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Regional Labour Force Differences among Young People in the European Union

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Regional Labour Force Differences among Young People in the European Union

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REGIONAL LABOUR FORCE DIFFERENCES AMONG YOUNG PEOPLE IN THE EUROPEAN UNION, 1993-1997

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EXECUTIVE SUMMARY

Introduction

- The *aim* of this report is to analyse differences in economic activity rates for young people in the European Union (EU) at the regional level.

Context

Youth Transitions

- This report is concerned with analysing the *transition from education to work*. (This is one of a number of transitions from childhood to adulthood.)
- During the 1980s and 1990s youth transitions have tended to *lengthen*, become *more ambiguous / uncertain* and *more diverse*.
- The shape of transitions is moulded by a number of inter-related factors including:
  - ◊ the demographic context;
  - ◊ the economic context;
  - ◊ the organisation and structure of the labour market;
  - ◊ the organisation of the education and training system;
  - ◊ the role of the state in shaping labour supply; and
  - ◊ the organisation of the family economy.

Labour Market Entry

- There have been two dramatic changes in the youth labour market in recent years: (1) the demographic downturn in young people, and (2) increasing participation in education.
- The youth labour market is characterised by:
  - ◊ relatively high unemployment rates;
  - ◊ changing industrial and occupational profiles, an increase in flexible working;
  - ◊ enhanced vulnerability of less well qualified labour market entrants;
  - ◊ the expansion of upper secondary and higher education; and
  - ◊ a greater diversity if entry jobs for more highly qualified young people.
- The literature on education to work transitions in the EU highlights the wide *range* and *variety* of education systems. The relative importance of general education versus vocational training has implications for the shape of education to work transitions.
- It is now the norm for young people to undergo further education/training after the end of compulsory education/training.

Analysis

Methodological Issues

- The term 'transition' implies a longitudinal perspective, yet the European Labour Force Survey (which is the main data source used in analyses) provides a series of cross-sectional *'snapshots'* at regional level.

- Since labour force participation rates for young people aged 15-24 years represent an 'averaging' of very different participation rates for young people at different ages the focus of analysis is on *sub-groups* of the population: notably 15-19 years olds and 20-24 years olds, disaggregated by gender. (Some analyses are also undertaken for 16-18 year olds, 19-21 year olds, 22-24 year olds and 25-27 year olds.)
- It is useful to 'unpack' the economically active to distinguish (1) those in employment, and (2) the unemployed. Given the trend for increasing participation in (part-time) employment alongside education and/or training it is also useful to identify sub-groups of (1) those participating in education and/or training and (2) those not participating in education and/or training amongst the economically active and economically inactive.
- Issues pertaining to the *quality and availability of European Labour Force Survey data* need to be borne in mind when assessing results of analyses.
  - ◊ *sample size constraints* may mean that inter-regional variations may be a function of 'noise' in the data, rather than 'real' differences;
  - ◊ *missing data* poses some problems: it would be desirable for some additional variables (not currently available) to have been included in the analyses;
  - ◊ *changes in regional definitions* pose problems for comparative analysis. It was necessary to code regions onto a consistent basis for all years; and
  - ◊ *regions vary in size* between and within member states and usually do not conform to functional regions defined on a consistent basis.

Exploring and Describing Regional Variations in Labour Force Participation

- There is considerable variation in profiles of transition into the labour market at the national level. For example, Belgium and France display low economic activity rates at the younger end of the age range, while Denmark and the UK display relatively high economic activity rates amongst 15-19 year olds.
- The gender 'gap' in activity rates is wider in some member states (for example, Greece and Italy) than in others (for example, Sweden and Denmark).
- Coefficients of variation reveal that:
  - ◊ there tends to be greater regional variation in employment rates than in economic activity rates;
  - ◊ there is a greater degree of regional variation in economic activity rates for 15-19 year olds than for 20-24 years olds;
  - ◊ there tends to be more regional dispersion in economic activity and employment rates for females than for males.
- There are important variations between member states in the degree of regional dispersion in economic activity and employment rates, with Italy consistently displaying some of the highest levels of regional dispersion and the UK some of the lowest levels.
- Over the period from 1993 to 1997 in most member states there is no discernible temporal variation in economic activity rates over the period. The implication is that amalgamating data across the period does not result in a marked loss of variation in the data.
- A cluster analysis of regions sharing similar labour market transitions underlined the dominance of the *national dimension* in regional variations in economic activity rates,

and also the existence of some contiguous 'super-regions' spanning national boundaries sharing similar economic activity rate profiles.

- A further cluster analysis was undertaken of regional:national differentials in labour market transitions. As would be expected, in this classification a greater range of clusters was represented in most member states.
- No clear-cut and/or universally applicable urban-rural differences in labour market transitions amongst young people are evident.
- Likewise, there is no universal gradation in economic activity rates between 'rich' and 'poor' regions. However, there is some suggestion that labour market transitions in 'rich' regions are characterised by lower than average economic activity rates at the younger end of the age range, but for this gap to close as young people reach their mid twenties, and then for the pattern to reverse.
- Using a specially constructed socio-economic classification of regions, some variations in economic activity rates by socio-economic category are evident, but patterns are not uniform across all countries.

'Explaining' Regional Variations in Labour Force Participation: Multivariate Regression Analysis

- *Multivariate regression analysis* is used in an attempt to develop explanations of regional variations in labour force participation.
- Previous research on modelling labour force participation has emphasised the important role of wages, wealth/income indicators and unemployment in understanding labour market participation decisions. Income and unemployment have generally been found to have a depressing effect on participation.
- The presence of young dependent children in the household has usually been found to depress participation, particularly for females.
- Theoretical models based on the rational decision making individual have to be extensively modified to deal with 'average' data for geographical areas. It has not been possible to operationalise all desired indicators for input into a regression analysis. In particular, it was not possible to develop an indicator of the market wage on offer.
- A *general model* was explored in which economic activity (for the 15-19 years and 20-24 years age groups, disaggregated by gender) was a function of:
  - ◊ GDP;
  - ◊ youth unemployment;
  - ◊ aggregate unemployment;
  - ◊ educational attainment in the region;
  - ◊ presence of young children in the household; and
  - ◊ country dummies.
- An initial exploration of the data using the 'stepwise' procedure in SPSS suggested that the *unemployment* variable was particularly important and also the *country dummies* emerged as important.
- Most of the variation in the data was explained by the *country dummies* – underlining the importance of variations *between* countries (reflecting institutional and cultural differences) as an important factor, tending to outweigh regional variations *within* countries. This may be thought of as the 'benchmark model', which other specifications

have to 'beat' if they are to enhance our understanding of the causes of regional variations in the labour market activity of young people.

- In the most basic economic explanation GDP, the aggregate unemployment rate and the youth unemployment rate (for the age and gender category concerned) were added to the basic specification. The explanatory power of the model improves, with:
  - ◊ GDP influencing economic activity rates negatively (i.e. the higher the level of income, the lower the economic activity rates of young people);
  - ◊ the aggregate unemployment rate having a positive influence (i.e. the higher the unemployment rate in the region the higher the economic activity rate of young people, as youngsters enter the labour market at an early age to supplement household income); and
  - ◊ the sub-category-specific unemployment rate having a negative influence (i.e. the higher the youth unemployment rate, the lower the economic activity rate of young people).
- Extensions to the model to include *young dependent children* and *employment structure* variables had mixed results.
- Inclusion of *education and training* variables in the models was most successful when aggregate indicators (i.e. all age and gender sub-groups aggregated together) were included. In general, the higher the level of educational attainment of the population generally, the lower the economic activity rates of young people.
- Overall, problems of multi-collinearity of independent variables, combined with the absence of some key variables (for example, wages) mean that satisfactory explanations of regional variations in economic activity rates of young people proved difficult to find.
- The *most successful results* are probably those from the most *basic economic model*. This suggests that a reasonable amount of variation in economic activity rates of young people can be explained in terms of differences in levels of income (GDP) and unemployment rates. This most basic economic specification could provides a mechanism by which some benchmark projections of the economic activity rates of young people at the regional level could be made; (using projections of GDP and unemployment).
- There is some evidence to support the role of other socio-economic effects; however, this is often at the expense of other key variables.
- Given more time and resources, it may be worthwhile to pursue a multi-level modelling approach in an attempt to gain a greater understanding of regional variations in economic activity rates remaining once national differences have been accounted for.

PART 1: CONTEXT

1. INTRODUCTION

1.1 Aim

This report is concerned with exploring regional labour market differences amongst young people (conventionally defined as persons aged 15-24 years) in the European Union (EU). The study focuses on the period from 1993 to 1997.

The *main aim* of the report is:

- To analyse differences in economic activity rates for young people in the EU at the regional level (i.e. for NUTS 2 regions).

It is hoped that such analyses will feed into an improvement of the understanding of regional labour force dynamics and patterns, and so feed into work on regional projections.

1.2 Scope of Activities Undertaken

The project has involved the following activities:

1) A review of previous studies concerning national and regional differences in labour force activity amongst young people.
2) Identification and specification of key data from the European Labour Force Survey[1] (and other data sources) for subsequent analyses at regional level.
3) Transfer of data from Eurostat.
4) Manipulation and cleaning of data for subsequent analyses – including assessments of data quality and utility.
5) Data analyses – using:
   - ◊ exploratory data analysis techniques – to 'explore' and 'describe' the main features of regional differences in labour force activity, and
   - ◊ multivariate regression analysis – in an attempt to 'explain' regional differences in labour market activity.
6) A synthesis of key issues emerging from the research.

1.3 Structure of the Report

The report is divided into three parts – with the second part containing the substantive analyses undertaken:

- *Part 1* outlines the *Context* for subsequent analyses. It addresses two key topics:
  - ◊ *Youth transitions* – introducing the concept of a transition and key features of transitions in the 1980s and 1990s (Section 2); and
  - ◊ *Labour market entry* – focusing in more detail on the key features and mechanisms of transitions from education to work of young people (Section 3).

[1] This is the key data source used in analyses.

- *Part 2* is concerned with *Analysis*. This part if divided into three sections:
  - ◊ *Methodological issues* – the issues rehearsed here include the division of young people into groups on the basis of age and gender, the 'unpacking' of the labour force into sub-groups on the basis of economic position and participation in education/training, and the implications of limitations in data availability and quality for subsequent analyses (Section 4).
  - ◊ *Exploration and description of regional variations in labour force participation* highlighting the main features of national and regional variations in labour force activity with particular reference to urban-rural differences, variations on the basis of wealth (as measured by GDP), and differences in regional socio-economic structures (Section 5).
  - ◊ *Explaining regional variations in labour force participation* with reference to the results of previous analyses of labour force activity, a variety of statistical models are tested and assessed (Section 6).

  (Sections 5 and 6 are the main substantive sections of the report.)

- *Part 3* provides a *Synthesis*:
  - ◊ *Conclusions* – this short section is concerned with presenting the key substantive findings emerging from the study, as well as some comments on methodological and technical issues (Section 7).

2. YOUTH TRANSITIONS

2.1 Concept of a Transition

A *transition* may be defined as a sequence of statuses or positions achieved over a period of time from a 'starting point' to an 'end point'. It may take the form of a smooth progression, or a succession of more abrupt changes.

2.2 Series of Transitions

A number of different transitions from childhood to adulthood may be identified. They are associated with major life course events: such as leaving the parental home, finishing school or college, getting a job and forming a couple (Eurostat, 1997). Perhaps the two main transitions, which are of such significance that they can be considered 'rites of passage', are:

1) *from education to work* (i.e. the transition linking the events of finishing school/college and getting a job[2]);
2) *leaving the parental home and establishing an independent household* (the latter event may, but need not necessarily, be associated with forming a couple and/or getting married).

It is the first transition that is the focus of interest in this report, although there may be important inter-relationships with the second main transition identified above. The transition from education to work is one of the most crucial in the entire life course of individuals because it often channels and shapes individual careers and life chances.

2.3 Features of Youth Transitions in the 1980s and 1990s

Research shows that during the 1980s and 1990s youth transitions have tended to:

- *Lengthen* - transitions are slowing down (Chisholm, 1992; Chisholm and Horrelmann, 1995) and are tending to start and end later (Lagree, 1997):
  - ⇒ it is not unusual to continue in education beyond the age of 20 years
  - ⇒ the median age of entry into the labour market in the European Union increased from 18 years in 1987 to 20 years in 1995
  - ⇒ young people are staying longer in the parental home - 90 per cent of young people aged 15-19 years and 65 per cent of those aged 20-24 years live with their parents
  - → young people are tending to marry later (CERI, 1996) and it is rare for a woman to become a mother before the age of 20 years

  such that the 'youth phase' of the life course may be more appropriately set at age 29/30 years rather than 24/25 years.[3]

In addition, they have tended to become:

- *More ambiguous / uncertain* - the 'crossover' from one status to another is less clear-cut than formerly. There is a tendency for a 'blurring of boundaries' between different

---

[2] Arguably, the 'end point' should be a 'stable' job, rather than just any 'fill in' job.

[3] Hence, the appropriate age range for investigating the labour force activity of young people may be '15-29 years', rather than the '15-24 years' conventionally used.

statuses, and the outcomes tend to be more uncertain. It has been posited that increasingly young people tend to live in an "extended present" where current work-life priorities remain sharply in focus due to the difficulty of planning for future work and family arrangements (Lewis *et al.*, 1999).

Moreover, they have tended to become:

- *More diverse* - the range of transition routes has increased in terms of both number and complexity, and often the sequencing of events has changed (Furlong and Cartmel, 1997). Young people are tending to take increasingly varied and incremental routes into the adult world than formerly – with an increasing number combining part-time work with education and training (Green *et al.*, 1999).

Hence, the context for this study is that the life course for young people has tended to become *more protracted, shattered* and *fragmented* (Bash and Green, 1995; Chisholm, 1995; Pollock, 1997). Moreover, adult life courses have become less linear, less predictable and more variable than previously, in the context of trends in culture, economy and society that are leading to an increasing pluralisation of lifestyles and values (Giddens, 1994).

The implication is that 'describing' and 'explaining' at individual or at area level is likely to be more difficult than formerly.

2.4 Factors Moulding the Shape of Transitions

The shape of transitions is moulded by a number of *inter-related factors*. These include:

- The *demographic context* - the key feature of the demographic context in Europe is the ageing of the population (European Commission, 1997). There has been a decline in the numbers of young people, and young people account for a smaller proportion of the population than formerly. Also of relevance here is the fact that, to some extent, the size of a particular cohort relative to previous cohorts as well as other age groups will influence the nature and speed of transitions.

- The *economic context* – Globalisation and economic restructuring are amongst the primary drivers of change across all EU member states. The state of the international, national, regional and (more particularly) local labour markets is likely to influence opportunity structures and decisions regarding 'staying on' in education and labour market participation (Furlong *et al.*, 1996); (for more detailed discussion see Sections 6.2 and 6.3).

