The Irish Regions: Review and Medium-Term Forecasts 1996-2005

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Introduction

The recent discussions on regional policy and the renewed interest in the economies of the regions in Ireland suggested that it might be useful to provide some basic information on the Irish regions and an indication of their prospects for the medium term. This piece provides a profile of the regions, discusses briefly the changes between 1979 and 1996, and provides forecasts for the medium term.

For this discussion, the country is divided into seven regions, namely, the Border, East, Midlands, Midwest, Southeast, Southwest, and West. The Mid-East and Dublin are combined in the East region because of their common labor market. It will prove convenient at times to combine the seven regions into three super regions, East, South, and Border-Midlands-West (BMW). The BMW is the thirteen-county region that has been designated an Objective One region by the European Union. A listing of the counties in each region is given in Table 1 and a map is provided in Figure 1. The data used for this report are from publications of the Central Statistics Office [1,3,4,5]. Additional data on output and employee compensation were provided by the CSO. Data on prices were taken from the ESRI database. The data on regional Gross Value Added for years prior to 1991 come from the report by Henry [7].

A Profile of the Regions in 1996

Data are given in Table 2 for output, population, adult population, labor force, employment, and unemployment in the Irish regions for 1996, the latest year for which data on all variables are available. Output is measured by gross value added (GVA) at factor cost and expressed in millions of pounds at 1990 prices. The other quantities are in thousands. The remaining quantities in the Table are computed from these data and help give a picture of how the regions compared with each other in 1996. As can be seen from Table 2, the currently defined regions vary greatly in size, whether measured by output, population, or labor force. Yet, the regions are broadly similar in terms of demographic and labor force characteristics. Where the regions differ considerably is in output per capita and output per worker. In 1996, output per capita ranged from IR£6,437 per head in the Midlands to IR£11,103 in the East. In index terms, output per capita in the Midlands was 68% of the national average while that in the East was 118%. The three regions making up the Objective One or BMW region had the lowest levels of output per capita. Taken together, their output per capita was 76.3% of the national average. The Southern regions were at 98.8% of the national average.

Table 1. Definitions of Regions in Ireland						
Region	Symbol	County		Region	Symbol	County
Border	BO	Cavan		Midwest	MW	Clare
		Donegal				Limerick
		Leitrim				Tipperary N.R.
		Louth				
		Monaghan		Southeast	SE	Carlow
		Sligo				Kilkenny
						Tipperary S.R.
East	EE	Dublin				Waterford
		Kildare				Wexford
		Meath				
		Wicklow		Southwest	SW	Cork
						Kerry
Midlands	ML	Laoighis		West	WW	Galway
		Longford				Mayo
		Offaly				Roscommon
		Westmeath				
Border-Midlands-West	BMW	Border + Midlands + West				
South	SS	Midwest + Southeast + Southwest				

Figure 1 Regional Authority Areas

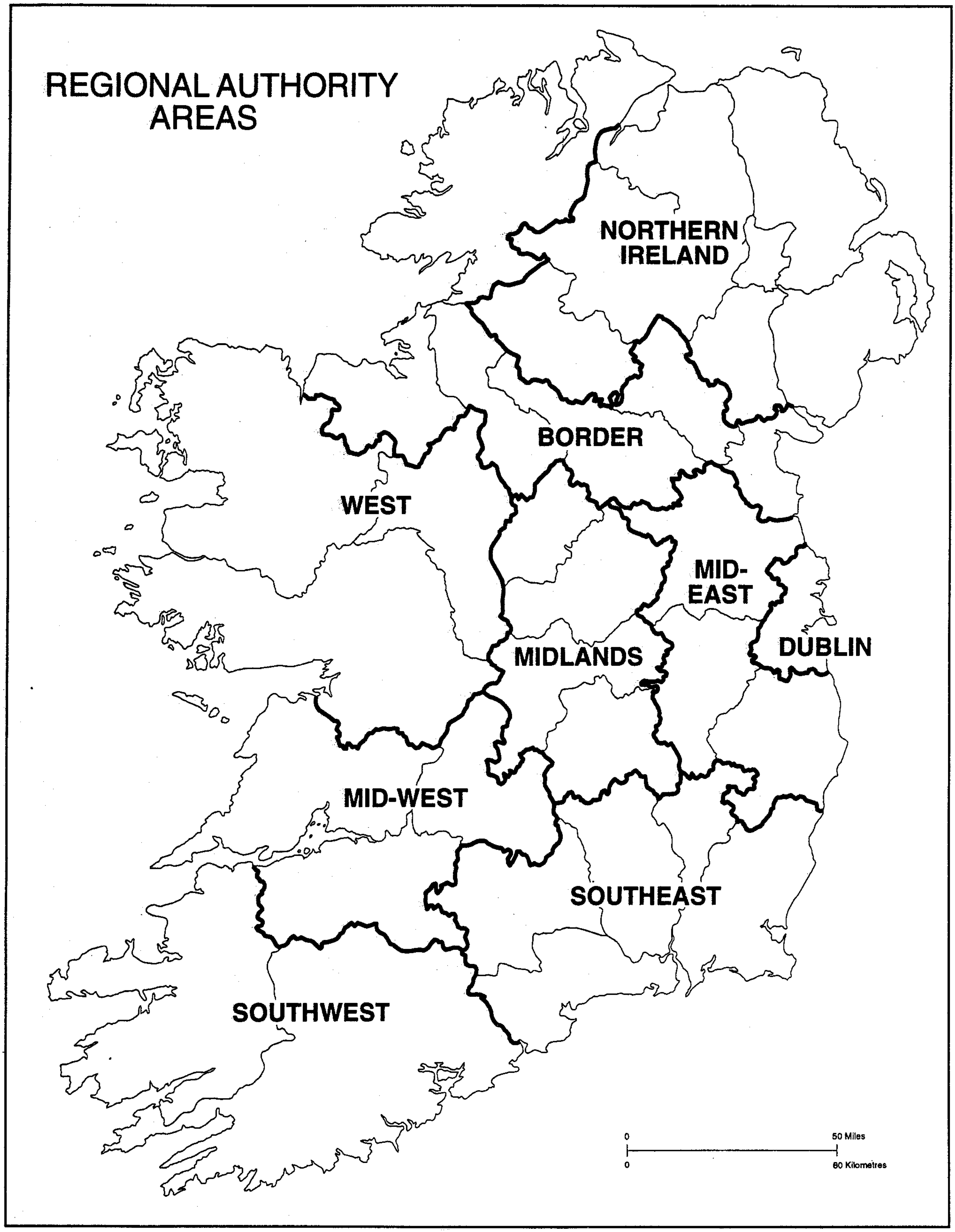
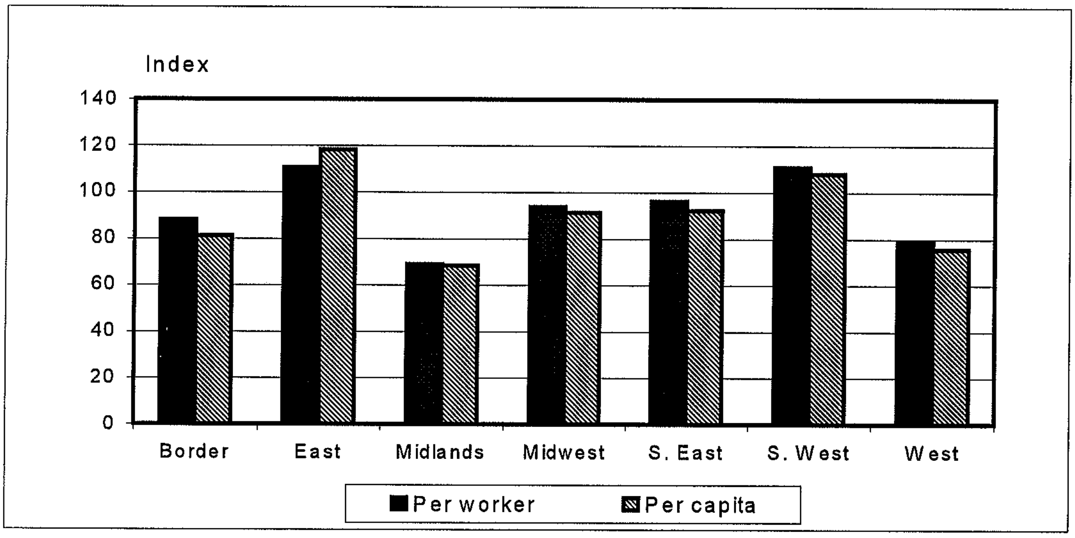


