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Conference

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IMPACT OF LABOUR MARKET INSTITUTIONS ON PRODUCTIVITY IN A SECTORAL APPROACH

Lecturer: Domicián Máté, PhD University of Debrecen, Hungary domician.mate@econ.unideb.hu

RESEARCH PROJECT

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INTRODUCTION

o, Labour market institutions are a system of laws, norms, or conventions resulting from a collective choice and providing constraints or incentives that alter individual choices over labour," according to Boeri and van Ours (2008).

INTRODUCTION

• The perspective of endogenous growth theories claimed that the most important mechanisms by which labour market institutions can affect productivity growth operate mainly through physical and human capital accumulation and innovation (Barro and Sala-i-Martin 1997).

INTRODUCTION

- Recently, serious debates have taken place in an attempt to explain the *role of institutions*.
- However, as North (1991) claimed that **institutions matter**, essentially nowadays no clear theoretical consensus has yet emerged to answer **how**.

RESEARCH QUESTIONS

•In this point of view one interesting research question:

Is there any existing labour market institutions, which impact on productivity (output per capita) in long run, and also what kind of characteristics they should have in economies.

INDUSTRY STRUCTURE TAXONOMY

Table 1. The skill taxonomy of industries (with ISIC Rev 3.)

1. High skilled (HS): Mineral oil refining, coke and nuclear fuel (23); Chemicals (24); Office machinery (30); Radio, television and communications equipment (32); Electronic valves and tubes (321); Telecommunication equipment (322); Radio and television receivers (323); Financial intermediation, except insurance and pension funding (65); Insurance and pension funding, except compulsory social security (66); Activities auxiliary to financial intermediation (67); Real estate activities (70); Computer and related activities (72); Research & development (73); Other business services (74); Public administration and defence; compulsory social security (75); Education (80).

2. *High-intermediate skilled* (HIS): Medical, precision & optical instruments (33); Scientific instruments (331); Other instruments (33-331); Other transport equipment (35); Building and repairing of ships and boats (351); Aircraft and spacecraft (353); Railroad equipment and transport equipment (352+359); Electricity, gas and water supply (40-41); Air transport (62); Supporting and auxiliary transport activities; activities of travel agencies (63); Communications (64); Renting of machinery & equipment (71); Health and social work (85).

3. Low-intermediate skilled (LIS): Wood & products of wood and cork (20); Pulp, paper & paper products (21); Printing & publishing (22); Fabricated metal products (28); Mechanical engineering (29); Electrical machinery and apparatus (31); Insulated wire (313); Other electrical machinery & apparatus (31-313); Construction (45); Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel (50); Wholesale trade and commission trade, except of motor vehicles and motorcycles (51); Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods (52); Inland transport (60); Water transport (61).

4. Low skilled (LS): Agriculture (01); Forestry (02); Fishing (05); Mining and quarrying (10-14); Food, drink & tobacco (15-16); Textiles (17); Clothing (18); Leather and footwear (19); Rubber & plastics (25); Non-metallic mineral products (26); Basic metals (27); Motor vehicles (34); Furniture, miscellaneous manufacturing; recycling (36-37); Hotels & catering (55); Other community, social and personal services (90-93).

SOURCES OF DATA

• the given time series of gross value added (GVA) in constant (1995) prices and numbers of persons engaged to calculate productivity and employment growth from EU KLEMS database.

- share of investment within GDP, from the Penn World Table (PWT) of Heston et al. (2006).
- othe labour market institutions from the OECD STAT databases.

AN EMPIRICAL APPROACH OF DYNAMIC PRODUCTIVITY CHANGES

Our starting point is a Cobb-Douglas production function, so production at time [t] can be written as:

 $Y_t = \left(A_t L_t\right)^{1-\alpha} K_t^{\alpha}$

- The notation is the standard, where [Y] represents output, [A] is the 'total factor productivity' factor, [K] and [L] are capital and labour.
- Thus, we assume a constant return to scale and the magnitude of (1-α) should correspond roughly to the labour income share in total GDP, which is close to 2/3 in most countries.

AN EMPIRICAL APPROACH OF DYNAMIC PRODUCTIVITY CHANGES

According to the suggestion of Mankiw et al. there is an alternative way to express the role of institutions from this model:

$$\ln\left(\frac{Y}{L}\right)_{t} = \frac{\alpha}{1-\alpha}\ln(s_{k})_{t} - \frac{\alpha}{1-\alpha}\ln(n+g+\delta)_{t} + \frac{\beta}{1-\alpha}\ln(X)_{t} + \varepsilon_{t}$$

Getting [Y/L], as output per capita for the steady state level of productivity and the rate of investment in physical capital [s_k], the rate of sectoral employment growth [n]. We also assume that technological changes [g] and depreciation rates [δ] are constant across countries. The [A] term reflects here the role of institutions. ln[A] = [X] and [e] represents a country-specific shock.

