Characteristics and Employment of Applicants for Social Security Disability Insurance Over the Business Cycle

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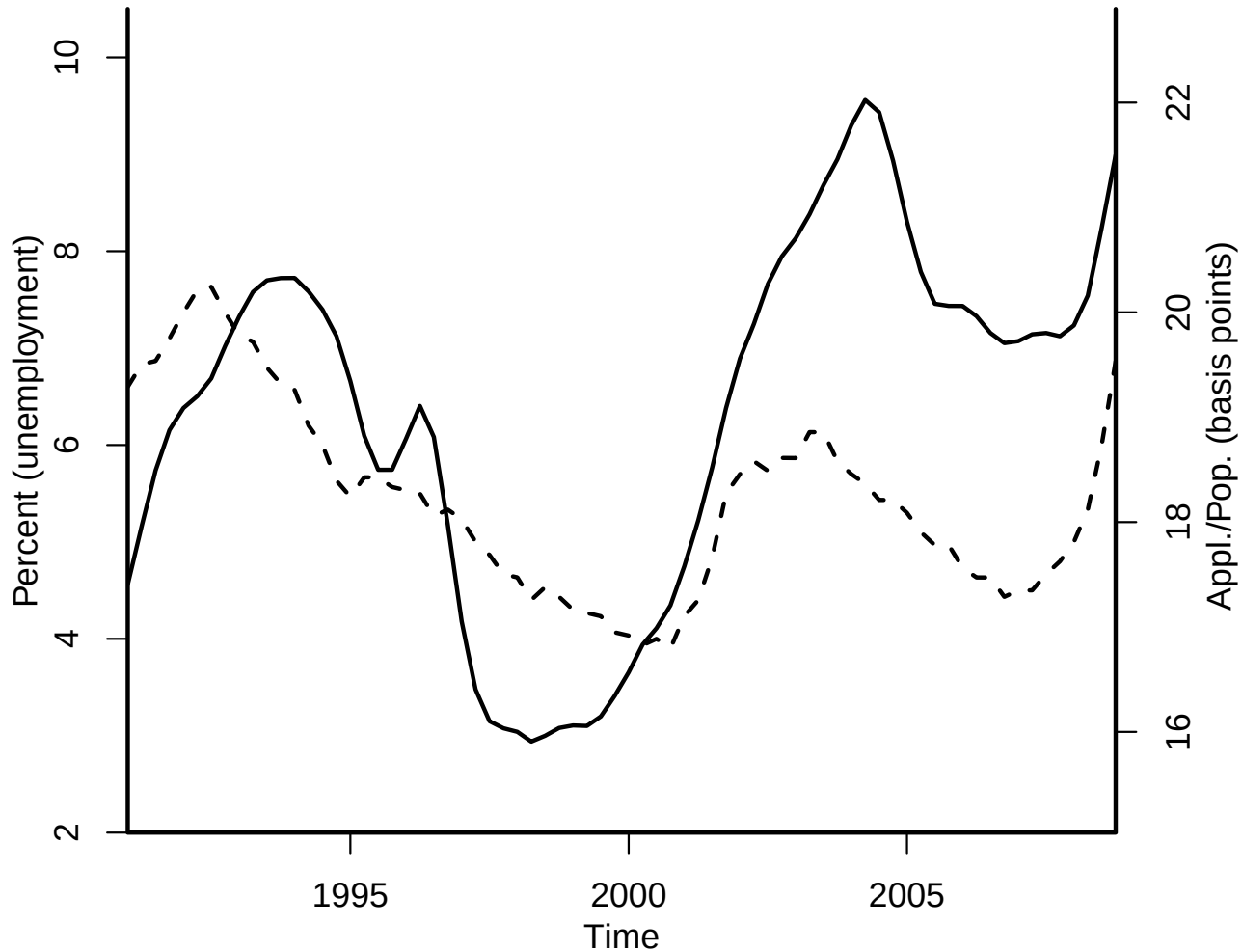
Number of applications for DI and the unemployment rate, 1991-2008



Framework:

Autor and Duggan (2003):

- Applicants with severe and/or sudden diseases apply independently of economic conditions.
- Marginal or conditional applicants apply only after losing their job.
- Conditonal applicants have low mortality impairments and high labor force attachment.

