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Financial Deregulation and Industrial Development: Subsequent Impact on Economic Growth in the Czech Republic, Hungary and Poland

By: Patricia McGrath

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Extraction from PhD in Economics (Financial Deregulation and Economic Growth in the Czech Republic, Hungary and Poland)

by Patricia Mc Grath

Contact: pmcgrath_bitc@eircom.net

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Abstract

The Czech Republic, Hungary and Poland all experienced an initial reduction in the number of industries and an increase in unemployment, once they moved to a market driven economy. Over time the unemployment problem reduced in significance though Poland still experiences high levels to date. Industries sprung up in the private sector in all three countries which counterbalanced the drop in state enterprises. Private sector industries all reported easy access to credit once the business set up while firms with head offices overseas tended to use the home country for borrowing purposes. For these companies, the most significant feature of financial deregulation in the Czech Republic, Hungary and Poland was that of freedom of capital movement, which increased both the level of business and investment opportunities. Results show that financial deregulation led to industrial development in all three countries. Tests to indicate the impact of industrial production on economic growth, show that for the three countries industrial production caused economic growth. This was a uni-directional causality.

1.0   Introduction

This study aims to analyse the impact of financial deregulation on industrial development and subsequently on economic growth, in the three countries. It is an extract from my PhD thesis on Financial Deregulation and Economic Growth in the Czech Republic, Hungary and Poland. Each of these countries had been under Soviet influence since the early 1950's, though they experienced different rates of industrial growth under socialism[1]. Czechoslovakia's growth rate averaged 2.5% between 1980-1989. In Hungary growth varied between 0-4%, with negative growth recorded in 1980. Poland's industrial growth averaged 1% in years 1980-1989, and they experienced a deep recession from 1980-1982. The 1990's brought huge changes for all three countries as they moved from a centrally planned economy to one embracing a market driven culture. The chapter is organised as follows:

Section 2 investigates the development of industries in the Czech Republic, Hungary and Poland
Section 3 describes the data and methodology used
Section 4 looks at empirical results of financial deregulation and industrial development
Section 5 looks at empirical results of industrial development and economic growth
Section 6 summarises and concludes

In this chapter the following questions will be answered:

   i)   has financial deregulation affected the level of industrial development in the Czech
             Republic, Hungary and Poland, in years 1990-2003?
   ii)   has industrial development affected levels of economic growth?
   iii)   is there a causal relationship between industrial development and economic growth?
             What direction/s does it take?

2.0   Development of Industries in the Czech Republic, Hungary and Poland
         1990-2003

Czech Republic

Prior to 1989 the Czech Republic held an impressive record in iron and steel production[2]. They produced nearly 1000kg of steel per capita per year, which was near the world's record figures. They also had a strong, heaving chemistry industry, whilst all industries were technologically backward, energy inefficient and were serious polluters of the environment. 1989 brought the Velvet Revolution and there was a move towards democracy and the free market. This was a difficult process and GDP fell by 15% in 1991 and 7% in 1992. In 1993 there was split and

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[1] Anderson, R.A. and Kegels, C. *Transition Banking, Financial Development of Central and Eastern Europe*, Oxford, Clarendon Press, 1988
[2] Moldan, B. Industrial Development in the Czech Republic in light of Sustainable Development, UNIDO Preparatory Activities for Rio+10, October 26th 2001

Czechoslovakia became the Czech Republic and the Slovak Republic. Industrial Production in the Czech Republic in 1993 was 63% of the 1990 level, though GDP fell by only 0.3%. 1994 saw the beginning of growth, with GDP increasing by 4.5% in 1995. The main reason for the drop in industrial output at the beginning of the 1990's was the reduction of heavy industry. While unemployment reached 20% in badly affected areas, the national average was around 5%. By 1996 this had fallen to 3%.

Two waves of privatisation took place, the first in 1992 when 1900 enterprises were privatised, and the second in 1994-1995. In 1991-1992 small state owned enterprises were sold, with almost 22,000 enterprises being auctioned off. By 1995, 250 of the 316 state farms had been privatised. In 1995 all industrial branches, including the construction industry, consolidated their activities. The EBRD Transition Report 1996, estimates that the non-state sector in the Czech Republic accounted for 4% of GDP in 1995 and almost 74% in 1996[3]. In 1997 the non-state sector's contribution to GDP was nearly 75%[4].

Table 1.1

Net increase in the number of firms by sector, 1993-1996

Sector	1993	1994	1995	1996
Extractive Industries	-796	-328	-74	-42
Manufacturing	-11372	-61470	17652	12476
Energy	22	71	123	-12
Construction	-6902	-46848	17919	14905
Trade	88432	30939	86623	55082
Hotel and Catering	6704	-18045	6206	5586
Transport and Communication	6111	-6725	5347	4125
Finance, insurance and banking	712	2223	2417	2433
Business Services	-719	-41590	35260	28949
Others	26432	1275	18028	16585
Agriculture	22955	8816	13061	7757
Total	131579	-131682	202562	147844

Statistical Yearbook of the Czech Republic in Hoshi[5]

Above, the number of firms in extractive industries fell over the time period 1993-1996, though the reduction rate fell over time. Manufacturing had losses in 1993 and 1994, with increases in

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[3] Szabo, A. Development of Entrepreneurship and Small and Medium-sized Enterprises in the Czech Republic, UN-ECE Operational Activities, http://www.unece.org/indust/sme/cz-study.htm

[4] Bornstein, M. "Framework Issues in the Privatisation Strategies of the Czech Republic, Hungary and Poland", William Davidson Institute, University of Michigan Business School, No 171, June 1998

[5] Hoshi, I. et al, *Barriers to Entry and Growth of New Firms in Early Transition, a comparative study of Poland, Hungary, Czech Republic, Albania and Lithuania*, London, Kluwer Academic Publishers, 2003

the following two years. Construction followed the same trend as manufacturing, with firms involved in trade increasing year on year. Financial firms also saw increases each year. (See Appendix A: Table 2.1 for Distribution of Enterprises by Type of Creation, and 2.4 for Distribution by Sector of Activities).

Manufacturing industry saw major restructuring with the introduction of the market economy. There was a strong decrease in MVA (market value added) and by the year 2000, gross MVA did not reach the 1990 level – see chart below.

Table 1.2

Gross MVA   1995 Prices

Year	1990	1991	1992	1993
Millions CZK	379,092	289,346	325,223	267,968
Year	1994	1995	1996	1997
Millions CZK	299,763	335,616	381,767	405,517
Year	1998	1999	2000	
Millions CZK	371,553	358,525	378,476	

Statistical Yearbook of the Czech Republic in Hoshi[6]

Table 1.3

Gross MVA Index, 1990-100, (1995 constant prices)

Year	1990	1991	1992	1993	1994	1995	1996
Index	100.0	76.3	85.8	70.7	79.1	88.5	100.7
Year	1997	1998	1999	2000			
Index	107.0	98.0	94.6	99.8			

Statistical Yearbook of the Czech Republic Hoshi[7]

In 1998 production in metallurgy in the Czech Republic was 28% of the EU average. In the pulp industry it was 16% of Austrian productivity, and the industry value added per member was only 20.5% of the EU member countries average in 1997.

By 1999 the number of registered industrial enterprises had fallen from 238,109 in 1993, to 151,195. The organisations with over 1000 persons recorded the highest share in the production indicators. Small and medium enterprises recorded lower work productivity than those firms with over 250 employees. The number of SME's is relatively low in the Czech Republic, compared to the average in the EU, though the Czech Republic had a sevenfold increase in the expansion of small businesses since 1990[8].

Table 1.4

Small and Medium Enterprises in Non-financial Institutions and Households

Characteristic	Year	Size	Groups	by number	of persons	Employed	
			1-9	10-19	20-49	50-99	100-249
Average	1995	682,324	642,577	20,850	11,261	4,292	3,344

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[6] Ibid, 2003

[7] Ibid, 2003

[8] Dickinson, P.G. European Business Review, Vol 12, No. 2, MCB University Press, 2000, pp84-92

Number of	1996	720,981	680,054	21,134	12,373	4,369	3,051
Enterprises	1997	802,716	750,512	27,889	15,703	5,366	3,246
	1998	836,476	786,426	27,002	14,845	5,089	3,114
	1999	836,748	787,271	27,464	14,120	4,946	2,947
	2000	989.896	943,340	24,538	14,216	4,918	2,884
	2001	991,658	945,261	25,002	13,647	4,846	2,903
Average	1995	1,920	493	280	332	306	509
Number of	1996	1,942	530	268	368	306	470
Employees	1997	1,973	419	300	417	355	482
	1998	19,20	416	296	401	348	459
	1999	1,951	425	322	403	341	460
	2000	2,032	549	300	410	335	438
	2001	1,997	511	303	397	339	447

Statistical Yearbook of the Czech Republic in Hoshi[9]

The above figures support Jurajda[10] and Terell's argument that small firms are the stimulus for job creation.

Table 1.5

Gross Domestic Output by Origin, 1991-1995

Year	1991	1992	1993	1994	1995
Industry	315.0	317.8	318.1	348.2	403.7

Source: Czech Statistical Office

Above, industry's contribution to output increased year on year from 1991 to 1995 in the Czech Republic.

