Introducing a temporary help agency in a labor market : a multi-agent model

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Extended abstract

Temporary Help Agencies (THA) bring into the labor market a new fundamental feature. They are intermediaries on a market which is modeled as decentralized by the dominant theoretical framework, search theory. This theory explains the flows of hires by the individual search by workers and employers and ensuing matches. THA bring some centralization in this framework. If agents are moved by self interest, some should create such agencies, since they lower search costs through the benefits of specialization, and can earn profits. Introducing intermediaries is then a necessity to give the search model more coherent microfoundations. THA are not the only intermediaries in the real labor market. Many countries have a national placement agency paid by the tax payers. However THA do not only match, they are the legal employers of the workers, and the contract is therefore a particular contract, different from the standard Fixed Term Contracts (FTC). Then THA propose contracts which involve a mark up on wages, and which are competed by the standard FTC, implying search costs for the employing firm. The two types of contracts are substitutes and their coexistence is not obvious.

Moreover temporary help jobs have important consequences for the labor market outcomes. THA select the workers for the client firm, and can gain precise information since they evaluate the same worker often for a new contract. Moreover it appears to be commun practice that they provide the worker with the training needed for the job in the client firm, since the short duration of the contract would make it too costly. A consequence is that temporary help workers, beyond being selected among condidates, gain human capital and also some experience on these jobs, three factors that may act as stepping stones for a future Open Ended Contract (OEC). However terminations rarely lead to an immediate OEC and short durations send most of the workers repeatedly into unemployment, delaying integration into OEC. Several major questions can then be tackled by the introduction of a THA in a model of the labor market. In this first paper on the topic, we will study three. First we will show that a calibrated model displays the coexistence of the two types of contracts, as well as the presence of OEC. Second we will study the efficiency that the temporary help contracts can bring to a labor market, notably in terms of unemployment and vacancies. Third we will analyse the consequences for the carreers of young workers. Are temporary help jobs a stepping stones or traps, and for whom ?

In order to carry this analysis which is novel in the literature, we introduce a THA in WorkSim, a large Agent Based Model of the French labor market, with 10,000 agents, which involves a scale of 1/4700. It is calibrated by the CMA-ES algorithm which sets 63 parameters to fit optimally 67 aggregated variables (measured for the year 2014). Goudet, Kant & Ballot, (2016) give a description of the first version of the model. The current version (Ballot, Kant & Goudet 2015) adds the endogenization of the choice between Fixed Term Contracts (FTC) and OEC, based on the total expected costs of each type of contract and anticipations by the firms on their own demand. We then give to the FTC a role of buffer. The decisions of the agents are based on search theory, albeit in a bounded rational context. This is justified on cognitive ground but also by the complexity of a labor market marked by the heterogeneity of our agents. Search theory allows to distinguish inactive

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workers and unemployed who search for a job, according to the ILO definition. It also enables us to introduce on-the-job search, an essential behavior on labor markets. In spite of bounded rationality agents do intertemporal calculations.

The model considers the states of unemployment, employment in OEC and in FTC, schooling, inactivity, retirement, civil servants. The decisions generate a complete gross flows system which is consistent, since the individuals age and stay in the model until their death. The unit period is the week, allowing to account for short contract and unemployment spells, and avoid the biases induced by descriptions of the labor market based on transition statistics. The institutions of the labor law are implemented, such as firing costs, advance notice, grace period, among others. These costs expectations are taken into account in the calculations of the firms.

The results of the present paper show that, first, the three types of contracts coexist, and that the statistics for their relative weights of the contracts fit the facts. The simulated share of the temporary help jobs in employment is 3.3% (real: 3.7%), and the simulated share of FTC is 15.0% (real: 13%). The recruitment rates by age group are well reproduced. We then reproduce approximately the enormous flow of hires in temporary help contracts : 12,245,000 (real : 15,400,000) and the 13,936,000 FTC signed (real :19,673,000 according to the ACOSS which overestimates by some 5 to 10%, and 8,428,000 according to the DARES/DMMO which does not register the contracts under 6 months), and finally 1,940,000 OEC (real : 2,962,000 according to ACOSS and 1,651,000 according to the DARES/DMMO stats) .

Second a variant suppresses the THA, and measures the outcomes. In the short run (one year) employers replace the temporary help contracts by FTC (but only half of them). Then they start, to substitute these supplementary FTC by OEC since temporary help contracts were used for jobs which required training, the cost of which was paid by THA, and FTC do not allow for amortization. However 232,000 jobs are not replaced after 15 years. The young people suffer more since their unemployment rises by 4 points. Vacancies rise by 22%. Production and profit decrease also.

Third we do the equivalent of a natural experiment by following a cohort of young people between 15 and 25 (summing 200 simulations) with and without the presence of the THA. Workers on average obtain more training with THA presence and this results in a faster progression of their salaries. Finally those workers who have held temporary help jobs are more likely to be in an OEC a year after than those who have been unemployed, a fact observed in France by Flamand (2016). Temporary help jobs then appear as being a stepping stone for the incumbents.

References :

Ballot G., Kant J.-D. & Goudet O. , (2015) – « Endogenous choices of contract types in an agent-based model of the labor market», WEHIA 2015 – Sophia-Antipolis, June. *w.p. available at http:// WorkSim.lip6.fr.*
Flamand J. (2016), Dix ans de transitions professionelles: un éclairage du marché du travail français, Document de travail no 2016-03, France Stratégie, Mars.
Goudet O., Kant J.-D.& Ballot G. (2016), "WorkSim, a calibrated agent-based model of the labor market accounting for stocks and gross flows", *Computational Economics*, on line in July 2016, forthcoming in paper version in 2017.

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