C E U

The Public Defense

of the Doctoral Thesis in Economics

by

Mariann Rigó

on

THREE ESSAYS ON WAGES AND PRODUCTIVITY

will be held on

Tuesday, June 12, 2012 at 2:00 pm

in the

Monument Building, Senate room

Central European University

Nádor Street 9, Budapest

Thesis Committee:

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The doctoral thesis is available for inspection

at the CEU Economics Department

Abstract

The recent availability of linked employer – employee databases (LEED) opened up new opportunities for empirical labor research. Among the variety of areas in which the LEED can potentially be utilized, my thesis examines earning regressions and production functions supplemented with information on both the employers and the employees. Wage regressions based on LEED may control for – besides the individual level variables, such as age, gender, education, occupation – various firm-level variables. Production functions including traditionally only firm level variables, such as the capital and the labor input, may be augmented with the worker composition of the firm offering the opportunity to study e.g. the relative productivity of various employee groups.

The first chapter of the thesis utilizes the rich firm-level and employee information of the LEED to investigate the wage differential associated with the conclusion of firm-level collective contracts. The historical roots of the Hungarian trade unions are in a sharp contrast with the origins of the industrial relations system in Western European or Anglo-Saxon countries. After the regime change, trade unions in the transitional countries had to reorganize themselves, find their new roles in the fundamentally changed economic environment, and cope with their social inheritance. The outcome was a decentralized structure, where the firm-level trade unions are the most important channel of collective negotiations. The estimation results mostly reflect this fragmented industrial relations system, and imply that the wage advantage associated with firm-level agreements is tiny. I estimate numerous regression specifications varying the scope of the explanatory variables (individual-level and firm-level controls, firm fixed effects), and the level of aggregation (firm-level vs. individual-level). In line with previous results, the study finds that the largest portion of the raw wage gap is explained by observable firm-level variables. The 26 percent raw wage gap estimated on individual-level data decreases to 6 percent after controlling for individual and firm-level characteristics, and to 2 percent when including time invariant firm-level unobservables. On the other hand, firm-level regressions using an accounting measure, the total wage bill of the firm as the dependent variable, suggest a surprisingly high wage gap of 8 percent in the final specification.

Chapter 2 and 3 pursue a different path, and – building on the rich employee and employer information of the LEED – investigate production functions in the way pioneered by Hellerstein and Neumark (1999). In Chapter 2 (joint with Anna Lovász) we examine the long-term adjustment process following the sudden devaluation of certain labor market skills due to the technological and organizational changes brought about by the regime change. Our hypothesizes are based on the model of skill obsolescence and imply that (a) the devaluation of skills should affect highly educated older workers more severely (b) the disadvantage should disappear over time as newer cohorts acquire more suitable human capital, and (c) the timing should differ among firm ownership types, reflecting the inflow of modern technologies and practices. Rather than focusing on wage differentials, we estimate the firm-level productive contribution of older relative to younger workers differentiated by education level. To assess long-run trends, we adapt the augmented production function methodology and apply it to the Hungarian LEED covering from before (1986) to 20 years after (2008) the economic transition. The results suggest that - in line with the model - the within firm productivity differential between older and younger workers following the transition was largest among the highly skilled (-0.13

in 1996-2000). The fall in relative productivity followed the inflow of modern capital: the gap was largest in 1992-1995 in foreign-owned firms (-0.6), while it appeared later in domestic firms (-0.18 in 1996-2000) before disappearing by 2006. Our results based on within-firm estimates are indicative that the speed of adaptation of older workers to modern technology was probably faster than implied by cross-sectional OLS estimates. By the last period, roughly fifteen years after the transition, the old – young relative productivity coefficients are comparable to those found in studies on Western European and U.S. data, documenting an insignificant or small decrease in productivity for older age groups.