- The *organisation and structure of the labour market* – here various models of labour market organisation have been distinguished (see Table 2.1 for an example). It is also the case that the nature of links between several dimensions are important, including:
  - ◊ education/training and work,
  - ◊ recruitment norms/policies,
  - ◊ the strength of internal labour markets,

- ◊ the structure of the labour market (in terms of the part-/full-time, permanent/temporary, industrial and occupational structure of employment), and
- ◊ the extent and nature of active labour market policy measures.

The inter-linkages between these dimensions will impact on decisions on when and how individuals choose to participate in the labour market.

Table 2.1: Models of labour market organisation

Model	Countries where applicable	Characteristics
Romano-German	Belgium, France, Germany, Greece, Italy, Luxembourg, Netherlands	The central state plays a major role; constitutions guarantee fundamental rights; rules of collective bargaining extend to all workers in law
Anglo-Irish	UK, Ireland	There is a limited role for the state in industrial relations; voluntaristic collective agreements only extend to parties involved, and mostly at plant level
Nordic	Scandinavia	The state plays a regulating and co-ordinating role, with labour market collective agreements at national level

Source: from Due *et al.*, (1991)

- The *organisation of the education and training system* – here the following major cleavages are of particular contextual importance in studying aspects of the timing of youth transitions:
  - ◊ the minimum school leaving age,
  - ◊ recruitment norms/policies,
  - ◊ the length of further/higher education courses,
  - ◊ opportunities for lifetime learning, and
  - ◊ the relative strength of general and vocational education.

  (For further details see Section 3, and also discussion in Green *et al.*, 1999.)

- The *role of the state in shaping labour supply* - through incentives to enter education/training or work, and support for the inactive, the state may play an important role in influencing the labour market activity decisions of young people; (see Table 2.2 for an example of a 'welfare state typology).

- The *organisation of the family economy* - as noted in the 'Mediterranean' model (shown in Table 2.2), the family economy may be important in shaping the labour force participation of young people, and for women, in particular. Also of relevance here are changing gender roles (notably the closing of the 'gender gap' between men and women's orientations to work and family) and the growing diversity of family forms.

The nature of some of these influences is illustrated in diagrammatic form in Figure 2.1. In particular, the importance of the organisation of the education and training system and the institutional structure of labour markets in moulding the shape of transitions from education to work is highlighted; (see Section 3 for further discussion). It is also evident that there may be a number of different statuses - including military/national service, government training

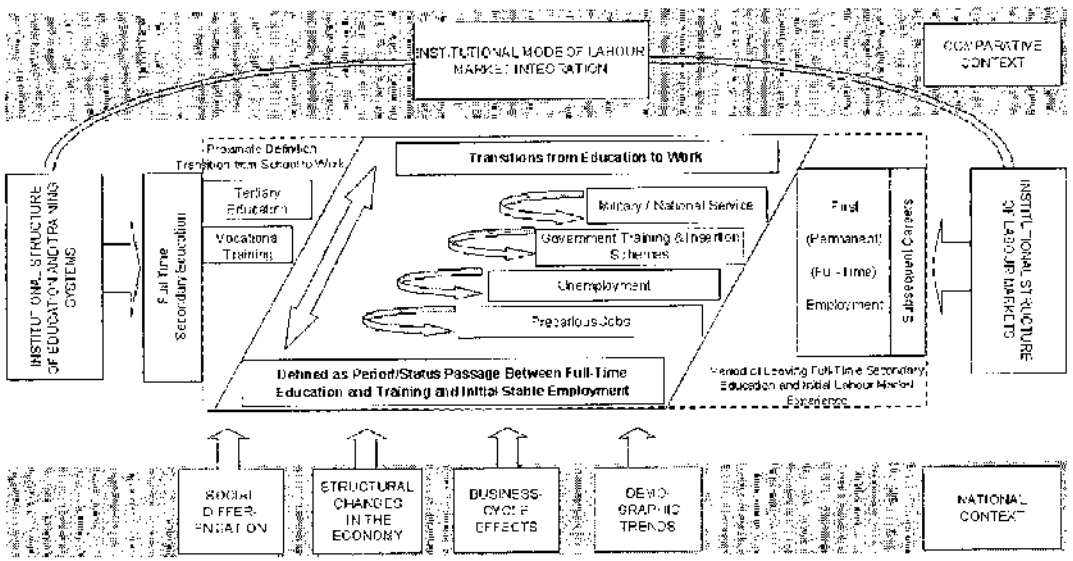
schemes, spells of unemployment and temporary/more precarious jobs - between the 'end point' of education and the 'starting point' of stable employment.[4]

Table 2.2: Welfare state typology

Model	Countries where applicable	Characteristics
Nordic	Sweden, Denmark, Finland, Netherlands	Mix of policies encourages most adults to enter and stay in the labour market (i.e. 'high participation')
Continental Europe	Belgium, France, Germany, Austria, Luxembourg	Mix of policies tends to limit the share of the population in the labour force (i.e. 'low participation')
Liberal	UK, Ireland	There is an incentive to enter the labour force because of low access to benefits, although some reliant on benefits/in need of support get caught in a 'benefits trap' (i.e. 'high initial participation')
Mediterranean	Italy, Greece, Spain, Portugal	The family [as opposed to the state] is a major mediating institution in labour supply, with family support [when in education or unemployed] allowing the young to wait a long time for an employment opportunity (i.e. 'low initial participation')

Source: from Rubery and Smith (1999)

Figure 2.1: Influences shaping the transition from education to work



(*Source*: Gangl *et al.*, 1999)

[4] It should be borne in mind that some individuals may not achieve permanent full-time employment (as outlined in Figure 2.1).

3. LABOUR MARKET ENTRY – TRACING THE TRANSITION FROM EDUCATION TO WORK OF YOUNG PEOPLE

3.1 Is There a Distinctive 'Youth Labour Market'?

It is possible to identify two contrasting views of the 'youth labour market' (Hasluck, 1998):

1) A *segregated* youth labour market - young people are seen as competing within a separate and distinct labour market marked out by the manner in which employers' characterise and recruit young people (Ashton and Maguire, 1983; Ashton *et al.*, 1990; Roberts, 1995); in such a segregated market young people are excluded from some sectors, while at the same time jobs exist for which only young people are recruited;

2) A *competitive* youth labour market - emphasising competition between young people and other job seekers (notably women returners); in which young people may be at a disadvantage because of their lack of work experience (and less developed personal qualities).

Segregation and competition both exist, but the extent to which youth labour markets are segregated or competitive is likely to vary between Member States, as well as over time. Moreover, this 'mix' between segregation and competition is likely to influence the labour market activity of young people.

3.2 The Changing Labour Market Position of Young People

There have been two dramatic changes in the youth labour market in recent years (Bynner *et al.*, 1999), to which reference has already been made in Section 2:

1) The *demographic downturn* in the numbers of young people[5] - contributing to:
   ⇒ a reduction in the volume of young people available for entry to the labour market, and
   ⇒ an ageing of the labour force;

2) *Increasing participation in education* beyond the minimum school leaving age[6] - it is now the exception, rather than the rule, to leave education at the end of compulsory schooling. The trend for increasing participation in post-compulsory education arise from the choices and decisions made by young people in the context of 'difficult' labour market conditions, changing skill requirements, and an increasing tendency by their peers and competitors – to stay in education and training for longer (Green *et al.*, 1999).

Combining the effects of declining cohort size and increasing participation in education in non-compulsory education, the number of young people entering the labour market has declined considerably.[7] Under these circumstances, if the demand for youth labour remained unchanged, it might have been expected that:

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5 For instance, the numbers of young people in Great Britain aged 16-24 years fell from around 8 million in the 1980s to 6.4 million by 1995.

6 In Great Britain, there were 2.1 million young people in post-compulsory education in 1995, compared with 1.4 million in 1984. Across the European Union the share of young people aged 15-24 years in education increased from 49 per cent in 1987 to 59 per cent in 1995.

7 In Great Britain the number of young people working or available for work is estimated to have dropped from 6.5 million in 1985 to less than 5.0 million by 1997.

- youth unemployment rates would fall,
- the scale of youth training / labour market insertion programmes would be reduced considerably,
- the ratio of the earnings of young people relative to older workers would increase, and
- young people may be tempted to enter the labour market earlier rather than enrol in post-compulsory education/training.

In general, however, the youth labour market is characterised by:

- *Relatively high unemployment rates* - across the European Union youth unemployment rates remain high relative to adult unemployment rates, and are disproportionately influenced by the economic cycle.

- *Changing industrial and occupational profiles* - typically, the largest proportion of young men entering the labour market have been recruited into craft & related occupations,[8] with young women entering clerical & secretarial occupations, but changes in labour demand have tended to reduce the number of such typical 'entry' occupations.

- *Increased part-time, flexible and non-permanent working* - the structure of labour demand has changed such that part-time and non-permanent employment opportunities have grown relative to 'traditional' full-time employment.

- *Enhanced vulnerability of young, less well qualified, labour market entrants* - in general, changes in the supply and demand of young workers has resulted in a juxtaposition of a reduced flow of 'young' (i.e. those from the younger end of the youth spectrum) labour market entrants (who tend to be disproportionately poorly qualified) with a reduced number of job opportunities for young people, while employers require new and more general skills (for which more qualified, older, labour market (re)entrants are likely to be more suited).[9]

- *Expansion of upper secondary and higher education* – many Member States have seen an expansion of provision[10] and have publicly promoted the advantages of increasing participation. Hence, there has been a growth in the supply of potential candidates for higher education. The shift towards mass participation in post-compulsory education reflects both supply and demand pressures. Young people 'expect' to stay in education longer – reflecting rising aspirations and a growing realisation that economic trends make desirable employment increasingly dependent on achieving higher levels of qualification.

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8 Although there are differences between regions (reflecting differences in occupational structure).

9 According to human capital theory the productivity of an individual increases with more and higher education and more on-the-job training. Hence, the more highly educated will tend to be at the front of the jobs queue.

10 From a modelling perspective, it is noteworthy that, in some cases, provision has expanded to an extent unforeseen even ten years ago; thus illustrating the salience of, but difficulty of taking account of, policy developments.

- *A greater variety and diversity of entry jobs for the more highly educated young people* - reinforcing the fact that transitions have tended to become more diverse as young people enter the labour market over a wider age range than hitherto, and into a wider range of employment.

Member states, and young people across the regions of the EU, face many common pressures influencing their decisions about labour market activity. However, as outlined in Section 3.3 (and in subsequent sections of the report), there are major and enduring differences and variability in education to work transitions across EU member states.

3.3 Variety of Education to Work Transitions

The literature on transitions from education to work in Europe, emphasises the *range* and *variety* of youth labour market activity patterns across Europe, and highlights the importance of *national level differentials* in the form, shape and length of transitions, relating to the 'institutional embeddedness' of transition processes.

In the first instance, there is a *wide variety of education systems*. In the words of Cailloids (1994, 241): "Over time countries have developed vocational training and education systems which diversely reflect their level of development, their industrialisation strategies, and the relations between the various partners concerned, i.e. the state, enterprises, and representatives of employers and workers."

The age at which compulsory schooling ends ranges from 14 to 16 years. In Belgium, Germany, the Netherlands and Austria it is 18 years if part-time schooling is taken into account. There are further variations between countries in the starting age for higher education and the normal length of study for a first degree (see Table 3.1).

Table 3.1: End of compulsory schooling

Member State	End compulsory school		Start Higher Education	Expected leaving age
	Full-time	Part-time		
Italy	14	-	19	26
Greece	15	-	17-19	28.5
Ireland	15	-	17-18	22-23
Luxembourg	15	-	N/A	N/A
Portugal	15	-	18	22
Austria	15	17	18-19	25
Belgium	15	18	18-19	22
Denmark	16	-	N/A	N/A
France	16	-	19-20	22
Spain	16	-	18	23
United Kingdom	16	-	18	21
Finland	16	-	19	23
Sweden	16	-	19	22-23
Netherlands	16	18	18	23
Germany	16	18	18	25

Source: Eurostat, 1997; Rubery and Smith, 1999

Furthermore, educational systems differ on the following dimensions:

- *standardisation* - the extent to which curricula, examinations and certification are standardised and quality assured on a national or regional basis: in general, all Member States are highly standardised in terms of their initial education systems, but there is greater variation in post-compulsory education, and particularly in the extent to which vocational training is nationally standardised;[11]
- *differentiation* - education/training systems may differentiate between young people either:
  - ⇒ by 'track' (e.g. academic / vocational) at the same stage
  - ⇒ by formal ranking/sorting individuals in different ways at the end of each stage
  - ⇒ by having different routes of progression to the next stage;
- *school-to-work linkages* - employers may be more or less involved in education/training systems;
- *youth training* - the nature of youth training relates both to the education/training system and to the labour market.

Education/training systems vary across all of these dimensions, so moulding education to work transitions in different ways. Hence, at opposite extremes of a spectrum (see Gangl *et al.*, 1999) it is possible to identify:

- ◊ the *German 'dual system'* - which institutionally employers may be more or less involved in education/training systems;
- ◊ the *Irish 'open market' model* - in which there are fewer institutionalised connections between education, training and the labour market, and potentially more competition between those with different levels and types of education for the same labour market positions.

The differing *relative importance of general education versus training* across Member States also has implications for the shapes of education to work transitions, and more specifically, for labour force participation rates. For instance, on this dimension Rubery and Smith (1999) distinguish the following systems:

- *apprenticeship-type vocational training* - in Germany, Denmark and Austria;[12]
- *school-based vocational training* - in the Netherlands, Finland, France, Belgium and Italy;
- *mainly general education* - in Ireland, Spain and Greece; and
- *non-classified* - in Sweden and the United Kingdom.

As would be expected given the variety of education and training systems and education to work transitions, *labour force participation rates* of young people vary markedly:

- ◊ between Member States; and
- ◊ amongst the 15-24 year age group; (see Section 5 for further details).

Breaking down the 15-24 years age group into two parts (see European Communities, 1999), significant differences are evident between:

- ♦ *those under 20* - most (in nearly all Member States) are in full-time education, either at school or college; and
- ♦ *those over 20* - the majority have left education and are in work or looking for work.

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[11] It should be noted that in some Member States with federal systems there is more regional variation.

[12] Hence, higher labour force participation rates would be expected in these countries than in those where vocational training is mainly school-based.

Table 3.2 shows labour force participation rates for these two sub-groups, as well as for the entire 15-24 year age group in 1996. In the *15-19 years* age group higher than average proportions are in the labour force in Denmark, the United Kingdom, the Netherlands and Austria. In Belgium, France and Luxembourg less than 15 per cent of this younger age group were in the labour force. Across the European Union just over a quarter of this age group were in the labour force. In the *20-24 years* age group approximately two-thirds of the population were participating in the labour force, with Denmark, Austria, the United Kingdom and the Netherlands once again recording the highest participation rates.