Table 2. Regional Output, Employment, and Population, 1996

	Border	East	Midlands	Midwest	S. East	S. West	West	State
GVA	3,100	15,611	1,326	2,720	3,397	5,553	2,498	34,206
Population	407	1,406	206	317	392	547	352	3,636
Working age (15+)	306	1,083	154	241	296	419	268	2,767
Labor force	160	616	81	123	155	217	137	1,489
Employed	134	536	73	110	134	190	120	1,297
Unemployed	26	80	8	12	21	27	17	191
Empl. / Pop	0.33	0.38	0.35	0.35	0.34	0.35	0.34	0.36
Empl. / Labor Force	0.84	0.87	0.90	0.90	0.86	0.88	0.88	0.87
Labor force / 15+	0.52	0.57	0.53	0.51	0.52	0.52	0.51	0.54
15+ / Population	0.75	0.77	0.75	0.76	0.75	0.77	0.76	0.76
Regional Shares								
GVA	9.1	45.6	3.9	8.0	9.9	16.2	7.3	100.0
Population	11.2	38.7	5.7	8.7	10.8	15.0	9.7	100.0
Employment	10.3	41.3	5.6	8.5	10.3	14.7	9.2	100.0
Output (GVA) per:								
Person	7,617	11,103	6,437	8,581	8,665	10,153	7,096	9,408
Worker	23,171	29,124	18,141	24,705	25,330	29,229	20,849	26,375
Index of Output (GVA)								
Person	81	118	68	91	92	108	75	100
Worker	88	110	69	94	96	111	79	100

Output per capita is the product of output per worker and the employment ratio, the latter being the ratio of employment to population and a commonly used measure of dependency. The employment ratio did not vary much from the national average of .36. The low of .33 was in the Border region while the high of .38 was in the East. The three factors that make up the employment ratio are the employment rate, the labor force participation rate, and the proportion of adults in the population. There was not much variation in the employment rate except that the Border region was somewhat below average at .84, which implied an unemployment rate of 16%. The labor force participation rate, that is the ratio of those in the labor force to the adult population, was higher in the East region relative to the other regions. There was little variation in the proportion of the population aged 15 and over, which we take as the adult population. Overall, the demographic and labor force characteristics varied little across regions. The two items worthy of note were the higher labor force participation rate in the East and the lower employment rate in the Border region. The major reason for the differences in output per person across regions was variation in output per worker. The range of output per worker was from IR£18,141 in the Midlands to IR£29,229 in the Southwest or in index terms from 69% to 111% of the national average. Figure 2 provides a bar graph of the index of output per worker and the index of output per capita. The greater dispersion in output per capita than that in output per worker reflects the effect of variation in the employment ratio. The effect is most obvious for the Border and the East region.

Figure 2. Output Per Worker and Per Capita, 1996



Sectoral Features

The differences in output per worker across regions were due to differences in regional specialization and differences in productivity across sectors. In Table 3, data are provided on output, employment and productivity by major sector. Agriculture includes farming, forestry and fisheries. Industry includes manufacturing, mining, utilities, and construction. Services include both market and non-market services. In Table 3, output is measured in basic prices rather than at factor cost. This means that lump-sum subsidies such as headage payments are subtracted from output at factor cost while lump-sum taxes such as levies are added.

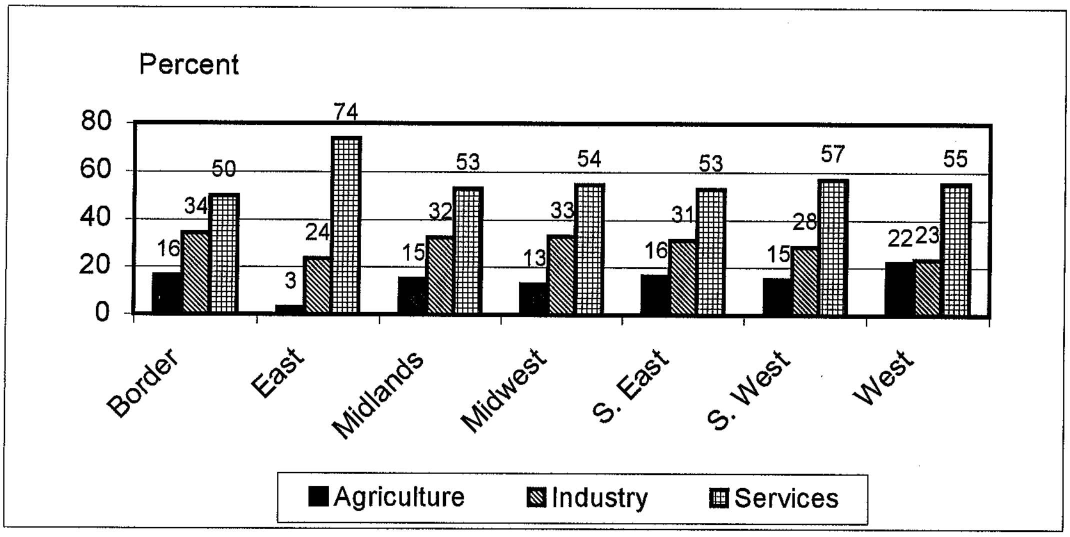
The sector share of employment in agriculture, shown in Table 3 and Figure 3, was 3% percent in the East but was 22% in the West. It varied from 13% to 17% in the other regions. The sector share of employment in industry was 23% in the West, 24%

in the East, and ranged from 29% to 34% in the remaining regions. The percentage of employment in services was 74% in the East and ranged from 50% to 57% in the

Table 3. Sectoral Composition of GVA at Basic Prices, 1996

	Border	East	Midlands	Midwest	S. East	S. West	West	State
GVA at Basic Prices (1990 Prices)								
Agriculture	259	159	109	188	277	380	177	1549
Industry	1431	6511	524	1306	1795	2967	991	15525
Services	1236	8910	632	1161	1228	2145	1215	16527
Total	2,926	15,580	1,265	2,654	3,300	5,492	2,383	33,601
Sectoral Share of Regional Output								
Agriculture	8.8	1.0	8.6	7.1	8.4	6.9	7.4	4.6
Industry	48.9	41.8	41.4	49.2	54.4	54.0	41.6	46.2
Services	42.3	57.2	50.0	43.7	37.2	39.1	51.0	49.2
Total	100	100	100	100	100	100	100	100
Regional Employment								
Agriculture	21.7	15.2	10.8	14.1	22	28	26.1	137.9
Industry	45.7	126.5	23.5	36.1	41.6	54	27.8	355.2
Services	66.4	394.3	38.8	59.9	70.5	108	65.9	803.8
Total	133.8	536.0	73.1	110.1	134.1	190.0	119.8	1296.9
Sectoral Share of Employment (Percent)								
Agriculture	16	3	15	13	16	15	22	11
Industry	34	24	32	33	31	28	23	27
Services	50	74	53	54	53	57	55	62
Total	100	100	100	100	100	100	100	100
GVA per Worker								
Agriculture	11,913	10,491	10,128	13,300	12,569	13,565	6,795	11,230
Industry	31,317	51,471	22,288	36,173	43,160	54,942	35,631	43,707
Services	18,621	22,597	16,289	19,376	17,420	19,862	18,440	20,562
Total	21,869	29,068	17,307	24,105	24,609	28,904	19,893	25,909
Index of Output per Worker for Regions								
Agriculture	106	93	90	118	112	121	61	100
Industry	72	118	51	83	99	126	82	100
Services	91	110	79	94	85	97	90	100
Total	84	112	67	93	95	112	77	100
Index of Output per Worker for Sectors								
Agriculture	54	36	59	55	51	47	34	43
Industry	143	177	129	150	175	190	179	169
Services	85	78	94	80	71	69	93	79
Total	100	100	100	100	100	100	100	100

Figure 3. Sector Shares of Employment, 1996

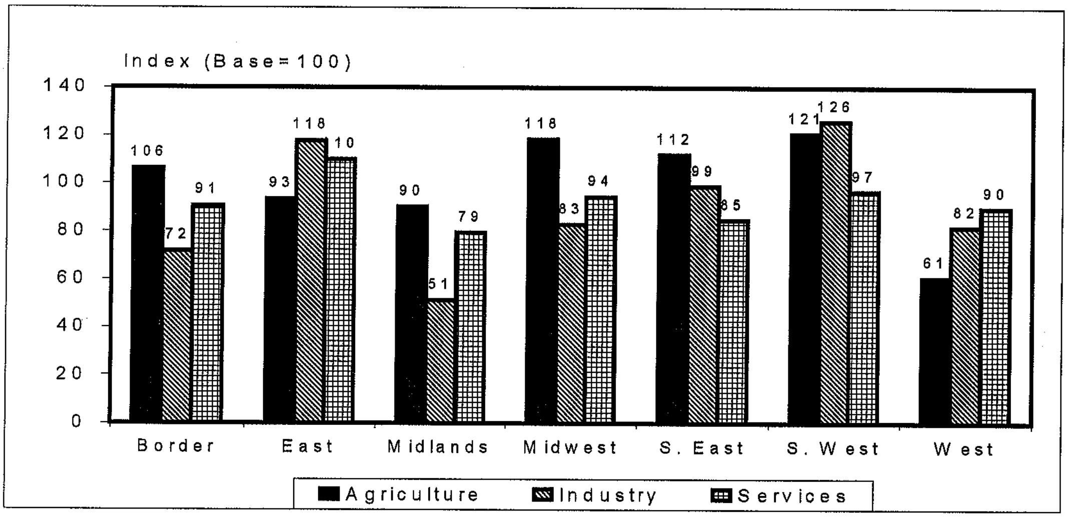


other regions. Thus, apart from the heavy specialization in services in the East and the greater emphasis on agriculture in the West, there was not a great deal of variation among regions in the sector composition of employment. It was roughly a sixth in agriculture, a third in industry, and a half in services.

