectations and Aspirations)

	Mean	Median	Standard Deviation	Min.	Max.	Obs.
Employment Prospects						
Already have job offer	0.092	0.000	0.289	0	1	2036
Probability of earning income within 6mths	0.663	0.700	0.231	0	1	2036
Minimum acceptable monthly earnings (USD)	298.535	256.410	189.573	0	1282	2036
Expected monthly earnings in first job (USD)	458.359	384.615	361.852	0	2564	2036
Plans after National Service						
plans_postnss==Start work at new job in Ghana	0.436	0.000	0.496	0	1	2036
plans_postnss==Travel abroad to continue school	0.148	0.000	0.356	0	1	2036
plans_postnss==Continue my schooling in Ghana	0.145	0.000	0.353	0	1	2036
plans_postnss==Continue working at NSS post	0.144	0.000	0.352	0	1	2036
plans_postnss==Start my own business in Ghana	0.102	0.000	0.302	0	1	2036
plans_postnss==Travel abroad to work	0.013	0.000	0.114	0	1	2036
plans_postnss==Return to pre-tertiary work	0.006	0.000	0.077	0	1	2036
plans_postnss==Neither work nor continue school	0.005	0.000	0.070	0	1	2036
Preferred Employer						
pref_employer==Government (MDA)	0.377	0.000	0.485	0	1	2036
pref_employer==Large private Ghanaian company	0.186	0.000	0.389	0	1	2036
pref_employer==Multinational company	0.159	0.000	0.366	0	1	2036
pref_employer==Self-Employment	0.128	0.000	0.334	0	1	2036
pref_employer==Government school	0.084	0.000	0.278	0	1	2036
pref_employer==Small private Ghanaian company	0.023	0.000	0.149	0	1	2036
pref_employer==Non-Profit/Charity/NGO	0.022	0.000	0.145	0	1	2036
pref_employer==Private school	0.015	0.000	0.122	0	1	2036
pref_employer==Family business	0.005	0.000	0.073	0	1	2036
Preferred Industry						
pref_industry==Finance, insurance, real est.	0.178	0.000	0.383	0	1	2036
pref_industry==Public admin and defense	0.134	0.000	0.340	0	1	2036
pref_industry==Human health and social work	0.117	0.000	0.322	0	1	2036
pref_industry==Admin and support services	0.115	0.000	0.319	0	1	2036
pref_industry==Manufacturing	0.094	0.000	0.292	0	1	2036
pref_industry==Professional, scientific, tech.	0.077	0.000	0.266	0	1	2036
pref_industry==Info and communication	0.066	0.000	0.249	0	1	2036
pref_industry==Education	0.057	0.000	0.233	0	1	2036

Table 3: Summary Statistics (Census)

	Mean	Median	Standard Deviation	Min.	Max.	Obs.
Age	24.783	25.000	2.589	19	29	38070
Male	0.550	1.000	0.498	0	1	38070
University graduate	0.187	0.000	0.390	0	1	38070
Aged 19-29	1.000	1.000	0.000	1	1	38070
Employment Status						
empstatd==At work	0.432	0.000	0.495	0	1	38070
empstatd==Have job, not at work in reference period	0.032	0.000	0.176	0	1	38070
empstatd==Unemployed, experienced worker	0.011	0.000	0.106	0	1	38070
empstatd==Unemployed, new worker	0.091	0.000	0.287	0	1	38070
empstatd==Housework	0.039	0.000	0.194	0	1	38070
empstatd==Unable to work/disabled	0.002	0.000	0.047	0	1	38070
empstatd==In school	0.365	0.000	0.481	0	1	38070
empstatd==Retirees/pensioners	0.000	0.000	0.000	0	0	38070
empstatd==Inactive, other reasons	0.027	0.000	0.162	0	1	38070
In the labor force but unemployed	0.180	0.000	0.384	0	1	21571
Worked before, seeking work and available for work	0.111	0.000	0.315	0	1	3890
Seeking work for first time, and available for work	0.889	1.000	0.315	0	1	3890
Class of Worker						
classwkd==Employer	0.022	0.000	0.146	0	1	17681
classwkd==Working on own account	0.094	0.000	0.292	0	1	17681
classwkd==Wage/salary worker	0.834	1.000	0.372	0	1	17681
classwkd==Employee, occasional, temporary, contract	0.013	0.000	0.113	0	1	17681
classwkd==Domestic worker (work for private household)	0.003	0.000	0.053	0	1	17681
classwkd==Unpaid family worker	0.027	0.000	0.162	0	1	17681
classwkd==Apprentice, unpaid or unspecified	0.005	0.000	0.069	0	1	17681
classwkd==Other	0.003	0.000	0.055	0	1	17681
Employment Sector						
empsect==Public	0.502	1.000	0.500	0	1	17681
empsect==Private, not elsewhere classified	0.298	0.000	0.457	0	1	17681
empsect==Individual/family enterprise, and self-employed	0.180	0.000	0.384	0	1	17681
empsect==Mixed: public-private or parastatal	0.006	0.000	0.075	0	1	17681
empsect==Foreign government or NGO	0.014	0.000	0.119	0	1	17681
Employment Industry						
indgen==Agriculture, fishing, and forestry	0.048	0.000	0.214	0	1	17681
indgen==Mining	0.010	0.000	0.101	0	1	17681
indgen==Manufacturing	0.040	0.000	0.197	0	1	17681
indgen==Electricity, gas and water	0.010	0.000	0.099	0	1	17681
indgen==Construction	0.018	0.000	0.134	0	1	17681
indgen==Wholesale and retail trade	0.084	0.000	0.278	0	1	17681
indgen==Hotels and restaurants	0.022	0.000	0.147	0	1	17681
indgen==Transportation and communications	0.055	0.000	0.229	0	1	17681
indgen==Financial services and insurance	0.078	0.000	0.268	0	1	17681
indgen==Public administration and defense	0.082	0.000	0.275	0	1	17681
indgen==Real estate and business services	0.040	0.000	0.197	0	1	17681
indgen==Education	0.326	0.000	0.469	0	1	17681
indgen==Health and social work	0.133	0.000	0.339	0	1	17681
indgen==Other services	0.047	0.000	0.211	0	1	17681
indgen==Private household services	0.004	0.000	0.067	0	1	17681

Notes: Tertiary graduates aged 19-29 from the 2010 census.