Application to business cycle:

- Higher number of job losses during recessions.
- Compositional shift toward conditional applicants during recessions.

Predictions:

Characteristics	Compositional effect
Musculoskeletal (share)	+
Mental disorder (share)	+
Neoplasms (number)	0
Stage 2, 4 (share)	+
Stage 5 (share)	+
Stage 3 (number)	0
Earnings before application	+
Earnings after application	+
DI/SSI application (share)	−

Data:

- Disability Research File (DRF), 1991-2008 (22.7 million applications).
- Re-applications: application accepted if initially denied applicant successfully re-applied within five years (similar to von Wachter 2011 and Bound 1989). Disgard earnings and employment during re-application.
- Variables: demographic characteristics, application outcomes, earnings and employment, unemployment rate, population.
- Panel creation: state-quarter / state-year averages (seasonally adjusted).

Aggregate-level regressions:

Goal: estimate descriptive statistics of the population.

$$y_{st} = \beta_0 + \beta_1 ue_{st} + \eta_s + \eta_t + \eta_s \cdot t + \varepsilon_{st}$$

t: Quarter (N=3744) or year (N=936); s: state.

y_{st}: Applicants characteristics (level and log).

ue_{st}: Unemployment rate.

η_s: State fixed effects.

η_t: Year fixed effects.

$\eta_s \cdot t$: State fixed effects interacted with linear time trend.

Standard errors are clustered at state level.

Use weights to obtain representative statistcs.

Number and share of applicants for a group:

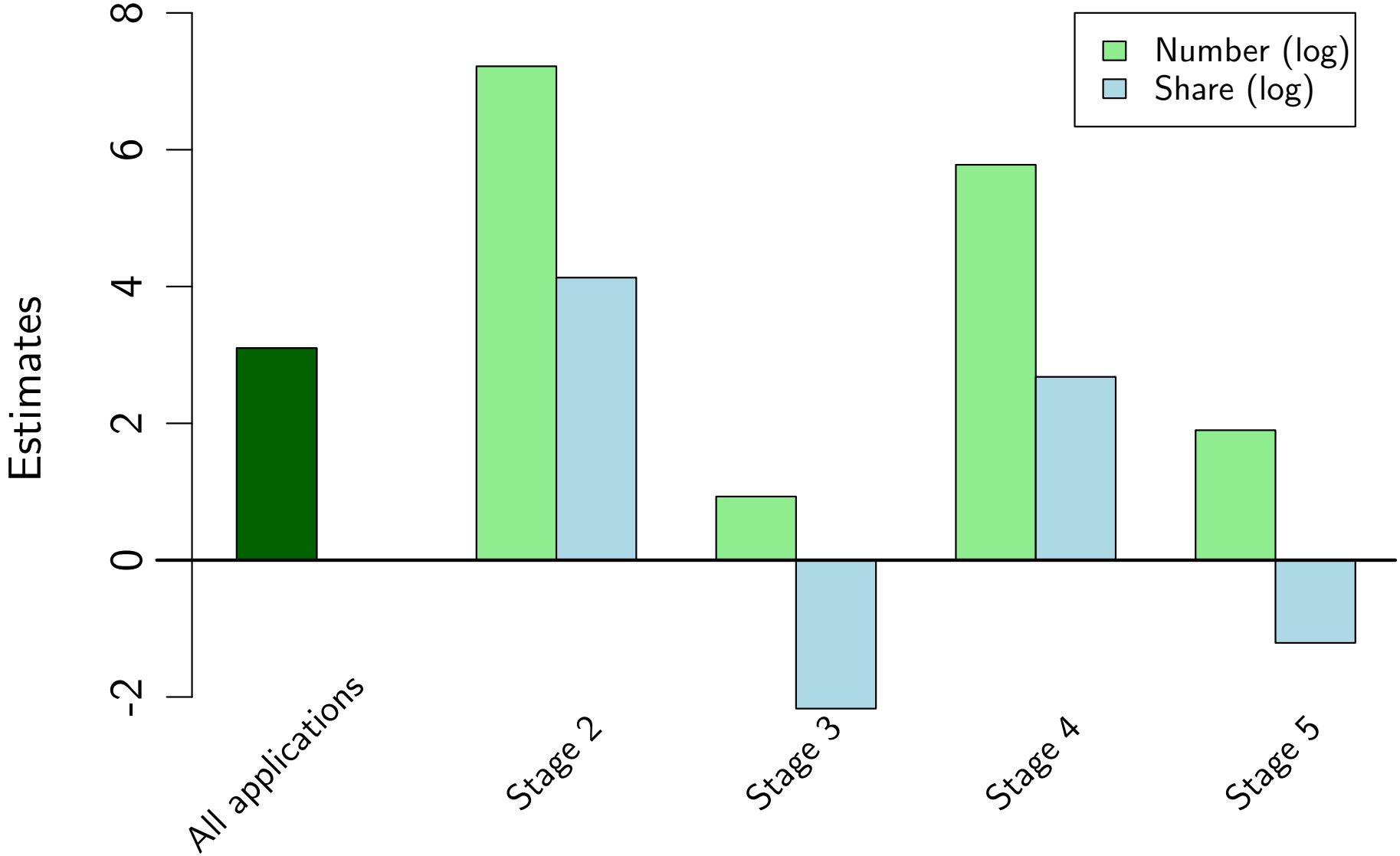
$$log(group\ share) = log\left(\frac{\#group}{\#applicants}\right)$$

