"Decomposing Duration Dependence in a Stopping Time Model" by Alvarez, Borovičková and Shimer

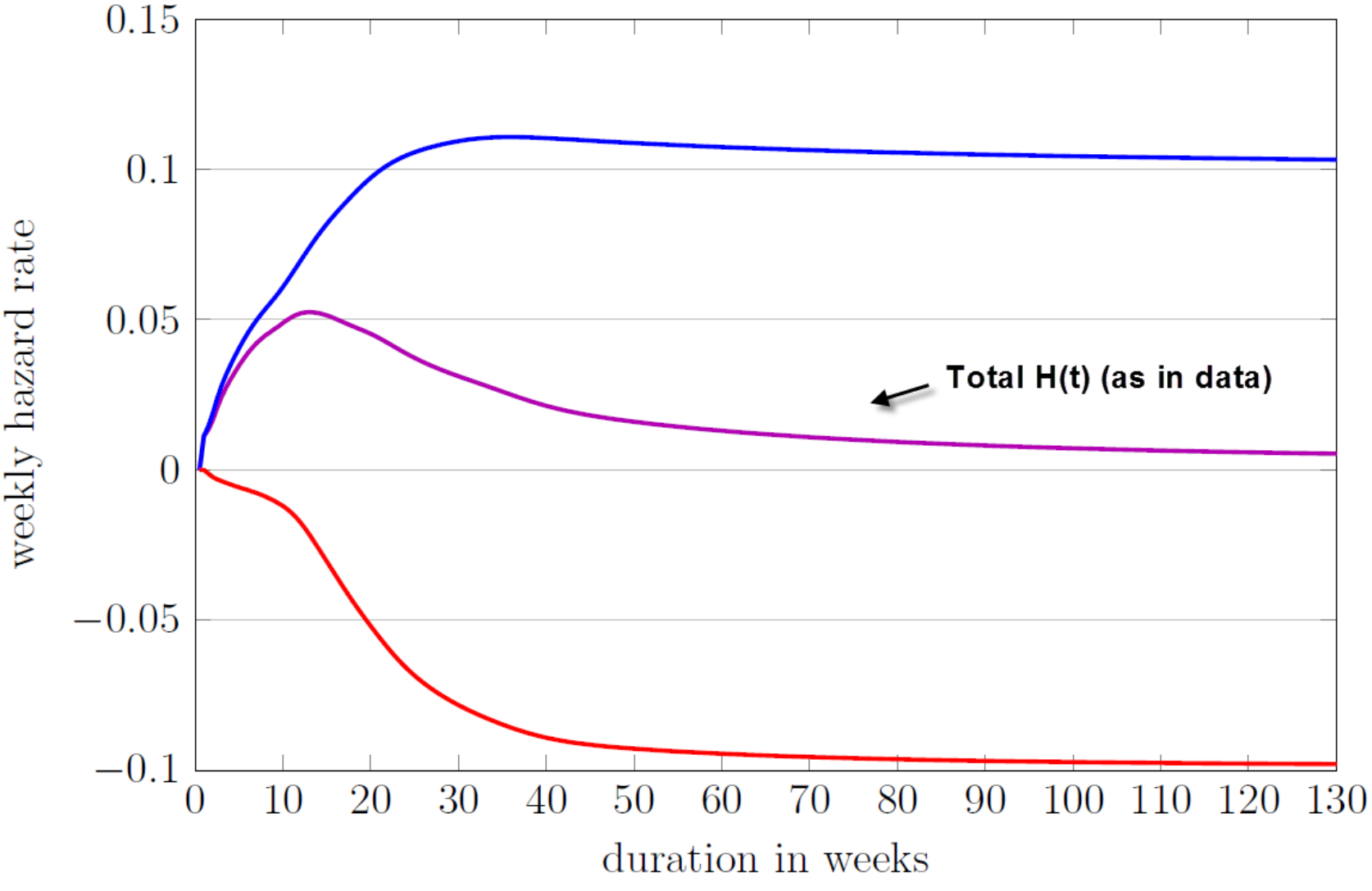
Discussant: **Andreas I. Mueller, Columbia GSB**

8th Banco de Portugal Conference on Monetary Economics
June 13, 2015

Introduction

- Main question:
  - Does the hazard of finding a job increase or decrease with the duration of unemployment?
  - Issue: Structural duration dependence vs. heterogeneity
- Main contributions of this paper:
  - A new model of transitions between unemployment and employment
  - Use of *multiple*-spell data to identify the shape and extent of structural duration dependence in job finding hazard rates