Table 1.6

Industry Production Volume Indices: Total

Year	1995	1996	1997	1998	1999	2000	2001
CZR	9.2	2.0	4.5	1.6	-3.1	5.4	6.5

Source: Statistical Yearbook on Candidate Countries 2003/01[11]

Table 1.7

Development of Main Production Indicators in 1994-2000

Year	1994	1995	1996	1997	1998	1999	2000
Millions		CZK	IN	OUTPUT	OVER	PERIOD	

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[9] Ibid, 2003

[10] Jurajda, S. and Terell, K. "JoB Growth in Early Transition, comparing two paths", William Davidson Institute, University of Michigan Business School, August 2002, Paper No. 503, abstract, pp1

[11] European Commission, Data 1997-2001, Data 1995-1999, Theme 1 General Statistics

Nace17	45,238	42,968	39,673.9	40,818.8	41,062.2	40,559.6	45,545.9
Nace27	103,526	120,900.1	111,447	130,734.4	126,368.1	107,968,8	114,031.6
Nace31	41,197	51,450	54,806	62,884	65,500	66,469	83,863
Nace34	52,721	70,027	87,618	126,058	142,940	155,395	191,495

Nace17 Textile Industry, Nace 27 Manufacture of basic metals including metal processing, Nace 31 Manufacture of electrical machinery and apparatuses, Nace 34 Manufacture of motor vehicles, trailers and semi-trailers
Source: Czech Republic Statistical Office, MIT Calculation

Above, the textile industry suffered a fall in production from 1994 to 1996. There was an increase from 1997 onwards with figures for 2000 reaching the highest level for six years. Basic metal output fluctuated over the time period, with the manufacture of electrical machinery and vehicles increasing year on year.

Table 1.8
Numbers Employed in Textiles and Manufacturing

Year	1994	1995	1996	1997	1998	1999	2000
Millions CZK							
Nace17	103,003	98,060	89,234	78,628	76,946	70,889	66,388
Nace27	106,070	108,056	106,751	98,825	90,246	83,123	73,974
Nace31	78,137	70,490	75,463	80,678	81,204	82,150	86,174
Nace34	61,180	58,491	57,460	61,674	66,404	68,944	71,566

Source: Czech Republic Statistical Office, MIT Calculation

Above, employee numbers fell in the first two categories. Employment increased in both manufacturing of machinery and vehicles.

Table 1.9
Main Production Indicators according to Size Groups of Enterprises in 1999

Mil CZK Persons	0-9	10-49	50-249	250-999	Over 1000
Revenues for sale of Product and Services	69,918	160,601	326,575	365,551	586,273
Value added	19,810	41,961	89,048	110,148	143,600
Number of Employees	96,190	199,022	331,240	336,158	364,534

Source: Czech Republic Statistical Office, MIT calculation

Above, large firms (over 1000) contributed more to revenue and value added, than the smaller enterprises. This supports Weeks[12] who argues that output per worker falls as size declines.

In 1998 the industrial sector's contribution to GDP fell from 47.5% to 42%. However by 2000 industrial output had increased by 7%. The service sector developed in the 1990's due to the increase in tourism. In the mid 1990's consumer demand was high. It then fell but recovered by 2000, due to a rise in exports and FDI. Employment fell in both industrial output and agriculture, but rose in the services sector. By mid 2001 the unemployment rate was 8.2%, with the minimum monthly wage from January 2002 at 5.700 CZK per month. However wage inflation had begun to affect this. The Czech Republic suffered from low levels of productivity (compared to other EU countries – about one third of the EU average). Other problems included poor access to distribution systems, poor brand image and inexperienced management. By 1996 almost 100% of construction firms were privately owned. The Czech Republic had one of the least efficiency energy sectors in Europe. By 1998 the private sector account for 75% of GDP.

Table 1.9

Output: Industrial Production – construction excluded[13]

Czech Republic

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	03
-21.9	-8.0	-5.3	2.1	-0.7	2.0	4.5	1.6	-3.2	5.4	6.5	9.5	4.5

Source: Czech Republic Statistical Office, MIT calculation

Above industrial production output fell considerably by 1991. Increases were recorded from 1992-1994. From 1995 to 1997, there was an upward trend in output, with reductions over the next two years. 2002 showed an output figure of 9.5% with a fall of 5% in 2003.

Table 1.10

Unemployment Rates

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
0.7	4.1	2.6	3.5	3.2	2.9	3.5	5.2	7.5	9.4	8.8

Source: Czech Republic Statistical Office, MIT calculation

The Czech Republic traditionally had low unemployment levels. Czech's unemployment rate averaged 3% between 1990-1995[14]. Between 1996 and 2000 there was a three year recession and unemployment grew by almost 6%[15]. Unemployment reached 10% by 2003. Fast growth of wages, (between 4-7% in 2001-2003) which was twice as high as labour productivity,

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[12] Weeks, J. Chapter 2, The Efficiency of Small Enterprises in Developing Countries: an Empirical Analysis, pp15-16 in Ghatak, S. et al, "European Integration and the Survival of Polish Small Enterprises", edited by Homi Katrak and Roger Strange, Basingstoke, Palgrave, 2002, pp137

[13] European Economy, European Commission, Directorate-General for Economic and Financial Affairs, No. 6, 2003

[14] European Employment Observatory, European Commission, Employment and Social Affairs, Employment and European Social Fund, Review Spring 2004, pp150-154

[15] Ibid. 2004

contributed to high unemployment levels. Between 1996 and 2002 unemployment fell by 4.1% (from 4.972 million to 4.765 million people). Employment losses have been most severe in mining and agriculture with increased employment in public administration and the health sector.

In the Czech Republic, after 1990 and financial deregulation, the numbers of businesses overall increased dramatically. At the beginning of 1990 there were just 18,837 company registered businesses but by the end of 2001 the number had reached more than 2.1 million[16].

Hungary

Hungary's output by industrial firms employing 50 workers or less, increased by 50% in 1991 and represented 6% of production[17]. Halpern and Korosi[18] found that state-owned firms were less efficient, with foreign owned firms being more efficient. Small firms performed better than large ones. They also found that GDP and Productivity moved in line, with productivity showing higher levels (blue line), throughout 1990's – see chart below.

GDP and Productivity Hungary 1990-1998
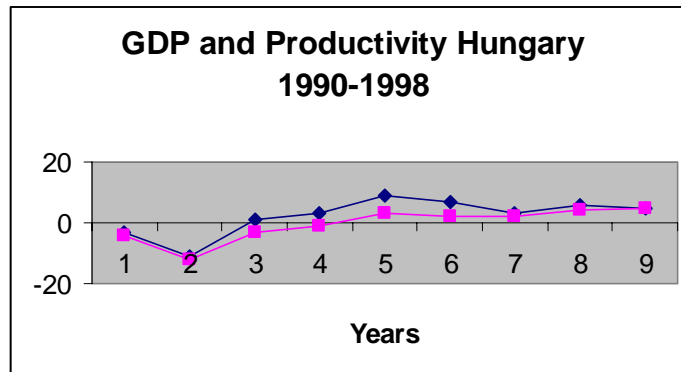
Productivity here is measured by GDP over employment. (See Appendix A Tables 2.2 for Distribution of Enterprises by Type of Creation, and 2.5 for Distribution of Enterprises by Sector of Activities).

Table 1.11

Output: Industrial Production – construction excluded[19]

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	03
-18.3	-9.8	3.9	9.5	4.7	3.3	11.1	19.9	10.3	18.2	3.6	2.7	2.5

Source: Statistical Yearbook on Candidate Countries 2003[20]

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[16] www.economist.com/countries/CzechRepublic/profile.cfm
[17] Dickinson, P.G. European Business Review, Vol 12, No 2, MCB University Press, 2000, pp84-92
[18] Halpern, Lazlo and Korosi, Gabor, "Efficiency and Market Share in Hungarian Corporate Sector", William Davidson Institute, University of Michigan Business School, Working Paper No 333, July 2000
[19] European Economy, European Commission, Directorate-General for Economic and Financial Affairs, No 6, 2003
[20] European Commission, Data 1997-2001, Data 1995-1999, Theme 1 General Statistics

There was dramatic fall in industrial production after 1990, and restructuring of the economy. By 1993 data had moved into positive figures with large increases recorded in 1994, 1997, 1998 and 2000. Production fell sharply in 2001 and remained low in both 2002-2003.

The 1990's brought difficult transformation for Hungary, but by 1997 they experienced an average growth of GDP of 4.25%[21].

Table 1.12

Industry Production Volume Indices: Total

	1995	1996	1997	1998	1999	2000	2001
Hungary	4.6	3.4	11.1	12.5	10.4	18.1	3.6

Source: Statistical Yearbook on Candidate Countries 2003[22]

Production volume fell in 1996 though there were large increases up to 2000. There was a reversal in 2001.

