Research Proposal

On the Job Search and Education Decisions in a Search and Matching Environment

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1 Introduction

To what extent do business cycles affect long-term individual outcomes? Recessions can have deep impacts on the the labour market, but also on education decisions. The 2008 economic crisis was one of the worst times in the history of the US economy. Between late 2007 and late 2009, the unemployment rate spiked to around 10%. By the end of the recession, over 15 million people have experienced a layoff[1]. Facing lower incomes on one hand, and a higher deferred income on top of job security on the other, young adults have to decide whether or not they want to invest in higher education. "Economic theory indicates that opportunity-cost considerations tend to make schooling countercyclical whereas ability-to-pay considerations have the opposite effect" (Dellas & Sakellaris, 2003). Which effect actually dominates is an empirical question. However, it has been documented empirically that college enrollment tends to increase during recessions(Betts & McFarland, 1995; Dellas & Sakellaris, 2003; Clark, 2011; Barr & Turner, 2015). (Bičáková, Cortes, & Mazza, 2021, 2023) find that enrolling in college in bad times improves subsequent market outcomes, in both the UK and the US. For the UK, they find that a 3pp increase in the unemployment rate at the time of enrolment increases average wages for men by around 1.7% i.e. if a man starts college in 2010, when unemployment was around 10%, he will later on face wages that are on average 1.7% higher compared to another man who enrolled in college in 2007, back when unemployment was around 5%. For the US, they find a qualitatively similar effect, that is even higher for women. Particularly women are found to become "more attached to the labour market" in the sense that they are working more hours per week and more weeks per year, as a result of enrolling in college during a recession. So, not only do people tend to choose to study more during economic downturns, they also end up doing better.

Keeping these facts in mind, policies that directly or indirectly impact higher education enrollment can have crucial effects on an economy during a recession. Such policies need to be considered in parallel to those that directly impact the job market. I propose a

[1]Source: www.bls.gov/opub/mlr/2018/article/great-recession-great-recovery.htm

theoretical framework where agents choose between entering the unskilled labour market, and paying a cost to enter the skilled one. In the unskilled labour market, workers are identical, they do not progress in their careers and lose their jobs exogenously, when a negative aggregate shock hits. Using the most basic version of the search and matching model developed by (Diamond, 1982) is fitting to model such a job market. In the skilled job market however is more complex. Workers in this market are more heterogeneous. They also have opportunities for career progression, and tend to search for jobs while already being employed. "Indeed, well over half of new hires each month (thus excluding recalls from unemployment) are workers who come directly from other jobs"(Moscarini & Postel-Vinay, 2024). To model this, (Moscarini & Postel-Vinay, 2024) develop a tractable model with random job search both off- and on-the-job (OJS), that could be extended in two ways: By adding screening costs and human capital shocks. The theoretical framework that I propose would integrate these two markets in the following way: Agents are fully informed about how the two markets function. They choose whether to be in the unskilled market, or get a higher education degree at a cost (that negatively depends on their ability), in order to access the skilled market.

The theoretical framework that I propose will provide an overall better understanding of the relationship between higher education and the state of the economy.It will allow for examining the effect of making higher education more/less accessible on unemployment, in different states of the economy.

2 Literature

This prospective paper will contribute to both search and matching as well as empirical labour literature.

- **Search and Matching**

  "With few exceptions (discussed below), the "Macro-labor" literature formalizes business cycles by introducing aggregate shocks into some variant of the (random) search-

theoretic framework of (Diamond, 1982) and (Mortensen & Pissarides, 1994)—routinely referred to as the "DMP model"— where only the unemployed look for jobs and where, as a consequence, employers only expect to hire unemployed workers" (Moscarini & Postel-Vinay, 2024). This prospective paper is essentially running two models from this literature in parallel, and having an agent choose between the two. The two models are the two sided search model with exogenous job destruction from (Diamond, 1982), and the model with the OJS following (Moscarini & Postel-Vinay, 2024).