Main result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duration in weeks
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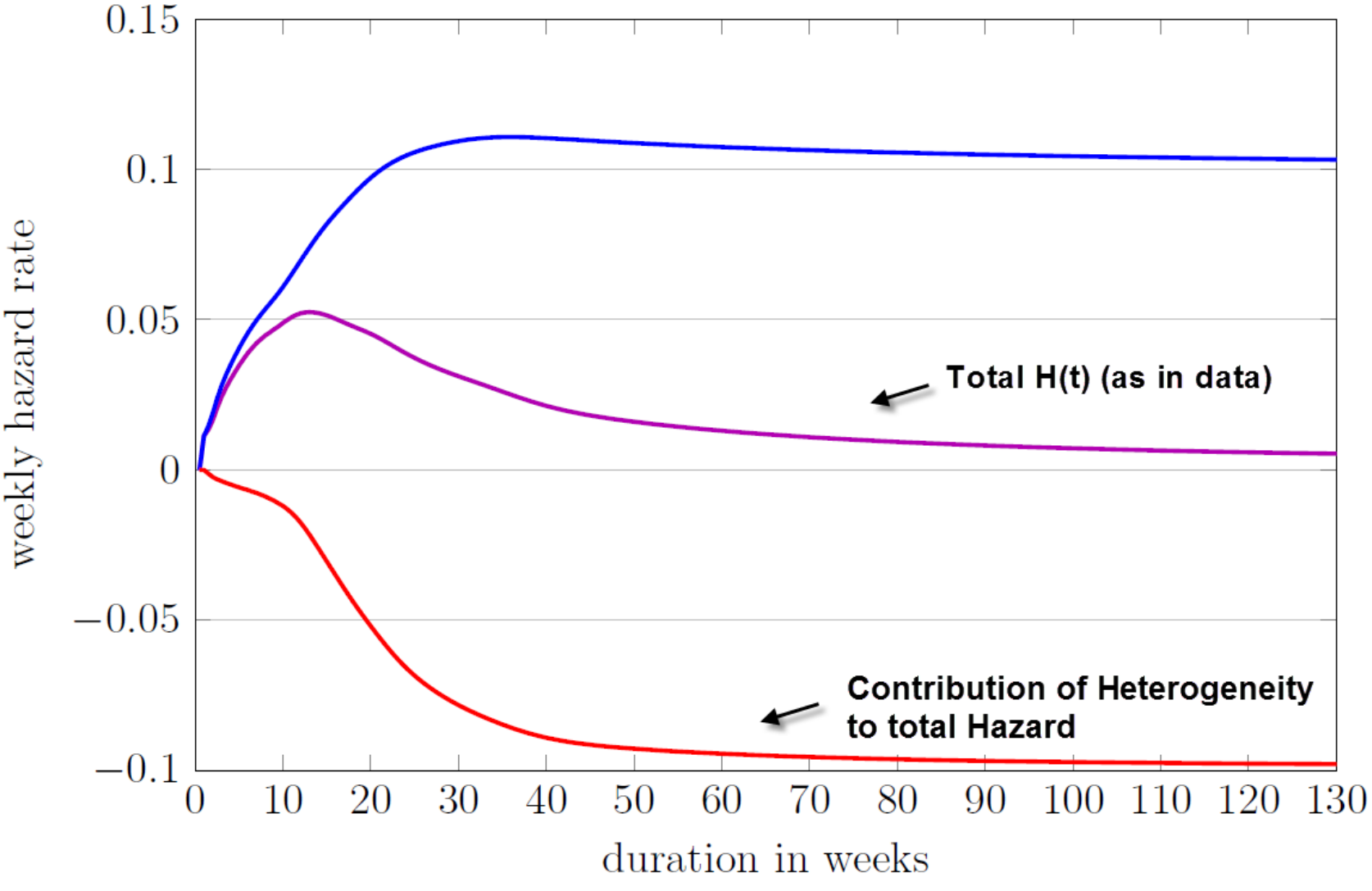