Table 4: Correlates of Tertiary Field Choice (Diploma Graduates)

	Dependent variable: Indicator for tertiary field of study				
	STEM (1)	STEM (2)	STEM (3)	Business (4)	Other (5)
SHS program = Agriculture	-0.214	-0.266	-0.295	0.048	0.247
	(0.070)***	(0.072)***	(0.071)***	(0.106)	(0.110)**
SHS program = Business	-0.395	-0.450	-0.470	0.663	-0.192
	(0.045)***	(0.049)***	(0.051)***	(0.076)***	(0.079)**
SHS program = General Arts	-0.364	-0.417	-0.422	0.345	0.076
	(0.046)***	(0.049)***	(0.051)***	(0.075)***	(0.078)
SHS program = General Science	-0.079	-0.155	-0.181	0.006	0.175
	(0.057)	(0.060)**	(0.060)***	(0.090)	(0.093)*
SHS program = Home Economics	-0.415	-0.460	-0.427	0.111	0.316
	(0.054)***	(0.057)***	(0.060)***	(0.089)	(0.092)***
SHS program = Technical	0.108	0.050	-0.012	-0.116	0.128
	(0.062)*	(0.064)	(0.064)	(0.095)	(0.098)
SHS program = Visual Arts	-0.276	-0.324	-0.361	0.123	0.238
	(0.060)***	(0.063)***	(0.064)***	(0.095)	(0.098)**
SSCE score		0.034	0.023	0.000	-0.023
		(0.013)***	(0.013)*	(0.019)	(0.020)
Missing SSCE score		-0.092	-0.069	-0.003	0.071
		(0.026)***	(0.026)***	(0.038)	(0.040)*
Male			0.128	-0.073	-0.055
			(0.021)***	(0.032)**	(0.033)*
Age			-0.012	-0.001	0.013
			(0.003)***	(0.005)	(0.005)***
Raven's score			0.015	0.009	-0.025
			(0.010)	(0.016)	(0.016)
Grit			-0.025	-0.009	0.035
			(0.011)**	(0.017)	(0.017)**
Self esteem			0.003	0.003	-0.006
			(0.011)	(0.016)	(0.017)
R^2	0.207	0.221	0.269	0.298	0.168
N	856	856	856	856	856

Notes: Each column reports coefficient estimates from an OLS regression. I impute SSCE scores as 0 (mean) for those with missing self-reported scores. Standard errors in parentheses, *p<0.1, **p<0.05, ***p<0.01.

Table 5: Correlates of Tertiary Field Choice (Degree Graduates)

	Dependent variable: Indicator for tertiary field of study				
	STEM	STEM	STEM	Business	Other
	(1)	(2)	(3)	(4)	(5)
SHS program = Agriculture	-0.137	-0.129	-0.162	-0.109	0.271
	(0.096)	(0.098)	(0.099)	(0.114)	(0.136)**
SHS program = Business	-0.129	-0.127	-0.174	0.363	-0.188
	(0.073)*	(0.077)*	(0.079)**	(0.091)***	(0.109)*
SHS program = General Arts	-0.136	-0.130	-0.170	0.006	0.163
	(0.072)*	(0.076)*	(0.078)**	(0.090)	(0.108)
SHS program = General Science	0.367	0.356	0.307	-0.153	-0.154
	(0.073)***	(0.077)***	(0.080)***	(0.092)*	(0.110)
SHS program = Home Economics	-0.142	-0.125	-0.121	0.080	0.042
	(0.094)	(0.096)	(0.097)	(0.112)	(0.134)
SHS program = Technical	0.246	0.253	0.189	-0.252	0.063
	(0.125)**	(0.127)**	(0.128)	(0.147)*	(0.176)
SHS program = Visual Arts	-0.151	-0.142	-0.181	0.028	0.153
	(0.085)*	(0.087)	(0.089)**	(0.103)	(0.123)
SSCE score		0.036	0.028	-0.052	0.024
		(0.014)**	(0.015)*	(0.017)***	(0.020)
Missing SSCE score		0.018	0.022	0.083	-0.105
		(0.029)	(0.029)	(0.034)**	(0.040)***
Male			0.065	-0.043	-0.022
			(0.021)***	(0.025)*	(0.029)
Age			-0.007	0.023	-0.016
			(0.004)*	(0.004)***	(0.005)***
Raven's score			0.002	-0.015	0.013
			(0.011)	(0.012)	(0.015)
Grit			0.015	-0.004	-0.011
			(0.011)	(0.013)	(0.015)
Self esteem			0.004	-0.006	0.001
			(0.011)	(0.013)	(0.016)
R^2	0.291	0.295	0.304	0.255	0.122
N	1180	1180	1180	1180	1180

Notes: Table reports coefficient estimates from OLS regressions with standard errors in parentheses, *p<0.1, **p<0.05, ***p<0.01.

Table 6: Correlates of Expected Earnings

Dependent variable:	Diploma Graduates			Degree Graduates		
	Expected Earnings (1)	Expected Earnings (2)	Minimum Acceptable (3)	Expected Earnings (4)	Expected Earnings (5)	Minimum Acceptable (6)
Tertiary field of study = STEM	135.874	114.114	54.208	75.736	8.430	9.647
	(40.318)***	(44.800)**	(23.743)**	(27.064)***	(30.942)	(15.932)
Tertiary field of study = Business	17.082	27.833	25.125	-11.285	10.972	6.879
	(26.532)	(30.074)	(15.939)	(24.305)	(26.856)	(13.828)
SHS program = Agriculture		-50.011	-41.814		20.727	33.167
		(89.720)	(47.550)		(102.910)	(52.987)
SHS program = Business		-128.200	-76.850		-91.724	-5.225
		(68.335)*	(36.217)**		(82.743)	(42.603)
SHS program = General Arts		-104.766	-55.429		-97.828	-7.787
		(65.838)	(34.893)		(81.616)	(42.023)
SHS program = General Science		-152.863	-68.875		7.775	50.139
		(75.418)**	(39.970)*		(83.168)	(42.822)
SHS program = Home Economics		-45.290	-26.324		-109.264	-3.049
		(76.953)	(40.784)		(100.980)	(51.993)
SHS program = Technical		-125.824	-59.652		72.684	167.031
		(79.605)	(42.189)		(132.947)	(68.452)**
SHS program = Visual Arts		-115.487	-55.113		-121.849	-38.272
		(80.617)	(42.726)		(92.656)	(47.707)
SSCE score		33.764	16.042		32.973	18.674
		(16.009)**	(8.485)*		(15.238)**	(7.846)**
Missing SSCE score		-56.520	-5.416		8.679	20.408
		(32.125)*	(17.026)		(30.422)	(15.664)
Male		28.503	8.705		28.484	12.047
		(26.955)	(14.286)		(22.244)	(11.453)
Age		-3.674	-1.058		3.269	3.602
		(3.979)	(2.109)		(4.081)	(2.101)*
Raven's score		-5.308	-6.556		-0.250	1.093
		(13.045)	(6.914)		(10.979)	(5.653)
Grit		-6.614	-2.700		4.661	-0.686
		(13.979)	(7.409)		(11.324)	(5.830)
Self esteem		37.044	16.924		14.739	11.599
		(13.405)***	(7.104)**		(11.922)	(6.138)*
R^2	0.014	0.039	0.033	0.008	0.034	0.047
N	856	856	856	1180	1180	1180

Notes: Table reports coefficient estimates from OLS regressions with standard errors in parentheses, *p<0.1, **p<0.05, ***p<0.01. Dependent variable is expected or minimum acceptable monthly earnings in USD.

