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Research Statement

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I am an economist of higher education with broad theoretical and empirical interests centering on understanding and improving public policy to increase readiness, access, choice, match, and success in higher education to reduce poverty and inequality. My research agenda tackles a fundamental question of higher education policy: ***Why do the racial, gender, and income gaps in higher education persist and rise, and how can we address this policy problem?*** A key feature of my research is the emphasis on developing an integrated, universal policy solution, particularly about optimal policy and individual decision-making, in the K-16 education pathway to advancing educational opportunities for all students.

During the past decade, through independent research and research assistant projects in the U.S. and China, I have examined both policy-level factors (supply side) and individual-level (demand side) behaviors in education and their consequences on the inequalities in college readiness, access, and success, consisting of three major interrelated policy areas: (1) gender, racial, and socioeconomic gaps in college access and choice, (2) impacts of K-12 and higher education finance, policy, and reform, and (3) data-based behavioral interventions to improve college readiness, access, and success. In the immediate future, I will continue using theories in the economics of higher education (and other related disciplines) and quantitative research methods (experimental, quasi-experimental, big-data) to address critical policy problems in higher education locally, nationally, and globally.

1 College access and choice

My first research area studies student decision-making behavior in K-12 and higher education, and its impacts on the racial and income gaps in college access and choice. Education reforms provide opportunities for disadvantaged kids; however, they need to make their optimal decisions to benefit from the opportunities. College choice is complicated. Underrepresented minority, low-income, and other disadvantaged students often lack sufficient information, guidance, and support to make appropriate decisions when they prepare, apply, enroll, and ultimately succeed in college. The prevalence of behavioral barriers in educational decisions is likely one key driver of the large unequal college-going gaps. For example, my early work finds that underrepresented minority students are more responsive to institutional financial aid, which may lead them to enroll at academically undermatched colleges. I have examined the long-term college-going impacts of elite school choice [1] and middle school transition [2], the socioeconomic gaps in college choice [3] [4] [5], and the dynamic effects of high school coursetaking on college outcomes with a particular focus on racial gaps in the policy effect heterogeneity in requiring students to take advanced courses [6] [7] [8].

College access and choice will continue to be one of my primary research and teaching interests. In the immediate future, I will be exploring two strands in this area. First, I am working with collaborators to identify the racial and socioeconomic gaps and associated behavioral barriers in college access and choice, using administrative data from a number of U.S. and Chinese states, as well as large-scale survey data

in other countries. Notably, I am currently working as a Postdoctoral Researcher examining a series of important K-12 and higher education reforms on college access and choice in the New Haven Public Schools, Connecticut. Second, I am using both behavioral interventions (as will be discussed below) and big data methods (e.g., [9]) to design and examine how we could best help students make optimal decisions (e.g., high school coursetaking, college-major choice, post-college labor market decisions) in their K-16 education pathway and reduce the inequality of college readiness, access and success.

2 K-12 and higher education finance, policy, and reform

The second focus area of my research is to evaluate the impacts of system-level factors (e.g., finance, policy, reform) on college-going outcomes. I am interested in studying the causal effects of large-scale education policies on learning outcomes, as well as the underlying mechanisms why a policy may work or fail. Being one of the very few researchers with the access to unique administrative and survey data from the Chinese Central Government, I have studied some of the most important national and local education policies of the past two decades, including college enrollment expansion [10], college admission mechanism reforms [3] [11], K-12 school finance reform [12] [13], rural school closure [14], and teacher performance pay [15]. I summarized my findings in the Policy Around the World Series Lecture at Michigan's Ford School of Public Policy in 2018 about why most of the education policies fail in China: the contradiction between central planning and local knowledge in policy design and the accountability structure of economic and political concerns for local governments undermine the potential policy effectiveness. For this reason, marginalized populations particularly do not benefit from most of the policy interventions. For example, the national college admissions reforms improve the college access and match for high-income students, but substantially enlarge the racial and socioeconomic gaps in college-going. Those projects would provide important policy implications to the K-12 and higher education reforms all over the world.

My research projects on U.S. education policies provide more encouraging findings. On average, students benefit from fewer school transitions (e.g., as a result of K-8 charter school attendance) [2] and more rigorous math and science courses in high school [6] [7] [8]. From the policy-relevant perspective, my coauthors and I have been developing new empirical methods to study the socioeconomic and racial gaps in the potential policy benefits and the unintended consequences. Through research assistantships, I also have intensive end-to-end research experience with many critical U.S. education policy topics, such as college financial aid, curriculum reform, online virtual learning, charter school, and teacher policy.