Table 1.13

GDP by Kind of Activity

	1991	%	1992	%	1993	%	1994	%	1995	%
Mining and Quarrying	81.8	3.6	32.2	1.2	20.1	0.6	20.0	0.5	23.2	0.5
Manufacturing	494.2	21.5	583.1	22.2	688.4	21.9	848.2	21.6	1125.5	23.0
Construction	123.5	5.4	153.9	5.9	167.4	5.3	201.5	5.1	238.7	4.9

Source: Hungarian Statistical Office

Manufacturing steadied at around 20% in the early nineties, along with construction – see chart above. Manufacturing remained steady between 2000-2002, and represented around 90% of industrial production – see chart below.

Table 1.14

Industrial Production at constant price of 2002, %

	2000	2001	2002
Mining	0.5	0.6	0.5
Manufacturing	89.8	90.1	90.4
Chemicals	6.8	6.3	6.2
Electrical and Optical equipment	23.0	24.0	24.5
Transport	13.4	13.4	13.1
Electricity, gas And water	9.7	9.3	9.1
Industry Total	100.0	100.0	100.0

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[21] Op. Cit. European Employment Observatory, European Commission, Employment and European Social Fund, Employment and Social Affairs, Review Spring 2004, pp 166-171
[22] European Commission, Data 1997-2001, Data 1995-1999, Theme 1 General Statistics

Source: HCSO Annual Figures

Hungary's private sector accounted for 75% of GDP in 1997[23].

Table 1.15

Unemployment Rates (%):

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1.7	7.4	12.3	12.1	10.9	10.4	10.5	10.4	9.1	9.6	8.9

Source: Hungarian Statistical Office

Unemployment was not a problem for Hungary prior to restructuring of the economy. It rose from 1991 to 1993 but then began falling slightly year on year. By 2001 unemployment had fallen to 5.6%. It steadied at 5.5% in 2002 and 5.9% in 2003.

Poland

Prior to reform, state owned enterprises accounted for 82% out output and 71% of employment in Poland. Output was dominated by heavy industry and the share of manufacturing in GDP was much higher than in low income EEU countries. In 1988 it accounted for 45% of GDP and the service sector accounted for 21% of GDP. Levels of industrial concentration were high. Polish managers also used resources for non-economic aims[24]. In Poland in 1990 there were 4024 state owned enterprises set up[25]. Between 1990 and 1995, 47.1% of employment was lost here. 4709 firms were restructured and there was a loss of 39.2% of employment. 856 firms were fully privatized and they lost 36% of their labour force. Large domestic and foreign owned firms lost over 60% of initial employment. Overall the large private firms and public sector lost over 3.5 million jobs in five years – see tables below. (See Appendix A Tables 2.3 for Distribution of Enterprises by Type of Creation, and 2.6 for Distribution of Enterprises by Sector of Activities).

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[23] Op. Cit. Bornstein, 1998

[24] Ghemawat, Pankaj and Kennedy, Robert E., "Competitive Shocks and Industrial Structure: the Case of Polish Manufacturing", William Davidson Institute, University of Michigan Business School, Working Paper No 53, May 1997

[25] Jackson, John. E. et al, "Firm Creation and Economic Transitions", William Davidson Institute, University of Michigan Business School, Working Paper No 238, July 1998

Table 1.16

Births and Size of Cohorts

Birth Year	Domestic Firms	Size	Total Jobs (in thousands)	Foreign Firms	Size	Total Jobs (in thousands)
1990	13587	17.1	232.0	778	34.9	27.2
1991	11820	26.8	316.5	183	40.2	7.4
1992	11284	22.5	254.3	774	32.9	25.5
1993	9748	22.5	218.9	504	33.1	16.7
1994	7728	23.0	178.1	534	32.3	17.3
1995	17291	16.8	290.8	1858	22.7	43.2

Source: Polish Statistical Office

Table 1.17

Output: Industrial Production – construction excluded[26]

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	03
-16.0	3.5	4.8	13.1	10.6	9.4	11.3	4.7	4.7	7.5	0.4	1.4	5.0

Source: Polish Statistical Office

1991 saw a huge reduction in industrial output. B y 1994 this had increased by almost 30%, from negative to positive figures. 1998 recorded a fall of almost 6% with further fall sin 2000 and 2001.

Table 1.18

GDP by Kind of Activity (current prices)

	1992	%	1993	%	1994	%	1995	%
Manufacturing	39126.8	35.5	51206.7	35.7	67706.1	36.2	82573.8	33.3
Construction	8931.6	8.1	10151.3	7.1	11998.7	6.4	148106.5	6.0

Source: Polish Statistical Office

Manufacturing remained steady over the time period with construction activity falling year on year.

Table 1.19

Industry Production Volume Indices: Total

	1995	1996	1997	1998	1999	2000
Poland	10.2	9.0	11.5	4.8	4.4	7.1

Source: Statistical Yearbook on Candidate Countries 2003[27]

Production volumes fell dramatically in 1998 and remained low for the rest of the nineties, though there was an increase in 2000.

Poland saw an increase in employment levels in small scale businesses, from 12% in 1989 to 61% in 1994[28]. Private firms increased their share of industrial output from 16% of gross sales in 1989 to 45% in 1995. Dickinson's study of Poland found the Poles to be willing to take risks and set up independently. Poland accumulated large amount of capital in the 'grey' market, and along with their innate entrepreneurial skills, they managed to move further ahead than other transitional economies.

Table 1.20

Unemployment Rates (%):

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
6.5	12.2	14.3	16.4	16.0	14.9	13.2	10.3	10.4	13.1	15.0

Source: STAT.GOV.PL

Poland's average unemployment rate almost doubled in 1991. It has remained in double figures, and some regions have higher than average rates. Unemployment stood at 19.7% in 2002, though it steadied at 17% in 2003[29].

The largest job loss between 1988 and 1993 was in the state owned sector, particularly the state manufacturing sector[30]. By 1992 growth in private sector labour equaled 180% of its size in 1988. The proportion in the private sector increased from 6.7% to 21.4% as a proportion of the active workforce. Growth in employment in the private sector came from new firms rather than privatized state firms. By 1998 new private firms accounted for almost 80% of all private sector jobs. There was a decline in farmers from 13.2% to 8.3%. Between 1988-1993 there was 13% of creation of jobs in the de novo sector with 40% destruction in the state sector. Also between these years, state workers had a 10% chance of being unemployed and 16% chance of leaving the workforce. At this time 25% of the unemployed and 8% of non-workers found jobs in the private sector. There was competition for jobs between those leaving the state sector and those

[27] European Commission, Data 1997-2001, Theme 1 General Statistics
[28] Dickinson, P.G. European Business Review, Vol 12, No 2, MCB University Press, 2000, pp84-92
[29] EBRD Transition Report 2000 and Business Central Europe Database and WDI Staff Calculations, William Davidson Institute, University of Michigan Business School
[30] Jackson, J and Mach, B. "Job Creation, Destruction and Transition in Poland, 1988-1998: Panel Evidence", William Davidson Institute, University of Michigan Business School, Working Paper No 502, June 2002

without work at the beginning of transition, which increased the unemployment rate. Other studies on employment in Poland by Bishop et al[31] support the view above that new firms in Poland create more employment. They also found that foreign firms do not reduce labour, like domestically owned firms, and that privatized companies reduce their labour force more than all the others.

3.0   Data and Methodology used to investigate the impact of financial deregulation on industrial development

To examine financial deregulation and its impact on industrial development, sources were taken from the William Davidson Institute (University of Michigan) Working Paper Series, and various journals and books from Irish and UK libraries, Databases – Emerald and Business Source Elite were used for journal articles. Published statistics were taken from Digests of Statistics, Annual Reports of National Banks and Regional Central Banks, IMF Statistical Reports, Chamber of Commerce Reports and EU Reports.
Primary sources were also used. Questionnaires were sent to 400 UK firms in 2003, in various sectors in the Czech Republic, Hungary and Poland. 60 companies were selected as a sample prior to this. There was a positive response (over 30%) and the remainder of the questionnaires were posted and emailed during September to December 2003. There was a 32% response rate, which is an acceptable response rate for a postal/email questionnaire.

Questionnaires were sent to businesses in thirty seven different fields[32]. Different sized companies were targeted: small, small-medium and large with employee sizes 1-25, 26-50, 51-100 and 100+ respectively. The questions asked were related to the impact of liberalisation on their business, the removal of capital controls, removal of controls on interest rates, despecialisation of financial institutions, improved securities markets, transparent financial institutions, and simplification of prudential supervision across markets.

3.1   Data and Methodology used to investigate the impact of industrial development on economic growth

The investigation of the relationship between industrial development and economic growth, used techniques of cointegration and Granger causality. These were applied to examine the relationship between industrial growth and overall economic performance in the Czech Republic, Hungary and Poland. See also Yamak[33] and Diaz-Bautista[34], who examine this causal relationship in Turkey and Mexico respectively.