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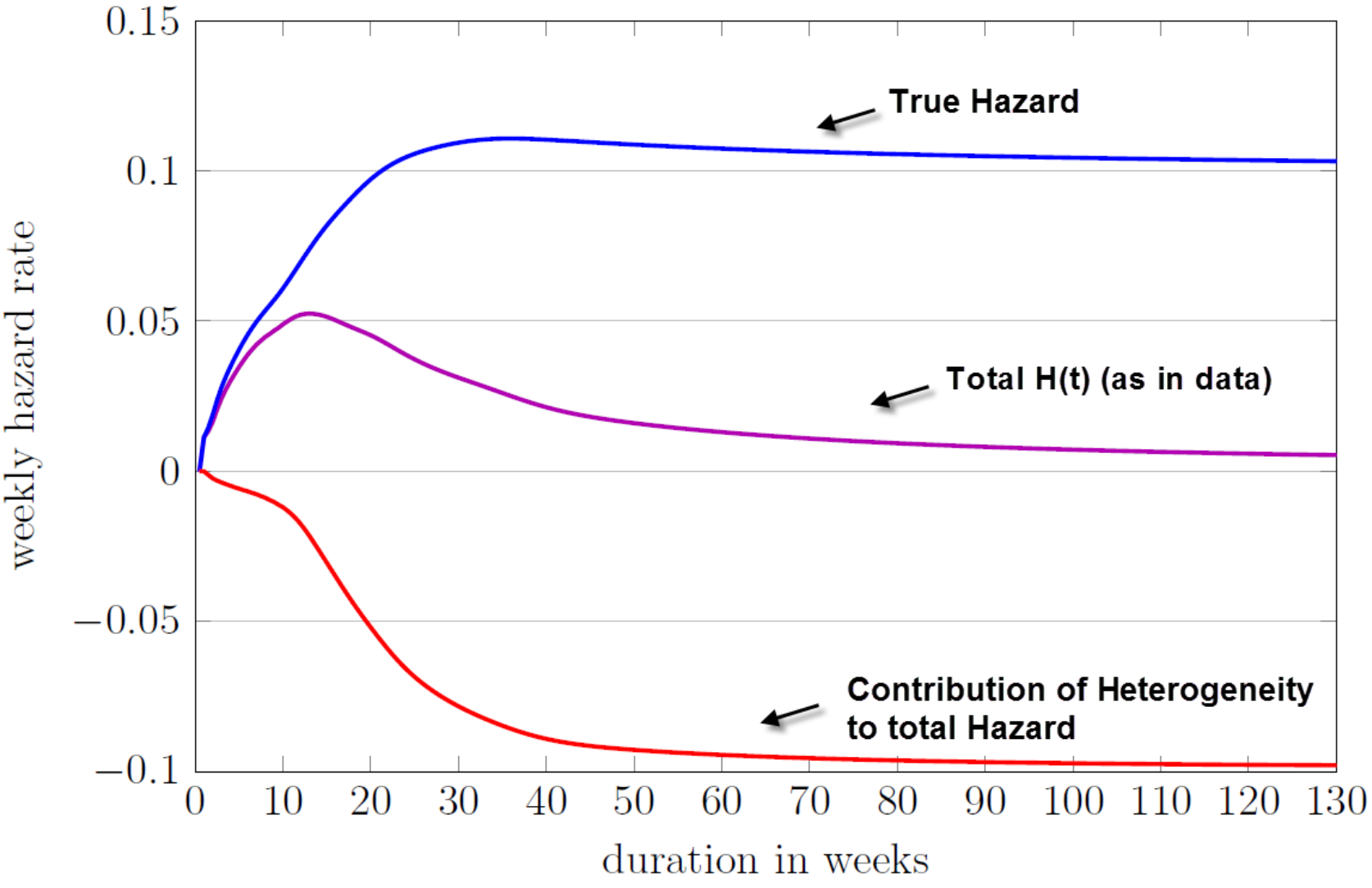
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Main points