Output per worker differed by both sectors and regions. At the national level, output per worker in both agriculture and services was in each case less than half that in industry. Output per worker in industry, was IR£44,000, in agriculture was IR£11,000, and in services was IR£21,000. As shown in Table 3 and Figure 4, the differences in output per worker across regions was much greater in agriculture and industry than in services. The range in agriculture was from 61% in the West to 121% of the national average in the Southwest. The values for the Southeast and Midwest were also well above the national average.

Output per worker in industry differed substantially across regions as shown in Table 3 and in Figure 4. The value for the Southwest at IR£55,000 per worker was 2.5 times the value of 22 thousand for the Midlands. The range for output per worker in industry was from 51% of the national value in the Midlands to 126% Southwest. Productivity in the industrial sector was above average in the East, average in the Southeast, and well below average in the Border (72%), West (82%), and Midwest (83%). The higher values in the Southwest and East probably reflect a sizable concentration of firms in the pharmaceutical and computer industries, which have high value added per worker. Output per worker in services ranged from 79% of the national average in the Midlands to 110% in the East. The value for the Southeast was 85% while the other regions had at least 90% of the national average.

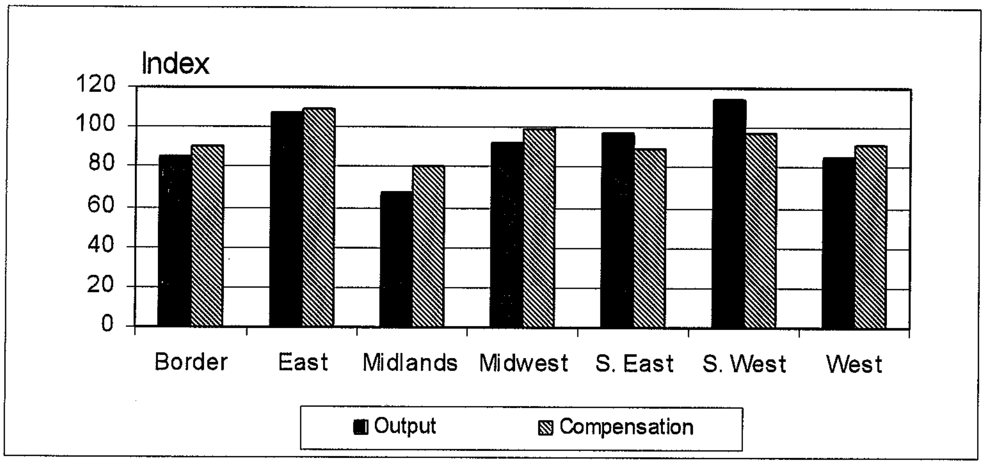
Figure 4. Output Per Worker by Sector, 1996



The foregoing allows one to see why output per worker varied across regions. The high output per worker in the East and Southwest was due to higher than average output per worker in industry and additionally, in the case of the East higher output per worker in services. In contrast, the low output per worker in the Midlands reflects the fact that output per worker in industry was only 51% of the national average while the share of employment in industry was close to average. A contributing factor was the lower than average output per worker in services. In the West, the major factor responsible for the low output per worker was the substantial share of employment (22%) in an agricultural sector with very low productivity. The somewhat lower than average (82%) productivity in industry was a contributing factor. The Border region's 84% of average for output per worker was due to output per worker in industry being 72% of average and industry's share of employment being about average.

As is widely acknowledged, gross value added is a measure of output in a region rather than a measure of income or material well being of the residents of a region. Output includes gross profits and wages and salaries. Ownership of businesses by non-residents of regions leads to repatriation of profits and can lead to differences between regional output and gross income. A published series on regional income that is consistent with the regional accounts is not available. Data are available on compensation of employees by sector. This includes wages and salaries but not proprietor income. Dividing by the number of persons engaged gives a reasonable proxy for earned income in industry and services. This is compared in Figure 5 with output per worker in industry and services. While there were some minor changes in the ranking of regions, in particular for the three Southern regions, the more important point is that the variation in wages and salaries was considerably less than the variation in output per worker. The former ranged from 67% to 114% while the latter ranged from 80% to 109% of the national average.

Figure 5. Output Versus Compensation Per Worker in Industry and Services Sectors, 1996



Data for household income on a regional basis are available from the septennial Household Budget Survey. The data from the 1994 survey suggested convergence of household disposable income across the non-East regions [2]. There are, however, some questions about the plausibility of this result since the data also showed wage and salary income converging outside the East, a result that is inconsistent with the data from the Census of Industrial Production, the Regional Accounts, and the National Farm Survey [1,5,6]. Further discussion of the issue can be found in [8].

Summary

As of 1996, the regions differed considerably in size but were broadly similar in demographic and labor force characteristics. The notable difference was that the East had a slightly higher labor force participation rate than other regions while the Border region had a lower employment rate than average. In contrast, there were sizable differences in output per person, as measured by gross value added (GVA) per person. The East and the Southwest had above average values while the Midlands, the West and the Border regions had the lowest output per capita. While the labor force participation rate in the East and the employment rate in the Border help explain some of the variation in those regions, the major reason for variation in output per capita was variation in output per worker. Output per worker varied across regions because of differences in regional specialization and in the labor productivity across both sectors and regions. The East and the Southwest had high output per worker because of high output per worker in industry. The above average productivity in services also contributed in the East. At the other end, the West had low output per worker primarily because of a high proportion of employment in an agricultural sector with very low labor productivity. The low output per worker in industry was the major factor that contributed to low output per worker in the Midlands and was a contributing factor in the Border region.

The other point that we make in this section is that gross value added per worker may not be a good measure of earned income because in some regions there is much higher repatriation of profits than in other regions. Comparison of output per worker in the non-agricultural sector with wages and salaries per worker in that sector show that while there were slight differences in the ranking of regions, the variation in wages and salaries was much less than that in output per worker. The implications for regional policy may be significant.

Changes over the Past Two Decades

The central point about development in the Irish regions from 1979 to 1996 is that while there were substantial changes in every region, the extent of inter-regional change was modest. While the regional shares of employment and population had changed greatly in prior decades of the century, the changes between 1979 and 1996 were modest. As shown in Table 4, the regional shares of population shifted slightly towards the East from 37.3% in 1979 to 38.7% in 1996 at the expense of the remaining regions. The share of employment accounted for by the East increased from 38.5% to 41.3%. This was due partially to an increased labor force participation rate relative to other regions. The regional shares of output increased in the East and Southwest. The East's share increased from 44.5% to 45.6% while the Southwest's share increased from 14.7% to 16.2%. The shares of each of the other regions declined by about one half of one percent.

The striking feature that was common to all regions was the rapid growth in output combined with modest growth in population and employment. The annualized rate of growth of output varied from 3.6% per year in the Midlands to 5.2% in the Southwest. Employment growth ranged from .1% per year in the Border region to 1.1% in the East. Population growth ranged from .2% per year in the Border to .7% per year in the East. The combination of these developments produced impressive rates of growth in both output per worker and output per capita in all regions over the period 1979-96. The growth rate in output per worker ranged from 2.9% per year in the Midlands to 4.7% in the Southwest, with an average for all regions of 3.9%. The growth rate in output per capita ranged from 3.3% in the Midlands to 4.8% in the Southwest. The average was 4.1% for all regions. Because of the approximately proportional growth across region, the variation in the indices of output per person and per worker did not change much between 1979 and 1996.

Table 4. Changes in Regional Indicators, 1979-96

	Border	East	Midlands	Midwest	S. East	S. West	West	State
Regional Share, 1979								
Output	9.5	44.5	4.6	8.4	10.4	14.7	7.9	100.0
Population	11.7	37.3	5.8	8.9	10.9	15.3	10.0	100.0
Employment	11.4	38.5	5.7	8.8	10.4	15.3	10.1	100.0
Regional Share, 1996								
Output	9.1	45.6	3.9	8.0	9.9	16.2	7.3	100.0
Population	11.2	38.7	5.7	8.7	10.8	15.0	9.7	100.0
Employment	10.3	41.3	5.6	8.5	10.3	14.7	9.2	100.0
Annualized Growth Rates, 1979-96:								
Output	4.3	4.7	3.6	4.3	4.3	5.2	4.1	4.6
Population	0.2	0.7	0.3	0.3	0.4	0.3	0.3	0.5
Employment	0.1	1.1	0.7	0.5	0.7	0.5	0.2	0.7
Output per:								
Person	4.1	4.0	3.3	3.9	3.9	4.8	3.8	4.1
Worker	4.1	3.6	2.9	3.7	3.6	4.7	3.9	3.9
Index of GVA, 1979								
Person	81	119	78	94	95	96	79	100
Worker	84	116	81	95	101	96	78	100
Index of GVA, 1996								
Person	81	118	68	91	92	108	75	100
Worker	88	110	69	94	96	111	79	100

These are graphed in Figures 6 and 7. The noticeable changes were in the Midlands and the Southwest. In the Midlands the index of output per worker decreased from 81% of the national average to 69% of the national average while output per person decreased from 78% to 68%. In contrast, in the Southwest the index of output per worker increased from 96% to 111% of the national average while the index for output per person increased from 96% to 108%. However, approximately proportional growth meant that the variation in actual money amounts increased between 1979 and 1996. The regional deviations from the national average for output per worker in 1979 and 1996 are plotted in Figure 8.

