

**Collective Logic in College Field of Study Choice and Its Consequences**

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**Abstract**

This study develops a conceptual framework on how individuals' positional inequality shapes their decision-making and the choices they make. While the classical view of decision-making perceives it as a cognitive and individualistic process, this framework highlights the "collective logic" to capture the influences of the social context on the individuals' decision-making. Using the unique dataset with information on Israeli college applicants' revealed choices, we test this framework regarding Jewish-Arab differences in field of study choice sets. The results reveals a high level of segregation in choices related to Arab applicants' greater tendency for risk taking. Most of the between-group disparity in risk taking is explained by differences in the weights placed on instrumental and social considerations, or, in other words, the collective logic. Yet, the risks that Arab applicants are willing to take in order to secure a stable employment and study in a friendly academic climate account for a substantial portion of the ethnic gap in admission rate. The discussion highlights the theoretical contributions to both decision-making and stratification theories and the policy implications of the collective logic in decision making.

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### **Collective Logic in Decision-Making and Its Consequences**

Scholarship suggest that today, when access to higher education is becoming more universal, inequality of educational opportunity is less about differences in whether or not one attends college, and more about differences in the type of institution one attends and one's field of study (Raftery and Hout 1993; Lucas 2001; Alon 2009). While economic returns are significantly correlated with college selectivity (Brand and Halaby 2006; Hoekstra 2009; Alon and Tienda 2005), recent evidence suggests that a college FOS is *the* most important determinant of future earnings, even after controlling for ability (Arcidiacono 2004; Roksa and Levey 2010). In fact, the disparity in earnings across FOSs rivals the overall college wage premium (Altonji, Blom and Meghir 2012; Kim et. al. 2015). Moreover, there are wide and consistent differences in FOSs across gender, race, and class groups within the population of college-goers (Alon 2015b, Alon and DiPrete 2015; Corbett and Hill 2012; Rumberger and Thomas 1993; Weinberger 1998). Given that this stratification accounts for much of the inequality in starting salaries among graduates, it is vital that we understand whether and how it may be traced back to students' choices.

Both rational and heuristic choice models place the individual at the center of the decision making process (e.g. Becker 1964; March 1994; Kahneman and Tversky 1984). Yet, we may expect to find systematic differences between applicants in FOS choice sets because interests and ambitions are shaped by socioeconomic and educational resources (Altonji et.al., 2012; Schneider and Stevenson 1999; Schneider 2009). Indeed, studies show that decisions and choices are partly shaped by social identities (March 2009; Kuziemko et al. 2011; Mullainathan and Shafir 2013; Hoxby and Avery 2012). Hoxby and Avery (2012), for example, show that the vast majority of high-achieving high-school graduates from low-income households do not apply to selective colleges, while Mullainathan and Shafir (2013) demonstrate how the stress of scarcity distorts decision making. Hence, since most behaviors are closely embedded in social networks, we need to consider the social context in which decisions are made by individuals.

This study develops a conceptual framework that harnesses the "collective logic" to capture the influences of the social context on the individuals' decision-making and the choices they make. By embedding the decision-making process in the group's opportunity structure, rather than just in individual idiosyncrasies, this perspective integrates the social context in decision-making theory. Moreover, by revealing how individuals' positional inequality shapes their decision-making, on the one hand, and the role played by individuals' choices in the fanning out of socioeconomic trajectories, on the other, the collective logic situates choices and in stratification theory.

Using a unique dataset with information on Israeli college applicants' revealed FOS choices (Alon 2015a; Alon 2015b), we demonstrate the utility of the collective logic perspective by examining Jewish-Arab differences in FOS choice sets. The objective of this study is to determine how systematic decision-making differences underlie segregation in FOS choices and assess their academic and economic consequences. We assess three questions: (1) Is the set of fields that are considered by Arab applicants different from that considered by their Jewish counterparts (*Segregation in choices*)? (2) Are there systematic differences between Arabs and Jews in the operation of specific decision-making rules (specifically, risk taking, and instrumental and social *considerations*), and whether these differences exist *net of academic preparation (Collective logic)*? (3) What are the academic and economic implications of collective decision making? Specifically the extent to which differences in the collective logic account for the ethnic gap in the likelihood of admission (*Reproduction of inequality*)?

## PRELIMINARY RESULTS

***Segregation in choices:*** The between-group variation in the mix of preferred majors is substantial. The index of dissimilarity demonstrates a systematic, high and persistent level of segregation, among the applicants to the four institutions, in all choices, even after accounting for majors' size and the influx of Arabs into the applicant pool.