Table 3.2: Labour force participation rates of young people, 1996

Member State	15-19	20-24	15-24
Austria	42.8	73.8	59.6
Belgium	6.9	57.6	32.7
Denmark	66.4	80.6	73.8
Finland	31.6	64.2	47.5
France	11.0	58.6	35.2
Germany	29.9	70.3	50.0
Greece	16.0	60.6	36.9
Ireland	20.5	70.6	43.8
Italy	19.8	55.1	38.4
Luxembourg	14.5	61.6	40.3
Netherlands	45.9	74.3	61.1
Portugal	22.1	62.3	42.3
Spain	19.7	60.2	40.4
Sweden	19.1	64.3	43.1
UK	48.1	77.5	63.0
EU15	*26.5*	*65.1*	*46.2*

Source: NIDI, 1999

Table 3.3: Age at which (a) a quarter, (b) half and (c) two-thirds of young persons are in the labour force, 1996

Member State	25%	50%	67%
Austria	16	18	20
Belgium	20	21	23
Denmark	15	16	16
Finland	17	19	22
France	20	22	23
Germany	17	18	21
Greece	18	21	23
Ireland	18	20	22
Italy	19	21	24
Luxembourg	19	21	22
Netherlands	16	17	21
Portugal	18	20	23
Spain	18	21	23
Sweden	18	20	23
UK	16	17	18
EU15	*17*	*20*	*23*

Source: NIDI, 1999

Although the subdivision into 15-19 year olds and 20-24 year olds highlights some of the variation in experience across the 15-24 year old age range, to gain a fuller insight into the transition from education to work it is necessary to identify labour force participation rates by individual years of age. Table 3.3 shows the age at which a quarter, a half and two-thirds, respectively, of young persons had entered the labour force in 1996:

- a *quarter* of young people across the entire European Union had entered the labour force by the age of *17 years*,
- *half* of young people across the entire European Union had entered the labour force by the age of *20 years*,
- *two-thirds* of young people across the entire European Union had entered the labour force by the age of *23 years*.

Yet the variation around these averages is marked, with the median age of entry into the labour force for people ranging from 17 years in to 22 years.

PART 2: ANALYSIS

4. METHODOLOGICAL ISSUES

4.1 'Snapshots'

The term 'transition' implies a longitudinal perspective. Yet the European Labour Force Survey (which is to be the main information source in this project) provides cross-sectional data. Hence, the focus in Part 2 is on a series of 'snapshots' which provide perspectives on different stages in a transition process. From the foregoing discussion it is evident that:

- for some individuals the transition from education to work has not been completed by the age of 24 years (the 'cut off' point for the analyses);

and

- the shape of transitions varies between countries (and is also likely to vary between regions), and these different countries and regions are likely to be at different stages in the transition process when the 'snapshot' is taken.

Hence, the analyses presented in subsequent sections are concerned with investigating:

- *regional differences in transition processes*, rather than
- regional differences in 'end states'.

4.2 Sub-Groups Identified

As indicated in Section 3, labour force participation rates for young people aged 15-24 years represent an 'averaging' of very different participation rates for young people at different ages. Ideally, therefore, it would be useful to identify sub-groups of young people on the basis of *age* and *gender*. Following the convention of some previous analyses, in many of the analyses presented[13] a two-fold distinction is made between:

◊ those aged 15-19 years, and

◊ those aged 20-24 years.

Even this two-fold distinction disguises some marked variations. Hence, in addition, some analyses[14] are presented for narrower age groups – including one age group which extends beyond the conventional cut-off of 24 years used in analyses of labour market activity of young people:

- those aged 16-18 years,
- those aged 19-21 years,
- those aged 22-24 years,[15] and
- those aged 25-27 years.

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13 In particular, those in Section 6.

14 In particular, some of those in Section 5.

15 These first three three-year age groups are centred on the age at which a quarter, a half and two-thirds of young people across the European Union are participating in the labour force (as shown in Table 3.3).

4.3 'Unpacking' Participation

The labour force comprises both those in employment (i.e. those in paid work) and the unemployed (i.e. those who would like paid work but who are currently without a job). Reference was made in section 2 to the fact that young people tend to be particularly vulnerable to unemployment. Moreover, from the specific regional perspective of this report it is significant to note (see European Commission [1999] for further details), that:

- There are marked regional disparities in unemployment;
- The disparities between regions have tended to widen as unemployment has risen; and
- Inter-regional disparities in unemployment tend to be particularly concentrated on young people.

Thus two regions may display similar labour force participation rates but rather different unemployment rates. Since a key interest here is in the transition of young people from education to work in the analyses presented in Section 5 a distinction is made between the:

◊ the *economically active*, and

◊ the *employed*.

A further important dimension of variation for young people is participation in *education or training*. Figures 4.1-4.4 show distinguish the shares of the active[16] and inactive population in education and training for males and females in the 15-19 and 20-24 years age groups at the national level. The following key points emerge:

- In the 15-19 years age group the majority of males and females who are economically inactive are in education or training.
- In most member states the largest of the four sub-groups identified in Figures 4.1-4.3 is 'economically inactive in education or training'; (in Belgium this category accounts for 90 per cent of males and 93 per cent of females in the 15-19 years age group).
- In member states with relatively high economic activity rates in the 15-19 years age group, a relatively large proportion of the economically active tend to be in education or training. For example, in Denmark, 57 per cent of males and 51 per cent of females aged 15-19 years are in the 'economically active in education and training' category, while less than 10 per cent are in the 'economically active not in education or training' category. The Netherlands, Austria and Germany display economic (in)activity by education / training profiles most similar to those in Denmark. In the UK the higher than average shares of economically active in the 15-19 years age group are relatively evenly subdivided between those in education or training and those not in education or training. In Italy, Greece, Spain and Portugal the majority of those economically active in the 15-19 years age group are not in education or training.
- Once again, in the 20-24 years age group the majority of males and females who are economically inactive are in education or training, although this tendency is more pronounced for males (Figure 4.2) than for females[17] (Figure 4.4).
- In most member states the largest of the four sub-groups identified in Figures 4.2 and 4.4 is 'economically active not in education or training'; in the UK and Ireland approximately 70 per cent of males aged 20-24 years are in this category.

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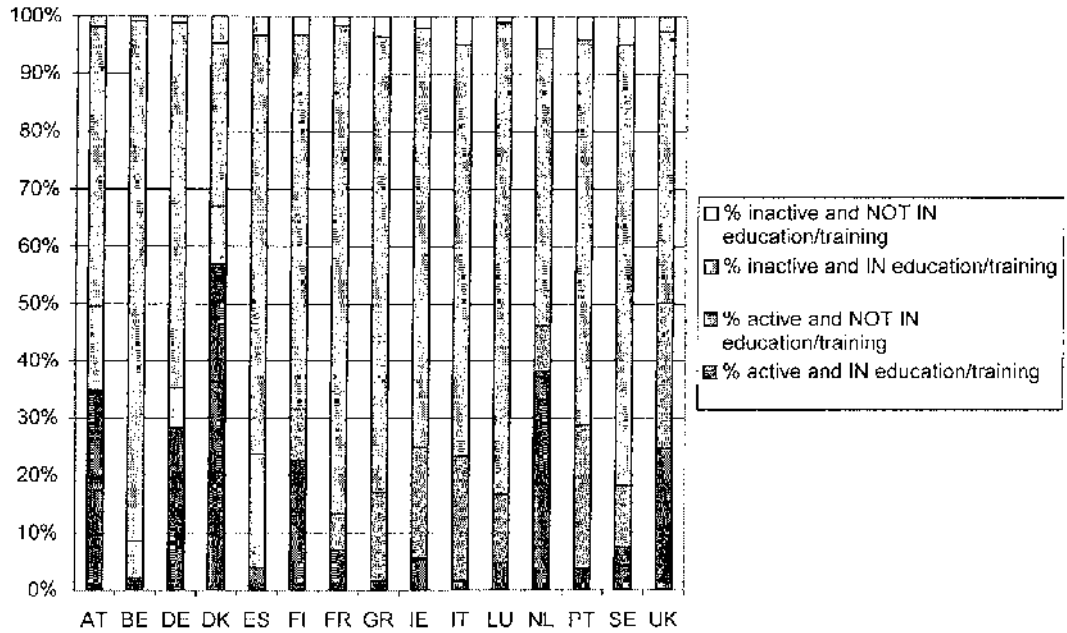
[16] The vast majority of the economically active population in education / training are in employment.

[17] More of whom are likely to be looking after the home / family.

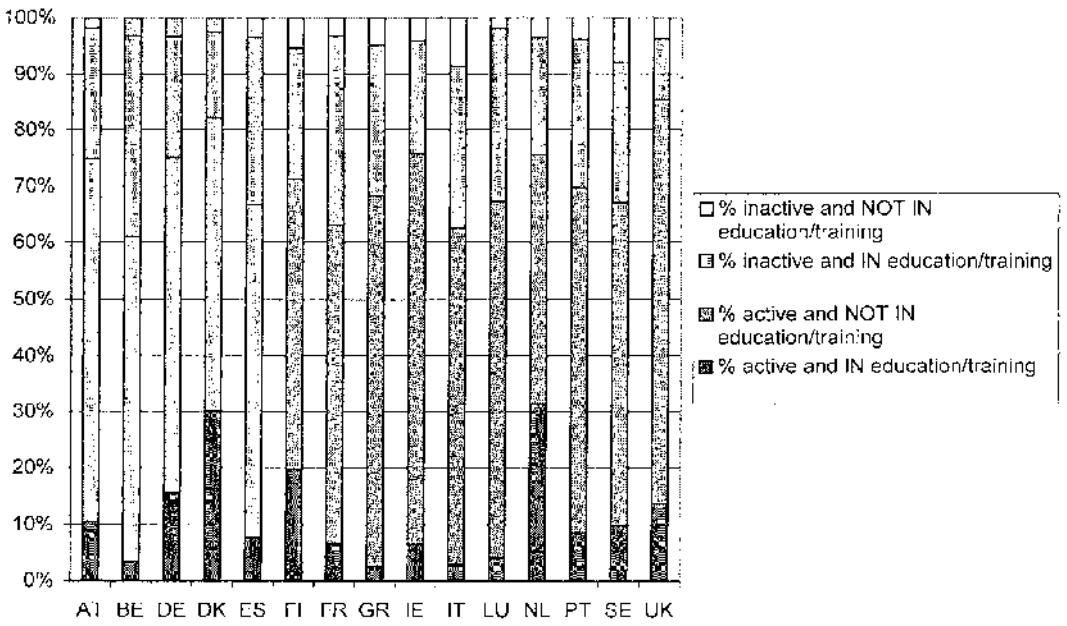
- In Denmark and the Netherlands over at least 30 per cent of economically active males aged 20-24 years are in education and training.

Figure 4.1: Crosstabulation of economic activity by participation in education or training – males aged 15-19 years



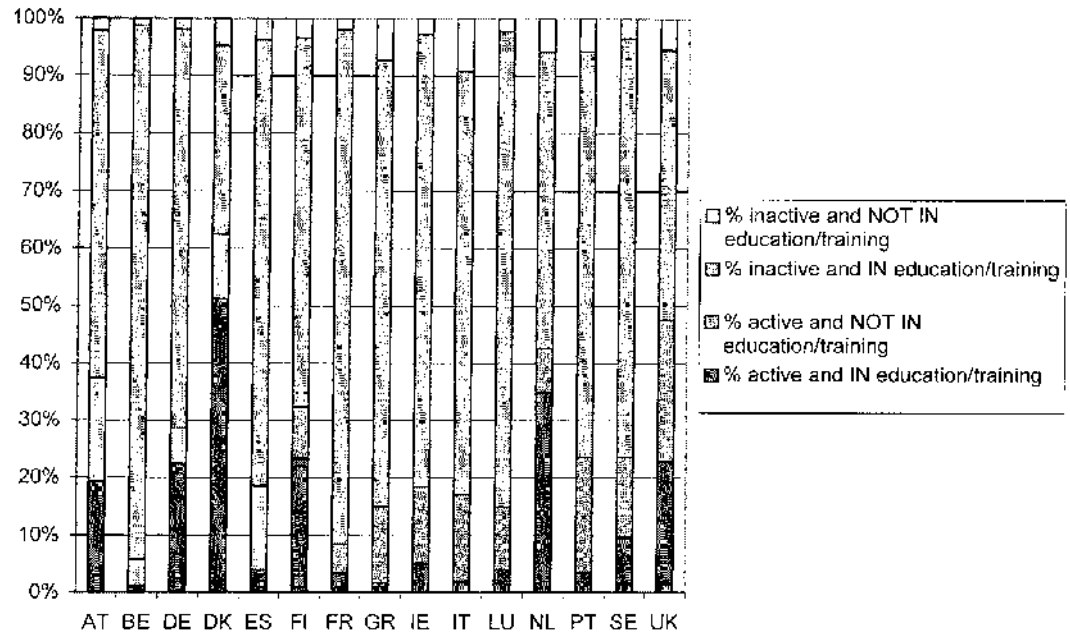
Source: European Labour Force Survey, 1993-97

Figure 4.2: Crosstabulation of economic activity by participation in education or training – males aged 20-24 years



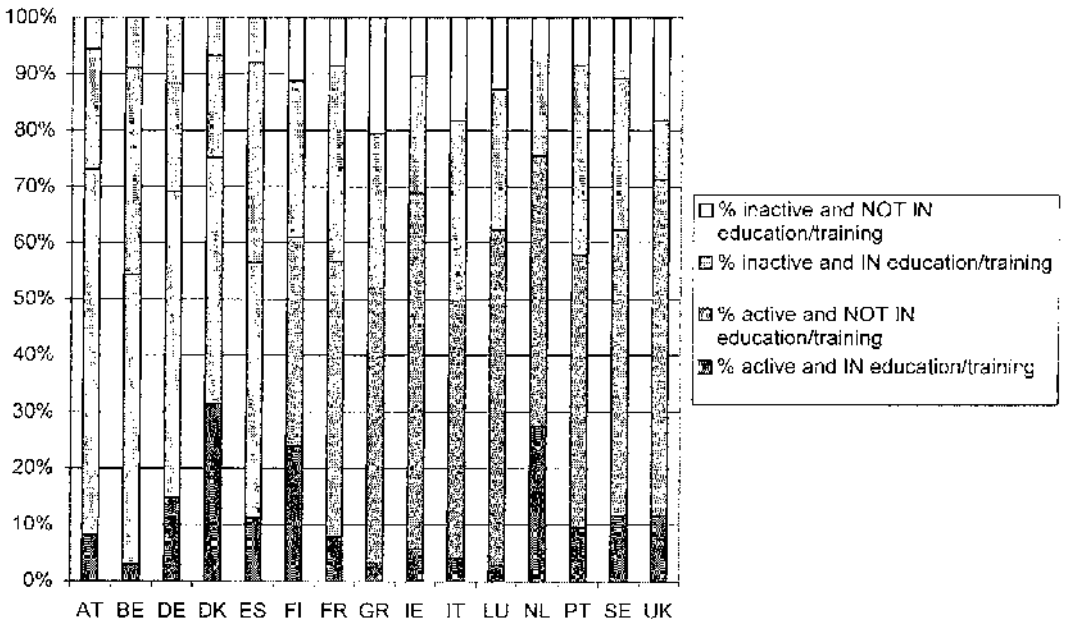
Source: European Labour Force Survey, 1993-97

Figure 4.3: Crosstabulation of economic activity by participation in education or training – females aged 15-19 years



Source: European Labour Force Survey, 1993-97

Figure 4.4: Crosstabulation of economic activity by participation in education or training – females aged 20-24 years



Source: European Labour Force Survey, 1993-97

(For details of the extent of regional variation in the percentage of young people in/not in education/training see Appendix 1.)