Chapter 3, also based on the worker composition augmented production function methodology, aims to give a more detailed picture of the relationship between age and productivity. Ageing is a particularly relevant research question in Hungary, where both the demographic trends and the low employment rate of the older worker groups make it difficult to cope with the increasing economic burdens of an ageing society. From the firms' point of view, a crucial element of the problem relates to how the productivity of employees changes as they grow older. The current paper addresses this issue by analyzing the connection between the age composition of firms and their productivity, grouping workers into detailed age intervals, and using the most recent econometric techniques to handle the unobserved firm heterogeneity and simultaneity issues. Among the variety of methods, structural approaches by Levinsohn and Petrin (2003) and Ackerberg, Caves and Frazer (2006) are also presented. The results on the pooled sample (covering the years 1992-2008) are suggestive that older workers are less productive. Estimates in the within dimension document that productivity drops significantly at the ages of 35, 45, and 55. The results suggest that increasing the share of workers below 35 by 1 percentage point (relative to workers aged 35-45) increases value added by 0.6 – 0.7 percent. The similar estimates for employees aged 45-55 lie in the range of -0.12 – -0.1, while the estimates for workers aged over 55 are in the range of -0.2 – -0.17. However, splitting the panel into two samples (before and after 2000) reveals that the productivity disadvantage of older employees disappears in the second period, and methods taking care of both the unobserved heterogeneity and simultaneity issues indicate an essentially flat age – productivity profile in that period. Therefore, the Hungarian results covering the most recent years do not confirm the usual skepticism over the negative impact of the ageing population on firms' productivity. The estimates covering the years after 2000 are in line with the results obtained in Chapter 2 documenting insignificant productivity gap between older and younger employees (both in the skilled and unskilled groups) in the most recent years.

CURRICULUM VITAE

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EDUCATION

2004 – 2012	Ph.D in Economics, Central European University, Budapest
	Field: Labor economics
	Dissertation: Three Essays on Wages and Productivity
2002 – 2004	M.A. in Economics, Central European University, Budapest
1997 – 2002	M.Sc. in Business Administration, Corvinus University, Budapest

WORK EXPERIENCE

2010 – 2011	Research Assistant, Université catholique de Louvain, IRES
2006 – 2008	Research Assistant, CEU Labor Project
2005 – 2006	Assistant, Ministry of Finance, Research Department

TEACHING EXPERIENCE

2007, 2005	Teaching Assistant, Microeconomic Theory, CEU
2007	Teaching Assistant, Mathematics, CEU
2004, 2003	Teaching Assistant, Microeconomics, Corvinus University, Budapest

OTHER PROFESSIONAL EXPERIENCE

2008	Member of Local Organizing Committee, CAED International Research Conference

FELLOWSHIPS AND AWARDS

2009	Marie Curie Fellowship, Universite Catholique de Louvain

2009	Best advanced doctoral award, CEU
2009	GDN Regional Research Network Grant
2003 – 2008	Doctoral scholarship, Economics Department, CEU
2001	ERASMUS scholarship, University of Greenwich

PUBLICATIONS

"Estimation of the relative productivity and wage of women compared to men in Hungary" (with Anna Lovász), The Hungarian Labour Market – Review and Analysis 2010.

"Increases in the minimum wage in Hungary, 2001-2006" (with Dóra Benedek, Ágota Scharle, Péter Szabó), Ministry of Finance, Working Paper No. 16, January 2006.

PRESENTATIONS

2011	Workshop on "Ageing, Health and Productivity", St. Gallen
2010	Workshop on "Ageing Workforces", Louvain la Neuve
2009	Doctoral Workshop in Economics, Louvain la Neuve
2009, 2008	Annual Conference of the Hungarian Economic Association
2008	8th Comparative Analysis of Enterprise Data (CAED) Conference, Budapest
2008	2nd RGS Doctoral Conference in Economics, Essen
2008	7th Meeting of the "Microdata Methods and Practice" EU Research Training Network, Budapest

WORK IN PROGRESS

"Vintage Effects, Ageing, and Productivity" (with Anna Lovász), revise and resubmit to the Labour Economics.
 http://www.econ.core.hu/file/download/bwp/bwp1203.pdf

"Ageing and Employability. Evidence from Belgian Firm-Level Data" (with Vincent Vandenberghe and Fabio Waltenberg), revised and resubmitted to the Journal of Productivity Analysis.
http://perso.uclouvain.be/vincent.vandenberghe/Papers/ageprod_VVDB_JProdA_revd.pdf

"Estimation of the Productivity-Wage Gap in Hungary 1986-2005" (with Anna Lovász)

"Estimating Union – Non-union Wage Differential in Hungary"

SKILLS

- Languages: Hungarian (native), English (fluent), German (advanced)
- Computer skills: Windows applications, STATA, Eviews, Visual Basic, GAUSS