Research project for access to FH-EEC

On Gender Norms and Worker Reallocation

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The structural transformations ahead will require large movements of the labor force. Automation, globalization shocks, or the green transition will change in depth the occupational structure of the economy, and thereby force workers from declining occupations (routine occupations, brown occupations, etc.) to reallocate towards expanding occupations (non-routine occupations, green occupations). So far, most of the literature has focused on differences in skills as a potential source of friction. In response, policymakers have implemented large training programs, helping incumbent workers learn new skills. However, the decision to switch occupation - a central part of our social identity - is quite complex and involves many other dimensions than skills. In particular, many occupations are gendered, and hence gender norms may play another important role in shaping worker reallocation. How do gender norms shape worker occupational mobility decisions? What is their relative importance, compared to skill frictions? Are male and female workers equally exposed to structural shocks? What does it imply for the design of public policy?

In this paper, we aim at quantifying the respective importance of gender and skills frictions in shaping worker reallocation dynamics. We are also interested in assessing the exposure of male and female workers to different structural shocks. We plan to answer these questions by making four contributions. First, we provide descriptive evidence on the differences across gender in patterns of occupational mobility. We label this phenomenon the *gender gap in reallocation dynamics*. Second, we study the factors driving the gender gap in reallocation dynamics. Third, we build a theoretical model of worker reallocation featuring skill and gender frictions. Fourth, we estimate the quantitative model and simulate different counterfactuals, to quantify the importance of skill and gender

frictions. Let us now describe each contribution in more detail.

In the first part of the paper, we document the existence of a gender gap in reallocation dynamics. We would use the data FH-EEC, a matched database consisting of information on unemployment spells ("Fichier Historique (FH)") of the French governmental agency for unemployment "Pôle Emploi" and information on the employment spells derived from the "Enquête Emploi en Continu" (EEC) of INSEE for the 2012-2017 time period. The data give detailed information about a large number of variables, e.g. occupation, wage, city, even during unemployment spells. We use these data to measure probabilities of transition across occupations for both male and female workers. The large sample size and the continuous time sampling from FH-EEC allow us to construct transition probabilities at a very high level of disaggregation and high frequency.[1]

We measure the gender reallocation gap by taking the difference between male and female transition probabilities, for each pair of occupations. A positive sign indicates that the transition is predominantly masculine, while a negative sign indicates that the transition is predominantly feminine. This gives us a matrix of gender differences in transition probabilities across occupations, which we refer hereafter to as the *gender reallocation gap*. Interestingly, these gender differences are not driven by differences in the skill mix of workers. Assuming that workers from the same occupation have the same skill sets, occupational switches indicate that the skills are sufficiently close for the transition to be feasible. If male or female workers do not make the switch, this must be driven by other factors. We turn to study possible candidates in the next part of the paper.

In the second part, we intend to study the different mechanisms explaining the gender gap in reallocation dynamics. There are several potential reasons why male and female workers might have different occupational mobility patterns. The literature documents that women are less mobile than men in terms of commute (Le Barbanchon et al., 2021), tend to have a relative preference for family-friendly job characteristics with temporal flexibility or offering better career-family balance (Wasserman, 2019; Wiswall and Zafar, 2017), tend to prefer a specific type of job amenities (Cortes and Pan, 2018). Moreover,

[1] A concern is that our estimates of transition probabilities might be biased, due to the sorting of workers into occupations based on observed and unobserved characteristics. Indeed, male and female workers might have different transition probabilities because they have different observed and unobserved characteristics. To address this issue, we estimate, for each pair of occupations, a probit model of professional transition, which controls for individual fixed effects and other observable covariates (such as age, diploma, industry etc.). By subtracting the effect of observed and unobserved covariates, we can recover the pure effect of gender on transition probabilities.

workers could be also constrained in their mobility by the gender norms related to the occupation: tend to exhibit greater risk aversion, lower levels of competitiveness, and a lower willingness to negotiate relative to men (for a review, see Blau and Kahn (2017)). Besides, let us note that still very little is known about the gender norms affecting male choices.