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AN EMPIRICAL APPROACH OF DYNAMIC PRODUCTIVITY CHANGES

• Taking into account new endogenous growth theories our dynamic model includes the lagged dependent variables among the repressors' developed by Arellano and Bond (1991).

• After taking the first differences of the dependent variables of *Equation (2)*, our basic model assumes the following formula, which is used in each of the different labour-skilled sectors:

AN EMPIRICAL APPROACH OF PRODUCTIVITY CHANGES $\Delta \ln Y_{it} = \beta_o + \beta_1 \Delta \ln Y_{it-1} + \beta_2 \ln(s_k)_{it} + \beta_3 \ln(n+g+\delta)_{it} + \beta_4 \ln(X)_{it} + e_{it}$ Note: Δvar - variable in first differences, Δvar_{t-1} - lagged differences, ln - in logarithm.

- the dependent variable here $[Y_{i,t}]$ is the ratio of a real GVA per capita of country [i] for the period [t] at a constant price (1995);
- the first dependent variable is the first lag of the productivity growth $[Y_{i,t}]$;
- $[s_k]$ is the share of investment within sectoral output from the PWT and
- [n] is the average growth rate of labour forces in each branches; the rate of [g] and depreciation [δ] here assumed to be 0.05, as in Mankiw et al. (1992);
- [X] is a vector, which indicates the impacts of labour market institutions
- and [e] is the error term.

Dependent Variable	Δln(real GVA per capita) _{it}							
Independent variables	High (HS)		Medium high (HIS)		Medium low (LIS)		Low (LS)	
constant	-0.385	0.318	-1.149	-0.725	-1,192	-1.008	-0.075	0.016
	(-1.49)	-0.77	(-2.81)***	(-1.99)**	(-3.16)***	(-2.02)**	(-0.32)	-0.05
ΔIn(Y) _{it-1}	-0.221	-0.464	0.479	0.281	0.145	0.184	0.562	0.442
	(-0.72)	(-1.38)	(3.07)***	(1.81)*	-0.85	-1.1	(4.44)***	(2.08)*
In(s _k) _{it}	0.166	-0.061	0.418	0.305	0.423	0.264	0.045	0.008
	(2.314)*	(-0.45)	(3.13)***	(2.57)***	(3.5)***	(1.66)*	-0.59	-0.08
ln(n _i +g+δ) _t	-0.417	-0.267	-0.813	-0.668	-0.515	-0,509	-0.421	-0.42
	(-1.83)*	(-1.52)*	(-5.14)***	(-4.03)*	(-3.89)***	(-3.76)**	(-3.84)**	(-2.51)**
In(UBs) _{it}		-0.075		0.005		-0.051		-0.006
		(-2.61)***		(-0,23)		(-1.84)*		(-0.28)
In(EPL) _{it}				-0.725		-0.122		0.049
				(-2.38)**		(-1.76)*		(-0.78)
Number of instruments	60	58	60	55	60	50	60	57
Number of countries	30	30	30	30	30	30	30	30
Wald-test	1.17*	10.48**	26.74***	21.89***	18.18***	18.49***	61.50***	19.51***
AR-test	(-2.83)***	(-2.79)***	(-2.43)**	(-2.41)**	(-3.45)***	(-3.47)***	(-3.45)***	(-3.35)***

 Table 3. Dynamic panel regression of real GDP (GVA) per capita, 1980-2008

Source: own calculation based on EC KLEMS (2014), OECD (2014) and Heston et al. (2006) databases.

Notes: * Heteroscedasticity robust z-statistics are in parentheses. Letters in the upper index refer to ***: significance at 1 per cent, **: 5 per cent, *: 10 per cent. P-values without an index mean that the coefficient is not significant even at the 10 per cent level.

RESULTS

- If we have a continuous time an increase in the share of investment within GDP $[s_k]$ variable in both sectors, as theoretically expected, we could claim a positive (procyclical) impact on productivity growth.
- According to the growth theories, the employment growth attainment is negatively related to the growth of per capita output in the long run.

RESULTS

- As we can see our results, the effect of UBs on the growth of productivity does not seem to be large. Nevertheless, there are negative coefficients in all branches but there is no significant z-statistic in LS branches. Hence, UBs are obviously controversially correlated with productivity growth in these sectors.
- From our result we could also state that an increase in EPL in the OECD countries reduced productivity growth in both high and low (HIS and LIS) labour-skilled sectors.

CONCLUSIONS

•In particular, our analysis suggests that policy makers must try to increase the degree of competition in labour markets; i.e. by motivating skilled workers to learn more for better productivity growth. • Moreover, we believe that lower level of unemployment benefits and less regulated labour markets are needed for better economic performance.

FUTURE RESEARCH DIRECTIONS

- (I) Recently, serious debates have taken place in an attempt to explain the role of education as they might influence productivity.
- (II) Since now, there is no ambiguous evidence to identify other institutions (i.e. ALMPs, labour unions, tax wedges etc.) impact on output per capita in different labour-skilled sectors.
- Hence, further research in these approaches could be fruitful as well.

THANK YOU