Table 7: Correlates of Preferred Employer

	Diploma Graduates			Degree Graduates		
Dependent variable: Indicator for pref. employer	Govt (MDA) (1)	Big Private (2)	Self (3)	Govt (MDA) (4)	Big Private (5)	Self (6)
Tertiary field of study = STEM	-0.052	0.163	0.047	-0.102	0.098	0.012
	(0.063)	(0.056)***	(0.039)	(0.040)**	(0.042)**	(0.030)
Tertiary field of study = Business	0.092	0.158	0.026	0.058	0.087	-0.027
	(0.042)**	(0.038)***	(0.026)	(0.035)*	(0.036)**	(0.026)
SHS program = Agriculture	-0.006	-0.073	0.020	-0.016	-0.110	0.095
	(0.125)	(0.112)	(0.078)	(0.134)	(0.138)	(0.101)
SHS program = Business	-0.082	-0.096	0.017	0.064	-0.017	-0.006
	(0.095)	(0.085)	(0.060)	(0.108)	(0.111)	(0.081)
SHS program = General Arts	-0.099	-0.053	0.017	0.082	-0.055	0.007
	(0.092)	(0.082)	(0.057)	(0.107)	(0.110)	(0.080)
SHS program = General Science	0.158	-0.033	-0.088	0.101	-0.040	0.031
	(0.105)	(0.094)	(0.066)	(0.109)	(0.112)	(0.082)
SHS program = Home Economics	-0.132	-0.018	0.076	0.045	-0.075	-0.017
	(0.107)	(0.096)	(0.067)	(0.132)	(0.135)	(0.099)
SHS program = Technical	0.138	-0.147	0.022	-0.071	0.071	0.042
	(0.111)	(0.099)	(0.069)	(0.174)	(0.178)	(0.131)
SHS program = Visual Arts	-0.130	0.031	0.071	-0.056	-0.046	0.173
	(0.113)	(0.101)	(0.070)	(0.121)	(0.124)	(0.091)*
SSCE score	-0.031	0.054	0.018	-0.031	0.036	0.017
	(0.022)	(0.020)***	(0.014)	(0.020)	(0.020)*	(0.015)
Missing SSCE score	-0.031	-0.040	0.053	0.033	-0.008	-0.005
	(0.045)	(0.040)	(0.028)*	(0.040)	(0.041)	(0.030)
Male	-0.007	-0.019	0.050	-0.010	-0.035	0.039
	(0.038)	(0.034)	(0.023)**	(0.029)	(0.030)	(0.022)*
Age	-0.005	-0.014	0.001	0.022	-0.027	-0.005
	(0.006)	(0.005)***	(0.003)	(0.005)***	(0.005)***	(0.004)
Raven's score	-0.030	0.040	0.007	-0.026	0.032	-0.006
	(0.018)*	(0.016)**	(0.011)	(0.014)*	(0.015)**	(0.011)
Grit	-0.006	0.007	0.004	0.011	-0.014	0.004
	(0.020)	(0.017)	(0.012)	(0.015)	(0.015)	(0.011)
Self esteem	0.011	0.008	-0.002	-0.007	0.002	0.008
	(0.019)	(0.017)	(0.012)	(0.016)	(0.016)	(0.012)
R^2	0.032	0.070	0.029	0.054	0.059	0.025
N	856	856	856	1180	1180	1180

Notes: Table reports coefficient estimates from OLS regressions with standard errors in parentheses, *p<0.1, **p<0.05, ***p<0.01. Big private firms include multinationals and private firms with more than 10 employees.