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[31] Bishop, K and Mickiewicz, T. "While Labour Hoarding may be over, Inside Control is not – determinants of employment growth in Polish large firms, 1996-2001", William Davidson Institute, University of Michigan Business School, Working Paper No 593, July 2003

[32] Accountancy, aerospace, architects, automotive industry, business consultants, business information, chemical, cigarettes, cleaning, clothing, construction, cosmetics, education, electricity, engineering, environment, executive, finance, food/drink, healthcare, household, industrial, insurance, IT, legal, lobbyiss, marketing, media, oil/gas, PR, real estate, recreation, stainless steel, telecommunications and ratio communications, textiles, transport and shipping, water processing

[33] Yamak, N 1997, "Cointegration, causality and Kaldor's Hypothesis: Evidence from Turkey 1946-1995", Journal of Economic Literature, 12, 131, pp5-14

Data for the three countries consists of Industrial Production (seasonally adjusted) and GDP at deflated prices. Industrial Production figures for the Czech Republic cover the period Quarter 1 1993 to Quarter 4 2003. For Hungary and Poland data dates from Quarter 1 1990 to Quarter 4 2003. Data for GDP for the Czech Republic covers the period Quarter 1 1994 to Quarter 4 2003, and for Hungary and Poland from Quarter 1 1995 to Quarter 4 2003 and Quarter 3 2003 respectively. All data was taken from the International Financial Statistics databases and quarterly figures were used – see Appendix A: Tables 2.7, 2.8 and 2.9. The data is in millions/billions/an index number of national currency i.e. Czech krony, Hungarian pound and Polish zloty.

The Granger Causality test was used, and the cointegration test. Engle and Granger[35] show that two variables, the logarithm of the level of the industrial production (log IND) and the logarithm of the level of the real GDP (log GDP) are cointegration if each is non-stationarity but there exists a linear relationship of two that is stationary.

The Dickey Fuller (DF) and Augmented Dickey Fuller (ADF) tests were used to implement stationarity tests. The DF/ADF is designed to reject the null hypothesis unless evidence exists to support it. The null hypothesis states that there exists a unit root in the series being tested. The DF/ADF statistic used in the test is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit root at some level of confidence. A stochastic process is stationary if all the roots of the characteristic are greater than 1 in absolute value[36]. If the roots are less than 1, the
process is non-stationary. The Dickey Fuller /Augmented Dickey Fuller unit root test statistics[37] were used, which incorporate McKinnon critical values, which in turn accommodate error autocorrelation by adding lagged difference of yt. The existence of a long-run relationship between the two variables is tested by calculating the F-statistic for testing the significance of the lagged levels of the variables, in the error correction form of the ARDL model. Coefficients of the long-run relationship can then be estimated and decisions made on their values and what they signify.

To test the relationship between IND (Industrial Production) and GDP (Gross Domestic Product) these were checked to see if these two variables move in the same direction. First the values for IND and GDP (at 1995 prices) were plotted for all three countries and results showed that the two series for all three countries are trended and move with one another (see Appendix A, Figures 4.1, 4.2 and 4.3). However it cannot be said that they are cointegrated. Tests are undertaken for a unit root, and using Microfit 4.1 p values are assigned (p = the order of the augmentation/lag of the test). The Dickey Fuller and Augmented Dickey Fuller tests are used as the sample is small (quarterly figure from 1990-2003 inclusive).

[34] Diaz-Bautista, A. 2004, "Mexico's Industrial Engine of Growth: Cointegration and Causality", Econometrics 0402010, Economics Working Paper at WUSTL
[35] Engle, R.F. and Granger, C.W.J. "Cointegration and Error Correction: Representation, Estimation and Testing", Econometrica, 55, 1987, pp251-276
[36] http://www.sussex.ac.uk/Units/economics/qml/lceture 8, pp4
[37] Pesaran, M. Hashem and Pesaran, Bahram, *Working with Microfit 4.0 Interactive Econometric Analysis*, UK, Oxford University Press, 1997

Using the cointegrated method by Johansen[38] and Johansen and Juselius[39], the long-run relationship between log IND and log GDP was detected. This method applies the maximum likelihood procedure to determine the presence of cointegrating vectors in non-stationarity time series. The information in the Akaike Information Criteria (AIC) and the Scwarz Bayesian Criterion (SBC), is determined by the number of lags applied. Two test statistics were used to test for the number of cointegrating vectors: the maximum eigenvalue and trace test statistics.

In cases where there is no evidence of a unit root, cointegration tests cannot be performed. The ARDL (autoregressive distributed lag) procedure is then used, which can be applied irrespective of whether the regressors are I(1) and I(0)[40]. The F-statistic is used for testing the significance of the lagged levels of the variables in the error correction form of the underlying ARDL model. Two sets of critical values are given: one assumes that all the variables in the ARDL are I(1) and the other assume all variables are I(0).

Finally the error correction model was used. An error correction model is a dynamic model in which the movement of the variables in any given period is related to the precious period's gap from the in-run equilibrium[41]. The ECM incorporates a long run cointegration relationship which implies that two cointegrating prices series will not drift apart without limits[42]. It argues that a long cointegrating relationship alone is insufficient, and needs to be complemented with error correction estimates. ECM's extend the analysis by making it possible to test hypotheses on the long run parameter. It is also possible to estimate a speed of adjustment parameter that measure how fast prices move back to the long run equilibrium in the presence of a shock. The ECM separates between a long run and short run response, which is an advantage compared to cointegration tests.

Tests for causality among variables were found to be cointegrated. Granger and Lin[43] state that causality in the long-run exists when the coefficient of the cointegrating vector is significantly different from zero. Variables deletion (F-type) tests for the coefficient of the cointegrating vector for the growth of industrial production VECM and financial development factors growth, were used. Tests for the validity of the supply leading hypothesis and demand following hypothesis were also used.

3.2   Data Constraints

It was impossible to test pre-deregulation data due to its non-existence. The IFS statistics held data for most of the period covered. Quarterly GDP figures for this period were somewhat limited: beginning in 1994 for the Czech Republic, and 1995 for both Hungary and Poland. Quarterly Industrial Production figures for the Czech Republic began in 1993 though the other

[38] Johansen, S. "Statistical Analysis of Cointegrated Vectors", Journal of Economic Dynamics and Control, 12, pp231-254
[39] Johansen, S. and Juselis, K. (1990), "Maximum Likelihood Estimation and Inference on Cointegration – with Application to the Demand for Money", Oxford Bulletin of Economics and Statistics, 52, pp383-397
[40] Op. Cit. Pesaran M. Hasem, and Pesaran, Bahram. (1997) Chapter 16: Lessons in Cointegration Analysis
[41] http://economics.about.com/li.../bldf-error-correction-model.ht
[42] Warell, L. "Market Integration in the International Coal Industry", Lulea University of Technology, Department of Business Administration and Social Science, Division of Economics, January 2002
[43] Granger, C.W.J. and Lin, J. (1995), "Causality in the Long Run", Econometric Theory, 11, 530-536

two countries had figures for the whole period (1990-2003). Nonetheless there were enough details to enable sufficient details to be generated from the data.

The initial starting date was 1990, the year that these countries moved from communist positions to transition status. The cut-off date was 2003, as it was vital to have complete years' figures for banks and economic data for in-depth analysis. While these countries all experienced change post 2003, this is something that cannot be accommodated in this study.

The approach, which isolated the impact of financial deregulation on economic growth, meant that a degree of bias was introduced into the study. Hoshi[44] et al's questionnaires (which were used and analysed) covered the period 1990-1996. My own questionnaires were sent out in 2003, to UK firms operating in the three countries. It included firms who had operated in these countries in the regulated period and post 1989. 32% responded to the postal questionnaire. An initial enquiry asking local firms to respond indicated a 0.5% response. The companies that replied indicated that they would not be in a position to respond to a questionnaire due to confidentiality issues and lack of time. It is likely that language difficulties were a problem also. The decision was then made to contact UK firms who had established businesses in these countries, and the relative Chambers of Commerce provided details. Some of this detail was out of date with firms having moved away or closed down.

It was difficult to determine to what an extent interviewees considered financial deregulation to be beneficial to them, or not. Reliance on their judgement can only be subjective. Nonetheless, one can draw conclusions with a reasonable degree of certainty on the basis of the research material provided.

4.0   Financial Deregulation and Industrial Development – Empirical Results

There are differing views on the relative importance of new firms and their contribution to economic growth. However the overall belief is that new firms encouraged productivity – this led to increased economic growth.

Hoshi[45] studied these three countries over the period 1990-1996, and found an increase in the net entry of new firms, for more years in these countries (Appendix A: Table 2.10)
He also analysed the impact of financial deregulation on industry and found that credit markets appeared for new private firms, early on in their existence in Eastern Europe. They also provided large amounts of financing though they did require collateral. Hoshi found that loss-making firms were not more agreeable to pay higher rates of interest, or more likely to ask for credit. However firms with reduced profits were more likely to request credit than those whose profits had not reduced. The interpretation here is that "reform and reorganization of the banking sector contributed to the reorientation of bank credit to the new private sector"… "which in turn supported the adjustment and recovery f the economy". He found that bank credit was the

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[44] Hoshi, I. et al, *Barriers to Entry and Growth of New Firms in Early Transition, a Comparative Study of Poland, Hungary, Czech Republic, Albania and Lithuania,* London, Kluwer Academic Publishers, 2003

[45] Op. Cit. 2003

largest source of investment finance, in firms which received credit in the Czech Republic. It was the second largest source of credit for both Hungary and Poland (Appendix A: Table 2.11). These points support the assertion that financial deregulation leads to industrial development.