$$= log(\#group) - log(\#applicants)$$

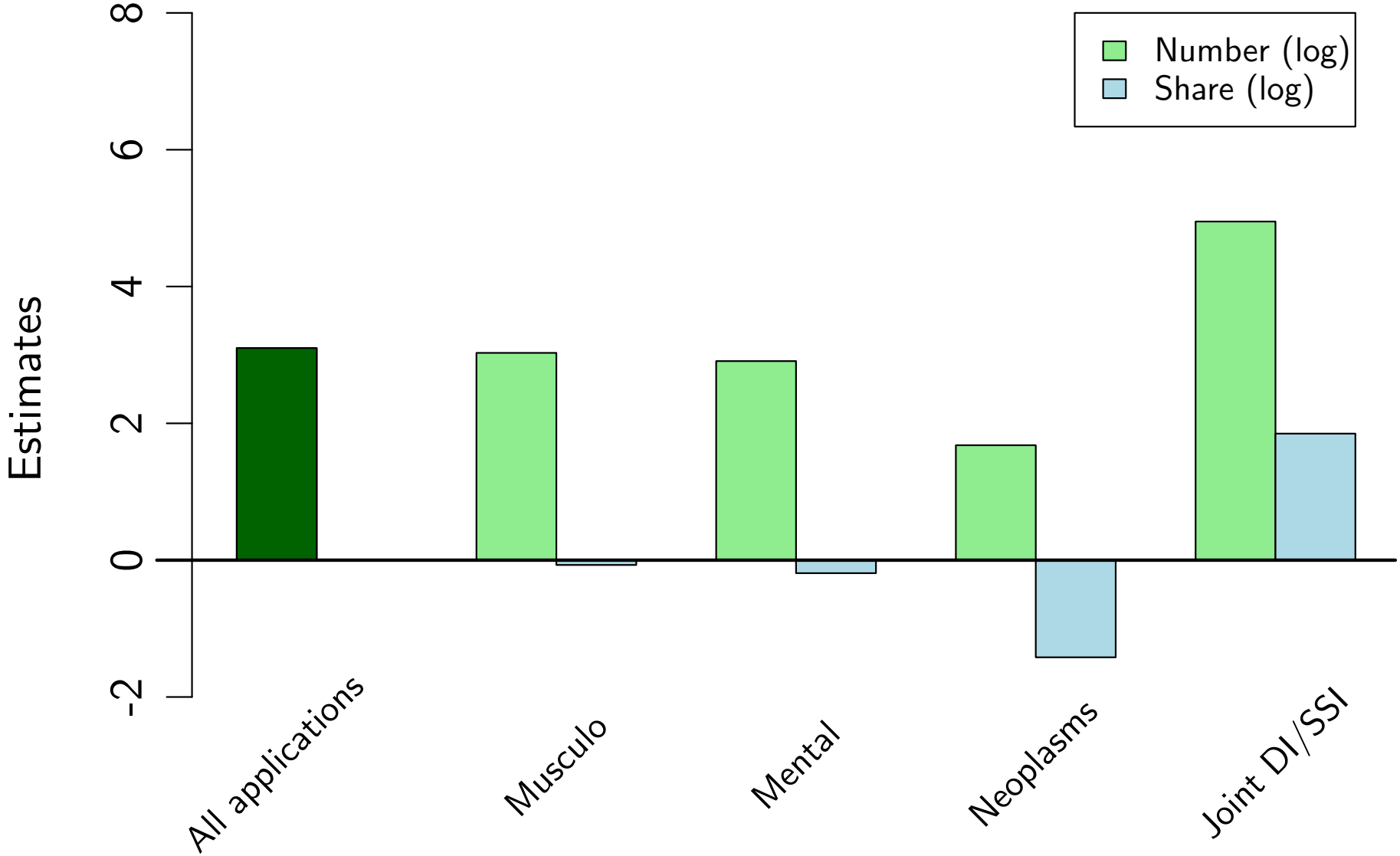
$$\Delta log(group\ share) = \Delta log(\#group) - \Delta log(\#applicants)$$

