



Are specific skills an obstacle to labor market adjustment? ☆

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ABSTRACT

This paper shows that specialized education reduces workers' mobility and hence their ability to cope with economic changes. We illustrate this point using labor force data from two countries having experienced important macroeconomic turbulence; a large economy with rigid labor markets, Poland, and a small open economy with increased flexibility, Estonia. We find that holding a vocational degree is associated with much longer unemployment duration spells and higher likelihood of leaving activity for older workers. We then build a theoretical framework in which young agents' careers are heavily determined by the type of initial education, and analyze the transition to a new steady-state after a sectoral demand shift. Quantitative exercises suggest that the over-specialization of the labor force in Poland led to much higher and persistent unemployment compared to Estonia during the period of EU enlargement. Traditional labor market institutions (wage rigidity and employment protection) lead to an increase of the unemployment gap, but to a lesser extent.

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1. Introduction

Macroeconomic shocks leading to sectoral reallocation might have long-lasting consequences, in particular for the labor market. Their effect varies considerably across countries: some economies seem to have a relatively good absorption capacity, while others face long periods of unemployment for reasons which are not always easy to identify. The traditional explanation for such marked cross-country differences in the response to shocks is the variety of institutions that govern modern labor markets (Blanchard and Wolfers, 2000). This paper shows both theoretically and empirically that, in addition to

institutions, obstacles to labor mobility due to skill specificities are key determinants of the speed of labor market adjustment.

The underlying logic of our analysis is simple. Suppose that initial education determines the career choice of workers and notably the sector (or occupation) where they work. In this context, a sectoral reallocation shock leading to several industries or occupations becoming obsolete, will also imply the obsolescence of the workers with more specific skills. In the absence of sectoral mobility—say, when 55 year old coal miners are reluctant or unable to apply for waiter jobs in fancy restaurants—the speed at which the labor market adjusts is the rate of demographic turnover, arguably a slow adjustment mechanism.

To give a brief overview of the argument of the paper, consider the example of two economies—Estonia and Poland—having faced similar macroeconomic turbulence, both the announcement of enlargement to the European Union in 1998 and the sequel of the Russian crisis, and having diverged afterwards. As Fig. 1 shows, the labor market in each economy has evolved quite differently since 1998, with the unemployment gap widening dramatically from 0.7 percentage points in 1998 to almost 10 percentage points in 2002. Past education choices leading to the accumulation of sector and job specific skills explain a large part of such differences, and notably the high persistence of unemployment in Poland. Indeed, the proportion of employed workers who attended vocational schools is much larger in Poland than in Estonia: 2/3 vs. 1/3 approximately. This is only one part of the story however, since labor market institutions may favor or prevent sectoral mobility. Retraining policies as those available in Estonia might increase the rate at which workers allocate to the new emerging sectors. On the other hand, Polish stringent employment

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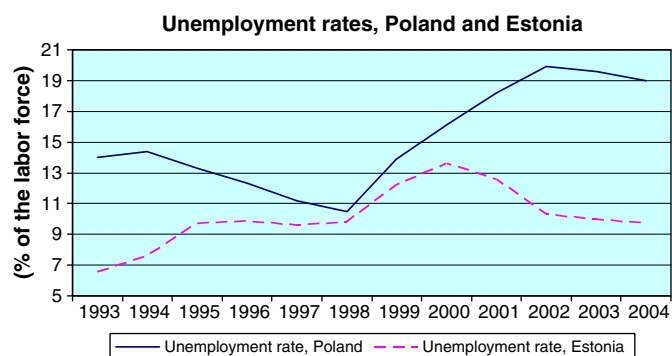


Fig. 1. Unemployment rates in Poland and Estonia, 1993–2004.

protection laws will reduce labor market flows and thus the speed of sectoral reallocation. Finally, early retirement policies may reduce unemployment in the short-run, at some longer-run cost.¹

The macro-labor literature has increasingly recognized that obstacles to the allocation of workers to jobs are crucial factors affecting the dynamics and the current level of unemployment. Blanchard and Katz (1992) have studied the adjustment of US states, notably Massachusetts having faced a large negative employment shock in the 80s, in a context of relatively flexible labor markets. Marimón and Zilibotti (1998) have shown that the dynamics of unemployment in eleven European countries were well accounted for by industry effects, where the Spanish case stands out as the transition from agriculture has been particularly costly. As regards to structural change, long-run trends of sectoral reallocation and their interaction with labor market performance in the presence of frictions are studied by Messina (2006) and Rogerson (2008).