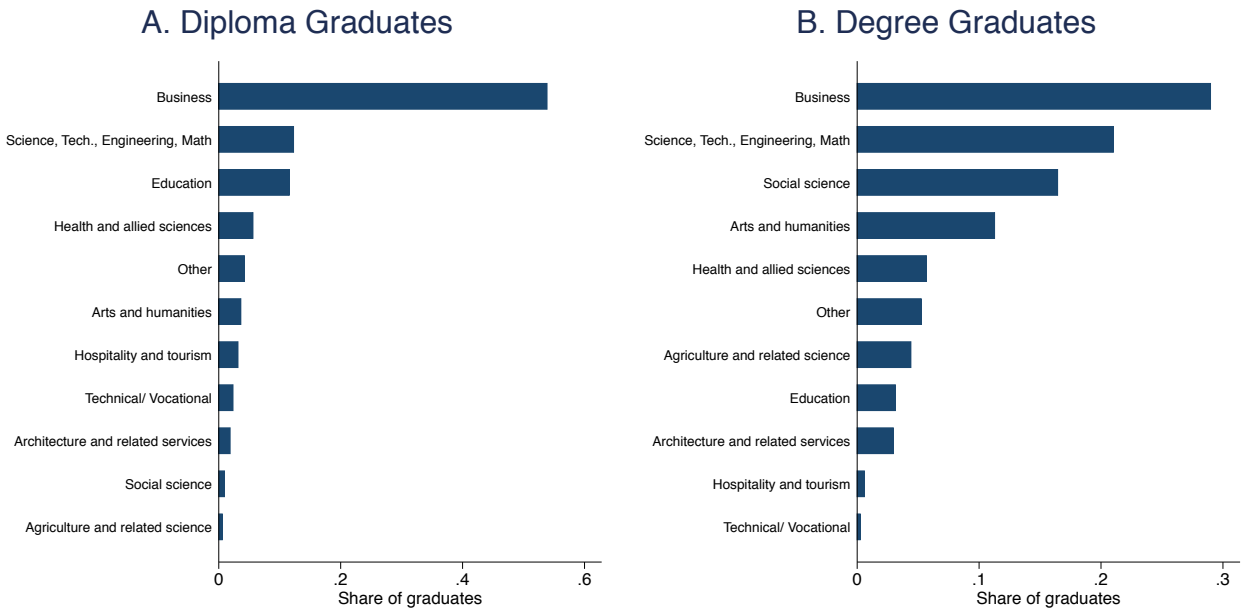

Figure 1: Tertiary Field of Study

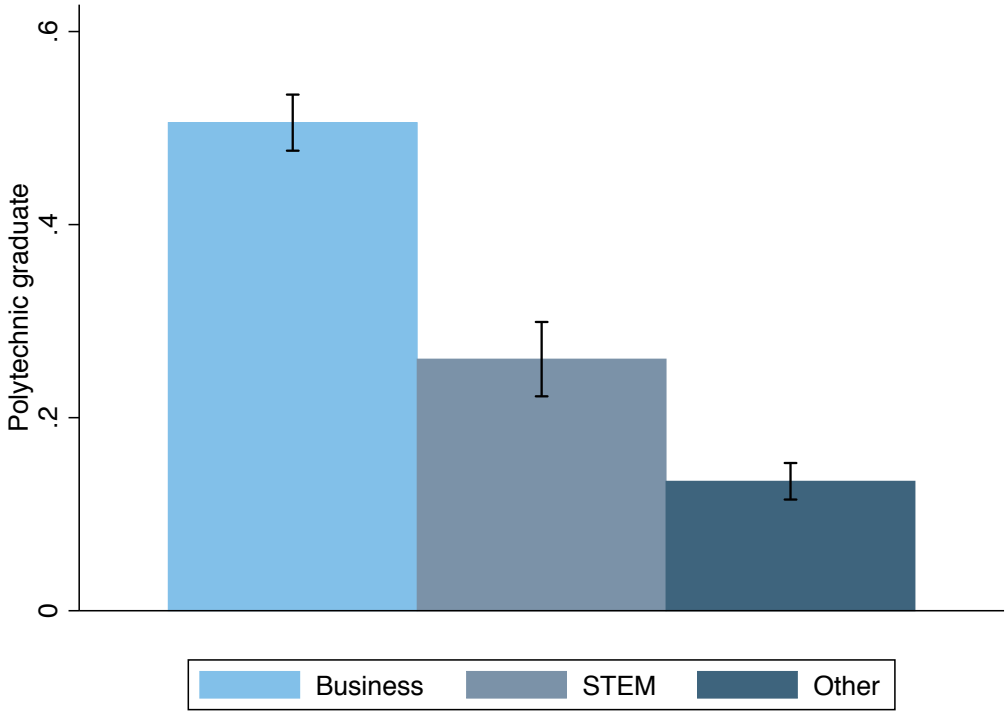

Figure 2: Polytechnic versus University Graduate

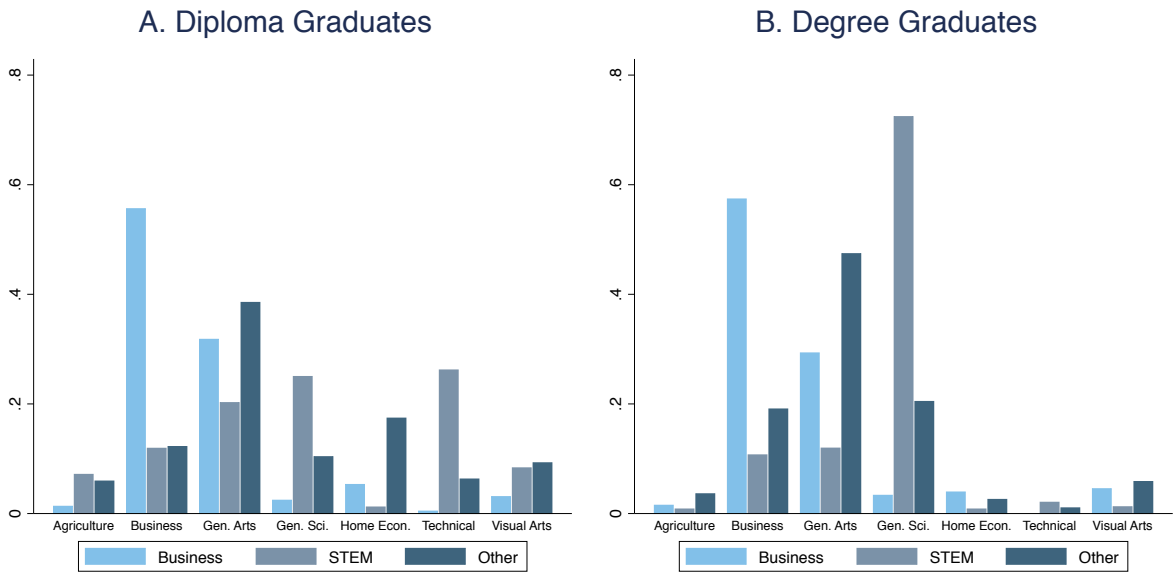

Figure 3: Senior High School Programme