Ghatak et al[46] in Katrak found that small and medium sized enterprises had an enormous role to play in terms of output and employment.

4.1   Financial Deregulation and Foreign Direct Investment – empirical results

In this section the effect of financial deregulation on firms with head offices outside of these three countries is analysed. The aim here is to discover whether the deregulation process affected all firms, or just indigenous companies.

4.2`   Survey by Hoshi

Hoshi[47] found that firms with head offices outside of these three countries, tended to rely more on own savings and borrowing from head office/family loan/other sources for initial capital, rather than borrowing from local banks (Appendix A: Table 2.12). He also found that foreign firms were less likely to borrow domestically over the course of the business life cycle (Appendix A Table 2.13). Other investigations showed that foreign firms that received a bank loan found the loan costly, and found collateral requirements to be a severe to quite severe problem (Appendix A: Table 2.14).

4.3   Results of Questionnaire 2002-2003

Questionnaires were sent to 400 firms from September 2003 to December 2003 by email and post. This number was reduced to 311, when 89 questionnaires were returned unopened, due to companies relocating or closing down. Of the remaining 311, 98 responded, which meant a 32% response rate, which is deemed acceptable for a postal questionnaire (minimum acceptable rate is 30%). The answers received are a reliable indicator of current beliefs amongst UK firms operating in these countries, of the impact of financial deregulation on their operations.

10 questions are asked (see copy of questionnaire in Appendix A: Table 2.15), 4 relating to description of the firm and 6 relating to financial deregulation and its impact on firms. These questions arose from the Literature Review. The results from the different countries were as follows: the response rate for the Czech Republic was 36%, 21% for Hungary and 43% for Poland. Thirty seven different industries were represented (Appendix A: Table 2.16)

Most companies had set up after the break with communism (post 1989), and most responses were from small companies i.e. with between 1-25 employees.

Response to questions in the impact:

i)   of freedom of capital movement on the level of business:

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[46] Op. Cit, S. et al in Katrak et al, 2002, Chapter 8, pp137
[47] Op. Cit. pp10

34% of businesses reported an increase in the level of business, once capital was allowed to flow freely into the country (2% reported a reduction with 64% reporting no change)

ii)   of freedom of capital movement on investment opportunities

42% of businesses noticed an increase in business opportunities, as a result of the increased capital available (2% reported a reduction with 56% reporting no change)

iii)   of freedom of interest rates on access to business loans

26% of firms had increased access to business loans once interest rates were liberalized. The reduction in lending rate made credit more easily affordable. (2% reported a reduction with 72% reporting no change)

iv)   of removal of controls on interest, on investment opportunities

20% of firms took advantage of business opportunities, once interest rates became more attractive. (2% reported a reduction with 78% reporting no change)

v)   of despecialisation on financial intermediation

32% of firms believed increased intermediation resulted from banks offering more than one speciality. (0% reported a reduction with 68% reporting no change)

vi)   of improved function of securities markets on investment opportunities

20% of businesses make use of the improved and more developed stock exchange to invest. (2% reported a reduction with 78% reporting no change)

vii)   of improved securities markets in financial intermediation

only 2% credited the more developed stock exchange as being an instigator of financial deepening. (0% reported a reduction with 98% reporting no change)

viii)   of increased transparency of financial institutions on accuracy of assessment of their financial positions

19% of businesses believed that increased openness of banks, and increased transparency had a noticeable effect when assessing their financial positions. (1% reported a reduction with 80% reporting no change)

ix)   of increased transparency on financial decision making

24% believed that their own financial decision making was improved as a result of the increased transparency. (0% reported a reduction with 76% reporting no change)

x)   of harmonization of prudential standards on levels of confidence in the banking system

41% of businesses indicated increased levels of confidence in the banking system, as a result of prudential standards being harmonized. (4% reported a reduction with 55% reporting no change – see Appendix A: Table 2.17)

While the overall response to this questionnaire seems to be 'no change' in levels of business activity, this evidence corroborates Hoshi's examination of foreign firms in the Czech Republic, Hungary and Poland (Appendix A: Table 2.12, 2.13, 2.14. It appears that firms continue to use the home country, for borrowing purposes, when investing and expanding.

5.0   Industrial Development and Economic Growth – empirical results

To test the relationship between Industrial Production (Gupta[48] was followed and Industrial Development used as a proxy for GNP) and GDP, there was a check if see if these two variables move in the same direction. First the values for Industrial Production and GDP for all three countries were plotted, and results shows that the two series for all three countries are trended and move with one another (see Appendix A: Figures 1.1, 1.2, and 1.3). However it cannot be stated that they are cointegrated. Tests were then undertaken for a unit root, and using Microfit 4.0 we assign p=0 and p=1, (p = the order of augmentation/order of the lag, of the test). The Dickey Fuller and ADF (1) were used as the sample size is small. The results are as follows:

5.1   Root Tests at Logarithmic Levels

Czech Republic Variables
        *Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected
        * 95% Critical values for the augmented Dickey-Fuller statistics = -3.5313 (with trend) and -2.9422 (without trend)

Table 1.21

	With Trend	Without Trend
Industrial Production		
DF	-1.2788*	
ADF(1)	-1.4464*	
ADF(2)	-1.3795*	
ADF(3)	-1.1651*	
ADF(4)	-.76666*	
ADF(5)	-.75380*	

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[48] Gupta, N and Yuan, K. "Financial Dependence, Stock Market Liberalisations and Growth", <u>William Davidson Working Paper</u>, No. 562, May 2003, pp3-4

19

GDP		
DF	-3.4404*	
ADF(1)	-3.0700*	
ADF(2)	-1.5771*	
ADF(3)	-.042853*	
ADF(4)	-1.3703*	
ADF(5)	-1.4942*	

Variables: *Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected

Table 1.22

	Unit Root at First Difference	
	Without Trend	
Industrial Production		
ADF(4)	-2.5324*	
ADF(5)	-2.1521*	
GDP		
ADF(3)	-2.3460*	
ADF(4)	-2.1446*	
ADF(5)	-2.2006*	

INDP (Industrial Production) in the Czech Republic, which has a trend shows DF and ADF statistics (1), (2), (3), (4), and (5): -1.2788, -1.4464, -1.3795, -1.1651, -.76666 and -.75380 respectively. These are all, in absolute value, below their asymptotic 95% critical value given (-3.5313). Therefore the null of a unit root in the log of INDP for the Czech Republic at the 5% significance level is rejected. Using the ADF test with difference of the first series, the following was found: the first difference does not have a trend, and the absolute value of the ADF (4), (5) test statistics are -2.5324 and -2.1521, which are below the 95% critical value of the test, (-2.9422). The hypothesis that the growth rate of CZRINDP has no unit root is rejected.

The GDP of the Czech Republic (trended) shows the DF, ADF(1), (2), (3), (4) AND (5) statistics, are -3.4404, -3.0700, -1.5771, -.042852, -1.3703, and -1.4942, which are well below the 95% critical value. With difference of the first series the ADF(3), (4) and (5) test statistics are -2.3460, -2.1446 and -2.2006 are below the 95% critical value of the test. Performing cointegration tests for both tests is possible.

Hungary Variables
        *Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected
        *95% Critical values for the augmented Dickey-Fuller statistics = -3.5005 (with trend) and -2.9215 (without trend)

Table 1.23

	With Trend	Without Trend
Industrial Production		
ADF(2)	-3.3207*	
ADF(3)	-3.1632*	
ADF(4)	-3.1102*	
ADF(5)	-3.0070*	
GDP		
ADF(1)	-3.2913*	
ADF(2)	-2.3715*	
ADF(3)	-2.2556*	
ADF(4)	-2.6001*	
ADF(5)	-2.4653*	

Variables
*Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected

Table 1.24

	Unit Root Tests at First Difference	
	Without Trend
Industrial Production	-7.1075
DF	-5.5303
ADF(1)	-5.3867
ADF(2)	-5.6843
ADF(3)	-4.9884
ADF(4)	-4.9233
ADF(5)	
GDP	
ADF(3)	-1.6701
ADF(4)	-1.7591
ADF(5)	-1.7217

Hungary's Industrial Production figures and GDP (which both have trends) show DF and ADF statistics, which are below the 95% critical value. Therefore rejection of the null hypothesis of a unit root is impossible. In the first difference for Industrial Production results show that DF and ADF statistics are above the 95% critical values and there is rejection of the null hypothesis that the growth rate of INDP has a unit root. GDP data shows statistics which are below the 95% critical value test. Cointegration tests are therefore not possible as the levels of log INDP are characterized by I(0).