1. How to model duration dependence?
   - The stopping time model
   - The mixed proportional hazard (MPH) model
2. Why is multiple-spell data important for identification?
3. The importance of recalls to previous employer

The stopping time model

- The authors of this paper model transitions between unemployment and employment as part of a model, where the net benefit from employment follows a Brownian motion and there are costs of switching employment status.
- The resulting shape of the hazard profile is flexible, though always starts at zero and is hump-shaped.
- Interpretations:
  1. Model of labor supply
  2. Theory of unemployment with sticky wages
- Model cannot generate data consistent with standard search model where job finding hazard is governed by matching frictions and search behavior.

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- In the MPH model, the hazard of finding a job takes the following form:

$$h(t) = h_0(t)\exp(x'\beta)v$$

where $h_0(t)$ is the baseline hazard, x are observed characteristics of the unemployed worker and v is an unobserved effect.

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The importance of multiple-spell data for identification

- Identfication with single-spell data is sensitive to distributional assumptions on v (see Heckman and Singer, 1984). The fundamental identification problem is that there is essentially only one outcome per person.
  - Honoré (1993) proofs identification with multiple-spell data in the context of the MPH model.
  - The authors of this paper show that the stopping time model is identified with multiple-spell data (except for the sign of α).
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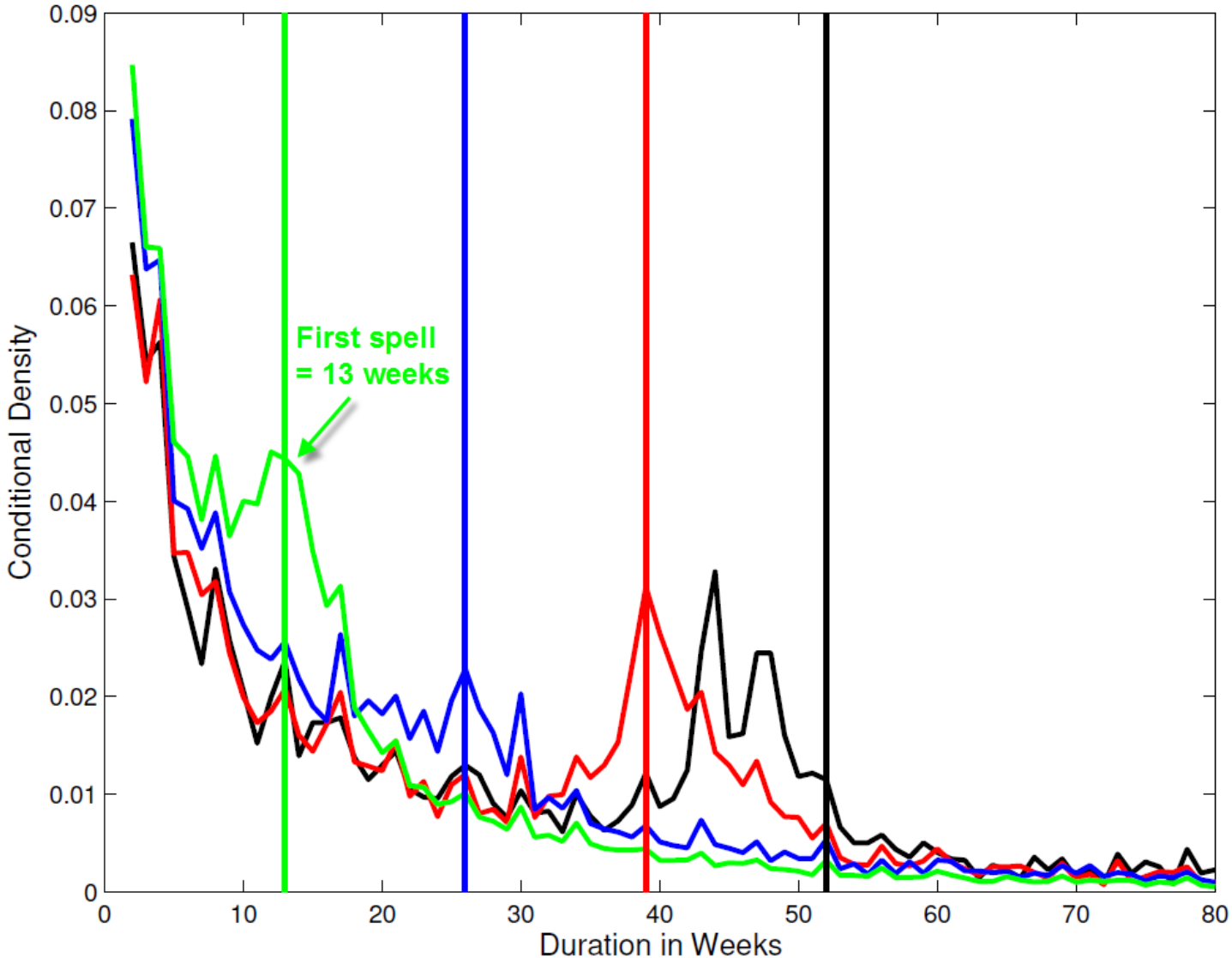
Based on work in progress with Andreas Kettemann (UZH) and Josef Zweimüller (UZH)