Figure 6. Index of Output per Capita, 1979 and 1996

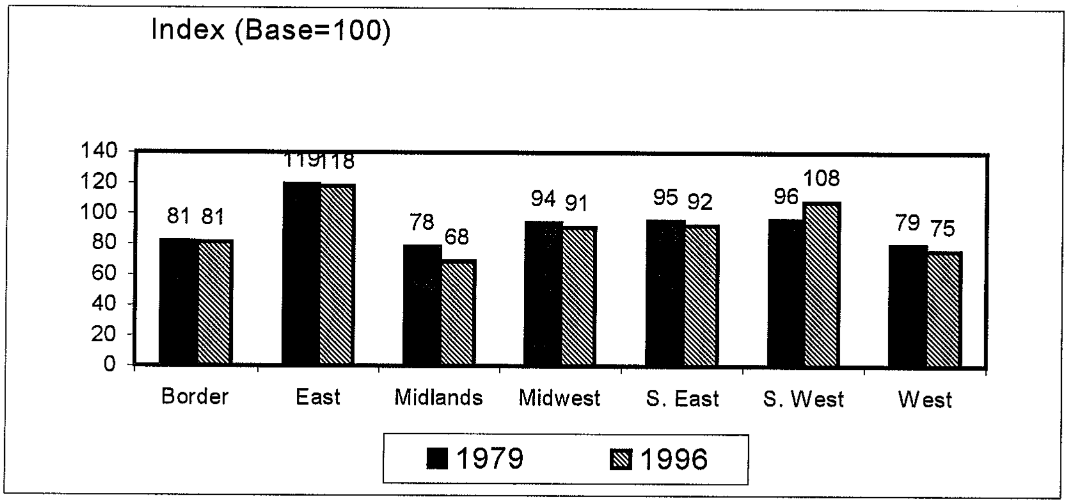


Figure 7. Index of Output per Worker, 1979 and 1996

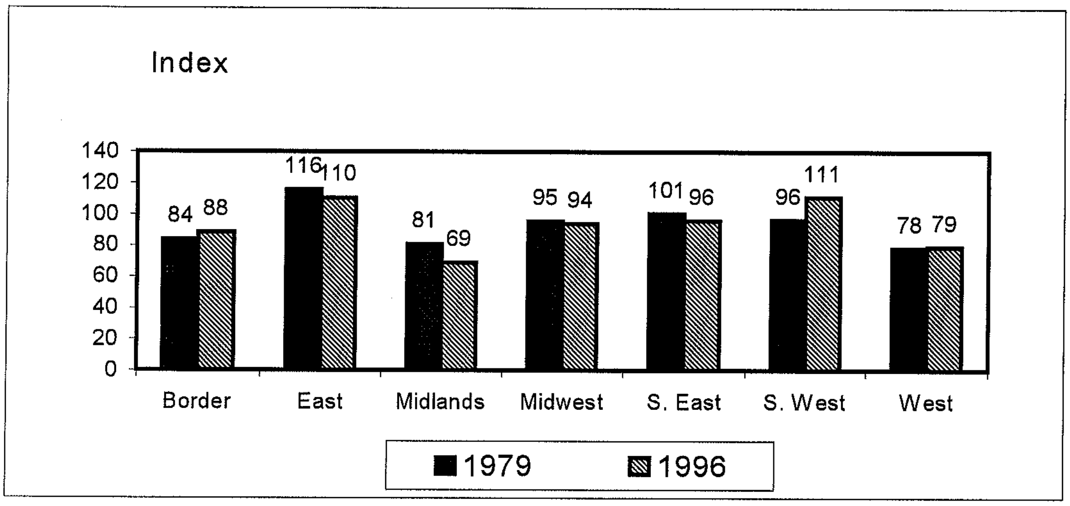
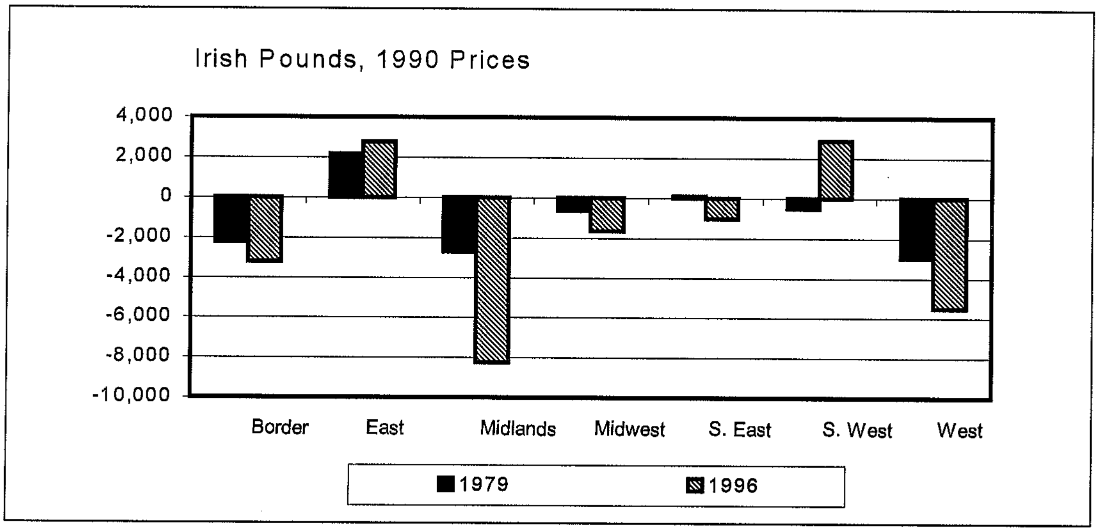


Figure 8. Deviation From National Average in Output Per Worker, 1979 and 1996



Changes in the Sectors

Table 5 presents growth rates in output, employment, and output per worker by sector for the regions. The growth rates in output indicate substantial growth in all sectors

Table 5. Annualized Growth Rates, 1979-96

	Border	East	Midlands	Midwest	S. East	S. West	West	State
Output (GVA at Factor Cost in 1990 Prices):								
Agriculture	4.8	3.6	3.3	2.8	2.4	2.7	3.2	3.2
Industry	6.3	6.8	3.9	6.5	7.0	8.6	6.7	6.9
Services	2.4	3.6	3.4	2.7	2.3	2.8	2.8	3.2
Total	4.3	4.7	3.6	4.3	4.3	5.2	4.1	4.6
Employment:								
Agriculture	-3.2	-1.3	-4.0	-3.5	-1.6	-2.6	-3.2	-2.8
Industry	0.2	-0.9	0.4	0.6	0.1	0.0	0.1	-0.2
Services	1.8	2.1	3.6	2.0	2.1	2.0	2.4	2.2
Total	0.1	1.1	0.7	0.5	0.7	0.5	0.2	0.7
Output per Worker:								
Agriculture	8.3	5.0	7.6	6.5	4.0	5.5	6.6	6.2
Industry	6.1	7.8	3.5	5.9	6.8	8.6	6.6	7.2
Services	0.6	1.5	-0.1	0.7	0.2	0.8	0.3	1.0
Total	4.1	3.6	2.9	3.7	3.6	4.7	3.9	3.9

and regions. Agriculture and services had output growth of 3.2% per year while industry grew at 6.9% per year. The growth rates across regions were reasonably consistent. The rate of growth of agricultural output was average or above in the three Objective One regions while it was below average in the Southern regions. It was above average in the East. Output in industry grew at approximately the national rate of 6.9% per year in all regions except the Midlands where its growth was only 3.9% and in the Southwest where the figure was 8.6%. The range in growth rate for the output of services was from 2.3% in the Southeast to 3.6% in the East.

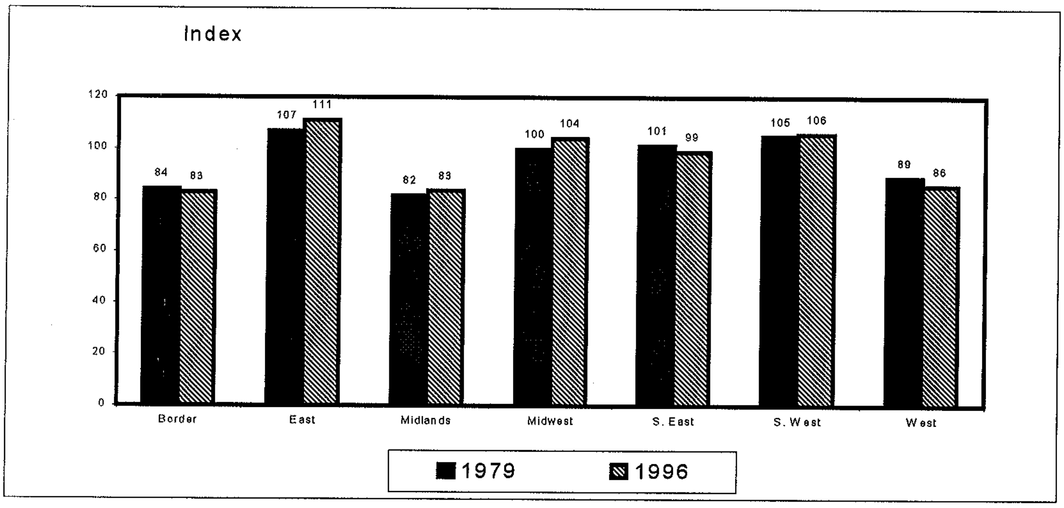
Employment in agriculture declined in all regions but most rapidly in the BMW regions and the Midwest. Employment in industry was stable or increased moderately except in the East where it declined at .9% per year. Employment in services grew at approximately 2% in all three regions except the Midlands where it increased at 3.6%. In light of the foregoing, it is not surprising that output per worker grew at quite rapid rates in both the agricultural and industrial sectors in all regions. Output per worker in agriculture grew most rapidly in the BMW regions and the Midwest. In industry, growth in output per worker was slowest in the Midlands at 3.5% per year and fastest in he Southwest at 8.6% per year. The growth rates in the remaining regions were close to the national average of 7.2%. Growth in output per worker in services was decidedly lower than in the other two sectors. It ranged from .5% in the BMW region to 1.5% in the East.