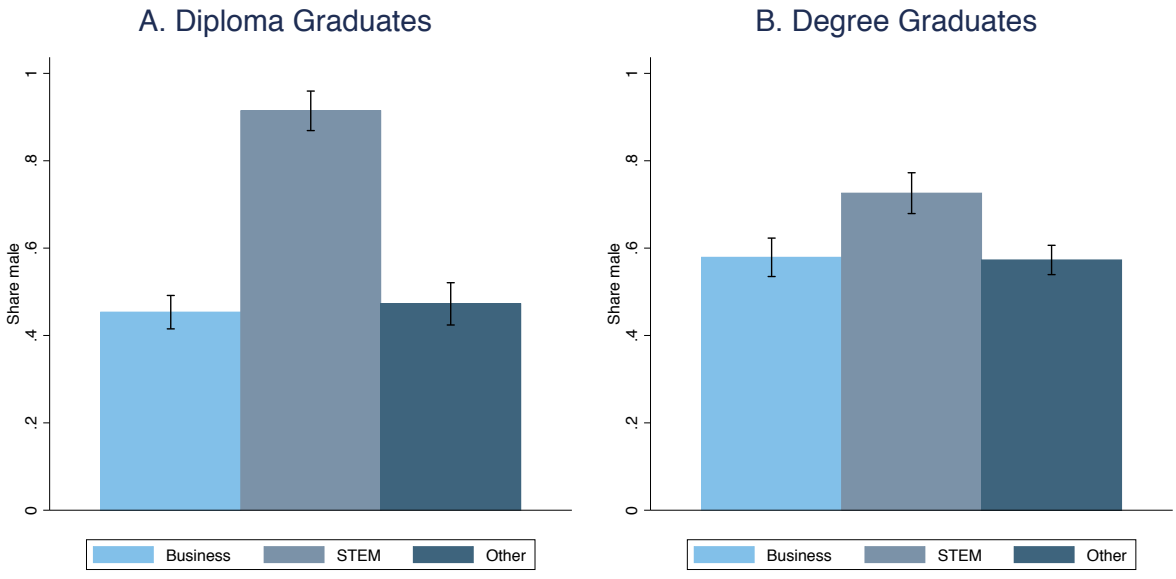

Figure 4: Gender

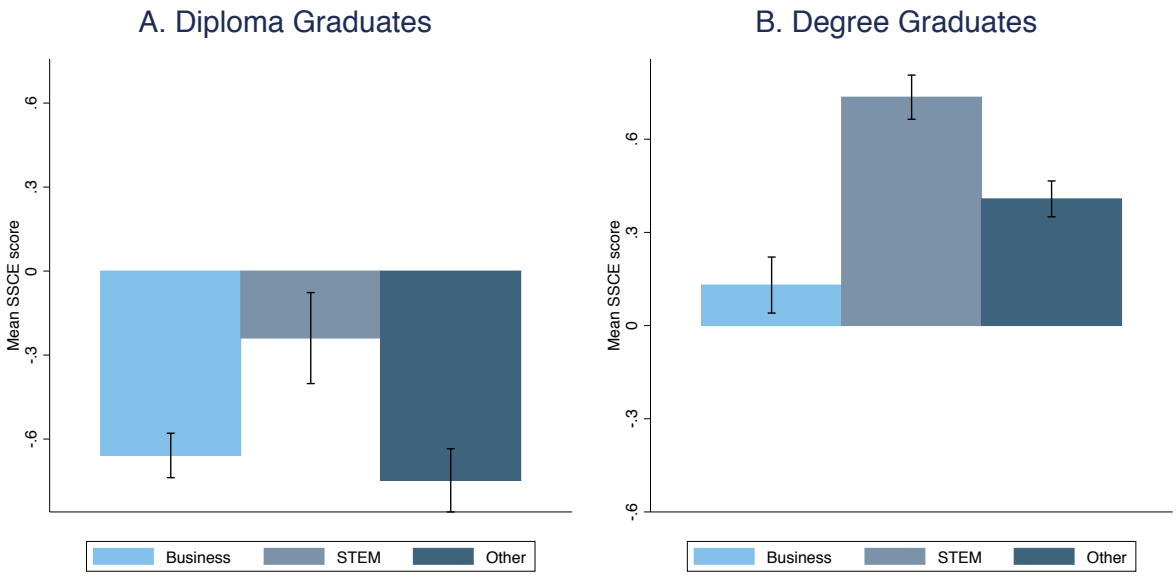

Figure 5: SSCE Scores

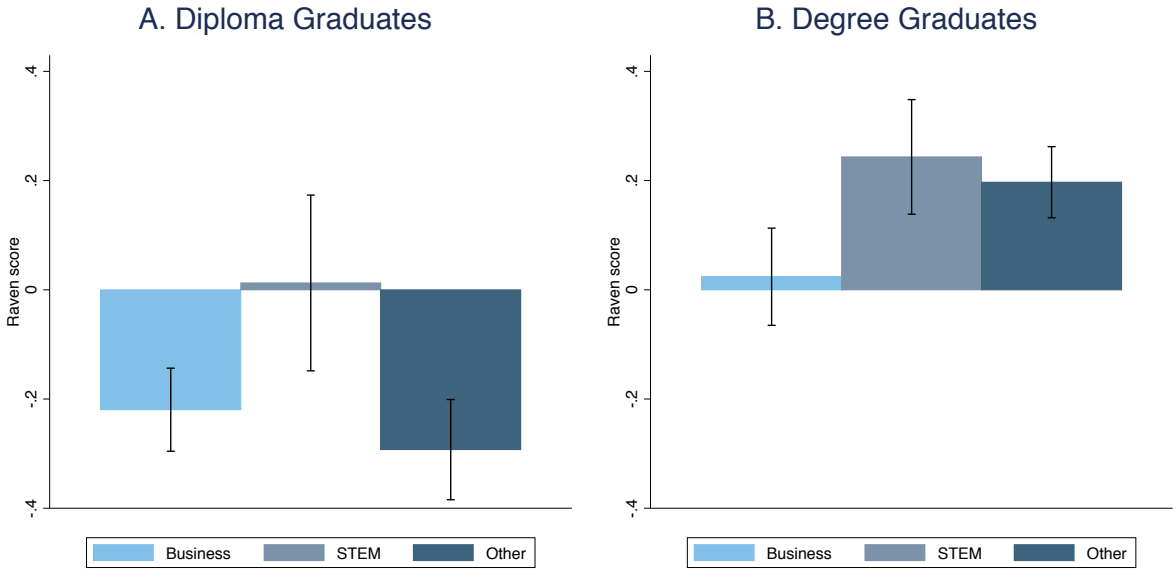

Figure 6: Raven's Matrices

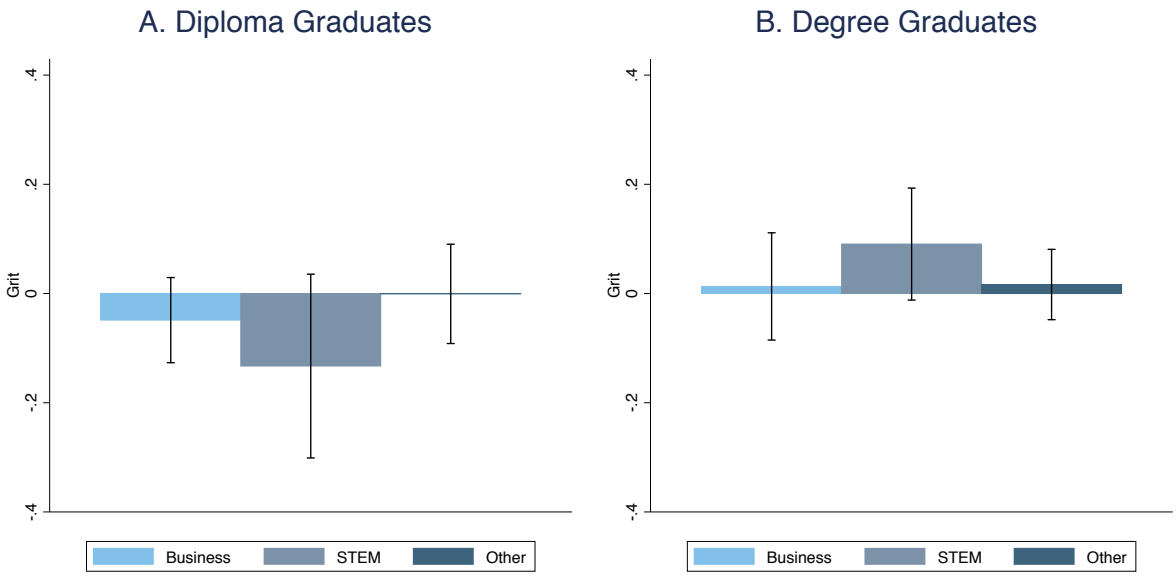

Figure 7: Grit