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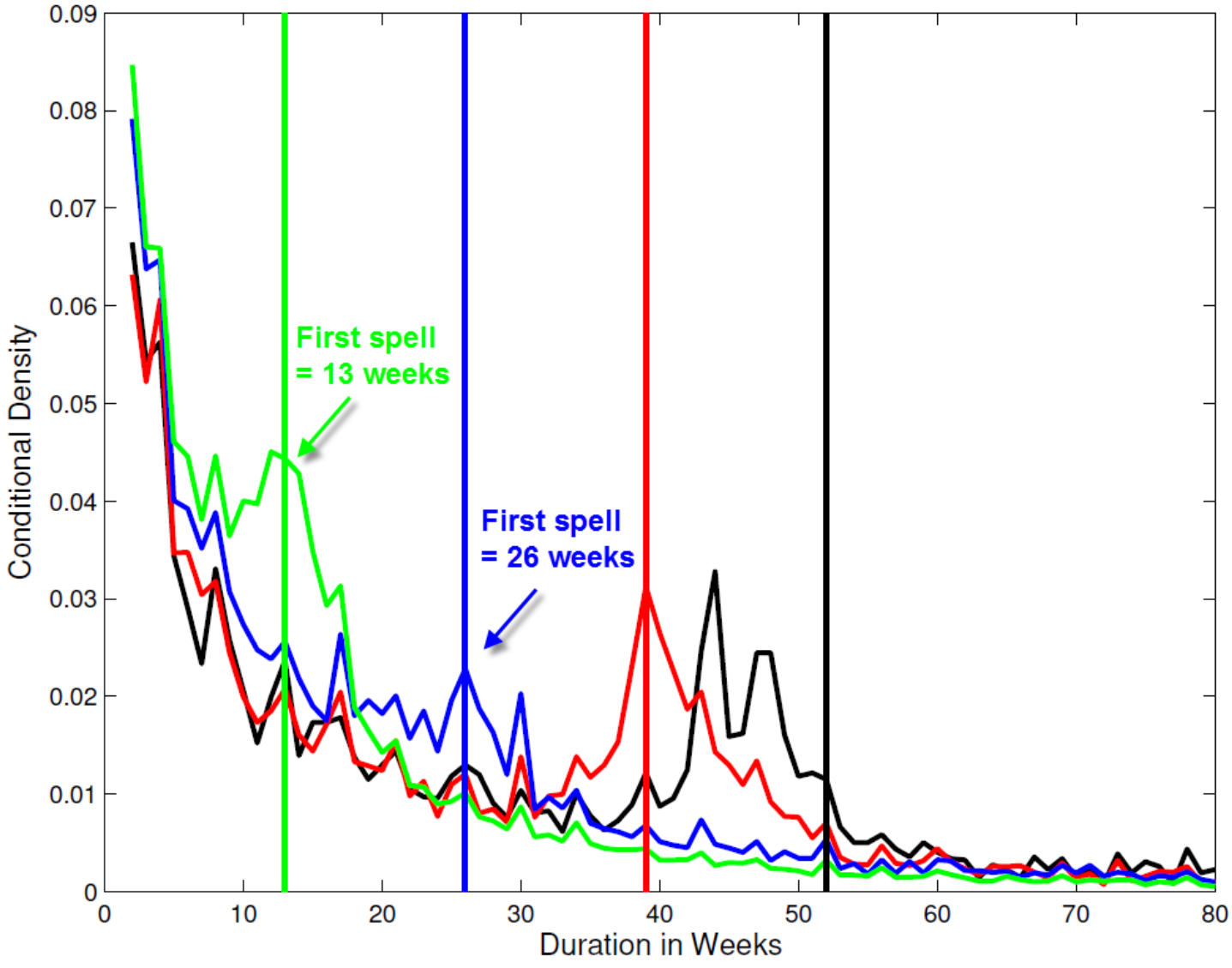

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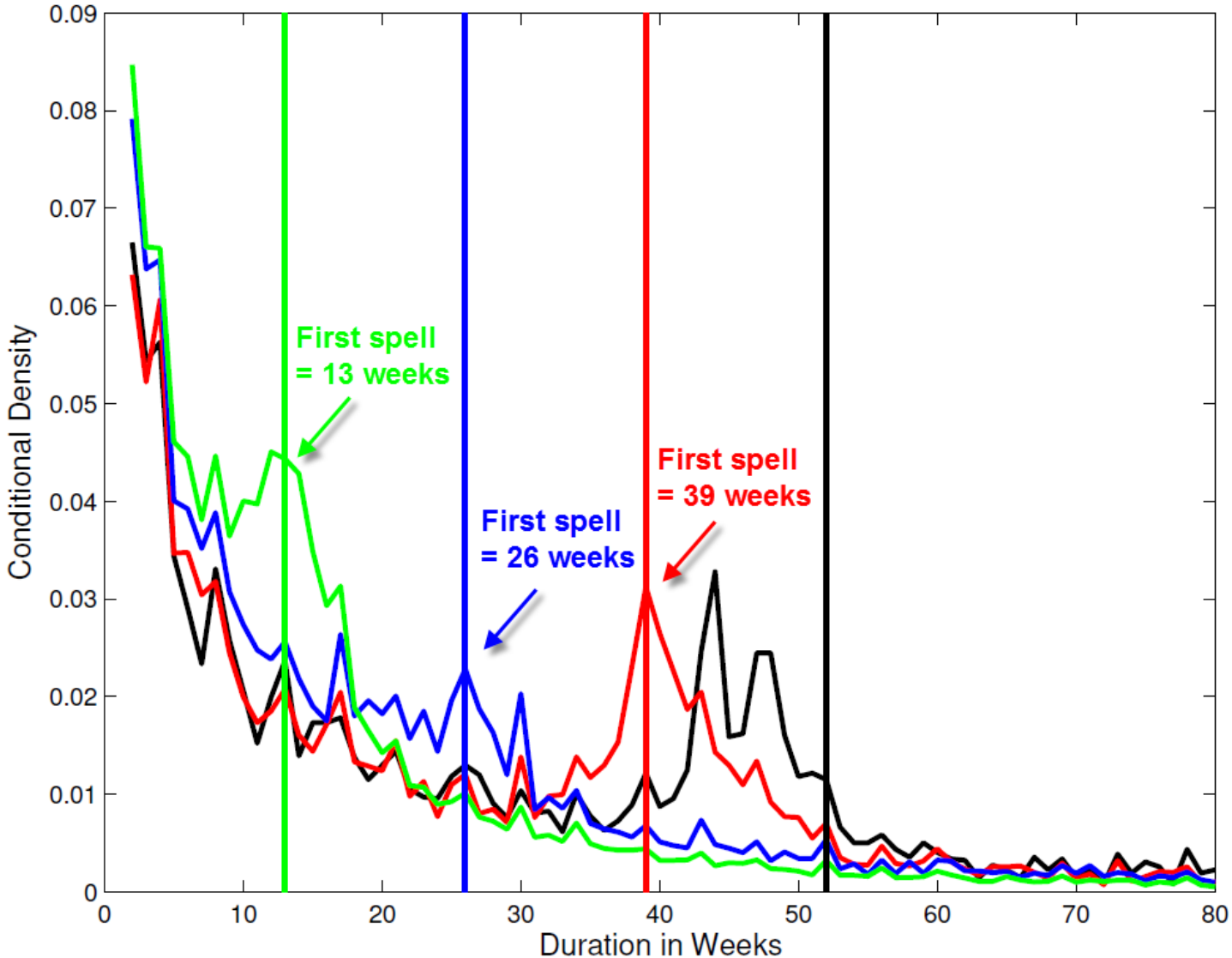