One of the questions that remain is the extent to which changes in output per worker indicate or provide a proxy for changes in earned income. Some evidence is available for the industrial sector. The index of wages and salaries per employee, computed from the Census of Industrial Production, showed little variation between 1979 and 1996 as shown in Figure 9.

Summary

In summary, during the period 1979-96 the Irish economy went through a major transformation, one that was experienced by every region. Employment in agriculture declined rapidly, employment in industry was relatively stable, and employment in services increased. Output in agriculture and services grew at about 3% per year while output in industry grew at almost 7% per year. As a result, output per worker grew rapidly in both agriculture and industry while it grew very slowly in services. It might be noted that the growth rate of output per worker in agriculture expressed in basic prices would be 3.6% rather than the 6.2% at factor cost.

Figure 9. Index of Wages and Salaries in Industrial Production,



Because growth rates did not vary greatly across regions, regional shares of output and employment changed very little during the period. There was a minor shift in employment towards the East and small shift in output towards the Southwest. The East's share of population increased slightly at the expense of the other regions. The indices of output per capita and output per worker were stable except for a decline in relative position of the Midlands and an improvement in the Southwest. The index of wages and salaries in industrial production changed little in the period 1979-96.

The Medium Term Forecast for the Regions

This section utilizes a recently developed econometric model of the Irish regions to provide medium term forecasts for the period through 2005 [9]. The forecasts of the exogenous variables are based on the ESRI medium-term forecast. Thus, the assumptions built in to the central forecast for the economy are also incorporated here, though output totals will not match because the regional data are on an ESA79 basis. The further presumption for the regional forecast is that the set of relationships that existed between the national economy and its regions, including trends in those relationships, will remain substantially the same during the forecast period as they were during the estimation period. The forecasts from the regional model for the main indicators are provided in Table 6.

Table 6. Values and Growth Rates for Selected Regional Indicators: Actual and Forecast for Selected Years 1985-2005

	1985	1990	1995	2000	2005	85-90	90-95	95-00	00-05
	Observed and Forecast Values					Growth Rates			
Output (GVA in 1990 prices)									
Border	1,890	2,345	2,793	3,508	4,108	4.4	3.6	4.7	3.2
East	7,920	10,756	14,231	20,900	27,987	6.3	5.8	8.0	6.0
Midlands	947	1,067	1,222	1,474	1,714	2.4	2.8	3.8	3.1
Midwest	1,684	1,977	2,529	3,310	3,997	3.3	5.1	5.5	3.8
S. East	1,872	2,249	3,048	4,342	5,343	3.7	6.3	7.3	4.2
S. West	2,846	3,902	5,147	7,312	9,226	6.5	5.7	7.3	4.8
West	1,592	2,056	2,272	3,358	4,072	5.3	2.0	8.1	3.9
State	18,751	24,351	31,242	44,204	56,447	5.4	5.1	7.2	5.0
Population (thousands)									
Border	410	404	408	417	429	-0.3	0.2	0.4	0.6
East	1,336	1,337	1,390	1,488	1,572	0.0	0.8	1.4	1.1
Midlands	206	204	204	211	217	-0.2	0.0	0.6	0.6
Midwest	315	307	316	333	350	-0.5	0.6	1.1	1.0
S. East	386	382	391	408	427	-0.2	0.5	0.9	0.9
S. West	537	531	545	570	595	-0.2	0.5	0.9	0.9
West	351	342	348	366	381	-0.5	0.4	1.0	0.8
State	3,540	3,506	3,601	3,793	3,970	-0.2	0.5	1.0	0.9

Table 6. (Continued)

	1985	1990	1995	2000	2005	85-90	90-95	95-00	00-05
	Observed and Forecast Values					Growth Rates			
Employment (thousands)									
Border	120	121	135	159	168	0.1	2.2	3.4	1.0
East	420	451	500	669	754	1.4	2.1	6.0	2.4
Midlands	63	65	69	81	86	0.7	1.2	3.3	1.2
Midwest	96	96	112	128	137	-0.1	3.1	2.8	1.3
S. East	111	119	131	155	165	1.5	1.8	3.5	1.3
S. West	161	169	183	226	248	1.0	1.6	4.4	1.9
West	104	114	119	150	163	1.9	0.9	4.7	1.7
State	1,074	1,134	1,248	1,569	1,721	1.1	1.9	4.7	1.9
Employment ratio #1									
Border	0.29	0.30	0.33	0.38	0.39				
East	0.31	0.34	0.36	0.45	0.48				
Midlands	0.30	0.32	0.34	0.39	0.40				
Midwest	0.30	0.31	0.35	0.39	0.39				
S. East	0.29	0.31	0.33	0.38	0.39				
S. West	0.30	0.32	0.34	0.40	0.42				
West	0.30	0.33	0.34	0.41	0.43				
State	0.30	0.32	0.35	0.41	0.43				
Output per capita (thousands of 1990 pounds)									
Border	4.6	5.8	6.9	8.4	9.6	4.7	3.3	4.2	2.6
East	5.9	8.0	10.2	14.0	17.8	6.3	4.9	6.5	4.9
Midlands	4.6	5.2	6.0	7.0	7.9	2.7	2.7	3.2	2.4
Midwest	5.3	6.4	8.0	9.9	11.4	3.8	4.5	4.4	2.8
S. East	4.9	5.9	7.8	10.6	12.5	3.9	5.8	6.4	3.3
S. West	5.3	7.3	9.4	12.8	15.5	6.7	5.1	6.3	3.9
West	4.5	6.0	6.5	9.2	10.7	5.8	1.7	7.0	3.1
State	5.3	6.9	8.7	11.7	14.3	5.6	4.5	6.1	4.1
Output per worker in all sectors									
Border	15.7	19.4	20.7	22.0	24.5	4.3	1.4	1.2	2.2
East	18.9	23.9	28.4	31.2	37.1	4.8	3.6	1.9	3.5
Midlands	15.1	16.5	17.8	18.2	19.9	1.7	1.5	0.5	1.8
Midwest	17.5	20.7	22.6	25.8	29.2	3.3	1.9	2.6	2.5
S. East	16.9	18.8	23.4	28.1	32.3	2.2	4.4	3.7	2.9
S. West	17.7	23.1	28.2	32.3	37.2	5.5	4.0	2.8	2.8
West	15.4	18.1	19.1	22.5	25.0	3.3	1.1	3.2	2.2
State	17.5	21.5	25.0	28.2	32.8	4.2	3.1	2.4	3.1

Values for output, population, employment, output per person, output per worker, and the employment ratio are presented at five-year intervals. Growth rates for the five-year intervals are also provided. The values for 1985, 1990 and 1995 are observed while those for 2000 and 2005 are forecast from the regional model.

In the period 1985-2005, the rate of growth of output for the nation was better than five percent in 1985-90 and 1990-95, is expected to average 7.2% in 1995-00 and is forecast to be 5.0% for 2000-05. Growth rates were lowest in the Midlands, followed by the Border region. The Midlands and the Border regions had the lowest rates of growth, a circumstance that is forecast to continue in 1995-00 and 2000-05. The growth rate for the West was low in 1990-95, because of the difficulties in the computer industry, but it is expected to have a growth rate of 8.1% per year in 1995-00. The West, Midwest, and Southeast regions are forecast to have growth rates of about four percent per year in 2000-05. The Southwest and the East are forecast to continue to have the highest rates of growth of output. As a result of the pattern of growth rates across regions, the East's share of output is forecast to increase from 46% to 50% between 1995 and 2005 with an approximately proportional reduction in the remaining regions except the Southwest.