- **Empirical Labour**

  Several papers estimate the effect of recessions on university enrollment such as: (Betts & McFarland, 1995; Dellas & Sakellaris, 2003; Clark, 2011; Barr & Turner, 2015; Bičáková et al., 2021, 2023) mentioned above. Other papers have tried to explain what is going on in the background. One aspect to be explained is the wage premium for people entering college during recessions. (Blom, Cadena, & Keys, 2020) find that "cohorts exposed to higher unemployment rates during typical schooling years select majors that earn higher wages, have better employment prospects, and lead to work in a related field." However, (Bičáková et al., 2023) find that post graduate education does not reduce the effect and that field of study choice explains less than 10% of the wage differentials conditional on educational attainment. Another explanation is that since people who graduate in recessions tend to perform persistently worse than their peers graduating in better economic times (Kahn, 2010; Oreopoulos, von Wachter, & Heisz, 2012; von Wachter, 2020), then it must be that people who start college in a recession graduate by the time the economy is doing better. But (Bičáková et al., 2021) find that varying the economic conditions at the time of graduation still does not explain the result. They point out that in the UK data, students who enrolled in college during good and bad times had comparable high school achievement. The remaining explanation which the authors argue for is that bad economic times induce more effort. Experiencing a recession during one's youth can have long-lasting effects

on individual preferences (Malmendier & Nagel, 2011). "Recessions create cohorts of workers who give higher priority to income, whereas booms make cohorts care more about job meaning for the rest of their lives"(Cotofan, Cassar, Dur, & Meier, 2023).

3 Data

To take the model to the data, I will need to estimate the employment status transition probabilities. The first option is CPS, from which I can get gross flows between employment and unemployment. This can be done using the monthly CPS files to estimate the average fraction of individuals who switch employment status. However, "This measure suffers from time aggregation from point-in-time observations of employment status, which suppresses short unemployment spells and thus underestimates transition probabilities" (Moscarini & Postel-Vinay, 2024). Alternatively, I could use NLSY, which provides data for two cohorts: 1997 and 1979. I could use these to calibrate the model. The model from (Moscarini & Postel-Vinay, 2024) also requires aggregate TFP shocks. It is modeled as an AR(1) process. (Moscarini & Postel-Vinay, 2024) follows (Shimer, 2005) in estimating the parameters for the TFP process. It can be estimated using quarterly Real Output Per Person in the Nonfarm Business Sector (BLS series PRS85006163). Data on yearly college enrollment can be acquired through the National Student Clearinghouse Research Center.

4 Methodology

PV,2024 for skilled DMP with exo JD for unskilled

Agent observes both and chooses. Exogenous ability, effort depends on state.

Agents decide between entering the unskilled or skilled labour market. They are facing two models. The first one is a search and matching model following (Diamond, 1982). The timeline for the model is as follows:

1. *Firm posts vacancy*: Firms post vacancies as long as there are rents to be made (So

the value of a vacancy at equilibrium is zero).

2. *Worker arrives*: Wage bargaining takes place (wages are determined through Nash bargaining).

3. *Productivity shock arrives*: If the shock reduces the value of the job below zero, the job is destroyed. (destroyed jobs do not become vacancies).

As for the OJS model, I follow (Moscarini & Postel-Vinay, 2024) model. It differs from the more simplistic (Diamond, 1982) model in that it makes job destruction endogenous, and it allows for OJS which generates a job ladder. Another important aspect is that wage determination happens through firms bertrand-competing for employed workers.

In other words, a brick layer remains a brick layer forever, and a white collar worker can have career progression, which realistically makes sense. I also assume that agents are ex ante aware of this. They decide which labour market to enter. They are given an exogenous ability, and they decide how much effort to put into higher education. This cost of education is internally incurred, and it depends negatively on ability and positively on effort. To account for the fact that people are more willing to put in effort in recessions, the disutility of effort should depend negatively on the state of the economy.

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