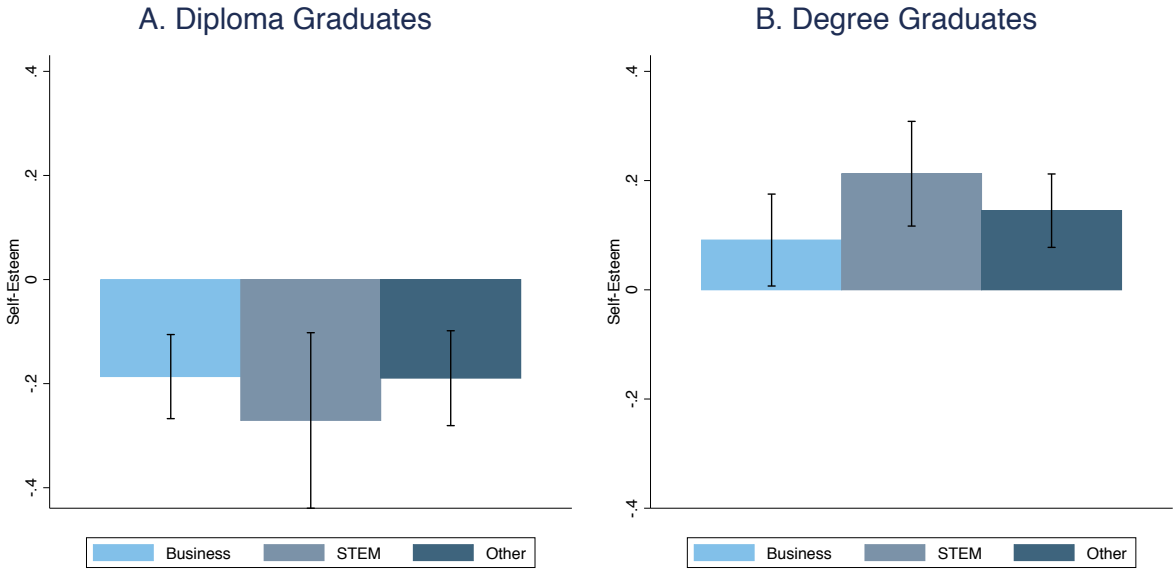

Figure 8: Self-Esteem

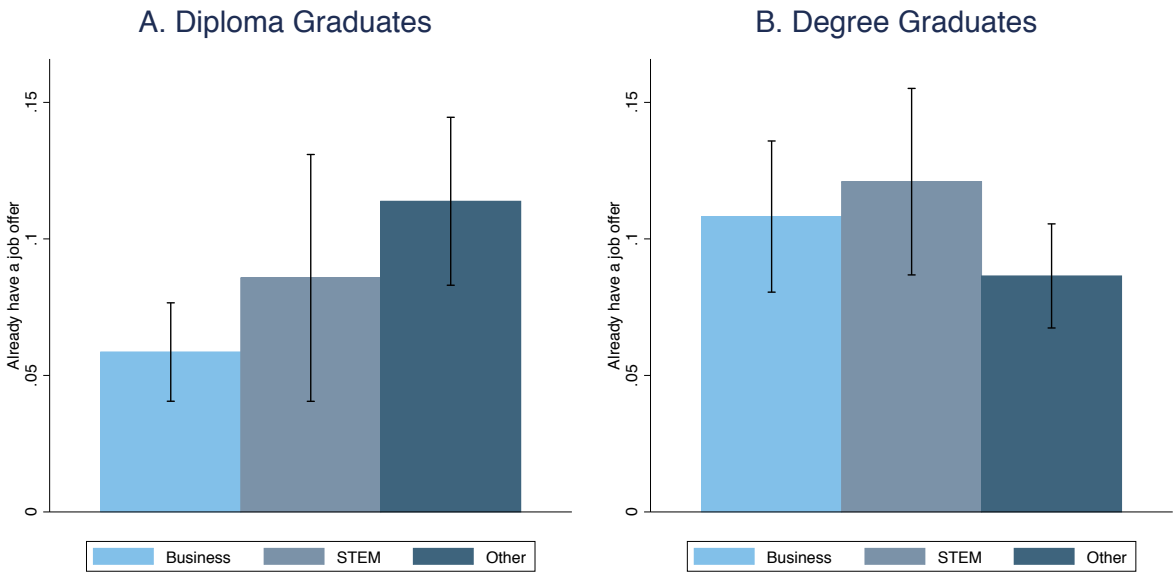

Figure 9: Job Prospects

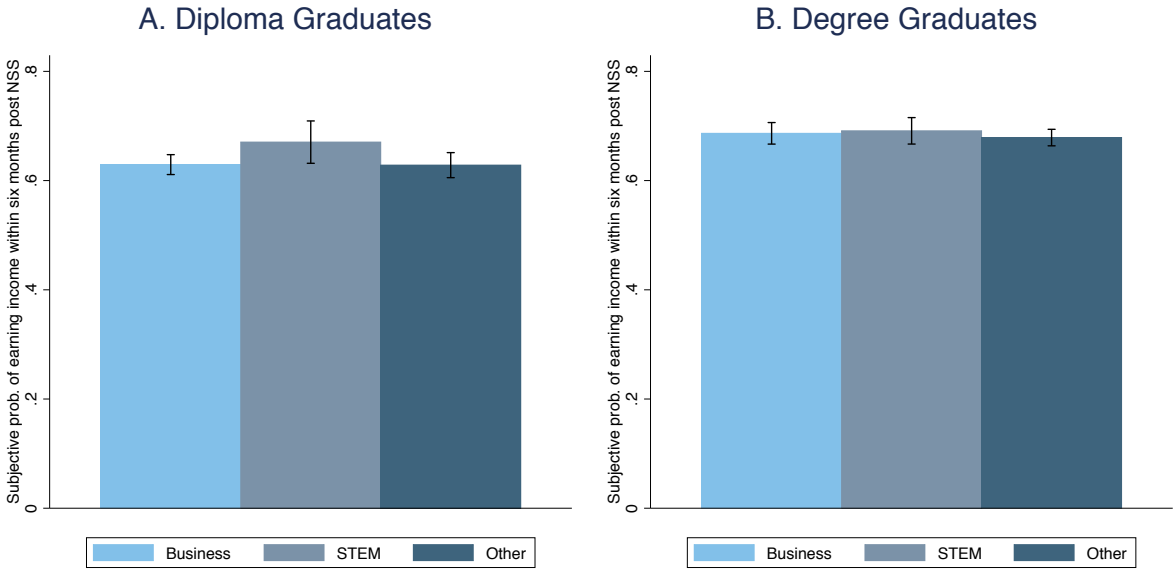

Figure 10: Subjective Probability of Earning Income within Six Months of National Service