The specificity of human capital has been central in very few papers. Rogerson (2005) presents a model of sector-specific skills in the Lucas–Prescott island tradition, and investigates individual trajectories of finitely-lived agents, with permanent non-employment after displacement being a possible outcome. Interactions between institutions and specific skills are discussed in Wasmer (2006), who studies the role of employment protection and frictions in promoting the accumulation of specific human capital investments, and argues that in steady-state, economies with specific skills do well, but during the transition in turbulent times, their labor force face high transitional costs. Similarly, Ljunqvist and Sargent (1998) incorporate human capital losses while unemployed in a model of search, and account for country-differences in unemployment due to greater or lower generosity of unemployment compensation. Albrecht and Vroman (2002) highlight the role of specific skills in the labor market. They present a model with low and high skill workers where the former can only do low-skill jobs. An application of this model is Albrecht et al. (2009), which evaluates a skill enhancing program in Sweden. In the transition literature, Garibaldi and Brixiova (1998) present a two-sector continuous-time model similar to ours and investigate the role of labor market institutions such as unemployment benefits.² Flanagan (1998) and Boeri (2000) have stressed the role played by the specificity of their human capital in the rise of unemployment in transitional economies. In the trade literature, the consequences of structural change driven by trade liberalization and increasing magnitude of capital flows have often been addressed in

models that assume away any labor market imperfections, thus having relatively little to tell about unemployment dynamics.³ Empirically, displacement has been used to measure the amount of specific skills embodied in workers' careers by Kriechel and Pfann (2005), who estimate the impact of general and specific skills on unemployment duration and wage losses after displacement.⁴

This paper claims that specialized education decreases workers' mobility and hence their ability to cope with economic changes. Empirically, the paper shows that workers holding vocational diplomas from formal education have had a hard time in readapting their skills in a period of rapid economic transition in Poland and Estonia. The paper's theoretical contribution to the literature is to provide a dynamic model of a two-sector economy with time-varying labor supply facing asymmetric shocks, and to study the various mechanisms of adjustment at work along the dynamics of transition to the new steady-state. The model is exploited to match the unemployment experience in Poland and Estonia during the enlargement process, an exercise that helps disentangling the relative importance of skills' specificity and institutions in driving the divergent outcomes in these two countries.

After a brief description of the macroeconomic context in Poland and Estonia in Section 2, Section 3 measures the costs of reallocation in the presence of specific skills. For this purpose we analyze the dynamics of employment and unemployment using micro data for these two economies from the labor force surveys. Our empirical results indicate that age, tenure and above all, vocational initial education are associated with higher unemployment duration and a higher likelihood to exit the labor market among the older workers. Interestingly, these patterns are present in both countries, suggesting that cross-country differences in the responses of labor markets to similar macroeconomic shocks might be accounted for by the differences in the total stock of specific skills highlighted above, or differences in institutions. The main lesson of this empirical analysis is that the specificity of skills is an obstacle to reallocation and can be a serious macroeconomic issue. In this respect, the mechanisms studied here are applicable to several other macroeconomic experiences.

In Section 4, we model reallocation of specialized labor across sectors following a relative demand shock in a two-sector Mortensen–Pissarides framework with wage rigidity and endogenous job destruction, augmented with specific human capital in which young agents initially are allocated into vocational or general education. The contribution to the literature here is to solve for out of the steady-state equilibria in continuous time and to characterize the saddle-path dynamics of its four predetermined variables and its four jump variables. We therefore provide a methodology to obtain the numerical resolution of the associated system of ordinary non-linear differential equations, which may be adapted to any continuous-time matching model as an alternative to discrete-time dynamic macroeconomic models. This allows us to analyze the transition to a new steady-state when one of the sectors expands and the other declines. We find three different time horizons in the transition: i) an initial and instantaneous period of increase in unemployment, as firms in the declining sector immediately layoff a sizeable fraction of the labor force; ii) a relatively rapid period of recovery—about 2 to 5 years—in which firms, facing a large pool of unemployed workers, post more vacancies; iii) a very slow period of convergence, due to mismatch between demand and supply of skills across sectors. In the absence of labor mobility, our model indicates that the period of convergence to a

¹ This may be what happened on the chart over the period 1993–1998: the decline in Polish unemployment seems to be in part associated with early-retirement policies while the increase in Estonian unemployment is related to drastic trade liberalization occurring at that time.

² The main difference is that in their paper there is a transition from the public sector to a private sector, whereas we consider two private sectors. Compared to them, we also model endogenous job destruction and account for the skill composition of the labor force.

³ For a few exceptions see Leamer (1980), Feenstra and Lewis (1994) and Saint-Paul (2005).

⁴ In this version of the paper we did not estimate wage equations, but focused on unemployment dynamics and labor market transitions. Kriechel and Pfann (2005) use information on higher ranks in the hierarchical position of displaced workers (such as managerial experience) as a proxy for general skills. We use the nature of diplomas as proxies for the degree of generality of skills as our focus is on the interaction between education and labor market adjustments.

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