Comparative Analysis of Undergraduate Student Attrition in US and Russian Universities

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Is non-completion of university a problem?

- College dropouts, on average,
  - earn less over the lifetime than college graduates,
  - achieve lower occupational success,
  - and can experience long-term psychological distress, self-esteem issues.

- Individual loss of economic opportunities translates in lower contributions to the national GDP and lower stock of human capital in the country, which in turn translates into a broader set of social problems.

Is non-completion of university a problem?

Russia

- Attrition rate – 22% (OECD, 2010)
- Low interest in college dropouts among policymakers
- High attrition is a sign of higher quality of educational process in universities
- Student departure is viewed as a natural selection process
- Changes in university funding formula – shift towards accounting for non-completion

US

- Attrition rate – 43% (OECD, 2010)
- Increasing graduation rates is a high-priority national goal
- Projected shortage of workers with a higher education degree (Carnevale, Smith and Strohl, 2010)
- Bad reputation and financial losses to universities with high attrition rates.

Purpose

- Address the question of student attrition in the context of US and Russia
- Compare the factors that influence student attrition in public universities in Ohio and two public universities in Russia
- Identify similarities and differences in departure trajectories within US and Russia's higher education systems

Theoretical focus

- Academic Momentum (Adelman, 1999, 2006):
  - the pace at which undergraduate students initially advance through their studies has an impact on the probability of completing the degree.

- Attewell, Heil and Reisell (2012) – empirically test Adelman's idea of academic momentum:
  - delay between high school and college
  - part- versus full-time enrollment in the first semester (i.e. enrollment in lower number of credits)
  - enrollment in high number of credits in the first semester
  - taking summer classes after the freshman year.

Measure of academic momentum

Russian universities

- Delayed enrollment in college
- Failed at least one course in the first semester
- Changes in grades between the first and second semesters

Ohio universities

- Delayed enrollment in college
- Number of credits attempted in the first term
- Enrollment in at least one developmental course in the first term
- Reporting a major at the time of enrollment
- First-term GPA
- Changes in grades between the first and second terms

Sample

Russian universities

- 2 public universities (main campuses): Moscow university and regional technical university
- Cohort of 2009
- Full-time first-time undergraduate traditional-age (16-24 years old) students
- N = 6,378 students

Ohio universities

- 8 four-year public universities with selective admission policies (main campuses)
- Cohort of 2007
- Full-time first-time undergraduate traditional-age (18-24 years old) students
- At the time of enrollment were enrolled in one institution
- N = 25,339 students

Method

- Discrete-time event history analysis

$$Logit\ h(t_{ij}) = \alpha_0 + [\alpha_1 D_1 + \alpha_2 D_2 + \cdots + \alpha_J D_J] +$$