Poland Variables
      *Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected
      *95% Critical values for the augmented Dickey-Fuller statistics = -3.5005 (with trend) and -2.9215 (without trend)

Table 1.25

	With Trend	Without Trend
Industrial Production		
DF	-2.4620*	
ADF(1)	-2.7892*	
ADF(2)	-3.0424*	
ADF(3)	-2.8292*	
ADF(4)	-2.2249*	
ADF(5)	-2.3179	
GDP		
ADF(1)	-2.6837*	
ADF(2)	-2.4173*	
ADF(4)	-2.5198*	
ADF(5)	-2.4570*	

Variables
*Evidence of unit root at the 5% significance level – the null hypothesis cannot be rejected

Table 1.26

	Unit Root Tests at First Difference
	Without Trend
Industrial Production	
DF	-6.6949
ADF(1)	-4.7690
ADF(2)	-4.6260
ADF(3)	-5.1222
ADF(4)	-3.9863
ADF(5)	-3.2948
GDP	
ADF(3)	-1.3163*
ADF(4)	-1.2497*
ADF(5)	-1.2410*

Poland's Industrial Production figures and GDP (which both have trends) show DF and ADF statistics which are below the 95% critical value. Therefore rejection of the null hypothesis of a unit root is impossible. In the first difference for Industrial Production we find that DF and ADF statistics are above the 95% critical value and rejection of the null hypothesis that the growth rate of INDP has a unit root is possible. GDP data shows statistics which are below the 95% critical value test. Cointegration tests are not possible as the levels of log INDP are characterized by I(0).

For the Czech Republic we can continue with cointegration tests and in this section the results are shown.

5.2   Johansen-Juelius Likelihood Cointegration Tests

Czech Republic Variables

*rejection of the null hypothesis, that there is no cointegation between variables (r = 0) but does not reject that there is a cointegrating relationship between two variables (r = 1).

Cointegration with restricted intercepts and no trends in the VAR Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

Table 1.27
                Industrial Production/GDP

Maximal Eigenvalue	Null Statistic	Order of VAR	Null 95% Critical Value
17.0704*	r = 0	3	15.8700
6.0081*	r <=1	3	9.1600
Trace			
23.0785*	r = 0	3	20.1800
6.0081*	r <=1	3	9.1600

Results from the Test Statistics and Choice Criteria for Selecting the order of the VAR Model suggest a VAR of 3 (both AIC and SBC). The Maximum Eigenvalue statistics strongly reject the null hypothesis that there is no cointegration between INDP and GDP, in the Czech Republic at the 95% critical value. They do not reject that there is one cointegrating relationship between INDP and GDP i.e. that r = 1. The Trace Eigenvalue statistic supports this view. Evidence shows that rejection the null hypothesis is possible i.e. that there is no cointegrating relationship between INDP and GDP in the Czech Republic, and that at least one cointegrating relationship exists between the two variables.

Finally the Granger Causality tests on the ECM Representation are used to see if causality exists between variables, and to investigate if it is uni-directional or bi-directional.

Granger Causality Tests on the ECM Representation

Czech Republic

Error Correction Model for variable IND (Industrial Production) by OLS (Ordinary Least Squares) based on cointegrating VAR 1 (vector autoregressive)

Variable INDP is independent, GDP is dependent

Table 1.28
Supply Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
GDP/INDP	-.078484	-.21443 [.831]	11.7274* [.000]

*indicates rejection of the null hypothesis for the 95% significance level

Variable GDP is independent, INDP is dependent

Table 1.29
Demand Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
INDP/GDP	-0.15815	-2.1443 [.831]	1.9111 [.163]

The above results show that there is uni-directional causality between INDP and GDP for the Czech Republic. INDP causes GDP.

5.3 Further Analysis using ARDL

The Autoregressive Distributed (ARDL) bounds test is used, to examine the cointegrating relationship between INDP and GDP for both Hungary and Poland, as performing cointegration tests is not possible. This bounds test is suitable for a small study, and the variables studied need not be integrated of the same order. The Ordinary Least Square (OLS) technique is used and there is restriction of all estimated coefficients of lagged level variables equal to zero, to check for cointegation.

There is estimatation the ARDL model[49]. If the computed F-statistic is below its lower bound criteria value (3.793-4.855)[50], the null hypothesis is not rejected (no cointegration i.e. the independent variable does not cause the dependent variable).

Hungary

Variable INDP is independent, GDP is dependent

Table 1.30

Supply Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
GDP/INDP	.059874	.20827 [.836]	7.042* [.000]

*indicates rejection of the null hpothesis for the 95% significance level

Variable GDP is independent, INDP is dependent

Table 1.31

Demand Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
INDP/GDP	-.12977	-2.6734 [.012]	3.6271 [.038]

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[49] Pesaran, M. Hashem and Pesaran, Bahram, *Working with Microfit 4.0 Interactive Econometric Analysis*, UK Oxford University Press, 1997, pp302-308
[50] Ibid. Pesaran, 1997, pp478, Table F

For Hungary when INDP is independent there is rejection of the null hypothesis i.e. there is acceptance that INDP causes GDP. When GDP is independent there cannot be rejection of the null hypothesis, and there is acceptance that GDP does not cause INDP.

Poland

Variable INDP is independent, GDP is dependent

Table 1.32

Supply Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
GDP/INDP	.64906	1.1129 [.274]	12.0898* [.000]

*indicates rejection of the null hypothesis for the 95% significance level

Variable GDP is independent, INDP is independent

Table 1.33
Demand Leading Hypothesis Test

Variables	Co-efficient of EM Term	T-ratio	F stat for ECM Term
INDP/GDP	.059195	1.1129 [.274]	.34186 [.713]

Here the supply leading hypothesis holds i.e. INDP causes GDP and there is rejection of the hypothesis that GDP causes INDP.

6.0   Summary and Conclusion

The evidence here supports the view that there is a relationship between financial deregulation and economic growth, in the Czech Republic, Hungary and Poland. An analysis of the theoretical relationship between financial deregulation and industrial development, shows that there is both support for deregulation and regulation. Fitzgerald[51], Hanson and Rocka[52]in Fry, and Caprio[53] all recognise that regulation tends to create more problem than it solves, while Honohan and Stiglitz[54] in Caprio argue for regulation. The examination of the theoretical relationship between industrial development and economic growth, shows there is strong support for the argument that industrial development promotes economic growth – see Juarajda and

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[51] Fitzgerald, E.V.K. Capital Surges, Investment Instability and Income Distribution after Financial Liberalisation", Working Paper Series, Paper No. 6, Institute for Development Policy and Management, University of Manchester, Financial and Development Research Programme, May 1999, pp1-22

[52] Fry, Maxwell. J. Money, Interest and Banking In Economic Development, 2nd Edition, Chapter 16: "Macroeconomic Environment and Macroeconomic Policies", 1995, pp387

[53] Caprio, G. et al, Introduction and Overview: the case for Liberalisation and Some Drawbacks, in Caprio, G. Honohan, P. and StiglitZ, J.E. Financial Liberalisation, how far, how fast?, Cambridge, Cambridge University Press, 2001, pp5

[54] Op. Cit. Caprio, G. et al, "Robust Financial Restraint in Financial Liberalisation", 2001, pp32-34

Terell[55], Jackson[56], Berkowitz and Cooper[57], Brixiova et al[58], and Kirby and Watson[59]. Empirical results indicate that financial deregulation leads to an increase in the net entry of new firms (industrial development), and increased bank borrowing for investment by these firms, in all three countries. Foreign firms tended to rely on the home country for borrowing requirements, and these firms were less affected by change in the deregulation of finance. Empirical results indicate that industrial development is strongly trended with economic growth, in all three countries. Causality is shown to exist in at least one direction. To clarify the direction of causality, the F-statistic was used. It indicated causality from Industrial Production to GDP for all three countries.

There is assertion that financial deregulation supports industrial development in all three countries. Also that industrial development is trended, or strongly aligned, with economic growth for all three. For the three countries, there is cointegration between Industrial Production and GDP, with causation running from the former to the latter.

Finally the three questions posed at the beginning of the study are answered:

i)   has financial deregulation affected the level of industrial development in the Czech Republic, Hungary and Poland, in years 1990-2003?

Yes, and positively.

ii)   does industrial development affect levels of economic growth?

Yes, and positively (see upward trend in graphs Appendix, A. Figure 1.1, 1.2 and 1.3).

iii)   is there a causal relationship between industrial development and economic growth? What direction/s does it take?

For the Czech Republic, Hungary and Poland a causal relationship does exist between Industrial Production and GDP, with Industrial Production being the driving force. Industrial Production caused GDP for all three countries. There is no evidence that GDP caused Industrial Production in any of the three countries – therefore causation is uni-directional.

In conclusion financial deregulation has been an important cause of economic growth for all three countries.