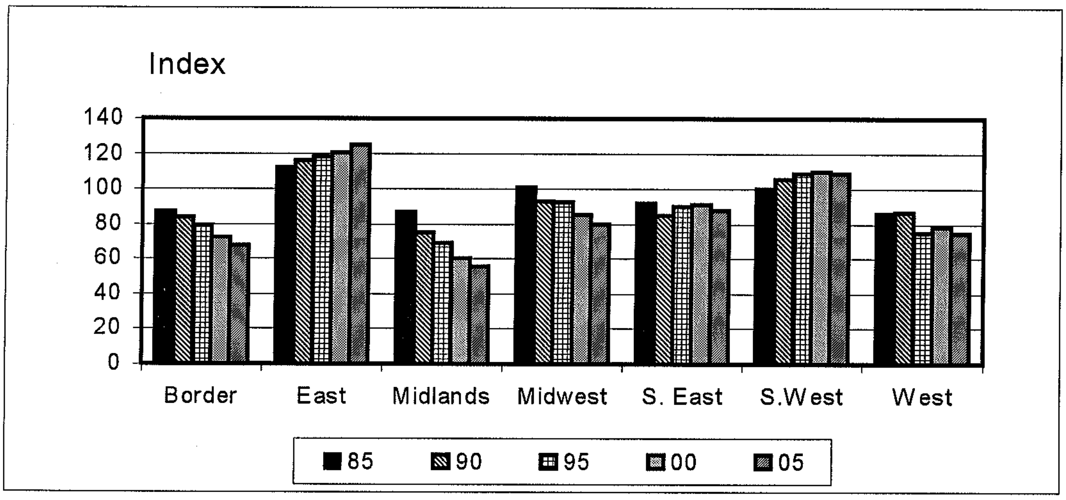
Population declined slightly or remained stagnant in 1985-90 while it increased at about one half of one percent per year in 1990-95. The annualized growth rate for all regions is expected to be 1.0% for 1995-00 and .9% for 2000-05. Population growth has been and is forecast to continue to be below average in the Midlands and Border regions. It has been and is forecast to be average in the other regions except the East where it has been and is forecast to be above average. It is forecast that the East will be closer to average in 2000-05 than in earlier periods. The East's share of population is forecast to increase from 39% to 40% between 1995 and 2005. This will come at the expense of the Border and Midlands regions.

As is widely recognized, employment growth in Ireland in the latter half of the nineties has been quite striking. All regions are expected to participate in this growth. For the 1995-00 period, growth is expected to be lowest in the Midwest at 2.8% per year and highest in the East at 6% per year. The rate of growth in employment is forecast to drop from the 4.7% per year in the 1995-00 period to 1.9% in the 2000-05 period. This reduction will be felt across the regions. The Border, Midlands, Midwest, and Southeast regions are forecast to have below average growth while the West and Southwest will have average growth and the East above average growth.
Between 1995 and 2005, the East's share of employment is forecast to increase from 40% to 44% while regions other than the West decline proportionately. This is primarily a consequence of an increase in the employment ratio in the East relative to

other regions rather than an increase in population.

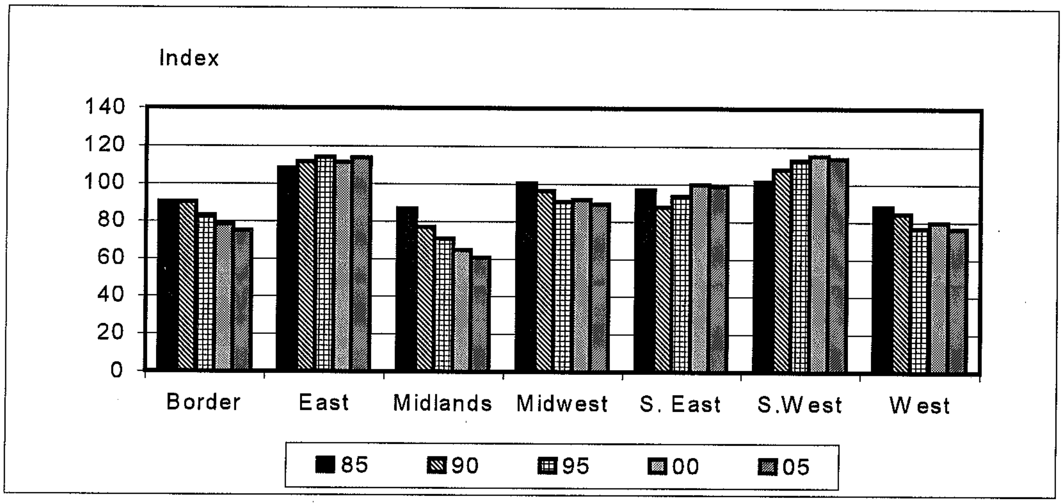
Output per capita and its growth rates are presented in Table 6. Given the high growth rates in output and the moderate growth in population, already discussed, it is not surprising to find high rate of growth in output per capita. The pattern across regions tends to follow that for total output. The Midlands and the Border grew more slowly and are forecast to have slower growth. This translates into a decline in their relative position in terms of output per capita as shown in Figure 10. Below average growth in the Midwest will contribute to a decline in its relative position. Per capita output in the West is expected to grow at the highest rate in 1995-00 that will help compensate for its poor results in 1990-95. The indexes of output per capita for the West, the Southeast, and Southwest regions are not expected to change much between 1995 and 2005. Because of the region's higher growth rate, the index of per capita output for the East is expected to increase between 1995 and 2005.

Figure 10. Output per Capita for Selected Years



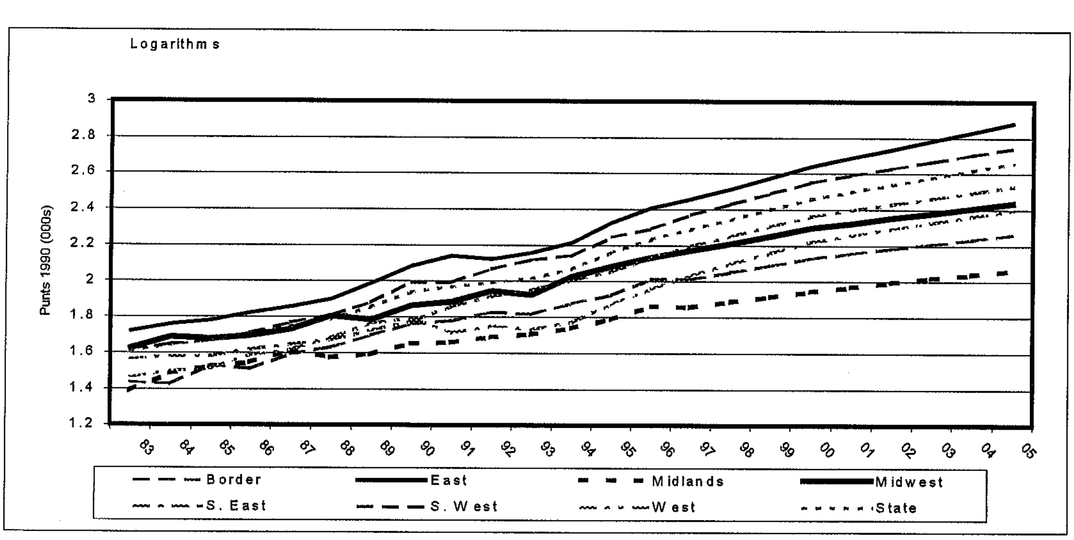
The results for output per capita combine the effects of changes in output per worker and those in the ratio of workers to population. Examination of the index of output per worker plotted in Figure 11 shows that the improvement in index of per capita output for the East is due to changes in the ratio of workers to population. For the same reason, the decline in the index of output per worker is less pronounced that the decline in output per capita in the Border, Midlands, and Midwest regions. The improvement in the position of the Southeast relative to the Midwest is due to improvement in output per worker.

Figure 11. Output per Worker for Selected Years



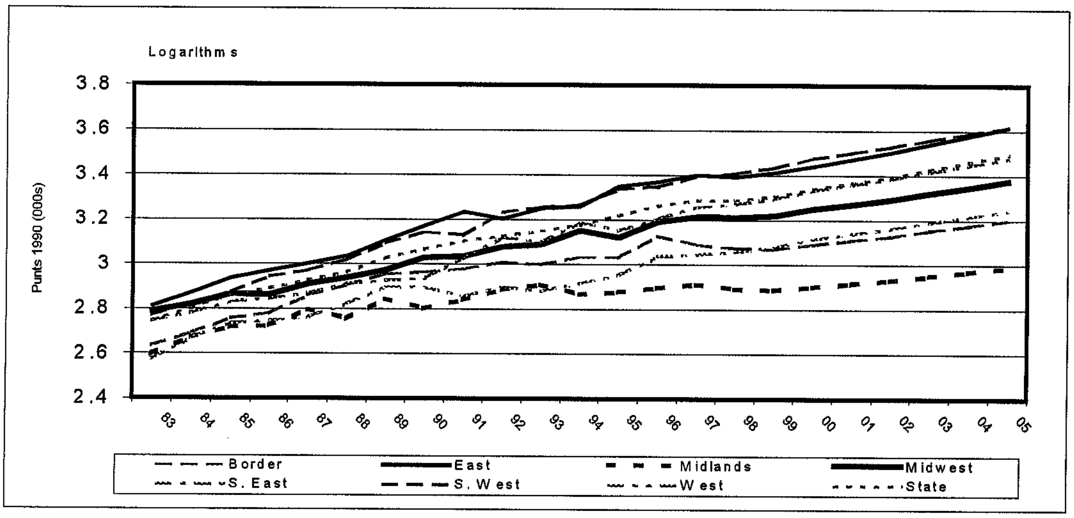
Figures 12 and 13 provide an alternative perspective on the regions and their prospects. Actual and forecast values for output per capita and output per worker are plotted on a logarithmic scale. The slope of the line gives the rate of growth. The notable feature of Figure 12 is the divergence of regional output per capita, especially

Figure 12. Output per Capita: Actual and Forecast



since the late 1980's. This is a consequence of the East and Southwest beginning at higher levels and growing at higher rates than the Midlands and Border regions. The performance of the latter two regions is a major source of the divergence. In the 1980's the Midwest had higher per capita output than the Southeast but because of a lower rate of growth is expected to fall behind. The faster growth in the West after the mid-nineties will cause it to move close to the Midwest by 2005.