4.4 Issues of Data Quality and Availability

The *European Labour Force Survey* is the main data source is the main data source used for *comparative analysis* in this project. Even though harmonised, it should be borne in mind that the indicators used are not necessarily fully comparable across Member States / regions.

Perhaps the most important technical issue is that of *sampling variability*. Sample size constraints mean that the Labour Force Survey cannot be expected to yield reliable figures at a detailed level of regional disaggregation, or for detailed sub-groups of the population. Yet the focus of this project is on regional level differences, and there is interest in sub-dividing the 15-24 years age group by both age and gender, and on 'unpacking' participation. Hence, when interpreting the results of analyses it is important to be aware of the fact that observed inter-regional variations may be due to "noise" in the data, as opposed to "real" differences. (It has been necessary to 'trade-off' the degree of disaggregation of data required against the robustness of the data. In most of the analyses presented in Sections 5 and 6 a decision has been taken to aggregate the data across the years 1993-97 in order to increase sample size.[18])

For exploratory data analysis (and notably cluster analysis [this technique is used in Section 5) the same variables are necessary for all regions. Hence, *missing data* poses a problem; (see Section 6 for an account of some of the problems posed by missing data for regression analysis).

Likewise, changes in the *definitions of regions* also pose difficulties for comparative analyses. Before any analyses could proceed it was necessary to code regions on to a consistent basis.[19] As far as possible, the regions existing in 1997 (i.e. at the end of the time period) were used, but for the United Kingdom it was be necessary to derive data for 1995-based NUTS 2 regions.[20] (See Appendix 2 for a list of the NUTS 2 regions used in the analyses in Sections 5 and 6.) In most instances, however, the definition of regions has remained relatively stable over the period from 1993 to 1997. For purposes of comparative analysis it should also be borne in mind that:

- although broadly comparable in size, there are some extreme variations at NUTS 2 level;[21] data for larger regions are likely to be more robust than for smaller regions;
- NUTS 2 regions are generally based on administrative geographies and so may not conform with functionally-defined regions.[22]

Changing definitions of regions and missing data (for some countries) limit the possibility for 'splicing on' extra variables (i.e. from sources other than the European Labour Force Survey) for use in multivariate regression analysis.

In the Labour Force Survey results are compiled for *private households* only. For young people the treatment of two groups is of particular importance:

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18 Data for Austria, Finland and Sweden are available for the period 1995-97 only.

19 In some instances regional definitions remained the same over the period 1993-97 but regional code numbers changed.

20 These are Standard Planning Regions at NUTS 1 level.

21 Exemplified by the Ile de France and Lombardia with populations of 9-10 million, and Corse, Burgenland and Highlands & Islands with populations of 200-300 thousand.

22 The 'ideal' would be to have functional regions defined on a consistent basis.

- those young people who are *conscripts* (and this category is not applicable in all Member States) are generally, but not always, included in private households;[23]
- persons in *student homes* are generally not included, although in some Member States they are included.[24]

When assessing the results presented in Sections 5 and 6, it should be borne in mind that shortcomings in data quality and availability place limitations on the scope of analyses undertaken.

[23] Greece and Italy are exceptions.

[24] e.g. in Spain, France, the Netherlands, Portugal and the United Kingdom.

5. EXPLORING AND DESCRIBING REGIONAL VARIATIONS IN LABOUR FORCE PARTICIPATION

5.1 Overview of National Level Variations in Labour Force Participation

Averaging over the five-year period from 1993 to 1997,[25] Figures 5.1 and 5.2 show male and female economic activity rates, respectively, from age 15 to age 29 by individual years of age. These figures may be conceptualised as showing the transition of young people into the labour market in each member state.

Several key features are apparent from the transition profiles of *both males and females*:

- There is *considerable variation* in transition profiles at the national level – particularly at the younger end of the age range. For example:
  - ◊ France and Belgium are characterised by lower than average economic activity rates up to the age of 22 years, and higher than average economic activity rates in the older age groups;
  - ◊ Denmark and the UK display higher than average economic activity rates across the entire age range;
  - ◊ Italy exhibits lower than average economic activity rates from the age of 16 years onwards.
- *Convergence* in economic activity rates is evident with increasing age, and is most apparent from around the age of 20 years.
- In most member states economic activity rates continue to increase after the age of 24 years (i.e. the conventional cut-off for defining 'young people').

A *comparison* of the transition profiles *of males and females* reveals:

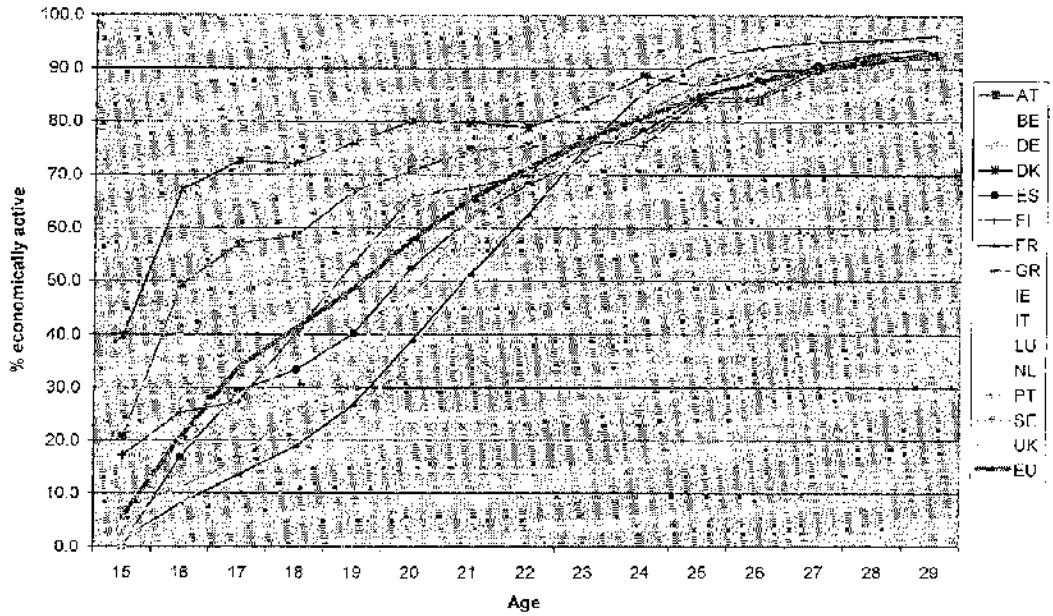
- A similar degree of national variation is evident for both males and females up to approximately the age of 20 years, and thereafter male economic activity rates for the different member states converge to a greater extent than female economic activity rates.
- Although in many member states male and female economic activity rates are similar at the younger end of the age range, female economic activity rates do not rise to the levels reached by male economic activity rates from the early twenties onwards.
- In some member states the gender 'gap' in economic activity rates is wider than in others. For example:
  - ◊ Italy and Greece are characterised by a larger than average 'gap' between male and female economic activity rates;
  - ◊ In Sweden and Denmark the 'gap' in economic activity rates is narrower than average.

Figures 5.3 and 5.4 show similar profiles of employment rates by individual year of age for males and females, respectively. The key feature to emerge from a comparison of natioanl level economic activity rates and employment rates is:

- There is a *greater degree of variation* in employment rates than in economic activity rates.

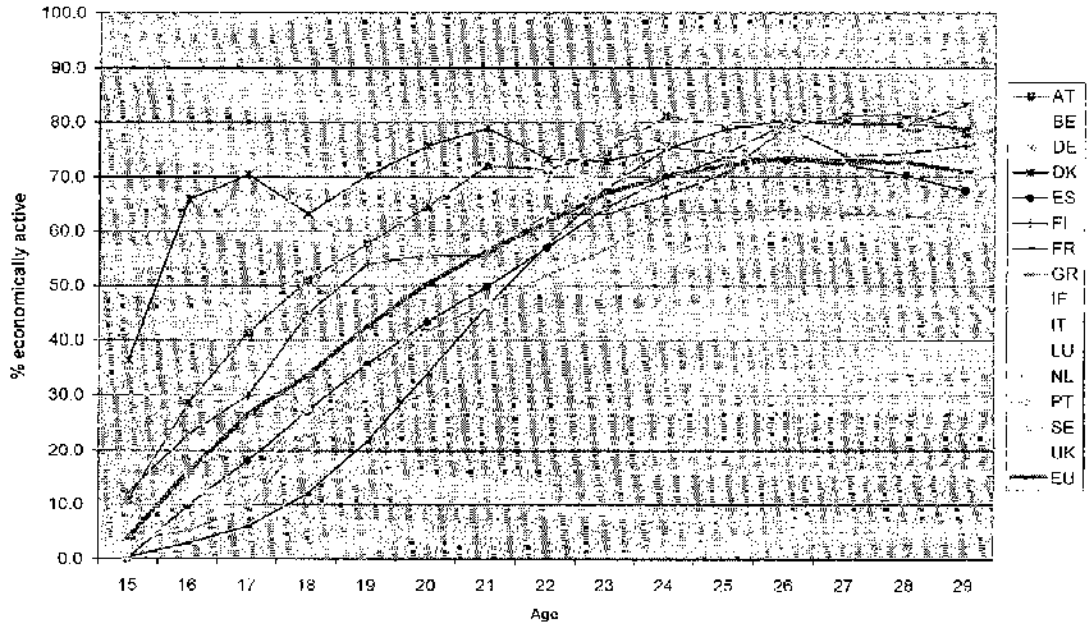
[25] Data for Austria, Finland and Sweden are available for the period 1995-97 only.

Figure 5.1: Male economic activity rates by member state, ages 15-29



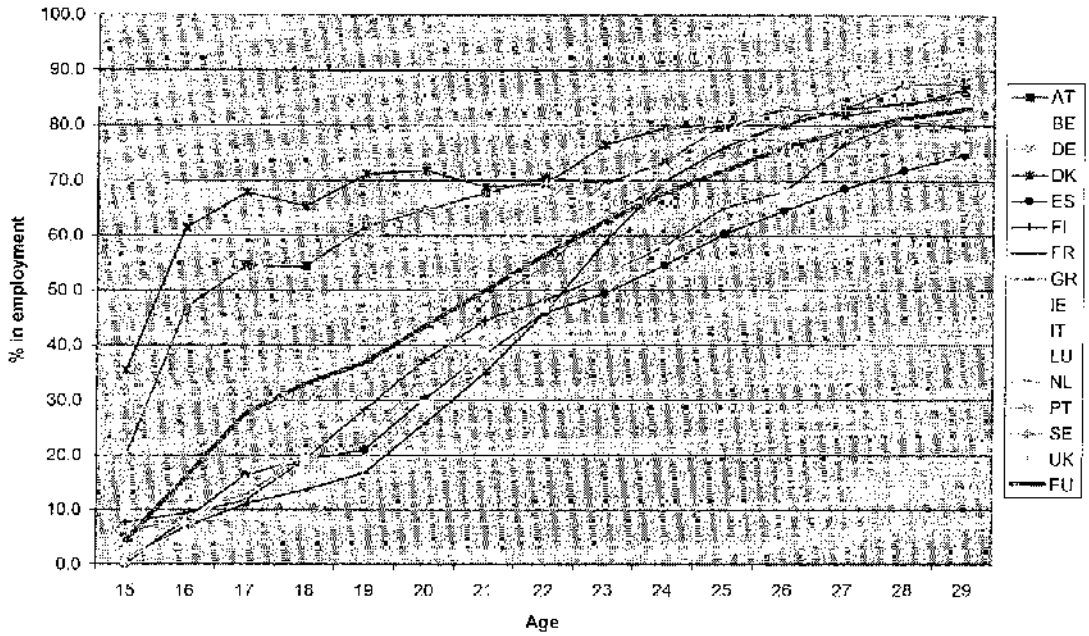
Source: European Labour Force Survey, 1993-97

Figure 5.2: Female economic activity rates by member state, ages 15-29



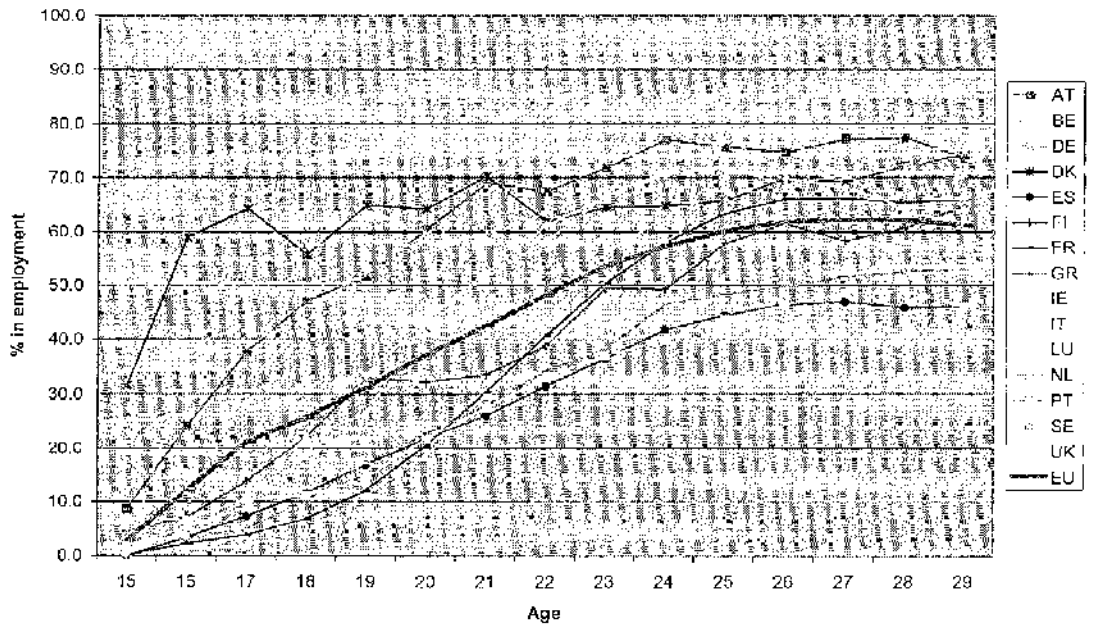
Source: European Labour Force Survey, 1993-97

Figure 5.3: Male employment rates by member state, ages 15-29



Source: *European Labour Force Survey, 1993-97*

Figure 5.4: Female employment rates by member state, ages 15-29



Source: European Labour Force Survey, 1993-97

5.2 The Extent of Regional Level Variations in Labour Force Participation

5.2.1 Introduction

From section 5.1 it is immediately apparent that there are important national level variations in labour force participation. In this section the focus of attention shifts to exploring the extent of regional variations in labour force participation. In order to gain insights into the extent of regional variation three techniques are utilised:

- *Coefficients of variation* are used to measure the dispersion of regional economic activity rates and employment rates in each member state and over time (see sub-section 5.2.2).
- *Boxplots* are used to illustrate graphically the extent of regional variation and temporal variation in economic activity rates within each member state (see sub-section 5.2.3).
- *Cluster analysis* is used to identify regions across the European Union sharing similar labour market transitions (see sub-section 5.2.4).