We propose to measure the different factors driving gender differences using various databases. The family constraints can be identified by using the French labour force survey (EEC - Enquête Emploi Continu), which provides information about both employment outcomes and household composition. The gender norms can be measured by using textual data on occupation descriptions (ROME and O*NET descriptions). Using text analysis methods and machine learning would allow us to identify occupations with strong gender norms patterns. Finally, data from French unemployment services (FH) would also enable us to gather information about the desired occupation of job seekers and compare them to the realized transition made. The differences between the desired and realized mobility would allow us to distinguish between worker preferences and constraints coming from the firm side.

Then, we turn to regress the gender difference in transition probabilities on the measures of gender norms that we have constructed. This regression would allow us to distinguish between different theories of why male and female workers have different patterns of occupational mobility. Access to FH-EEC is crucial for this analysis as this is the only panel database providing conjointly information about the household composition, work status and wages of the partner, and information of desired occupation during unemployment spells. Moreover, the time period covered by data, 2012-2017, is especially convenient as it is a recent period that has not been impacted by an economic crisis.

Third, we build a model of worker reallocation dynamics featuring skill and gender frictions. The model extends the skill network search model from Bocquet (2023) with gender friction. There is a population of male or female workers, spread across the economy's different occupations. Three frictions are at play. *Search frictions* prevent workers from matching instantaneously with firms: in other words, job search takes time and there is involuntary unemployment in equilibrium. *Skill frictions* determine the set of occupations where workers can search for jobs: this includes the worker's own occupation, but possibly other occupations requiring similar skills too. Importantly, we assume that skill frictions are independent of the worker's gender. *Gender frictions* affect

the utility that workers derive from working in a certain occupation. This is a stand-off for many unmodelled factors: for instance, the utility loss from working in a male occupation for a female worker.

In addition, the model features a number of empirically-relevant mechanisms: on-the-job search, partially directed search, and endogenous wage negotiation. Workers can search for both jobs while employed but have a lower search efficiency of searching on-the-job. They can choose to direct more search effort towards certain occupations yielding higher expected benefit.[2] They also bargain with the firm over the wage. Note that the model is quite flexible and allows for rich patterns for heterogeneity: most parameters (on-the-job search efficiency, search elasticity, bargaining power) are allowed to differ by occupation and gender.

The main predictions of the model are patterns of worker mobility across occupations by gender, in response to different structural shocks. More specifically, we study how the distribution of male and female workers across occupations evolves in response to structural shocks, modelled as permanent asymmetric productivity shocks. However, following a distribution over time is challenging, given the high dimensionality of such an object. Building on previous work, we construct a scalar measure of aggregate reallocation speed, which summarizes in a single scalar how fast the workers reallocate across occupations. The proposed measure of aggregate reallocation speed is our main variable of interest. But we also consider complementary measures of transition speed: for instance, measures of reallocation speed by gender and/or occupation.

Fourth, we estimate the model on the FH-EEC data and estimate different counterfactuals to estimate the importance of gender and skill frictions in shaping worker reallocation dynamics. The FH-EEC give us three groups of observed variables: wages, unemployment benefits and transition probabilities across occupations and gender. Building on previous work, we show that, despite the rich heterogeneity of the model, the main parameters of the model can be identified using these data.[3] Crucially, the gender fric-

[2]This specification nests as special cases two popular modelling frameworks: random search and directed search. In the former case, agents distribute their search effort fully at random. In the latter, they only search for the highest-paying occupation. The elasticity of search effort to the expected benefit controls the degree of directedness of job search.

[3]The identification proof relies on two ideas. First, flow payoffs and transition probabilities - which are observed - are informative about the worker value functions. Second, running a gravity regression, i.e. regressing log worker flows on log worker value functions, is informative about many structural parameters: search elasticities, on-the-job search efficiencies, skill frictions, etc.

tions are identified using the reduced-form analysis above. More specifically, and under the assumption that skill frictions are independent of the worker's gender, the gender frictions are estimated by targeting the gender reallocation gap.

With the estimated model at hand, we study different counterfactual scenarii to quantify the importance of skill and gender frictions for worker reallocation dynamics. In particular, we ask the following questions: How fast would worker reallocation have been in the absence of gender frictions? or in the absence of skill frictions? To answer this question, we compute aggregate worker reallocation speed in counterfactual economies with no gender frictions or skill frictions. Moreover, we are interested in the extent to which male and female workers are exposed to different structural shocks (e.g. green transition, automation, globalisation shocks). To answer this question, we compare the measures of reallocation speed for female and male workers after different scenarii of structural shocks.

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