Figure 13. Output per Worker: Actual and Forecast



The graph of output per worker in Figure 13 helps to explain the extent to which differences in output per capita reflect differences in output per worker as opposed to differences in the ratio of employment to population. The difference in output per capita between the East and the Southwest is due to differences in the employment ratio. The convergence of the West to the Midwest reflects improvement in the employment ratio in the West relative to the Midwest. A higher growth rate in output per worker explains the overtaking of the Midwest by the Southeast.

Sector Developments

The developments within the sectors will continue to reflect national developments to a large extent. Tables 7 presents the actual and forecast values for output, employment, and output per worker for the three main sectors. Tables 8-10 give growth rates, regional shares, and sector shares.

Output growth in agriculture is expected to be slightly negative in 1995-00 and slightly positive in 2000-05. The pattern is broadly consistent across the regions. Employment in agriculture is expected to continue its decline at about 3% per annum with higher rates in the Midlands, Midwest, and West regions. In regions outside the East, it is expected to decline to approximately 10% of total employment while in the East it should be about 2% by 2005. As a result, labor productivity in agriculture will continue to increase. Output per worker in agriculture shows signs of convergence in regions other than the West where it is expected to continue at about 75%. Regional shares of employment in agriculture will shift slightly in the direction of the Southwest. Regional shares of agricultural output are expected to remain stable

Growth in industrial output has been the major factor in the spectacular growth in total output in the economy, and in output per worker and per capita. The rate of growth nationally is expected to decline from the 9% of the prior five-year periods to 5.4% in 2000-05. The growth in industrial output in the regions is forecast to vary from 3.8% in the Midlands to 5.8% per year in the East for 2000-05. Growth in the Southeast and Southwest will be similar to that in the East. The Midwest, Border, and West will be below average. The East's regional share of industrial output increased between 1990 and 1995 and is expected to remain at that higher level. The BMW and Midwest were the losing regions.

In the 1985-90 and 1990-95 periods, the rate of growth in industrial employment was 1.0% and 1.7%, respectively. However, there was much variation between regions and between the two periods. The Border grew rapidly, the West and Midwest flipped. In 1995-00, all regions are expected to have high rates of growth in industrial employment, ranging from 4.6% per year in the Midwest to 8.2% in the West with an average of 6.1%. The period 2000-05 is forecast to see a dramatic reduction in the growth of industrial employment. The rate is forecast to vary from .6% in the East to 1.0% in the Border region. The East share of industrial employment has been decreasing and that is expected to continue. The gainers are the Border, Southwest, and West.

Growth in output per worker in industry has been slow in some regions. It is expected to continue to be below average in the BMW regions but above average in the East, Southeast, and Southwest. Output per worker in industry diverged significantly between 1990 and 1995. The East and the Southeast gained at the expense of the Border, Midlands, Midwest, and the West. Small further declines are expected in the Border and Midlands in 2000 and 2005.

The output of services has grown slowly in the Border, Midlands, and Midwest. The growth in output of services has been highest in the East but has also been quite high in the West. The East's share of both output and employment in services is expected to increase. The increase in employment will be less than the increase in output, indicating an increase in labor productivity. The index of output per worker in services is expected to diverge further with a significant increase in the East and decline in the Border, Midlands, Midwest and Southeast.

The notable inter-regional changes will be as follows. The employment pattern in the West will move close to that of the non-East regions, though output per worker in agriculture will remain below the national average. The East's share of industrial employment will decrease while its share of employment in services will increase. Its share of the national output of services will also increase.

Table 7. Output, Employment, and Output per Worker by Sector

Year	1985	1990	1995	2000	2005	1985	1990	2000	2005
Agriculture:	Output (mil. 1990 pounds)					Employment (000s)			
Border	297	316	374	361	369	28	25	18	16
East	246	268	245	244	248	18	16	14	12
Midlands	142	203	188	178	182	14	16	10	8
Midwest	207	227	271	261	266	20	22	13	11
S. East	352	420	406	400	405	24	27	21	18
S. West	432	578	505	508	517	31	32	26	23
West	273	334	299	298	303	33	31	22	18
State	1,949	2,348	2,287	2,250	2,290	169	169	124	105
Industry:									
Border	639	1,040	1,275	1,851	2,282	34	40	64	67
East	2,338	3,321	5,906	9,130	12,078	118	120	159	164
Midlands	337	346	430	614	739	19	20	29	30
Midwest	667	848	1,201	1,818	2,308	30	28	47	49
S. East	677	905	1,535	2,610	3,410	35	37	51	53
S. West	1,035	1,772	2,781	4,380	5,733	46	46	75	78
West	553	855	829	1,482	1,864	24	30	43	45
State	6,247	9,087	13,956	21,885	28,415	306	322	469	487
Services									
Border	954	990	1,144	1,296	1,457	59	56	77	84
East	5,335	7,166	8,081	11,526	15,661	284	314	496	577
Midlands	468	518	604	682	793	29	29	42	48
Midwest	810	901	1,057	1,231	1,422	46	46	68	77
S. East	843	924	1,107	1,332	1,528	52	55	83	94
S. West	1,378	1,551	1,861	2,424	2,975	85	91	125	147
West	766	867	1,145	1,577	1,906	46	52	85	100
State	10,555	12,917	14,999	20,068	25,742	600	643	976	1,128

Output per Worker (1990 pounds (000s)

Agriculture:						Services:			
Border	10.7	12.5	18.7	19.7	23.3	16.2	17.7	16.8	17.2
East	13.4	16.9	15.7	17.3	20.1	18.8	22.8	23.2	27.1
Midlands	9.8	12.6	15.8	18.2	23.7	16.2	17.8	16.2	16.4
Midwest	10.4	10.6	17.0	20.0	25.2	17.8	19.4	18.1	18.5
S. East	14.6	15.3	17.1	19.3	22.6	16.3	16.9	16.1	16.2
S. West	14.0	18.0	18.4	19.6	22.5	16.3	17.1	19.3	20.3
West	8.2	10.8	10.5	13.5	16.6	16.6	16.6	18.6	19.0
State	11.6	13.9	16.0	18.2	21.7	17.6	20.1	20.6	22.8
Industry:									
Border	18.9	26.0	28.2	28.9	34.0				
East	19.9	27.6	47.2	57.4	73.6				
Midlands	17.4	17.6	21.1	21.1	24.4				
Midwest	22.0	30.5	31.8	38.4	46.7				
S. East	19.4	24.3	39.8	50.8	64.1				
S. West	22.8	38.6	52.1	58.4	73.1				
West	23.0	28.1	28.9	34.8	41.8				
State	20.4	28.3	40.0	46.7	58.3				