***Collective logic:*** We assess whether there are systematic differences between Arabs and Jews in the decision-making rules that determine the probability of applying to major  $j$ . We fit a discrete choice model (McFadden 1974) to the person-major-rank file. We use a rank-ordered logit model where the dependent variable is the FOS choice set in the first choice and in lower-ranked choices (Allison and Christakis 1994; Alon and DiPrete 2015). The independent variables are the Applicant-Major match (measuring risk-taking); the expected monthly salary and employability (instrumental considerations); and the share of Arabs of the major (social considerations). The results (see **Table 1**) reveal that the high level of segregation in choices is related to Arab applicants' greater tendency for risk taking, i.e. to choose FOS to which their academic standing is lower than the major's academic threshold. Most of Arab applicants' elevated tendency for risk-taking is explained by the specific weight they place on instrumental and social considerations, or, in other words, their collective logic. Applicants from both groups are conscious of the social climate and labor market prospects of the FOS and they incorporate this knowledge in determining their preferences. Yet, while the decisions made by Jews are mostly sensitive to the pecuniary ramifications of the field, Arab applicants care primarily about future employment stability.

**Reproduction of inequality:** The admission decision is the first place where we can observe the consequences of the collective logic in FOS choices. The admission gap between Arabs and Jews for applications ranked first in the choice set is huge: 17 vs. 46 percent were admitted, respectively. Fitting a logistic regression to the admission decision for the first choice applications, reveal that the academic composite score explain only part of the variance between Arabs and Jews in admission rate (see **Table 2**). Re-fitting these models to a *matched-pairs sample* (by academic composite score, within each major, in each institution, and in each year) demonstrate that differences in the academic match of the choice set account for a substantial portion of the gap in admission rate between Arabs and Jews. These findings link the decision-making process of determining FOS choices to admissions chances. Clearly, Arab applicants' collective logic, specifically the tendency for risk taking and the emphasis on employability, is a key explanation for the low chances of admission to the Israeli elite universities.

**Table 1. Multinomial Preferences Model: Decision Rules for Selecting the First Choice , Israeli elite universities, 1999-2008**

VARIABLES	FIRST CHOICE					
	Model 1		Model 2		Model 3	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
	Arab	Jews	Arab	Jews	Arab	Jews
Decile 1 - most risky	0.199*** (0.0256)	-0.707*** (0.0119)	-0.127*** (0.0281)	-0.837*** (0.0128)	-0.329*** (0.0287)	-0.792*** (0.0128)
Decile 2	0.555*** (0.0234)	-0.190*** (0.00944)	0.405*** (0.0240)	-0.262*** (0.00978)	0.315*** (0.0242)	-0.237*** (0.00981)
Decile 3	0.586*** (0.0226)	0.182*** (0.00834)	0.469*** (0.0231)	0.140*** (0.00848)	0.421*** (0.0232)	0.153*** (0.00850)
Decile 4	0.481*** (0.0223)	0.305*** (0.00793)	0.405*** (0.0228)	0.282*** (0.00798)	0.379*** (0.0229)	0.289*** (0.00798)
Decile 6	-0.757*** (0.0283)	-0.439*** (0.00902)	-0.656*** (0.0286)	-0.416*** (0.00906)	-0.684*** (0.0291)	-0.425*** (0.00906)
Decile 7	-1.694*** (0.0369)	-0.914*** (0.00992)	-1.529*** (0.0373)	-0.872*** (0.0100)	-1.454*** (0.0376)	-0.900*** (0.0101)
Decile 8	-2.697*** (0.0540)	-1.419*** (0.0119)	-2.495*** (0.0544)	-1.356*** (0.0121)	-2.370*** (0.0546)	-1.395*** (0.0122)
Decile 9	-3.828*** (0.0791)	-1.986*** (0.0138)	-3.549*** (0.0795)	-1.899*** (0.0141)	-3.372*** (0.0797)	-1.947*** (0.0142)
Decile 10 - least risky	-5.462*** (0.140)	-3.102*** (0.0202)	-5.191*** (0.141)	-2.980*** (0.0206)	-4.976*** (0.141)	-3.028*** (0.0206)
Expected monthly salary			-0.0628*** (0.00171)	0.0203*** (0.000764)	-0.0156*** (0.00194)	0.00380*** (0.000798)
Expected employability			0.723*** (0.00804)	-0.00898*** (0.00327)	0.428*** (0.00923)	0.101*** (0.00369)
Share of Arabs					2.737*** (0.0467)	-2.140*** (0.0310)
Observations	779,652	5,465,296	779,652	5,465,296	779,652	5,465,296
Number of groups	20,846	146,579	20,846	146,579	20,846	146,579

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 2: The Admission Likelihood of First Choice Applications by Ethnicity, Full and Matched-pairs Samples, Odds Ratio, Israeli Elite Universities, 1999-2008**

	A: Full sample			B: Matched-pairs sample		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>All applications</b>						
Arab	0.267***	0.288***	0.333***	0.538***	0.531***	0.608***
Controls:						
Acad. composite score (pct)		yes	yes		yes	yes
Matriculation GPA			yes			yes
Psychometric test score			yes			yes
N person-major	262,862	262,862	262,862	170,143	170,143	170,143

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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