$$\frac{\Delta log(group\ share)}{\Delta ue} = \frac{\Delta log(\#group)}{\Delta ue} - \frac{\Delta log(\#applicants)}{\Delta ue}$$

Estimates of regressing the number / share of applicants (log) on the unemployment rate for selected groups



Estimates of regressing the number / share of applicants (log) on the unemployment rate for selected groups

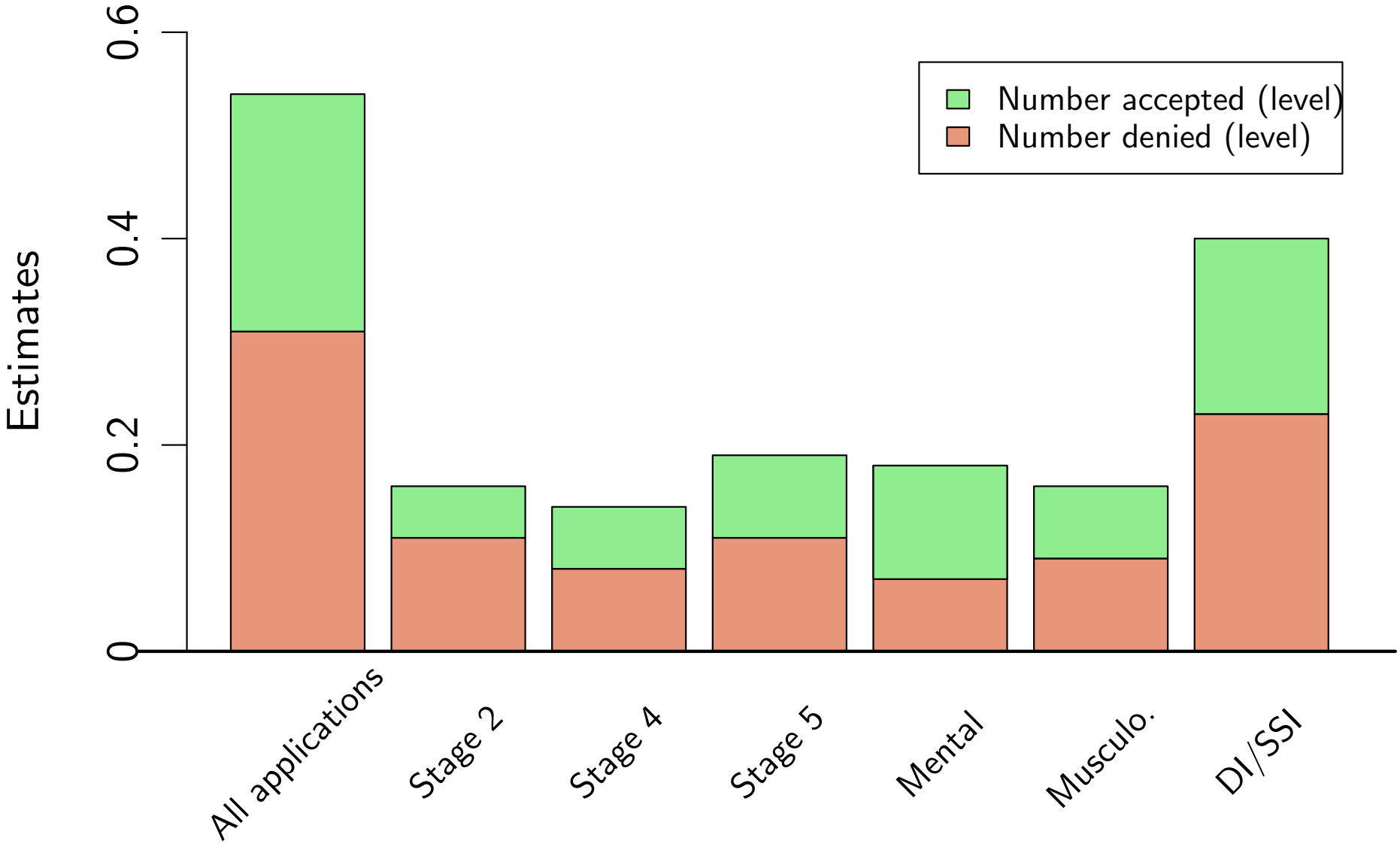


Number of all, accepted and denied applicants:

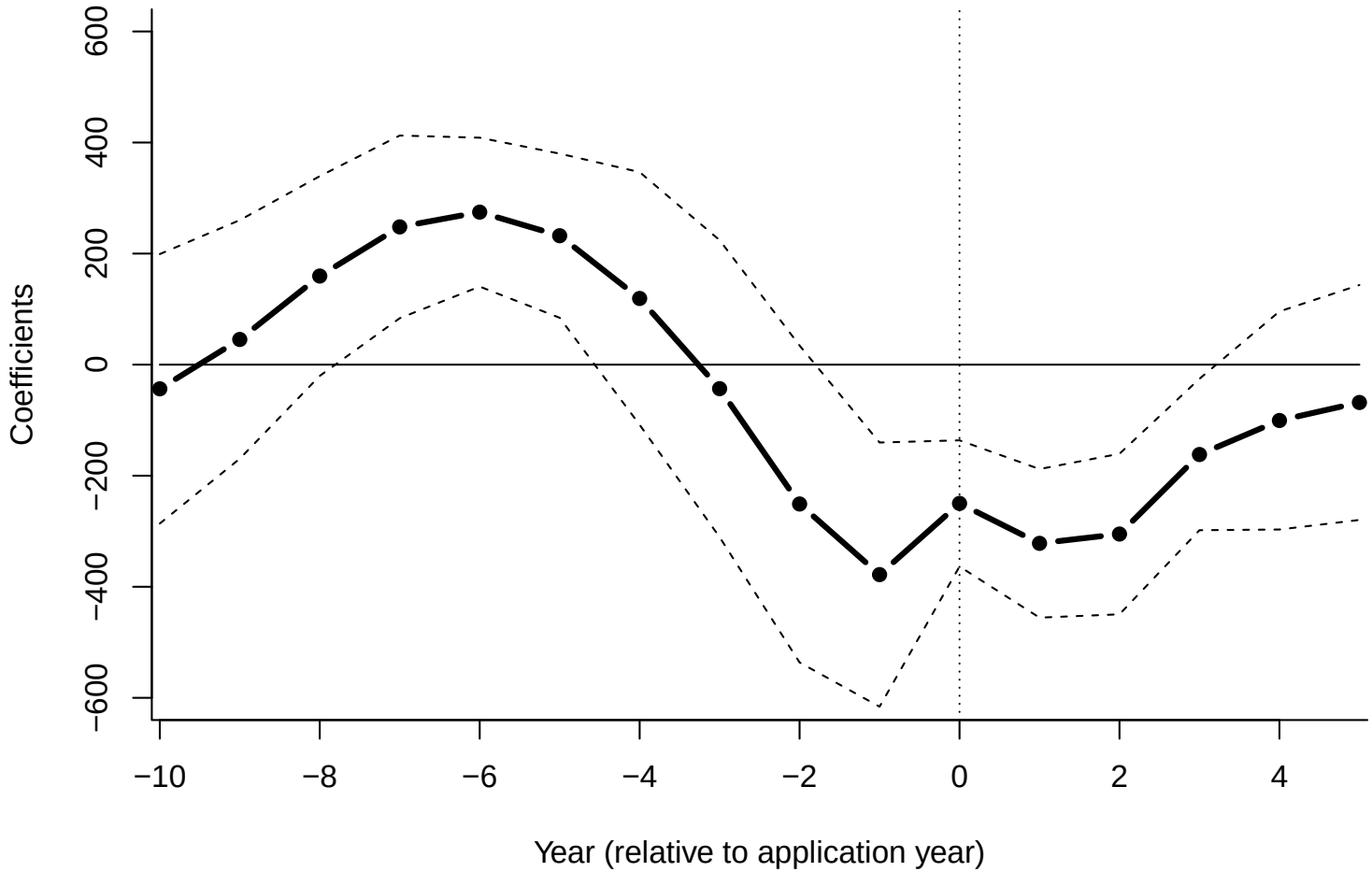
$$\#applicants = (\#accepted) + (\#denied)$$

$$\frac{\Delta \#applicants}{\Delta ue} = \frac{\Delta \#accepted}{\Delta ue} + \frac{\Delta \#denied}{\Delta ue}$$

