

The Penn Effect and Transition

The New EU Member States in International Perspective

Richard Frensch^{a,b} and Achim Schmillen^{a,b,c}

^aOsteuropa-Institut Regensburg; ^bUniversity of Regensburg; ^cIAB

11th Bi-Annual Conference of the European Association for
Comparative Economic Studies (EACES): Comparing Responses to
Global Instability

Tartu, August 26-28, 2010



Agenda

Motivation

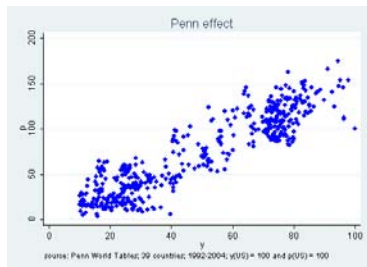
Data

Results

Conclusions



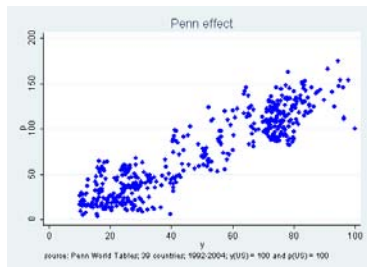
Background



- ▶ At going exchange rates aggregate price levels are generally higher in richer than in poorer economies [cf. Bergin, Glick and Taylor (2006)]
- ▶ Samuelson (1994): "Penn effect"
- ▶ Most prominent explanation: Balassa-Samuelson hypothesis [Balassa (1964), Samuelson (1964)] based on the ratio of tradables to nontradables productivity



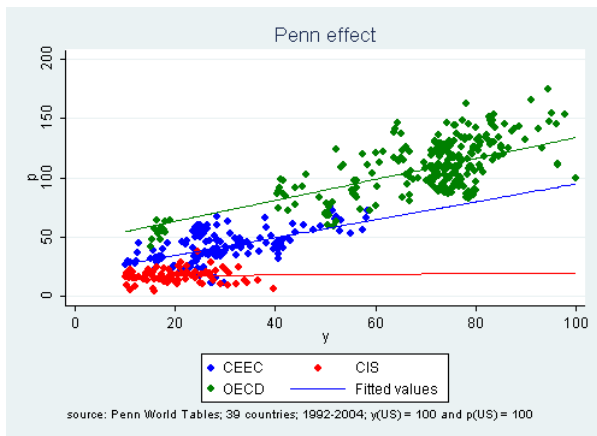
Background



- ▶ At going exchange rates aggregate price levels are generally higher in richer than in poorer economies [cf. Bergin, Glick and Taylor (2006)]
- ▶ Samuelson (1994): “Penn effect”
- ▶ Most prominent explanation: Balassa-Samuelson hypothesis [Balassa (1964), Samuelson (1964)] based on the ratio of tradables to nontradables productivity



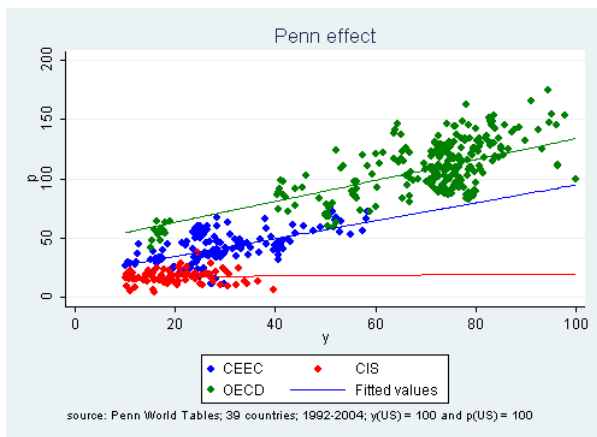
Contribution



Goal: Putting the aggregate price level behavior of (former) transition economies into an international perspective



Contribution



Goal: Putting the aggregate price level behavior of (former) transition economies into an international perspective



Literature (1)

Possibility of peculiar relationship between productivity and aggregate price levels for (former) transition economies because...