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[55] Jurajda, S. and Terell, K. "Job Growth in Early Transition, comparing two paths", <u>William Davidson Institute</u>, University of Michigan Business School, August 2002, Paper No. 503, Abstract, pp1

[56] Jackson, J. and Mach, B. "Job Creation, Destruction and Transition in Poland, 1988-1998: panel evidence", <u>William Davidson Institute</u>, University of Michigan Business School, Working Paper No 502, Jun 2002

[57] Berkowitz, D.W. and Cooper, D.J. "Start-ups and Transition", William Davidson Institute, University of Michigan Business School, Paper No 84, September 1997, pp1

[58] Brixiova, Z. et al. "Skill Acquisitions and Firm Creation in Transition Economies", William Davidson Institute, University of Michigan Business School, Paper No 162, October 1999, pp3-4

[59] Kirby, D.A. and Watson, A. *Small Firms and Economic Development in Developed and Transition Economies: A Reader*, Aldershot, Ashgate Publishing Ltd, 2003

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Appendix A

Table 2.1

Distribution of all active private enterprises by type of creation % (by countries)[60]

Country/type of Creation	True creation Eurostat	Privatisation or Co-operative split	Other Forms
Czech Republic	1994 86.1	4.6	9.3
	1995 87.3	1.8	10.8
	1996 87.4	2.4	10.1

Table 2.2

Distribution of all active private enterprises by type of creation % (by countries)[61]

Country/type of Creation	True creation Eurostat	Privatisation or Co-operative split	Other Forms
Hungary	1994 84.5	2.2	13.3
	1995 88.1	2.5	9.4
	1996 77.8	6.0	16.2

Table 2.3

Distribution of all active private enterprises by type of creation % (by countries)[62]

Country/type of Creation	True creation Eurostat	Privatisation or Co-operative split	Other Forms
Poland	1994 88.6	3.2	8.2
	1995 87.8	2.9	9.3
	1996 86.0	2.3	11.7

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[60] Op. Cit. Kirby and Watson, 2003
[61] Ibid. Kirby and Watson, 2003
[62] Ibid. Kirby and Watson, 2003

Table 2.4

Distribution of all active enterprises by sector of activities % (by countries)[63]

Country	Manufacturing	Construction	Trade	Transport	Hotel Restaurant Cafe	Others
Czech Republic	10.1	15.2	29.5	4.6	5.4	35.2

Table 2.5

Distribution of all active enterprises by sector of activities % (by countries)[64]

Country	Manufacturing	Construction	Trade	Transport	Hotel Restaurant Cafe	Others
Hungary	12.7	9.9	33.8	5.6	6.3	31.8

Table 2.6

Distribution of all active enterprises by sector of activities % (by countries)[65]

Country	Manufacturing	Construction	Trade	Transport	Hotel Restaurant Cafe	Others
Poland	14.9	13.2	35.0	10.3	4.8	21.8

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[63] Ibid. Kirby, D. and Watson, A. 2003
[64] Ibid. Kirby, D. and Watson, A. 2003
[65] Ibid. Kirby, D. and Watson, A. 2003

Table 2.7

Czech Republic	GDP (millions)	Industrial Prod (index no)
Q1 1993		89.909
Q2 1993		90.622
Q3 1993		87.848
Q4 1993		88.841
Q1 1994	302.151	88.403
Q2 1994	321.796	91.962
Q3 1994	345.301	92.822
Q4 1994	334.396	92.562
Q1 1995	319.901	90.94
Q2 1995	342.939	89.93
Q3 1995	367.920	89.24
Q4 1995	350.289	92.27
Q1 1996	332.979	94.89
Q2 1996	360.419	90.28
Q3 1996	382.632	92.17
Q4 1996	364.320	91.14
Q1 1997	333.925	93.47
Q2 1997	365.395	95.21
Q3 1997	366.534	96.67
Q4 1997	363.475	100.43
Q1 1998	340.788	101.45
Q2 1998	366.644	99.49
Q3 1998	356.020	97.84
Q4 1998	350.970	93.77
Q1 1999	336.911	92.25
Q2 1999	366.304	95
Q3 1999	360.571	95.34
Q4 1999	357.257	97.14
Q1 2000	348.056	95.45
Q2 2000	374.410	99.5
Q3 2000	375.471	102.38
Q4 2000	368.448	103.07
Q1 2001	360.042	105.7
Q2 2001	385.161	106.49
Q3 2001	384.720	106.48
Q4 2001	403.315	107.91
Q1 2002	394.414	114.32
Q2 2002	420.652	116.1
Q3 2002	418.678	117.09
Q4 2002	408.252	119.36
Q1 2003	406.900	121.05
Q2 2003	436.113	121.96
Q3 2003	435.389	124.1
Q4 2003	424.622	126.96

Table 2.8	Hungary	GDP	(billions)	Industrial Prod (index no)
Q1 1990				67.333
Q2 1990				65.733
Q3 1990				63.7
Q4 1990				64.133
Q1 1991				60.367
Q2 1991				54.833
Q3 1991				50.233
Q4 1991				48.233
Q1 1992				49.5
Q2 1992				49.667
Q3 1992				48.167
Q4 1992				51.3
Q1 1993				49.5
Q2 1993				52.1
Q3 1993				52.033
Q4 1993				52.9
Q1 1994				54.333
Q2 1994				55.367
Q3 1994				57.4
Q4 1994				68.667
Q1 1995			2604.17	59.4
Q2 1995			2719.11	60.1
Q3 1995			2744.59	60.2
Q4 1995			2752.88	59.7
Q1 1996			2619.63	60.6
Q2 1996			2737.98	60.9
Q3 1996			2769.13	61.4
Q4 1996			2836.85	63
Q1 1997			2680.05	64.9
Q2 1997			2869.57	66.6
Q3 1997			2927.63	69
Q4 1997			2986.95	72
Q1 1998			2797.97	73
Q2 1998			3010.18	76.4
Q3 1998			3085.72	78
Q4 1998			3127.48	78.7
Q1 1999			2887.72	79.7
Q2 1999			3108.34	81.2
Q3 1999			3213.91	86
Q4 1999			3310.71	88.8
Q1 2000			3077.07	94.5
Q2 2000			3284.24	98.7
Q3 2000			3360.52	103.2
Q4 2000			3450.47	104.4
Q1 2001			3205.24	105

Q2 2001		3418.41	104.7
Q3 2001		3491.58	102.9
Q4 2001		3564.13	104.1
Q1 2002		3305.45	105.7
Q2 2002		3526.56	106.3
Q3 2002		3622.08	107.7
Q4 2002		3703.85	108.2
Q1 2003		3394.98	109
Q2 2003		3613.43	111
Q3 2003		3726.45	114.8
Q4 2003		3839.00	118

Table 2.9	Poland	GDP (index no)	Industrial Prod (index no)
Q1 1990			86.973
Q2 1990			86.262
Q3 1990			88.389
Q4 1990			88.661
Q1 1991			81.058
Q2 1991			74.116
Q3 1991			70.64
Q4 1991			69
Q1 1992			74.307
Q2 1992			75.562
Q3 1992			76.798
Q4 1992			78.234
Q1 1993			77.458
Q2 1993			81.932
Q3 1993			79.051
Q4 1993			81.236
Q1 1994			86.568
Q2 1994			89.972
Q3 1994			92.284
Q4 1994			92.469
Q1 1995		59.849	69.525
Q2 1995		60.827	69.525
Q3 1995		63.299	69.408
Q4 1995		65.803	71.24
Q1 1996		71.063	74.89
Q2 1996		72.127	75.431
Q3 1996		73.274	76.314
Q4 1996		79.565	78.336
Q1 1997		80.863	80.813
Q2 1997		81.421	85.234
Q3 1997		82.922	85.453
Q4 1997		91.823	87.841
Q1 1998		90.121	89.879

Q2 1998	90.995	89.88
Q3 1998	92.628	89.036
Q4 1998	102.207	86.498
Q1 1999	96.351	87.794
Q2 1999	96.843	90.901
Q3 1999	97.364	94.151
Q4 1999	109.445	98.739
Q1 2000	103.010	96.923
Q2 2000	103.952	100.574
Q3 2000	103.879	100.671
Q4 2000	116.031	101.492
Q1 2001	108.637	101.557
Q2 2001	109.167	100.374
Q3 2001	107.744	99.79
Q4 2001	118.833	100.034
Q1 2002	111.639	100.175
Q2 2002	111.488	99.92
Q3 2002	108.349	103.073
Q4 2002	118.756	103.933
Q1 2003	113.100	104.7
Q2 2003	112.263	109.307
Q3 2003	108.505	112.157
Q4 2003		116.327

Table 2.10

Net Entry of firms % (difference on previous year)[66]

	Year	1990	1991	1992	1993	1994	1995	1996
Czech Republic		-	-	-	10.3	-12.1	18.6	11.6
Hungary		-	35.1	21.4	17.0	13.0	4.4	-
Poland		-	-	-	-	6.4	-1.1	12.6

Table 2.11

Source of investment finance in firms which received credit (%)[67]

	Country	Czech	Hungary	Poland
Own capital and Retained Earnings		23.8	31.4	41.3
Bank Credit		**36.0**	**18.0**	**19.8**
Trade Credit		1.7	4.2	7.0
Leasing		3.4	5.3	10.3
Others		35.1	41.1	21.6

Table 2.12

Size of initial capital and its sources (three countries taken from sample)[68]

Initial Capital	Czech Republic		Hungary		Poland	
	Foreign/Domestic Firms		Foreign/Domestic Firms		Foreign/Domestic Firms	
Average Size ($1000)	1081	(210)	190	(162)	186	(260)
Sources %:						
Own Saving	25	(61)	79	(85)	46	(74)
Family Loan	13	(8)	6	(4)	3	(7)
Bank Loan	**0**	**(12)**	**0**	**(2)**	**0**	**(4)**
Informal Capital Market	0	(0)	0	(0)	0	(2)
SME Support Schemes	0	(0)	1	(1)	0	(0)
Restitution	0	(3)	0	(0)	0	(1)
Other	63	(16)	14	(9)	51	(12)