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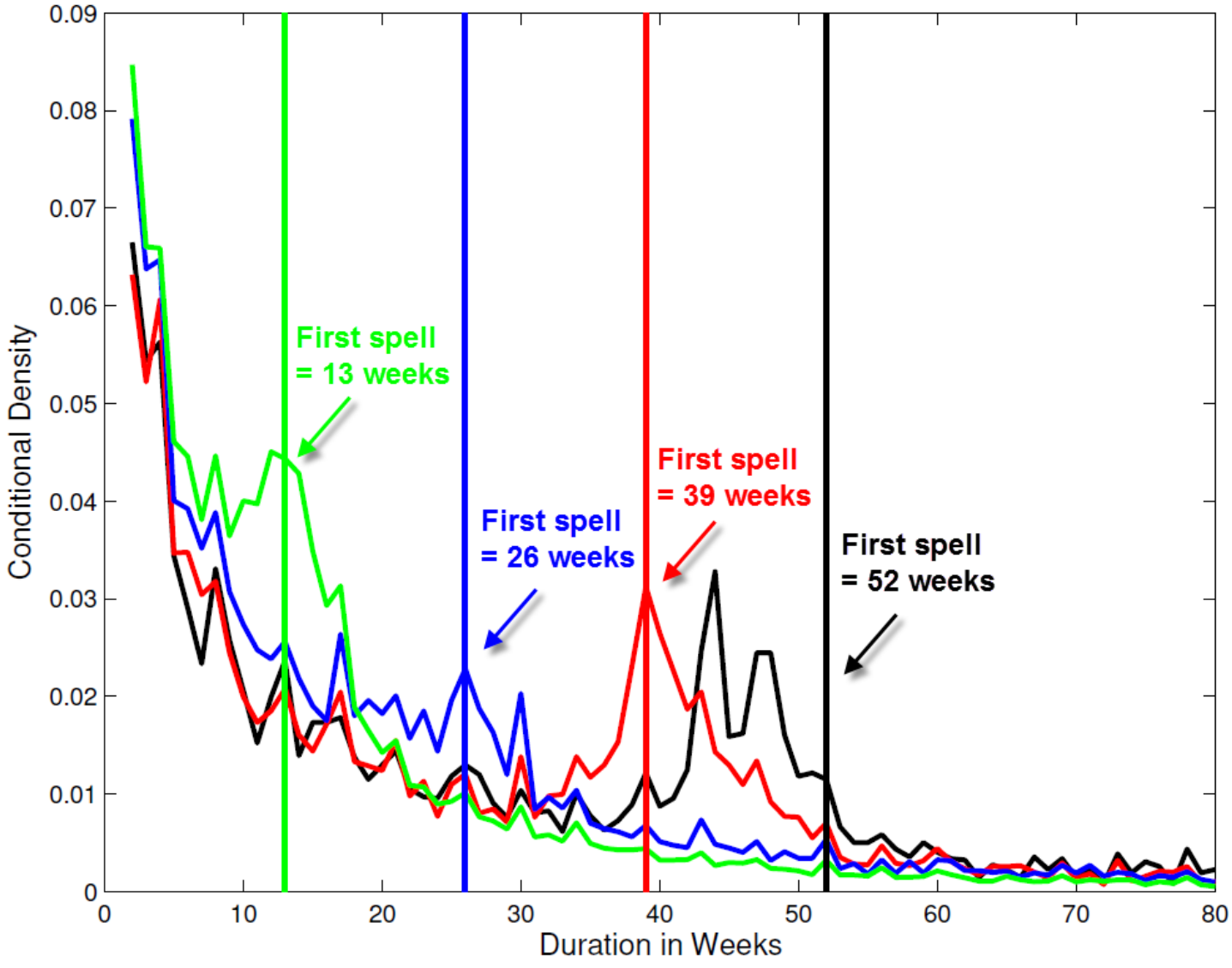

Observations on the conditional densities

- Conditional densities differ substantially.
  - Suggests important role for heterogeneity.
- Density of second spell has a peak at the duration of the first spell (but does not differ much elsewhere). Shown also as a "ridge" on the joint density in the paper.
  - The stopping time model is flexible enough to capture this feature of the data.
  - The MPH model cannot generate conditional densities with peak at duration of first spell. In case of $h_0(t) = h_0$, the conditional densities should be declining smoothly and cross at some point.