5.2.2 What coefficients of variation have to say about the extent of regional dispersion

The *coefficient of variation* is calculated as follows:

$$\text{coefficient of variation } (V) = s / \bar{s}$$

where s is the standard deviation and $\bar{s}$ is the mean.
V is expressed as a percentage, and the higher the percentage, the greater the degree of dispersion.

Table 5.1 shows coefficients of variation for male economic activity rates and male employment rates for each member state for each of the five years from 1993 to 1997, and for the years 1993 to 1997 aggregated together.[26] Table 5.2 displays similar information for females.

The coefficients of variation reveal that:

- For males and females, and for all age groups and all member states, there tends to be *greater regional variation* in *employment rates than in economic activity rates*.
- There tends to be a *greater degree of regional variation* in economic activity rates and employment rates at the *younger end of the age range*. There is greater regional dispersion in rates for 15-19 year olds than for 20-24 year olds, and greater regional dispersion in rates for 20-24 year olds than for 25-29 year olds.
- Except in the 15-19 age group (where the picture is more varied[27]), there tends to be *more regional dispersion* in economic activity rates and employment rates *for*

[26] The values for coefficients of variation tend to be somewhat lower for all years aggregated together than for the individual years. This is likely to be due to the fact that inter-regional 'extremes' in sample size tend to be evened out to some extent when the samples from each year are aggregated together. Hence, the aggregated values may be regarded as more robust than those for single years.

[27] It should be noted that there are fewer 15-19 year olds than 20-24 year olds or 25-29 year olds who are economically active, and hence the regional statistics on economic activity tend to be least robust for this age group.

females than for males. This distinction in the extent of regional dispersion is particularly pronounced in the older age groups (notably 25-29 years).

Table 5.1: Coefficients of variation for male economic activity rates and employment rates, 1993-1997

Age	State	Economic activity rates						Employment rates					
		1993	1994	1995	1996	1997	All years	1993	1994	1995	1996	1997	All years
15-19	AT	-	-	11.9	9.8	10.9	9.8	-	-	12.4	11.2	13.0	11.2
	BE	41.5	32.9	33.8	30.4	28.0	25.5	56.1	38.5	42.7	44.4	44.7	37.9
	DE	21.6	23.6	24.4	21.8	25.8	22.0	23.6	26.1	26.7	24.2	28.3	24.1
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	ES	27.5	29.1	29.1	26.0	30.6	26.2	29.1	43.3	36.2	31.6	38.2	32.9
	FI	-	-	25.1	16.9	50.2	24.2	-	-	35.8	16.8	53.7	15.6
	FR	30.7	20.7	27.9	23.2	21.8	17.8	32.4	32.6	30.6	29.2	28.5	23.3
	GR	30.9	30.1	33.6	31.6	29.7	29.8	38.1	38.1	41.9	42.4	37.6	38.1
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	24.6	23.5	25.3	25.8	29.7	24.1	38.3	37.7	46.0	45.9	50.1	41.6
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	13.9	12.8	10.0	6.4	9.4	7.5	15.1	15.1	10.4	9.7	13.8	10.2
	PT	20.8	31.4	33.8	24.4	18.1	23.5	25.0	34.6	35.6	29.1	22.9	27.5
	SE	-	-	27.9	30.6	35.8	23.9	-	-	39.0	46.5	45.1	36.7
	UK	8.2	9.5	10.7	8.6	10.6	8.2	9.4	7.3	10.8	8.2	9.5	7.2
20-24	AT	-	-	9.5	8.2	7.6	8.0	-	-	11.0	9.4	8.4	9.3
	BE	11.2	11.5	13.6	17.7	11.8	12.6	20.5	22.5	24.7	28.9	21.6	23.2
	DE	7.2	7.8	8.1	7.9	7.0	6.7	7.3	8.8	8.2	8.7	9.1	6.8
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	ES	7.3	12.4	9.3	9.5	8.9	8.3	17.7	19.7	21.0	23.9	18.7	18.2
	FI	-	-	22.2	4.7	22.6	14.4	-	-	30.9	16.5	18.5	14.7
	FR	7.1	7.9	7.9	10.4	8.4	6.6	10.2	12.7	11.0	17.4	11.3	10.7
	GR	13.4	13.6	12.7	12.0	13.6	12.5	19.5	21.1	18.8	17.8	17.6	18.2
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	10.5	14.3	14.0	12.1	15.8	12.7	26.1	31.2	34.9	36.4	36.6	32.4
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	7.0	7.1	7.6	7.4	6.8	5.1	8.8	9.5	9.6	13.4	8.9	6.8
	PT	10.2	8.8	6.4	6.8	7.9	7.2	11.9	12.1	10.6	10.3	8.1	9.0
	SE	-	-	11.7	9.6	7.4	7.5	-	-	16.6	18.7	21.5	15.6
	UK	4.6	5.2	3.8	3.3	3.8	3.4	6.7	8.6	6.8	5.0	7.5	6.2
25-29	AT	-	-	4.0	3.9	5.3	4.1	-	-	4.8	5.3	6.9	4.8
	BE	4.5	3.0	4.4	4.5	4.1	3.8	9.1	9.4	11.2	8.8	9.6	9.4
	DE	5.3	4.7	5.3	5.3	4.5	4.6	6.3	5.3	5.6	5.9	5.2	4.9
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N/a	n/a	n/a	n/a	n/a
	ES	3.8	3.2	2.9	4.1	2.9	2.5	9.1	9.5	12.0	14.3	9.7	9.9
	FI	-	-	6.5	20.3	5.2	5.5	-	-	18.2	18.0	18.0	8.2
	FR	6.8	4.7	2.2	2.0	2.5	2.0	10.3	6.3	5.3	6.1	6.7	5.5
	GR	2.9	2.8	2.2	2.1	2.6	2.1	5.6	5.9	5.7	5.7	5.6	5.3
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	6.1	6.8	7.7	8.7	7.1	6.8	13.2	15.8	18.7	20.4	19.5	17.2
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	3.0	2.9	2.4	1.9	2.8	2.1	3.4	5.5	4.4	5.5	4.2	4.1
	PT	2.8	2.4	5.4	2.2	4.5	2.0	4.3	3.4	5.5	4.7	5.9	3.4
	SE	-	-	5.7	7.3	6.3	5.9	-	-	9.2	8.9	7.6	7.9
	UK	1.9	1.5	2.1	2.7	1.4	1.5	5.0	4.1	3.9	4.4	4.3	3.1

Source: European Labour Force Survey, 1993-1997

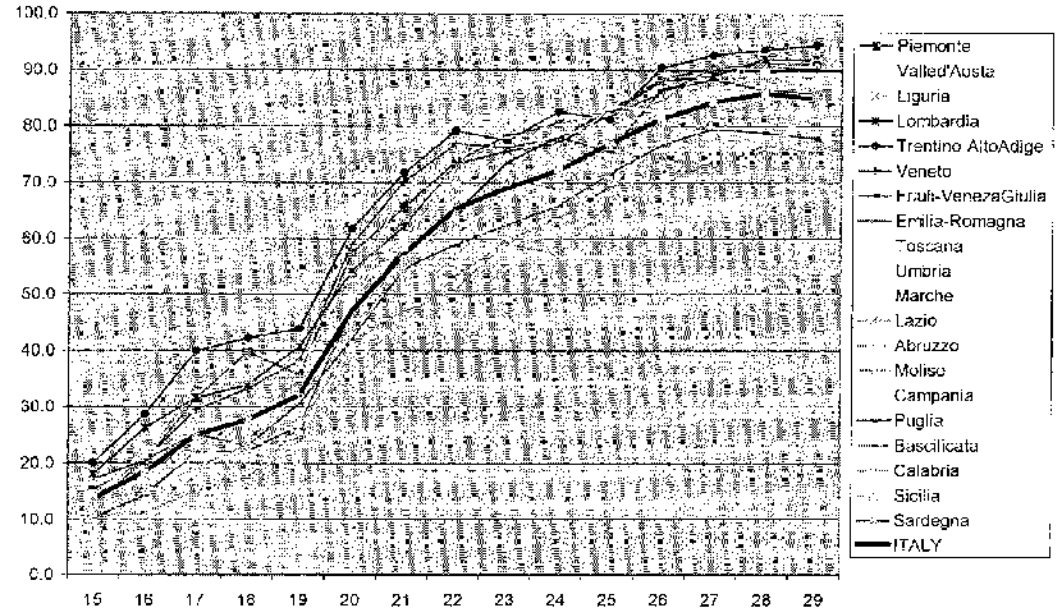
Table 5.2: Coefficients of variation for female economic activity rates and employment rates, 1993-1997

Age	State	Economic activity rates						Employment rates					
		1993	1994	1995	1996	1997	All years	1993	1994	1995	1996	1997	All years
15-19	AT	-	-	12.8	14.4	9.5	11.0	-	-	17.2	17.1	10.7	13.6
	BE	29.9	38.4	37.2	39.3	48.9	29.6	38.2	62.4	51.0	51.6	63.9	43.4
	DE	24.6	25.9	28.3	28.6	23.9	24.4	25.7	28.2	29.7	31.2	25.6	26.1
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	ES	34.5	36.7	45.2	38.5	35.3	35.8	44.7	43.9	55.1	56.7	42.3	44.6
	FI	-	-	35.2	42.4	50.7	39.6	-	-	50.4	46.5	55.8	40.2
	FR	27.9	32.7	30.3	37.1	46.3	29.8	37.0	52.4	48.4	50.7	59.7	42.4
	GR	34.8	35.9	34.5	22.9	29.2	29.1	59.8	60.0	58.0	43.7	53.5	53.3
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	25.9	37.3	29.4	25.5	28.4	25.3	53.8	62.8	56.2	47.8	50.9	51.3
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	16.9	13.6	11.2	10.1	11.3	10.0	21.6	14.9	13.7	16.0	11.8	12.5
	PT	39.5	35.9	35.6	29.4	37.0	34.6	47.0	46.5	45.6	42.7	51.7	45.1
	SE	-	-	13.3	20.7	24.5	14.5	-	-	19.0	21.9	33.8	14.6
	UK	15.8	16.7	14.2	12.3	12.3	13.1	20.5	16.8	14.4	12.9	11.9	13.7
20-24	AT	-	-	8.0	7.6	7.9	7.0	-	-	8.2	7.9	9.0	7.6
	BE	14.1	14.9	15.2	14.9	14.8	14.3	23.4	28.1	29.5	28.6	32.4	27.5
	DE	8.6	8.5	9.2	10.4	9.6	8.4	9.2	9.8	8.4	10.2	9.8	8.0
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	ES	13.4	11.3	14.5	14.2	12.5	11.7	25.7	22.3	28.6	28.3	25.9	24.5
	FI	-	-	7.7	25.7	30.9	19.5	-	-	32.1	65.0	57.9	27.7
	FR	5.8	9.0	13.9	12.1	13.5	6.0	12.0	13.4	17.2	17.4	23.3	11.8
	GR	13.1	11.8	16.9	12.7	12.3	11.1	23.3	24.9	27.2	24.4	24.2	22.5
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	26.3	25.4	24.9	24.2	23.5	23.9	50.5	51.9	53.3	56.9	54.8	52.8
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	6.5	5.9	7.2	7.9	5.2	5.1	10.2	7.7	7.2	9.7	8.3	6.8
	PT	7.1	11.2	9.9	9.2	13.9	7.7	9.8	14.1	14.7	13.6	14.4	11.9
	SE	-	-	8.1	11.0	13.6	8.5	-	-	19.4	16.0	21.2	11.0
	UK	5.4	5.9	6.5	5.3	5.3	4.6	7.4	8.0	7.9	7.0	7.3	5.9
25-29	AT	-	-	5.5	5.1	7.0	4.6	-	-	6.9	4.4	7.9	5.0
	BE	6.4	5.9	6.7	7.4	6.7	6.0	10.6	12.0	13.7	14.2	14.3	12.5
	DE	12.0	11.4	11.8	9.6	8.9	10.3	9.1	8.5	9.1	7.6	6.5	7.2
	DK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	ES	10.3	10.3	10.9	10.0	8.6	9.1	17.9	20.2	20.9	22.1	20.7	19.3
	FI	-	-	15.1	22.1	28.9	14.5	-	-	29.9	21.0	27.3	13.0
	FR	7.7	5.6	5.4	5.5	7.3	4.8	12.5	8.1	10.8	9.8	10.2	8.0
	GR	14.2	17.3	15.4	9.3	10.4	12.4	16.8	20.1	19.9	18.5	16.5	17.4
	IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	IT	25.0	23.7	25.3	24.8	25.2	24.4	39.3	39.2	41.8	42.9	42.9	40.9
	LU	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	NL	8.8	3.9	6.0	6.5	4.1	4.3	8.9	6.5	7.6	8.5	4.6	5.4
	PT	9.4	6.6	12.7	14.4	10.1	9.6	11.6	8.0	14.4	16.8	10.9	11.3
	SE	-	-	4.4	7.7	10.0	3.9	-	-	5.7	10.1	10.2	6.3
	UK	5.2	3.6	3.4	3.0	4.0	2.3	5.6	4.7	4.2	5.2	4.4	3.0

Source: European Labour Force Survey, 1993-1997

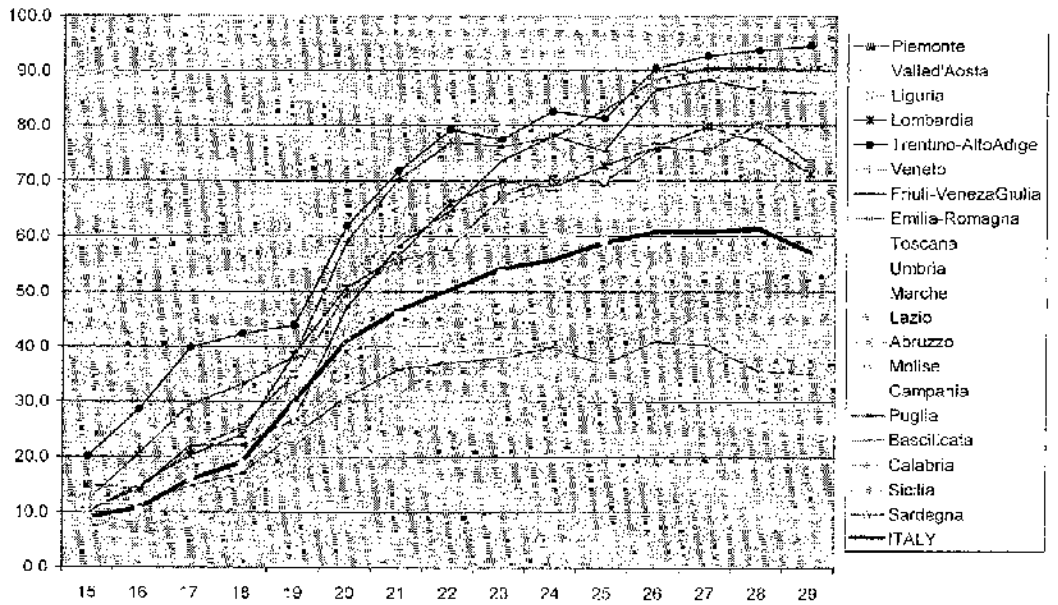
- There are important variations between member states in the degree of dispersion in economic activity rates and employment rates by region. For example:
  - ◊ Italy consistently displays some of the highest levels of regional variation – particularly for females, (see Figures 5.5 and 5.6 showing regional variations in economic activity rates by single year of age from 15-29 years for males and females, respectively);