These projects have clear policy implications for us to better design and implement education policies to reduce the inequality of college-going. I draw broadly and deeply from theories in the economics of higher education and other related disciplines, local and global contexts, and cutting-edge quantitative methods. Both the U.S. and China, as well as many countries worldwide, are experiencing a variety of large-scale reforms in K-12 and higher education. I will continue my research focus on assessing how these education programs and policies would work for at-risk youth in their readiness, access, and success in higher education. I am particularly interested in collaborating with researchers, practitioners, and in conjunction with governments in the design and implementation of education reforms (e.g., [16] [17]).

3 Behavioral economics and data science in higher education policy

Building on the first two areas, I am bringing in the emerging field of behavioral economics to study policies and interventions for better decision-making in college access, choice, and success. Many education policies do not reach their desired goals because of the suboptimal behaviors in policies, schools, and individual decisions. Minority, low-income, and other underserved students are more likely to make these suboptimal behaviors. My research focuses on developing scalable policy interventions in education by leveraging behavioral economics, field experiments, data science, and deep research-practice partnerships.

An important line of my research on this topic is to explore effective solutions to improve college access and choice for minority and low-income students. College undermatch is pervasive worldwide, but we still lack a unified, scalable solution. My dissertation project proposes school-based solutions by leveraging behavioral interventions, data science, and school organizational policies. Comparing the effectiveness of conventional human instruction (accompanied with school personnel policies) and big-data based machine learning methods, I have been conducting a series of large-scale field experiments of a college-going advising program serving about half million high school graduates in the poorest areas in China.

My job market paper **"Human instruction vs. machine learning: Experimental evidence on improving college access and match at scale"** [16] and the companion paper [18] synthesize my research interests (and skills) in studying both system-level and individual- level behaviors in educational decision-making. This comprehensive research is indicative of how I search for innovative, evidence-based solutions for important education policy questions. The third chapter of my dissertation studies the cognition bias of Muslim students in understanding the negative consequences of Ramadan fasting on their college entrance exam performance [19]. This paper provides the first field experimental evidence on that how motivated beliefs distort high-stakes behaviors and undermine the effectiveness of informational interventions. I am currently working on a series of follow-up questions in college choice, including identifying optimal college choice using artificial intelligence [9], decisions on retaking the entrance exam [20], choice of teacher education [21], and increasing education program take-up [22].

4 Summary and future work

To summarize, I have been pursuing research and policy analysis at the frontier of the economics of higher education for more than ten years, with a committed career goal of developing effective policy interventions to close the racial and socioeconomic gaps in the K-16 education pathway. Poverty and inequality are among the most complex development problems all over the world. I take a comparative, global approach - beginning with the world's two most important countries (the U.S. and China) and now expanding in other countries - to provide rigorous and innovative evidence-based solutions to understanding and addressing the barriers facing the members of groups who have been historically underrepresented in U.S. and international higher education.

Rigorous education policy research requires substantial investment in understanding the context, collecting data, formulating policy designs both theoretically and empirically, and evaluating the policy

impacts. After many years of hard work, I am starting to see the payoff come to fruition. I have more than 15 working papers, all of which have been presented at top conferences. Several papers are currently under review at leading economics and higher education journals. My research has been generously supported by numerous competitive research grants, including the National Academy of Education/Spencer Dissertation Fellowship, AEFP New Scholar Award, J-PAL, and the China Natural Science Foundation Grants.

Going forward, I will continue my work on all the three main lines as discussed above, with a particular focus on behavioral interventions with high potential for large-scale policy reform and for improving both institutional and individual behaviors in education. I am interested in understanding why the underrepresented groups in higher education (e.g., racial minorities, female, low-income students) make sub-optimal or "irrational" (to the conventional human capital theory) choices in their K-12 to higher education pathways and how we can improve their decision-making. I will combine three research strands: (1) theory - integrating behavioral economics and other related disciplines (e.g., political science, psychology, sociology) to the classic college choice model; (2) methods - using randomized controlled trials to understand student behaviors; and (3) empirics - generating (international) comparative evidence using longitudinal administrative data from a number of U.S. and Chinese states, and large-scale international survey data.

My career has been largely driven by the possibility of making meaningful impacts on higher education theory, policy, and practice. I look forward to collaborating with the top-tier colleagues in the LPO department, the Peabody College, and Vanderbilt University, as well as with educational leaders and policymakers to contribute to the policy practice of advancing equitable opportunities in higher education for disadvantaged students locally and globally.

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