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Interpretations of the main finding

- What is the economic mechanism underlying the positive structural duration dependence?
  - The model does not tell us whether the benefit of working (w) or the benefit of not working (b) is the main source of variation in the net benefit from working ($\omega = w - b$).
  - Search models with limited duration of UI such as Mortensen (1977) or declining savings also imply upward sloping job finding hazard.
- Is there any feature of the data that could tell us a little more about this?
  - Recall to the previous employer is an important feature of unemployment in Austria (30-45% of total spells end in recall).

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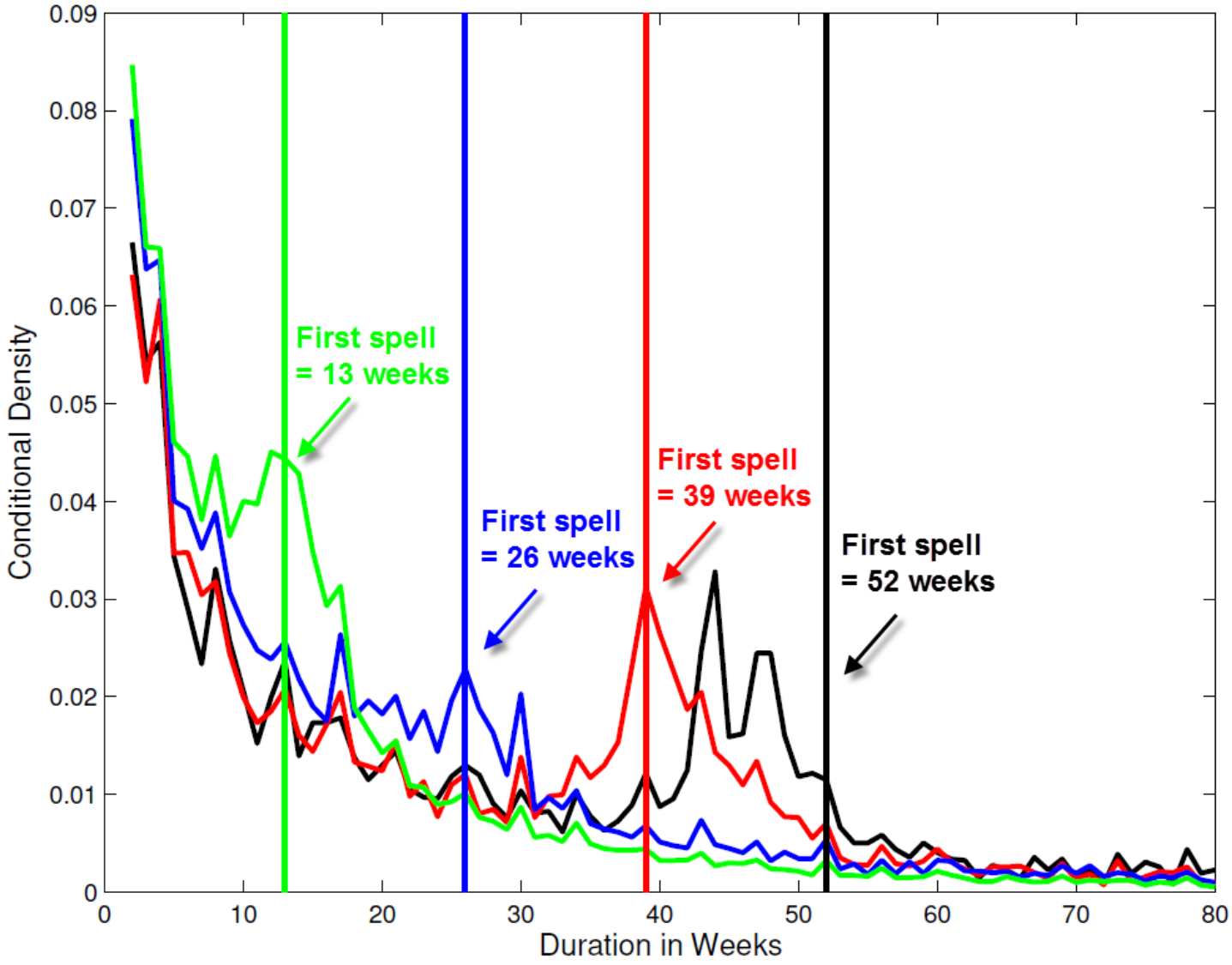