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[66] Op. Cit. Hoshi, 2003, CSO Various Countries
[67] Ibid. Hoshi, 2003
[68] Ibid. Hoshi, 2003

Table 2.13

Table 2.13   Investment since establishment and its main sources (%) (three countries taken from sample)[69]

Sources	Czech Republic		Hungary		Poland	
	Foreign/Domestic Firms		Foreign/Domestic Firms		Foreign/Domestic Firms	
Average Investment ($1000)	5446	(611)	490	(298)	845	(1072)
Sources (%)						
Own Saving	10	(2)	8	(15)	5	(9)
Profits	50	(39)	48	(59)	29	(47)
Family Loan	0	(3)	0	(2)	4	(1)
Domestic Bank Loan	**8**	**(30)**	**3**	**(14)**	**17**	**(19)**
Foreign Bank Loan	0	(3)	0	(0)	3	(0)
SME Support Scheme	0	(0)	0	(0)	0	(0)
Informal Capital Market	0	(0)	0	(0)	0	(1)
Domestic Suppliers	0	(0)	1	(0)	6	(6)
Hire/Purchasing/Leasing	0	(7)	0	(5)	9	(12)
Tax Arrears	0	(2)	0	(0)	0	(0)
Others	33	(13)	10	(5)	0	(2)

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[69] Ibid. Hoshi, 2003

Table 2.14

Characteristics of bank loans obtained by new companies[70]

Bank Loans	Czech Republic		Hungary		Poland	
% of firms obtaining	**Foreign/domestic firms**		**Foreign/domestic firms**		**Foreign/domestic firms**	
a bank loan	**13**	**(49)**	**29**	**(40)**	**27**	**(32)**
Average amount of	1429	(456)	140	(354)	75	(232)
Loan ($1000)						
Evaluation of obstacles:						
Cost of Loan	3.5	(4.0)	4.1	(4.3)	4.1	(4.0)
Complicated Procedure	3.33	(3.3)	3.4	(3.5)	4.3	(3.7)
Collateral Requirement	4.75	(4.2)	4.2	(4.3)	4.0	(3.6)
Use of Connections	4.0	(2.4)	2.8	(2.8)	2.4	(2.4)
Track Record Requirement	2.67	(2.7)	1.7	(2.2)	3.2	(3.2)
Time needed for processing applications	3.0	(3.3)	3.5	(3.3)	2.5	(2.9)
Source: Survey						
Note 1-5 scale:	1 = no problem		2 = minor problem		3 = moderate problem	
4 = severe problem	5 = very severe problem					

[70] Ibid. Hoshi, 2003

Table 2.15

| Questionnaire |
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1. What is the name of your company?

2. What type of business are you in? Please expand if necessary.

3. What size company are you (number of employees in country X)? Please tick box.

1 – 25

26 – 50

51 – 100

100+

4. Has freedom of capital movement affected your operations in any of the following ways. Please tick box/es.

Reduced level of business

Expanded opportunities

Reduced opportunities

No noticeable change

5. Has the removal of controls on interest rates (allowing market based rates) affected your company in any of the following ways? Please tick box/es.

Reduced access to bank loans

Increased investment opportunities

Reduced investment opportunities

No noticeable change

6. Has despecialisation of financial institutions (allowing financial institutes to offer more than one facility) affected your company in any of the following ways?

Increased level of financial intermediation

Decreased level of financial intermediation

No noticeable change

7. Has the improved function of securities markets (expansion of the Stock Exchange) affected your company in any of the following ways? Please tick box/es.

Increased investment opportunities

Increased financial intermediation

No noticeable change

8. Has increased transparency of financial institutions (ensuring they provide complete and accurate information to the public) affected your company in any of the following ways? Please tick box/es.

Provided you with a more accurate assessment of their financial position

Allowed you to make more prudent financial decisions

No noticeable change

9. Has harmonisation and simplification of standards of prudential supervision across markets (ensuring capital requirements are met, limits on customer concentration are placed, assessment of riskiness of bank portfolios is carried out) affected your company in any way? Please tick box/es.

Increased level of confidence in the banking system

Reduced level of confidence in the banking system

No noticeable change

Table 2.16

Types of Business Activities Surveyed

Type	Number
Accountancy	6
Aerospace	1
Architects	2
Automotive Industry	4
Business Consultants	5
Business Information	1
Chemical	3
Cigarettes	1
Cleaning	1
Clothing	2
Construction	4
Cosmetics	2
Education	5
Electricity	1
Engineering	4
Environment	1
Executive	2
Finance	5
Food/drink	2
Healthcare	2
Household	2
Industrial	9
Insurance	2
IT	3
Legal	1
Lobbyists	1
Marketing	2
Metals	2
Oil/gas	3
PR	1
Real Estate	6
Recreation	1
Stainless Steel	2
Telecommunications and Ratio Communications	2
Textiles	1
Transport and Shipment	3
Water Processing	3

Table 2.14

Results of Questionnaires

Impact of freedom of capital movement on level of business

Increase   34%
No change   64%
Reduction   2%

Impact of freedom of capital movement on investment opportunities

Increase   42%
No change   56%
Reduction   2%

Impact of freedom of interest rates on access to business loans

Increase   26%
No change   72%
Reduction   2%

Impact of removal of controls on interest rates, on investment opportunities

Increase   20%
No change   78%
Reduction   2%

Impact of despecialisation on financial intermediation

Increase   32%
No change   68%
Reduction   0%

Impact of improved function of securities markets on investment opportunities

Increase   20%
No change   78%
Reduction   2%

Impact of improved securities markets in financial intermediation

Increase   2%
No change   98%
Reduction   0%

Impact of increased transparency of financial institutions on accuracy of assessment
Increase   20%
No change   98%
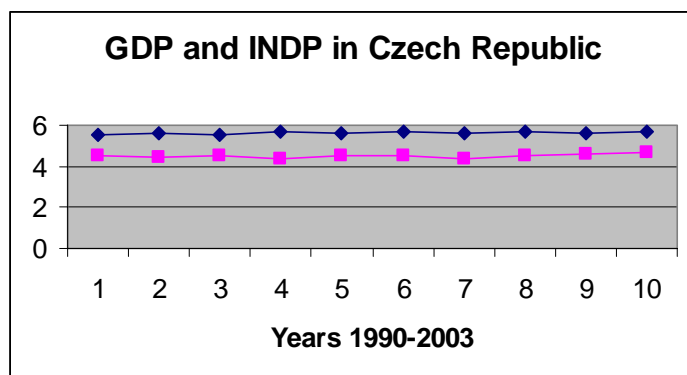Reduction   0%

Impact of increased transparency on financial decision making

Increase   24%
No change   76%
Reduction   0%

Impact of harmonisation of prudential standards on levels of confidence in banking

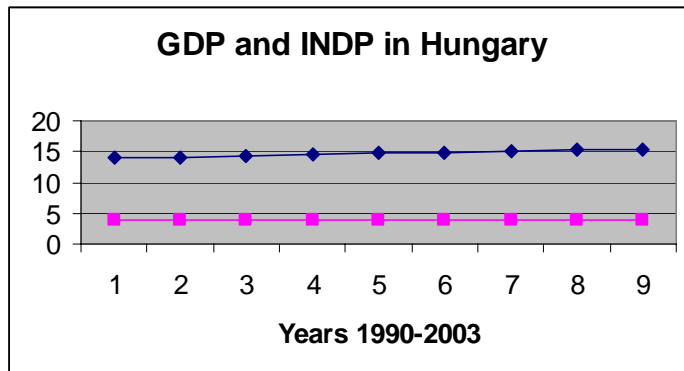Increase   41%
No change   55%
Reduction   4%

Figure 1.1

GDP and INDP in Czech Republic

Years 1990-2003

(GDP top line, INDP bottom line)
Source: International Financial Statistics – International Monetary Fund

Figure 1.2

GDP and INDP in Hungary

Years 1990-2003
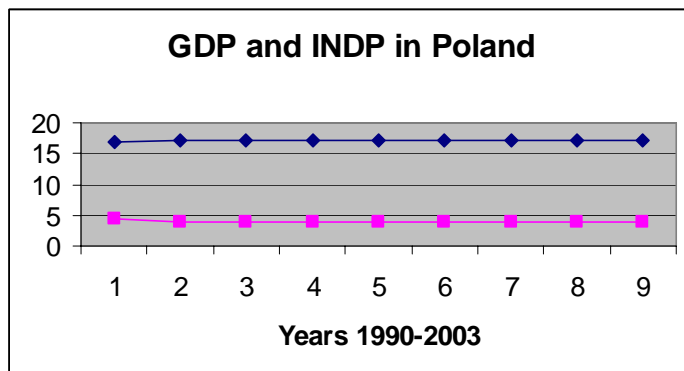
(GDP top line, INDP bottom line)
Source: International Financial Statistics – International Monetary Fund

Figure 1.3

GDP and INDP in Poland

Years 1990-2003

(GDP top line, INDP bottom line)
Source: International Financial Statistics – International Monetary Fund

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