Figure 5.5: Male economic activity rates for regions in Italy, ages 15-29



Source: European Labour Force Survey, 1993-97

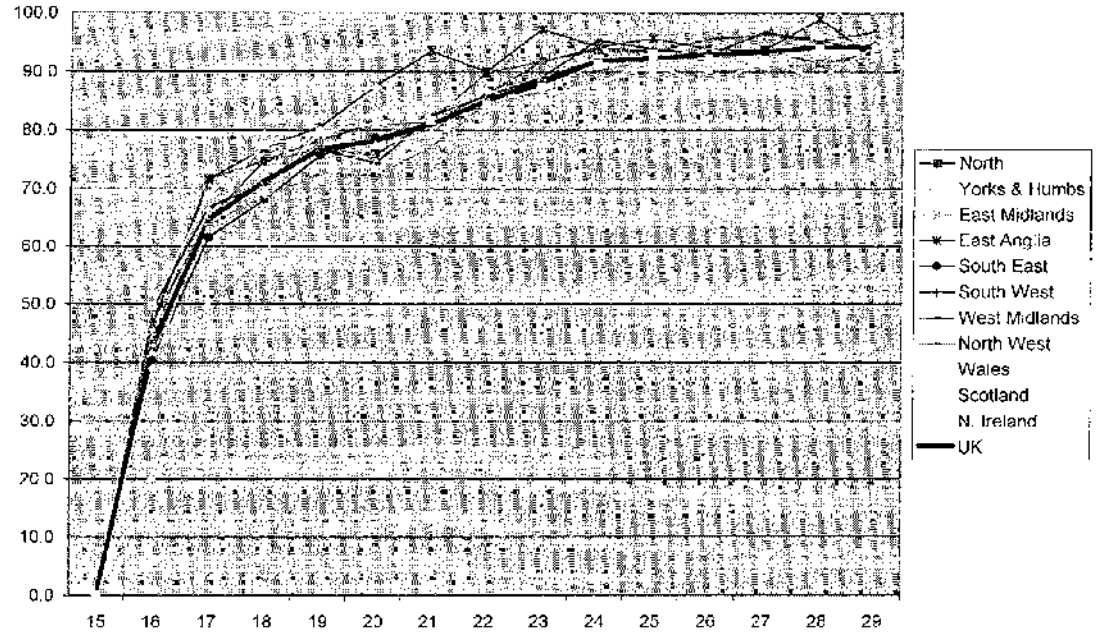
Figure 5.6: Female economic activity rates for regions in Italy, ages 15-29



Source: European Labour Force Survey, 1993-97

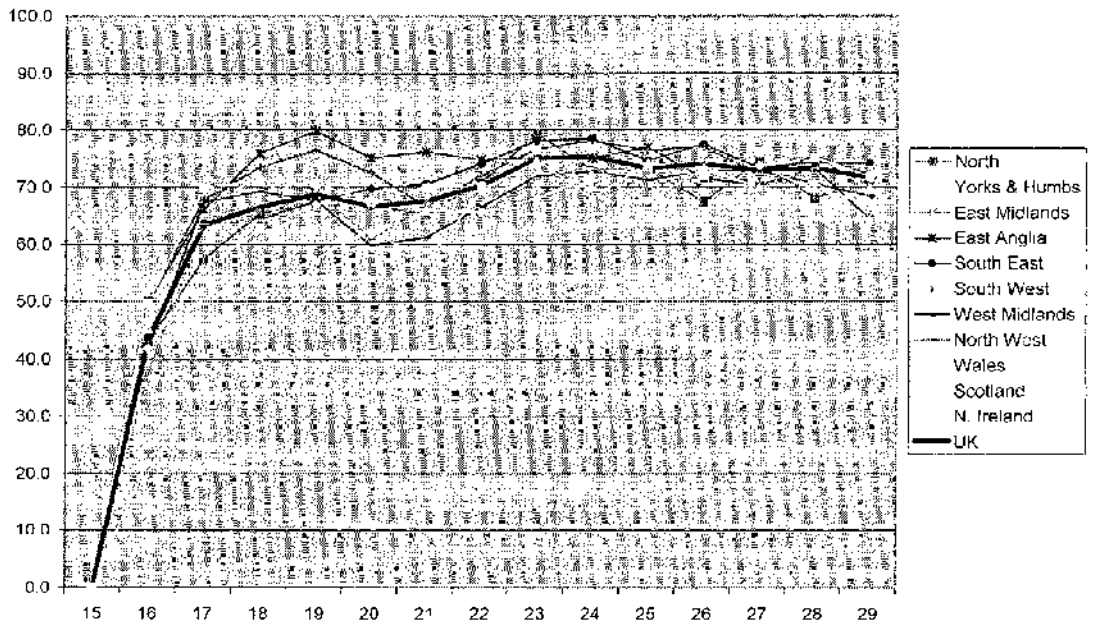
◊ The UK displays amongst the lowest levels of regional dispersion of any member state (see Figures 5.7 and 5.8 for the regional transition profiles analogous to those shown in Figures 5.5 and 5.6 for Italy).

Figure 5.7: Male economic activity rates for regions in the UK, ages 15-29



Source: European Labour Force Survey, 1993-97

Figure 5.8: Female economic activity rates for regions in the UK, ages 15-29



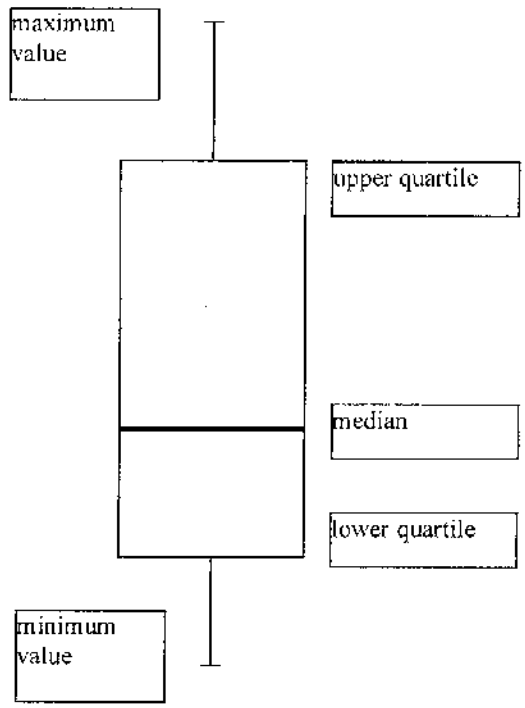
Source: European Labour Force Survey, 1993-97

- The extent of regional dispersion tends to be greater *between* member states than *within* member states over time. In the case of male economic activity and employment rates there are no clear trends for increasing or decreasing regional dispersion in economic activity and employment rates over the period from 1993 to 1997.[28] In most instances such a lack of temporal variation holds for female economic activity and employment rates also. However, there are exceptions:
  - ◊ In France increasing regional dispersion is apparent (for the 15-19 and 20-24 age groups); while
  - ◊ In the Netherlands the trend appears to be in the direction of reduced regional dispersion.

5.2.3 Illustrating the size and nature of regional variations using boxplots

A *boxplot* provides information about the shape and dispersion of a distribution. As illustrated in Figure 5.9, the box comprises the middle 50 per cent of observations: the lower end of the box represents the lower quartile and the upper end of the box represents the upper quartile. The line in the middle of the box represents the median. The lines outside the box extend downwards to the lowest value in the distribution, and upwards to the highest value in the distribution – excluding outliers (which are indicated separately).

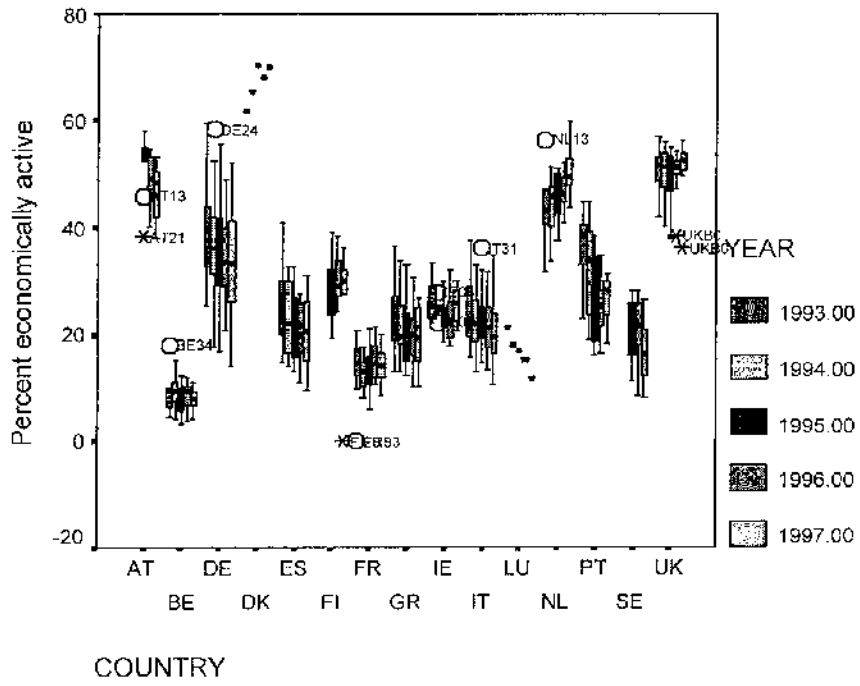
Figure 5.7: Diagrammatic key to a boxplot



Figures 5.10-5.21 show boxplots of regional economic activity rates and employment rates by member state in each individual year from 1993 to 1997 for males and females, respectively, in each of three age groups: 15-19 years, 20-24 years and 25-29 years.

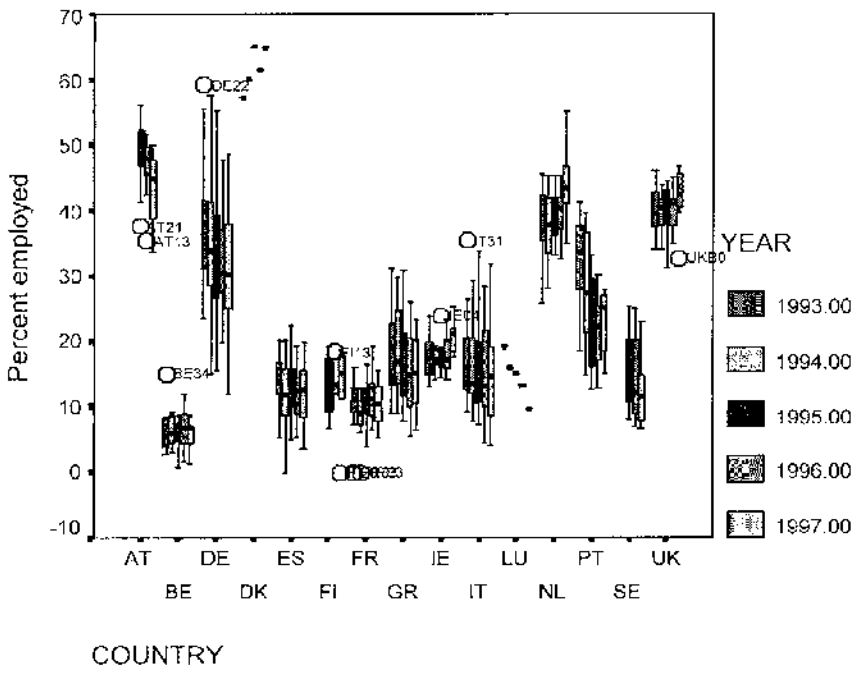
[28] Indeed, in the case of small regions it is important to treat data for individual calendar years with some caution.

Figure 5.10: Boxplots - economic activity rates for males aged 15-19, 1993-97



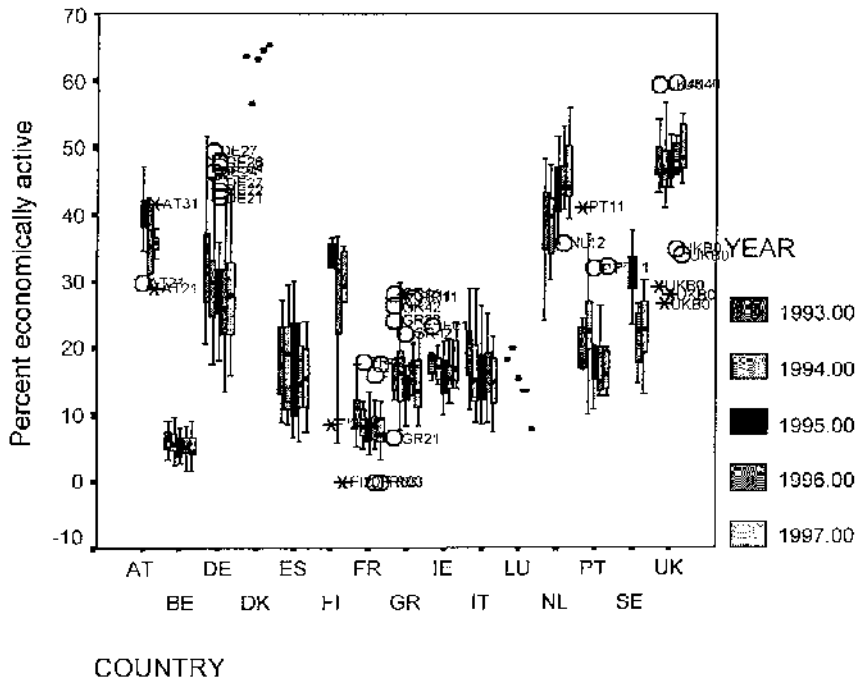
Source: European Labour Force Survey, 1993-97