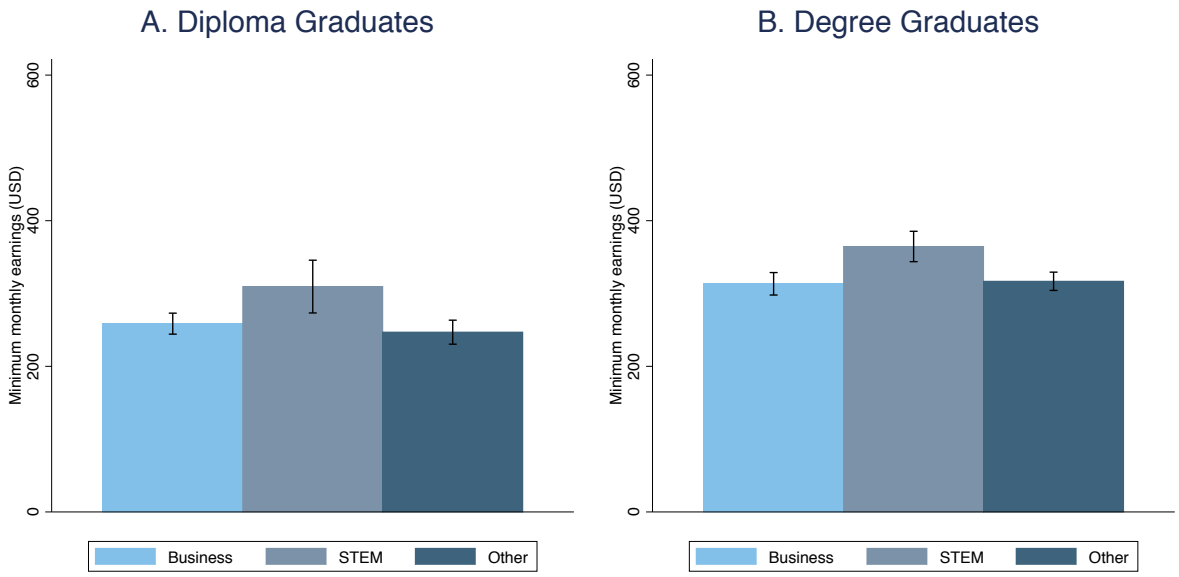

Figure 11: Minimum Acceptable Monthly Earnings

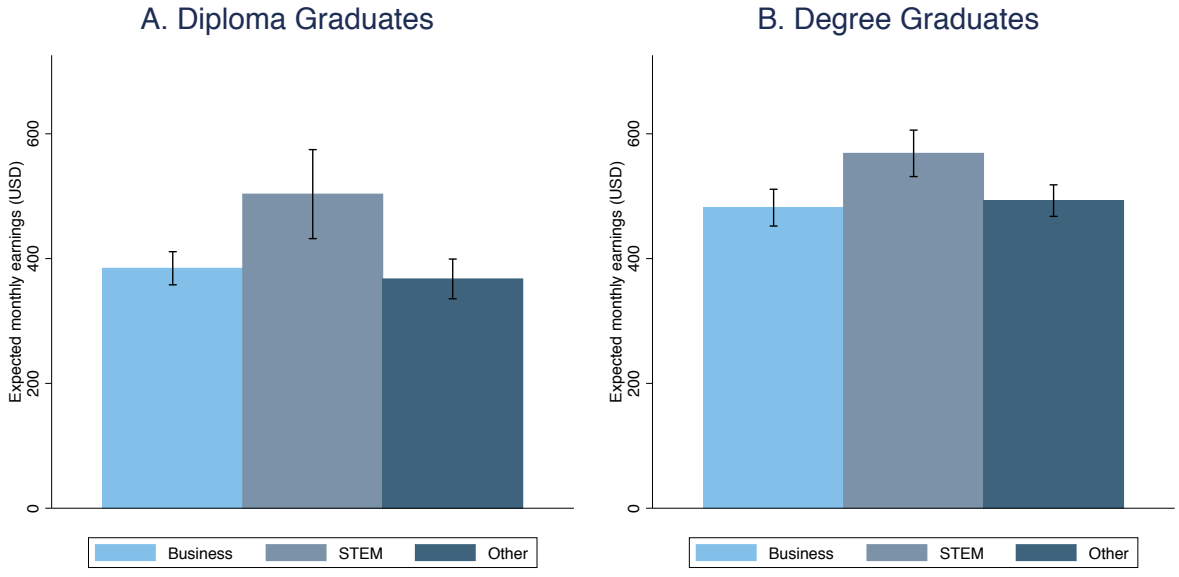

Figure 12: Expected Monthly Earnings

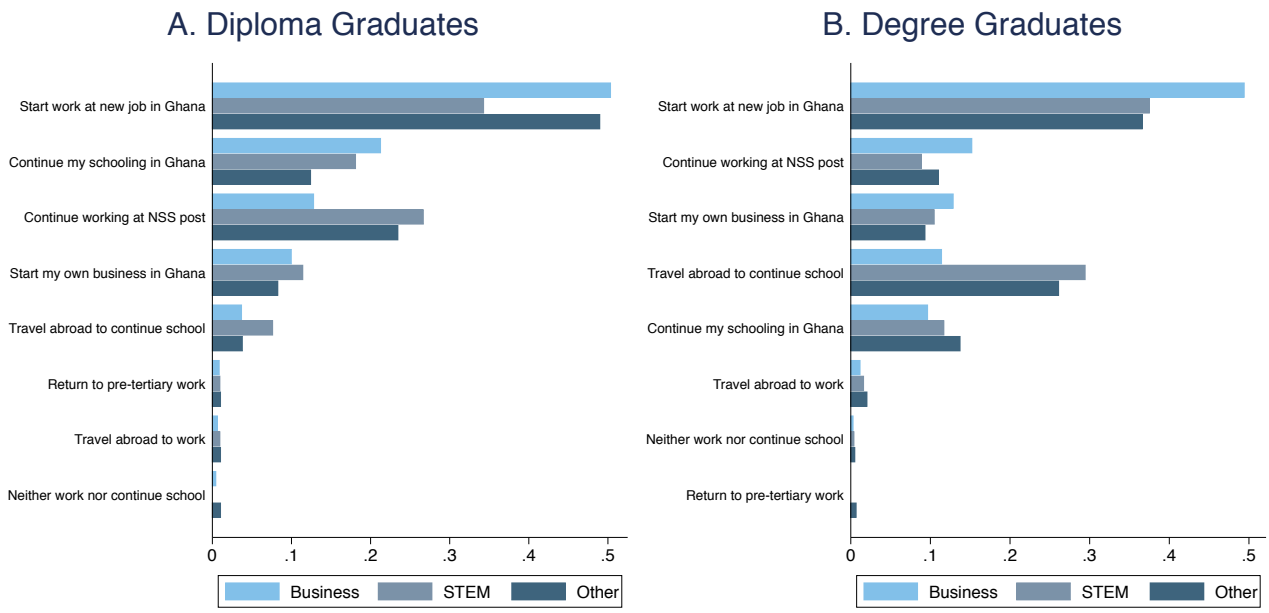