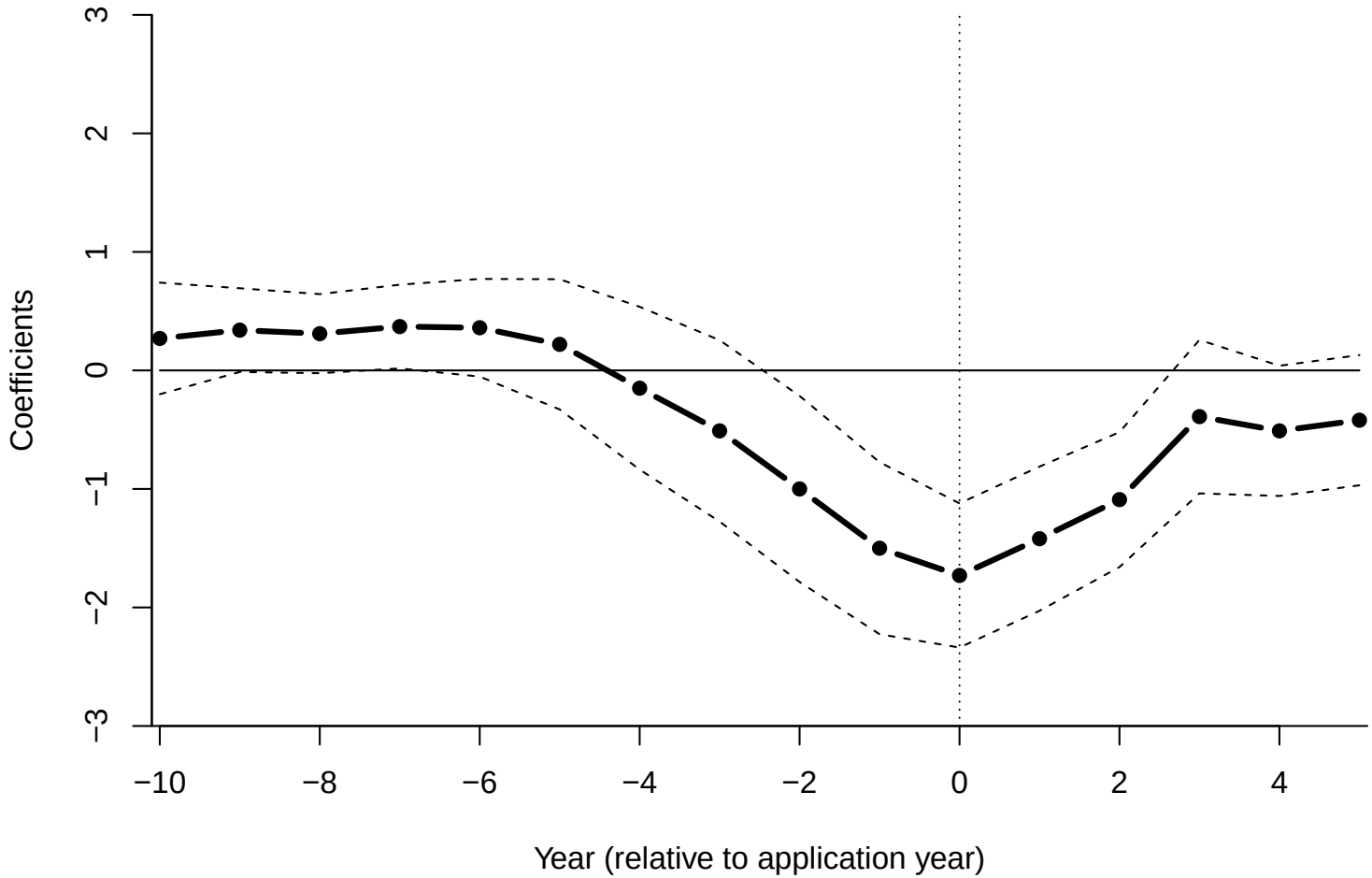
Estimates regressing the number (level) of accepted / denied applicants on the unemployment rate for selected groups



Regression results for level of earnings of denied applicants and the unemployment rate



Regression results for level of employment of denied applicants and the unemployment rate



Predictions:

Characteristics	Compositional effect
Musculoskeletal (share)	+
Mental disorder (share)	+
Neoplasms (number)	0
Stage 2, 4 (share)	+
Stage 5 (share)	+
Stage 3 (number)	0
Earnings before application	+
Earnings after application	+
DI/SSI application (share)	−

Extending the framework:

- Displaced workers suffer from severe and long-term earnings losses (e.g., Ruhm 1991; Jacobson et al. 1993).
- Earnings losses are greater during economic downturns (Davis and von Wachter 2011).
- Conditional applicants who apply and are rejected during recessions face more challenges to return to employment than conditional applicants who apply and are rejected during booms.
- This business cycle effect implies opposite predictions for post-application earnings and employment than the compositional effect.

Extending the framework:

Characteristics	Compositional effect	And business cycle effect
Musculoskeletal (share)	+	+
Mental disorder (share)	+	+
Neoplasms (number)	0	0
Stage 2, 4 (share)	+	+
Stage 5 (share)	+	+
Stage 3 (number)	0	0
Earnings before application	+	+
Earnings after application	+	+/−
DI/SSI application (share)	−	+/−

Concluding remarks:

Importance of business cycle effect:

- Decomposing earnings differences between non-recession and recession periods into compositional and business cycle effect.
- Business cycle effect in itself would double (the negative) earnings difference.

Suggestions for policy:

- DI program seems to initially reject conditional applicants that apply during recessions, but a fraction of them nonetheless ends up on the program.
- Short-term support as an effective alternative?