Table 8. Growth Rates in Output, Employment, and Output per Worker

Years	85-90	90-95	95-00	00-05	85-90	90-95	95-00	00-05
Agriculture:	Output				Employment			
Border	1.2	3.4	-0.7	0.4	-1.9	-4.5	-1.7	-2.9
East	1.8	-1.8	-0.1	0.3	-2.8	-0.4	-2.0	-2.6
Midlands	7.5	-1.5	-1.2	0.5	2.3	-5.9	-3.8	-4.8
Midwest	1.9	3.6	-0.7	0.4	1.6	-5.9	-3.8	-4.2
S. East	3.6	-0.7	-0.3	0.3	2.7	-2.8	-2.8	-2.9
S. West	6.0	-2.7	0.1	0.4	0.8	-3.1	-1.1	-2.3
West	4.1	-2.2	-0.1	0.3	-1.4	-1.7	-4.9	-3.8
State	3.8	-0.5	-0.3	0.3	0.1	-3.3	-2.8	-3.2
Industry:								
Border	10.2	4.2	7.7	4.3	3.5	2.5	7.2	1.0
East	7.3	12.2	9.1	5.8	0.5	0.8	4.9	0.6
Midlands	0.5	4.4	7.4	3.8	0.4	0.7	7.4	0.8
Midwest	4.9	7.2	8.7	4.9	-1.8	6.3	4.6	0.9
S. East	6.0	11.1	11.2	5.5	1.3	0.7	5.9	0.7
S. West	11.4	9.4	9.5	5.5	0.2	3.1	7.0	0.9
West	9.1	-0.6	12.3	4.7	4.8	-1.1	8.2	0.9
State	7.8	9.0	9.4	5.4	1.0	1.7	6.1	0.8
Services								
Border	0.7	2.9	2.5	2.4	-1.0	4.4	2.1	1.9
East	6.1	2.4	7.4	6.3	2.0	2.7	6.6	3.1
Midlands	2.0	3.1	2.5	3.1	0.1	4.7	2.9	2.7
Midwest	2.2	3.2	3.1	2.9	0.3	4.6	3.2	2.5
S. East	1.8	3.7	3.8	2.8	1.1	4.5	3.9	2.6
S. West	2.4	3.7	5.4	4.2	1.4	2.4	4.2	3.2
West	2.5	5.7	6.6	3.9	2.5	3.4	6.6	3.4
State	4.1	3.0	6.0	5.1	1.4	3.3	5.3	2.9
Output per Worker in Agriculture					Output per Worker in Services			
Border	3.2	8.3	1.0	3.5	1.8	-1.4	0.4	0.5
East	4.7	-1.5	2.0	3.0	3.9	-0.3	0.7	3.1
Midlands	5.1	4.6	2.8	5.5	2.0	-1.5	-0.5	0.3
Midwest	0.3	10.0	3.2	4.8	1.8	-1.3	-0.1	0.5
S. East	0.9	2.1	2.5	3.2	0.7	-0.8	-0.2	0.1
S. West	5.2	0.5	1.2	2.8	1.0	1.3	1.2	1.0
West	5.6	-0.4	5.1	4.2	0.0	2.2	0.0	0.5
State	3.7	2.9	2.6	3.6	2.7	-0.2	0.7	2.1
Output per Worker in Industry								
Border	6.5	1.7	0.5	3.3				
East	6.8	11.3	4.0	5.1				
Midlands	0.1	3.7	0.0	2.9				
Midwest	6.8	0.9	3.8	4.0				
S. East	4.6	10.3	5.0	4.8				
S. West	11.2	6.2	2.3	4.6				
West	4.1	0.5	3.8	3.8				
State	6.7	7.2	3.2	4.5				

Table 9. Regional Percentage Shares of Output, Employment, and Population

Year	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005
	Regional Share of Output					Regional Share of Employment				
Agriculture:										
Border	15	13	16	16	16	16	15	14	15	15
East	13	11	11	11	11	11	9	11	11	12
Midlands	7	9	8	8	8	9	10	8	8	7
Midwest	11	10	12	12	12	12	13	11	11	10
S. East	18	18	18	18	18	14	16	17	17	17
S. West	22	25	22	23	23	18	19	19	21	22
West	14	14	13	13	13	20	18	20	18	17
Industry:										
Border	10	11	9	8	8	11	12	13	14	14
East	37	37	42	42	43	39	37	36	34	34
Midlands	5	4	3	3	3	6	6	6	6	6
Midwest	11	9	9	8	8	10	9	11	10	10
S. East	11	10	11	12	12	11	12	11	11	11
S. West	17	20	20	20	20	15	14	15	16	16
West	9	9	6	7	7	8	9	8	9	9
Services										
Border	9	8	8	6	6	10	9	9	8	7
East	51	55	54	57	61	47	49	48	51	51
Midlands	4	4	4	3	3	5	5	5	4	4
Midwest	8	7	7	6	6	8	7	8	7	7
S. East	8	7	7	7	6	9	9	9	8	8
S. West	13	12	12	12	12	14	14	14	13	13
West	7	7	8	8	7	8	8	8	9	9
All Sectors:										
Border	10	10	9	8	7	11	11	11	10	10
East	42	44	46	47	50	39	40	40	43	44
Midlands	5	4	4	3	3	6	6	6	5	5
Midwest	9	8	8	7	7	9	8	9	8	8
S. East	10	9	10	10	9	10	11	10	10	10
S. West	15	16	16	17	16	15	15	15	14	14
West	8	8	7	8	7	10	10	10	10	9

Regional Share of Population

Border	12	12	11	11	11
East	38	38	39	39	40
Midlands	6	6	6	6	5
Midwest	9	9	9	9	9
S. East	11	11	11	11	11
S. West	15	15	15	15	15
West	10	10	10	10	10

Table 10. Sectoral Shares of Regional Output and Employment

Year	1985	1990	1995	2000	2005	1985	1990	1995	2000	2005
	Sectoral Share of Output					Sectoral Share of Employment				
Agriculture:										
Border	16	13	13	10	9	23	21	15	12	9
East	3	2	2	1	1	4	4	3	2	2
Midlands	15	19	15	12	11	23	25	17	12	9
Midwest	12	11	11	8	7	21	22	14	10	8
S. East	19	19	13	9	8	22	23	18	13	11
S. West	15	15	10	7	6	19	19	15	11	9
West	17	16	13	9	7	32	27	24	15	11
State	10	10	7	5	4	16	15	11	8	6
Industry:										
Border	34	44	46	53	56	28	33	34	40	40
East	30	31	41	44	43	28	27	25	24	22
Midlands	36	32	35	42	43	31	30	30	36	35
Midwest	40	43	47	55	58	32	29	34	37	36
S. East	36	40	50	60	64	32	31	30	33	32
S. West	36	45	54	60	62	28	27	29	33	32
West	35	42	36	44	46	23	27	24	29	27
State	33	37	45	50	50	28	28	28	30	28
Services:										
Border	50	42	41	37	35	49	46	52	48	50
East	67	67	57	55	56	68	70	72	74	77
Midlands	49	49	49	46	46	46	45	53	52	56
Midwest	48	46	42	37	36	48	48	52	53	56
S. East	45	41	36	31	29	47	46	52	53	57
S. West	48	40	36	33	32	53	54	56	55	59
West	48	42	50	47	47	44	46	52	57	61
State	56	53	48	45	46	56	57	61	62	66
Index of Output per Worker in Agriculture:						Index for Services				
Border	93	90	117	108	107	92	88	83	82	76
East	116	122	98	95	93	107	114	113	113	119
Midlands	85	91	99	100	109	92	89	83	79	72
Midwest	90	76	107	110	116	101	97	92	88	81
S. East	127	111	107	106	104	93	84	82	78	71
S. West	121	130	115	108	104	93	85	92	94	89
West	71	78	66	74	77	95	83	93	90	83
Index of Output per Worker in Services:										
Border	93	92	71	62	58					
East	97	98	118	123	126					
Midlands	85	62	53	45	42					
Midwest	107	108	80	82	80					
S. East	95	86	99	109	110					
S. West	111	137	130	125	125					
West	112	99	72	74	72					

Summary

The changes in the regions between 1995 and 2005 will reflect primarily national changes. These include high but moderating rates of growth in output, modest growth in population, and significant but slowing growth in employment. The regions with the highest initial output per capita, East and Southwest will also have the highest growth rates. The growth rate in the Southeast will be greater than in the Midwest, causing output per capita in the latter to fall behind the Southeast. The West will experience rapid growth in 1995-00 and close to average growth in 2000-05 with the result that it will move from being near the bottom in 1993 to close to the Midwest in per capita output by 2005. Both the Midlands and the Border regions are expected to continue to have lower than average growth rates with the result that their relative and absolute standing in terms of per capita output will decline.

The above developments will have an impact on regional shares. The East's share of output is expected to increase from 46% in 1995 to 50% in 2005. This will come at the expense of the remaining regions other than the Southwest. The East's share of population is forecast to increase from 39% to 40% at the expense of the Border and Midlands. However, the East's share of employment is forecast to increase from 40% to 44%. This change reflects primarily a more rapid increase in labor force participation in the East than in other regions.

The major sector changes are as follows. Agricultural employment will continue to decline both relative and absolute terms in all regions. The proportion of employment accounted for by agriculture will become very similar in the non-East regions. Agricultural output will grow slowly in all regions. Output per worker will tend to converge except for the West where it will continue at about 75% of average.

The growth of employment in industry is forecast to slow significantly between 1995-00 and 2000-05. The rate will be lowest in he East and highest in the Border. In 1995-00, there is expected to be a small decline in the East's regional share of industrial employment accompanied by small increases in the shares of the Border, Southwest, and West regions. In contrast to employment, output of industry is expected to grow at better than 5% per year in 2000-05. Growth rates will not vary greatly and regional shares are forecast to remain stable.

The major area for increases in employment in all regions will be in services. Employment in services grew at a high rate in 1990-95, is expected to grow at a rapid rate in 1995-00, and is expected to grow art a reasonable rate in 2000-05. Growth in the West and the East was especially high in 1995-00. This will moderate in 2000-05. The growth in output of services will be quite healthy. However, with the exception of the East the growth in output per worker will be quite modest.

This report has examined the changes in the regions over the past two decades and discussed their prospects for the medium term. In part because of data availability, attention was focused on of output, employment, population, and quantities computed from these variables, such as output per capita and output per worker. It is important to recognize that output per capita may be, and almost certainly is in the case of some regions, quite different from either income per capita or earned income per capita. A major factor is the ownership of firms by residents of other countries and the resultant repatriation of profits. It is not being suggested that there is no difference in per capita earned income between the East and Southwest compared to the Border and Midlands. Indeed, it is quite likely that the ranking of per capita earned income and the ranking of output per capita are very similar if not identical. What is being suggested is the divergence in the index of output per worker may be substantially greater the divergence in the index of earned income per worker.

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