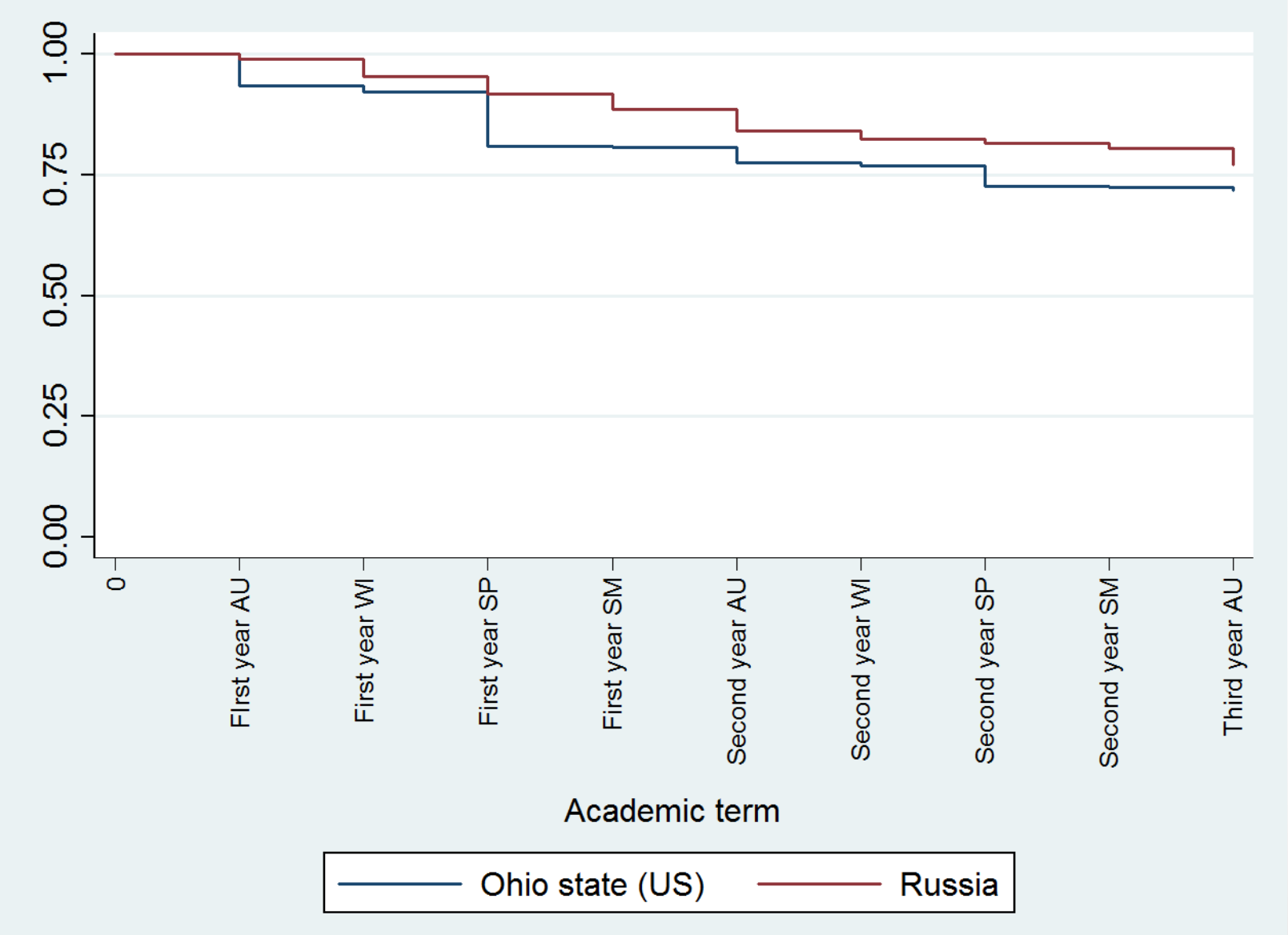
$$[\beta_1 X_{1ij} + \beta_2 X_{2ij} + \cdots + \beta_P X_{Pij}]$$

- $(\alpha_0 + \boldsymbol{D}\alpha_i)$ represents the baseline hazard function, where D's are dummy variables for time intervals
- The covariates $\boldsymbol{X}$ can be time-invariant and time-varying
- Observation period is 2.5 years

Dependent variable

- Dependent variable = 1 if a student departed from the first institution of enrollment, 0 otherwise:
  - In Russia's administrative records the date of student departure is registered with precision.
  - In Ohio's model, we consider that a student discontinues enrollment if he or she is not enrolled in the institution for more than a year and one academic term.

Survival rate in Ohio and Russian universities during 2.5 years observation period



Descriptive statistics – control variables

	Universities in Ohio (N=25,339)	Universities in Russia (N=6,378)
Variable	Weighted mean	Weighted mean
Age at the time of enrollment	18.45	17.06
Female	0.53	0.47
White	0.84	-
African-American	0.09	-
Lived in university housing	0.80	0.28
Engineering	0.11	0.39
Natural Science and Mathematics	0.11	
Social and Behavioral Sciences	0.10	-
Humanities and Social Sciences	-	0.18
Economics and Government	-	0.40
Received a need-based grant	0.31	-
Received a merit-based grant	0.50	-
Study is subsidized (merit- or need-based)	-	0.54

Regression results – academic momentum

	Universities in Ohio (N=25,339)	Universities in Russia (N=6,378)
Variable	Odds ratio	Odds Ratio
Delayed enrollment in college	1.14	1.46***
Took at least one developmental course	1.15***	-
Attempted credits	0.97***	-
No major reported (reference group is Social and Behavioral Sciences)	1.01	-
Failed 1 course in the first term	-	1.87***
Failed 2 courses in the first term	-	3.05***
Failed 3 or more courses in the first term	-	7.64***
First-term cumulative GPA	0.41***	-
Grade improved between first and second terms	0.47***	0.35***
Grade remained unchanged between first and second terms	1.29***	0.65***

Conclusions

- Most departures happen at end of first year of study (student do not return to university by the beginning of second year)
- Similar signs and magnitudes of “academic momentum” coefficients
- A few overlapping academic momentum measures – students’ freedom to choose their college path, flexibility/inflexibility in college curricula

Implications

1. Russia's higher education system needs greater flexibility (academic major selection, selection of electives, transfer between institutions and departments)
2. Need for improvements in information and data management in Russian universities
3. Greater attention to intermediate outcome measures (monitoring student performance early in undergraduate studies, early "alert" systems)
4. Academic resources to first-year students in Russia and US (university-wide learning centers, departmental support, teaching assistants)

Thank you.