Figure 5.11: Boxplots – employment rates for males aged 15-19, 1993-97



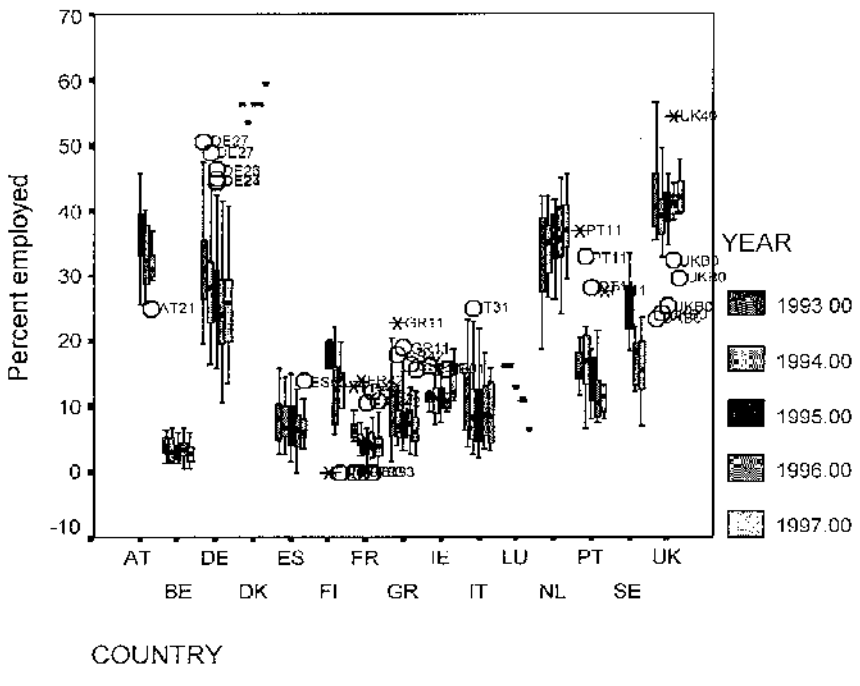
Source: European Labour Force Survey, 1993-97

Figure 5.12: Boxplots - economic activity rates for females aged 15-19, 1993-97



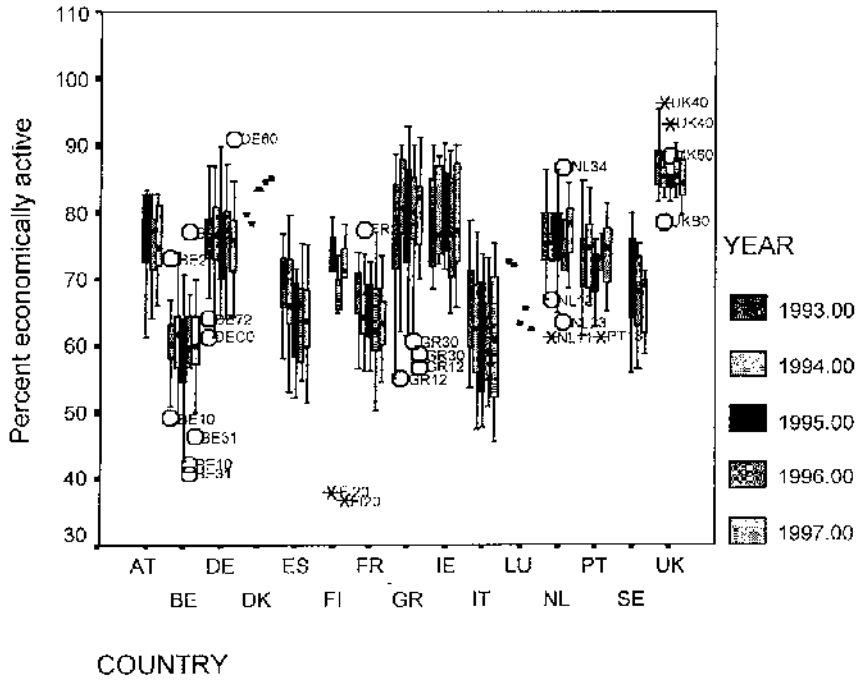
Source: European Labour Force Survey, 1993-97

Figure 5.13: Boxplots – employment rates for females aged 15-19, 1993-97



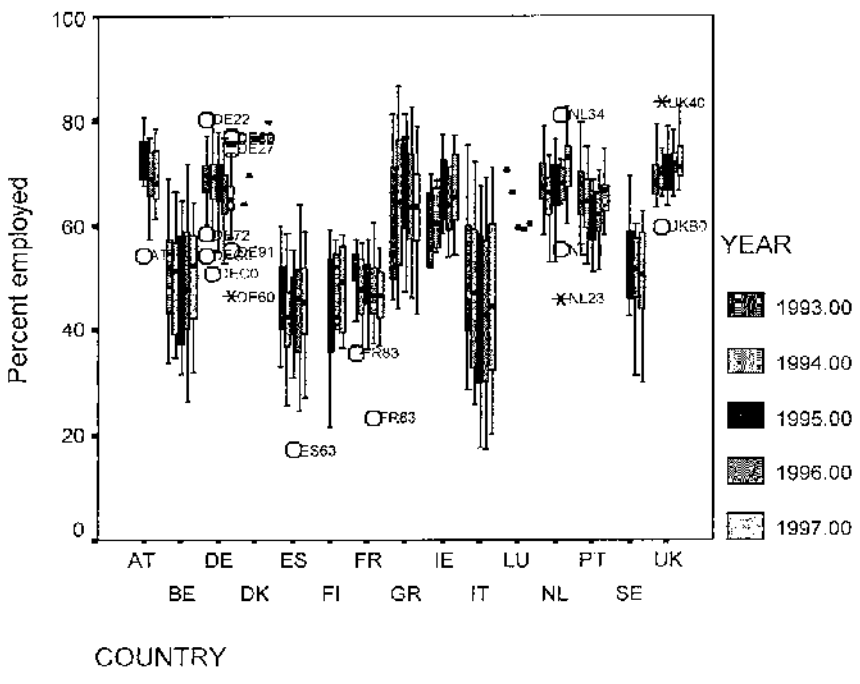
Source: European Labour Force Survey, 1993-97

Figure 5.14: Boxplots - economic activity rates for males aged 20-24, 1993-97



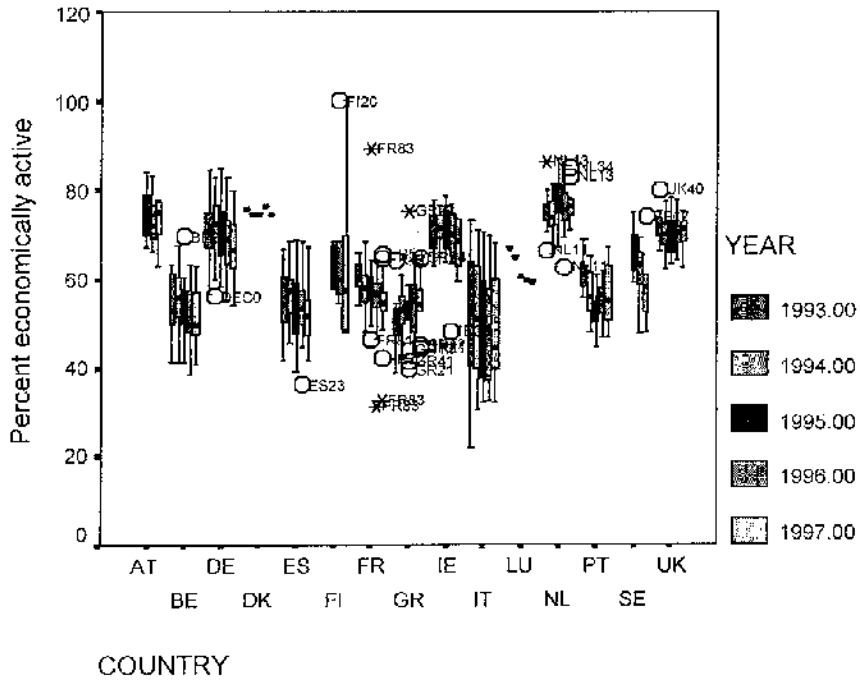
Source: European Labour Force Survey, 1993-97

Figure 5.15: Boxplots – employment rates for males aged 20-24, 1993-97



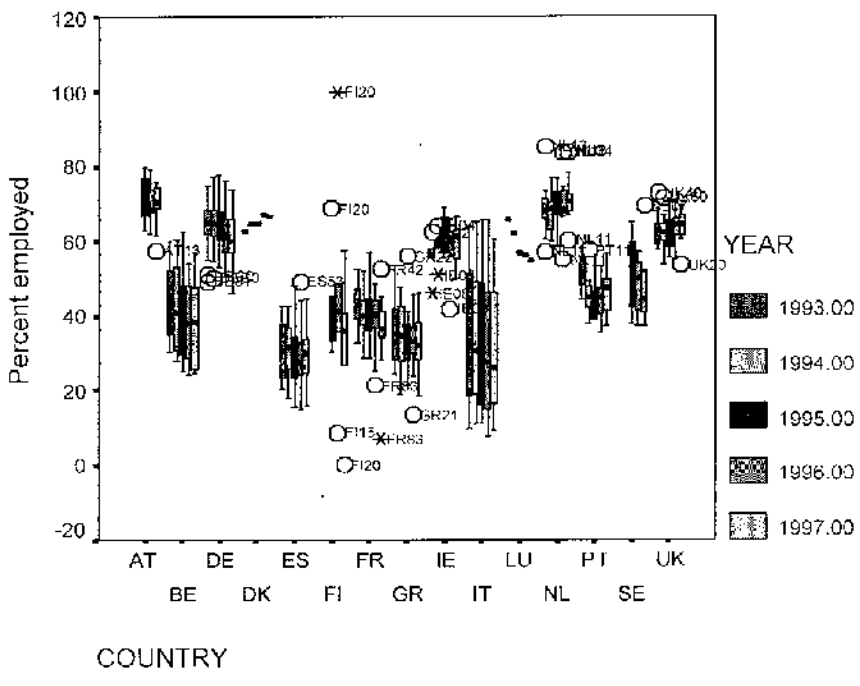
Source: European Labour Force Survey, 1993-97

Figure 5.16: Boxplots - economic activity rates for females aged 20-24, 1993-97



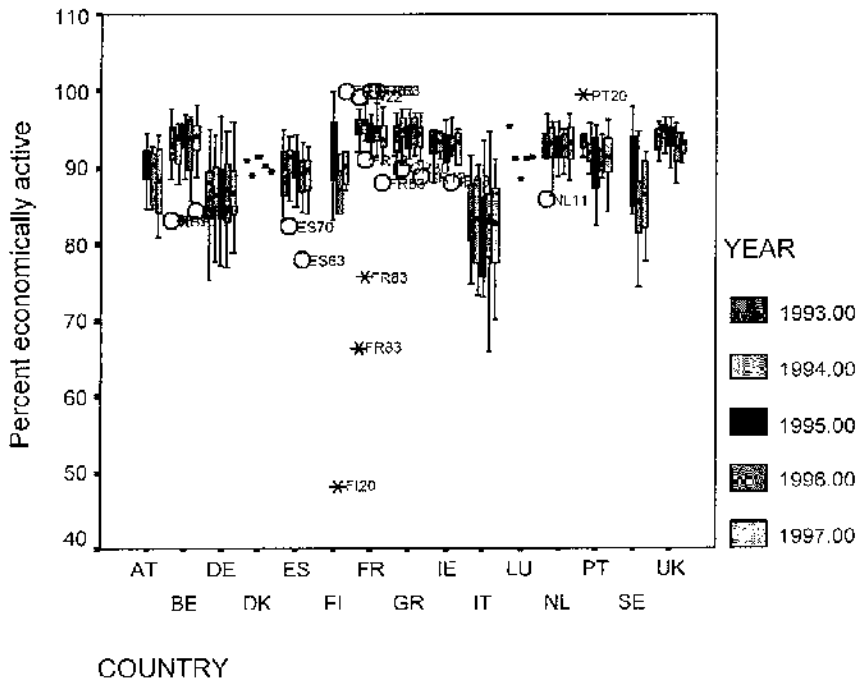
Source: European Labour Force Survey, 1993-97

Figure 5.17: Boxplots – employment rates for females aged 20-24, 1993-97



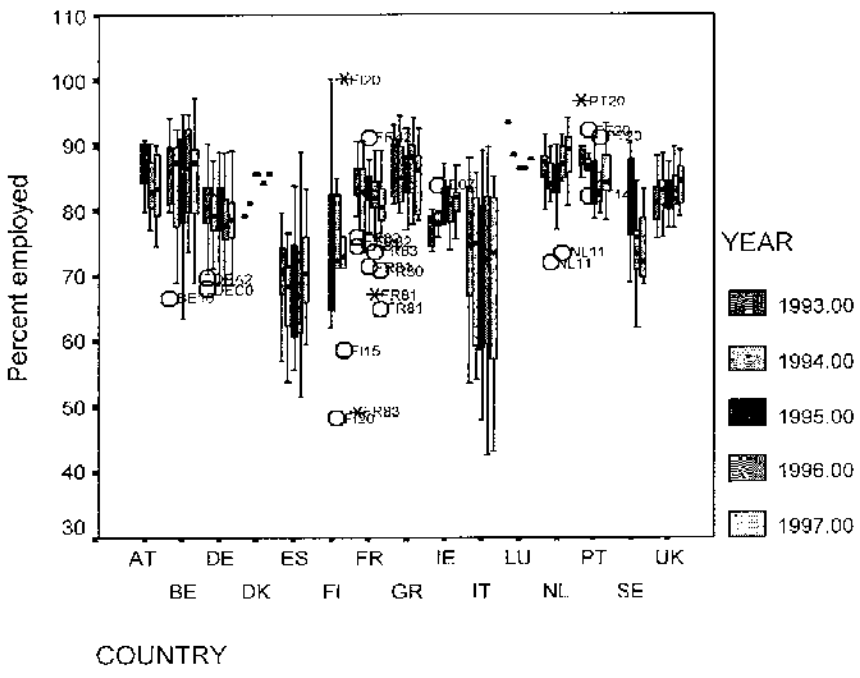
Source: European Labour Force Survey, 1993-97

Figure 5.18: Boxplots - economic activity rates for males aged 25-29, 1993-97



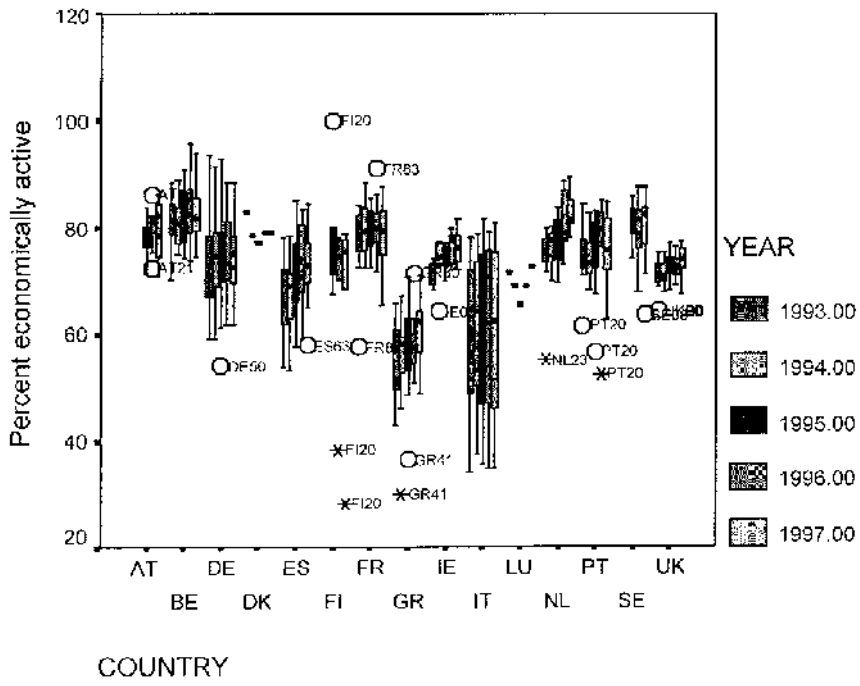
Source: European Labour Force Survey, 1993-97