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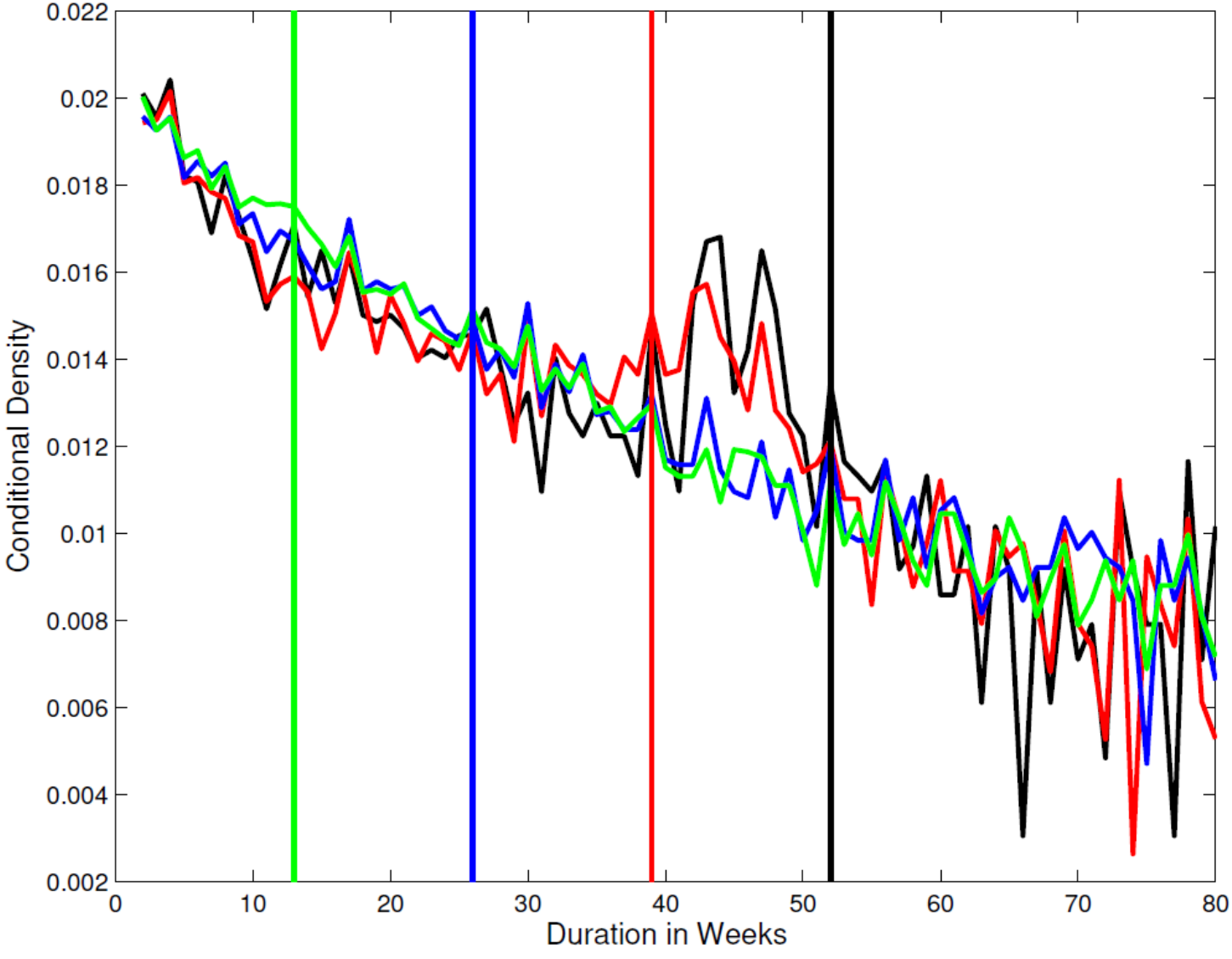

Observations on the conditional densities - excluding recalls

- The conditional densities look similar when excluding spells ending in recall:
  - This suggests important role of heterogeneity for hazard of recall to previous employer.
  - This suggests smaller role of heterogeneity for hazard of job finding at new employer.
- Recalls are well captured by structural model. But why is there heterogeneity in recall hazards?
  - Driven by workers or firms? Perhaps seasonal production cycles differ across firms/sectors?
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Conclusion

- Important paper, breaking new ground both in terms of modelling and empirically estimating the structural duration dependence in job finding hazards.
- Main finding: heterogeneity is important and thus the structural hazard is upward sloping.
- The stopping time model seems to capture better some of the features of the data ("the ridge") than the MPH model.
- Importance of recalls to previous employer:
  - Heterogeneity in recall hazard rates is likely to explain a large share of the heterogeneity in overall job finding hazard rates.
  - Structural hazard is upward sloping, likely due to upward sloping recall hazard.