- ▶ incomplete price liberalization: the output of a formerly centrally planned economy (CPE) is not yet fully priced on the market, subsidization drives a wedge between prices and costs. This holds especially for services, i.e., non-tradables.
- ▶ Output quality is systematically lower in a CPE than in a market economy [Frensch (2004)]. This may *ceteris paribus* bias aggregate price levels levels downwards for a CPE
- ▶ some (former) transition countries are oil and gas exporters ["Dutch Disease"; cf. Kutan and Wyzan (2005)]



Literature (2)

Related paper: De Broeck and Sloek (2006)

- ▶ Pooled Mean Group (PMG) estimations of relationship between productivity and real effective exchange rates for OECD and (former) transition economies
- ▶ results: confirmation of Penn effect for CEEC and CIS
- ▶ problems:
 - ▶ relationship between the real effective exchange rate and productivity is interpreted as both capturing the impact of structural reforms on productivity and the Balassa-Samuelson effect
 - ▶ PMG estimations only for CEEC and CIS, no control group
 - ▶ PMG estimations with very short panels and focus on time-series dimension



Data sources and variables (1)

Penn World Tables (version 6.2):

- ▶ PPP-adjusted income per capita (relative to the US)
- ▶ comparative prices (relative to the US)
 - ▶ indicate the deviation of a country's nominal exchange rate from purchasing power
 - ▶ provide a measure of a country's aggregate price level / trade-weighted real effective exchange rate
 - ▶ both comparable over time and across countries



Data sources and variables (2)

EBRD Transition Indicators:

- ▶ price liberalization, trade and foreign exchange system liberalization, competition policy, large scale privatization, small scale privatization
- ▶ Scale: 1–4.33 (OECD: 4.33)
- ▶ Construction of dummies at median value for (former) transition countries

IMF Guide on Resource Revenue Transparency 2007:

- ▶ Dummies for Hydrocarbon-rich countries



Data coverage

1992–2004

41 countries

- ▶ 12 CEEC
- ▶ 9 CIS
- ▶ 20 non-transition OECD

$N * T = 484$



The time-series dimension (1)

Table: OLS regression with country fixed effects

	p	
y	0.4514*	(0.2538)
CEEC* y	0.4822	(0.4830)
CIS* y	-1.6241***	(0.4310)
constant	2.6273***	(0.7260)

Notes: * (**, ***) indicate significance at 10 (5, 1) per cent; heteroskedasticity robust standard errors in parentheses.

- ⇒ confirmation of the Penn effect
- ⇒ economically — though not statistically — significant positive coefficient for CEEC* y
- ⇒ negative relationship between p and y for CIS (!)



The time-series dimension (2)

Problems:

- ▶ Penn effect is supposed to be a cross-section phenomenon [cf. Bergin, Glick and Taylor (2006)]
- ▶ no explicit consideration of reforms
 - ▶ reforms in transition economies influences both p and y in these countries (cf. Dufrenot and Egert, 2006)
 - ▶ not explicitly considering them implies an omitted variable bias
- ▶ no consideration of oil and gas exports [which might influence comparative prices because of “Dutch Disease”]



The cross-section dimension

Table: OLS regression with period fixed effects

		<i>p</i>
<i>y</i>	0.4760***	(0.0219)
CEEC* <i>y</i>	-0.0784	(0.0715)
CEEC	-0.2303	(0.2587)
CIS* <i>y</i>	-0.2230	(0.1768)
CIS	-0.3320	(0.5121)
OIL	0.1972***	(0.0556)
price liberalization	0.2366*	(0.1251)
trade and foreign exchange system liberalization	0.2433**	(0.0975)
competition policy	-0.0749	(0.0876)
large scale privatization	0.0089	(0.0712)
small scale privatization	0.1935***	(0.0530)
constant	2.1913***	(0.1689)

Notes: * (**, ***) indicate significance at 10 (5, 1) per cent; heteroskedasticity robust standard errors in parentheses.

- ⇒ confirmation of the Penn effect
- ⇒ no special status of (former) transition economies
- ⇒ important role for OIL dummy and some transition indicators



Robustness

All results quite robust...

- ▶ ...to the choice of the sample:
 - ▶ 1989–2004
 - ▶ excluding Armenia, Aserbaijan, Kyrgyztan (for which we have very few observations)
- ▶ ...to the choice of the definition of oil and gas exporters:
 - ▶ net energy exporters [as listed by IEA (2008)]
- ▶ ...to the the exact threshold for the transition indicator dummies
 - ▶ first tercile of (former) transition countries versus the other two
 - ▶ first two terciles of (former) transition countries versus the third



Conclusions

Penn effect:

- ▶ robust and stable over all specifications
- ▶ price-income elasticity about 0.5

Special status of (former) transition economies:

- ▶ no special status in preferred specification
- ▶ extend of reforms *ceteris paribus* significantly influences aggregate price levels
- ▶ status as oil and gas exporter *ceteris paribus* significantly influences aggregate price levels