Figure 13: Plans after National Service

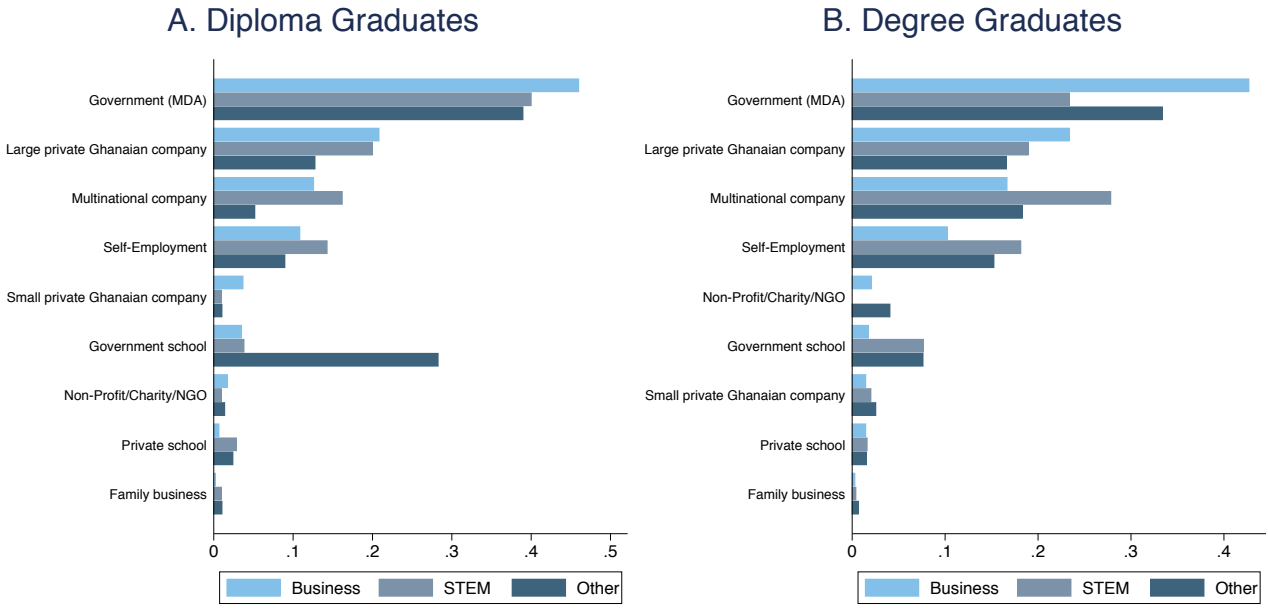

Figure 14: Preferred Employer

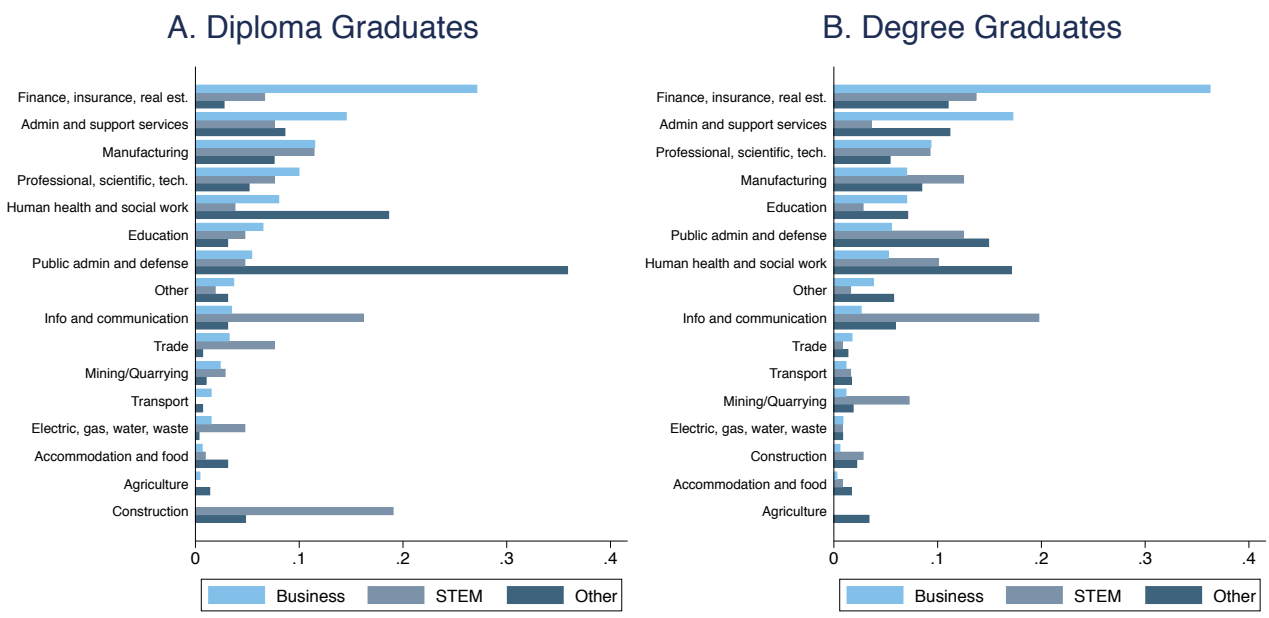

Figure 15: Preferred Industry

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