Figure 5.19: Boxplots – employment rates for males aged 25-29, 1993-97



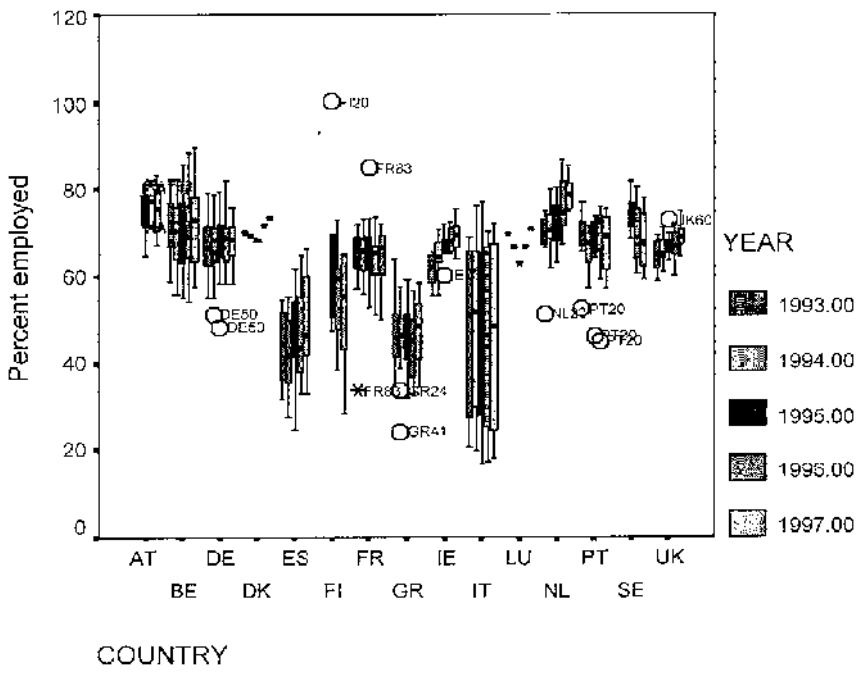
Source: European Labour Force Survey, 1993-97

Figure 5.20: Boxplots - economic activity rates for females aged 25-29, 1993-97



Source: European Labour Force Survey, 1993-97

Figure 5.21: Boxplots – employment rates for females aged 25-29, 1993-97



Source: European Labour Force Survey, 1993-97

The boxplots re-emphasise that:

- There are considerable variations between member states in average levels of economic activity rates particularly in the younger age groups (most notably for those aged 15-19 years), and in the extent of regional variation around that average.
  - ◊ Denmark, Austria, the UK and the Netherlands display amongst the highest economic activity rates for both males and females – particularly in the younger age groups;
  - ◊ In contrast, France and Belgium exhibit amongst the lowest economic activity rates amongst the younger age groups;
  - ◊ In the younger age groups (i.e. at the early stage of transition into the labour market) regional variations in economic activity rates tend to be greater than in the older age groups;
  - ◊ Germany displays amongst the greatest regional variations in economic activity rates in the youngest age group (those aged 15-19 years), while in the older age groups shown (20-24 years and 25-29 years) the greatest degree of regional variation in evident in Italy. Spain also exhibits a greater than average degree of regional variation.
- Regional variations in employment rates tend to be more marked than those in economic activity rates.
- Regional variations in economic activity rates and employment rates tend to be greater for females than for males.

From a *methodological perspective* it is salient to note that:

- For some member states *temporal variations* in the size and nature of regional variations in economic activity rates and employment rates are evident over the period from 1993 to 1997. However, in general, the degree of similarity in the 'shape' of regional variation over time for each member state tends to be greater than the degree of difference. On this basis it is concluded that:
  - ◊ *It is appropriate to aggregate information from successive European Labour Force Surveys (i.e. across the years 1993-97) in subsequent analyses* without an inordinate loss of information. Aggregating data across years has the advantage of increasing the sample size and so enhancing robustness, (and by the same token diminishing the amount of 'noise' in the data due to sampling variation).
- Some regions emerge as 'outliers' in the boxplots. This may be a function of *either*:
  - (i) shortcomings in the data,[29] *or*
  - (ii) genuine marked differences in economic activity rates and/or employment rates relative to the member state average.

  If the former applies:
  - ◊ *It may be is appropriate to omit some regions*[30] *from subsequent analyses* notably the regression analyses presented in section 6.

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[29] This is especially likely to be the case for small regions where sample sizes are small (and so subject to sampling variation).

[30] These are likely to be small regions.

5.2.4 Regions sharing similar labour market transitions

In order to identify regions sharing similar labour market transitions a *principal components analysis* was undertaken on gender-specific economic activity rates, 1993-7, in each of four three-year age groups:

- 16-18 years
- 19-21 years
- 22-24 years
- 25-27 years

Three *principal components* emerged with eigenvalues greater than 1.0, together accounting for 93 per cent of total variance in the data. These three principal components may be characterised as follows (see Table 5.3):

1) *younger ages* positive loadings on economic activity rates in all age and gender groups, but with highest loadings amongst the younger age groups (16-18 years and 19-21 years) and smallest loadings for those aged 25-27 years
2) *older ages* – positive loadings on economic activity rates amongst those aged 22-24 years and (more particularly) those aged 25-27 years, combined with negative loadings on economic activity rates in the younger age groups (16-18 years and 19-21 years)
3) *gender* – negative loadings on economic activity rates for females, especially in the older age groups (25-27 years and 22-24 years), combined with positive loadings on economic activity rates for males, which are higher in the older age groups (22-24 years and 25-27 years).

Table 5.3: Component matrix – regions sharing similar labour market transitions

Economic activity rate variable	Component		
	1	2	3
Males 16-18 years	.898	-.321	9.067E-03
Males 19-21 years	.895	-.305	.104
Males 22-24 years	.711	.291	.597
Males 25-27 years	.310	.786	.486
Females 16-18 years	.889	-.312	-3.298E-02
Females 19-21 years	.926	-.241	-.144
Females 22-24 years	.775	.444	-.373
Females 25-27 years	.387	.691	-.579

A *cluster analysis* was undertaken using the three principal components as classificatory variables. A hierarchical cluster analysis technique was used. Classifications with 3 to 20 clusters were assessed. The preferred solution[31] capturing the key dimensions of variation was the *6-cluster classification*. The clusters vary in size with the smallest containing 9 regions and the largest 46 regions. However, the key feature to emerge from the cluster analysis is the way in which regions tend to form national groupings (see Table 5.4) - so emphasising the dominance of the *national dimension* in regional variations in economic activity rates. Moreover, mapping of the clusters (Figure 5.22) reveals the emergence of some contiguous 'super-regions' spanning national boundaries. All regions in one of the clusters are from one country, another has regions drawn from two countries, while a third

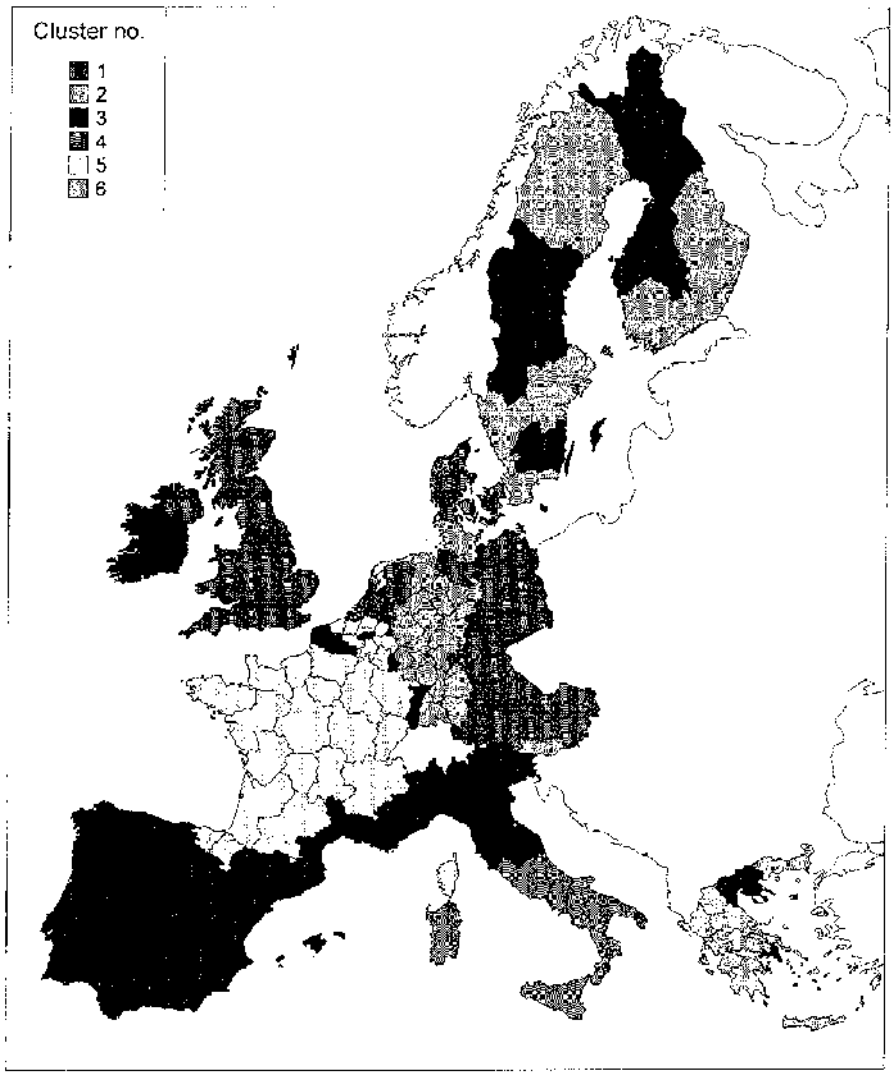
[31] Assessed using objective and subjective criteria.

includes regions from three countries. Only one cluster has a diverse membership drawn from eleven countries.

Table 5.4: Crosstabulation of country by 6-cluster classification

Country		Cluster						Total
		1	2	3	4	5	6	
AT	count	7	2					9
	row %	77.8%	22.2%					100.0%
	column %	15.2%	5.9%					5.0%
BE	count			2		9		11
	row %			18.2%		81.8%		100.0%
	column %			4.1%		31.0%		6.1%
DE	count	15	23	1				39
	row %	38.5%	59.0%	2.6%				100.0%
	column %	32.6%	67.6%	2.0%				21.8%
DK	count	1						1
	row %	100.0%						100.0%
	column %	2.2%						.6%
ES	count			16		2		18
	row %			88.9%		11.1%		100.0%
	column %			32.7%		6.9%		10.1%
FI	count		4	2				6
	row %		66.7%	33.3%				100.0%
	column %		11.8%	4.1%				3.4%
FR	count			4		18		22
	row %			18.2%		81.8%		100.0%
	column %			8.2%		62.1%		12.3%
GR	count			2			11	13
	row %			15.4%			84.6%	100.0%
	column %			4.1%			91.7%	7.3%
IE	count			1				1
	row %			100.0%				100.0%
	column %			2.0%				.6%
IT	count			11	9			20
	row %			55.0%	45.0%			100.0%
	column %			22.4%	100.0%			11.2%
LU	count			1				1
	row %			100.0%				100.0%
	column %			2.0%				.6%
NL	count	12						12
	row %	100.0%						100.0%
	column %	26.1%						6.7%
PT	count			6			1	7
	row %			85.7%			14.3%	100.0%
	column %			12.2%			8.3%	3.9%
SE	count		5	3				8
	row %		62.5%	37.5%				100.0%
	column %		14.7%	6.1%				4.5%
UK	count	11						11
	row %	100.0%						100.0%
	column %	23.9%						6.1%
Total	**count**	46	34	49	9	29	12	179
	row %	25.7%	19.0%	27.4%	5.0%	16.2%	6.7%	100.0%
	row %	25.7%	19.0%	27.4%	5.0%	16.2%	6.7%	100.0%
	column %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.22: Clusters of regions sharing similar labour market transitions



The key features of the clusters are as follows:

Cluster 1 *(46 members)*
Characteristics: Regions in this cluster are characterised by *higher than average economic activity rates* in all age groups, but particularly in the youngest age groups.
Geographical distribution: All regions in the United Kingdom and the Netherlands are members of this cluster, along with Denmark. Seven of the nine regions in Austria are members, and the remainder of cluster members (15 regions) are located in Germany (mainly drawn from the eastern part of the country).

***Cluster 2** (34 members)*
Characteristics: In this cluster economic activity rates are generally close to *'average'*, although *economic activity rates are higher than average in the 19-21 years group* (for males and females).
Geographical distribution: Two-thirds of the regions in this cluster are in Germany (60 per cent of all regions in Germany). The majority of Swedish and Finnish regions are also members of this cluster, as are the two regions in Austria not in cluster 1.

***Cluster 3** (49 members)*
Characteristics: This cluster is characterised by *lower than average economic activity rates in the younger age groups* (16-18 years and 19-21 years) and *close to average economic activity rates* in the older age groups (22-24 years and 25-27 years).
Geographical distribution: This cluster has the most diverse membership of any cluster, drawn from eleven countries; (the UK, the Netherlands, Denmark and Austria are not represented). Ireland and Luxembourg are included in this cluster, as are sixteen of the eighteen regions in Spain, all but one region in Portugal and eleven out of twenty regions in Italy.

***Cluster 4** (9 members)*
Characteristics: This cluster is characterised by *lower than average economic activity rates in all age groups; particularly amongst females.*
Geographical distribution: All members of this cluster are located in southern Italy.

***Cluster 5** (29 members)*
Characteristics: The key features of this cluster are *much lower than average economic activity rates in the younger age groups* (especially 16-18 years, but also 19-21 years), *close to average economic activity rates by age 22-24 years* and *markedly higher than average activity rates amongst those aged 25-27 years.*
Geographical distribution: Cluster membership is drawn from three countries – France, Belgium and Spain. Over 80 per cent of all regions in France and Belgium are included in this cluster.

***Cluster 6** (12 members)*
Characteristics: This is a small cluster characterised by *generally higher than average economic activity rates for males* (except in the youngest age groups) and lower than average economic activity rates for females (particularly in the older age groups
Geographical distribution: All except one member of this cluster is in Greece, and only two regions in Greece fall outside this cluster.

5.3 Regional:National Differentials in Labour Market Transitions

In order to identify regions sharing similar regional:national differentials in labour market transitions a *principal components analysis* was undertaken on the percentage point regional:national differences in gender-specific economic activity rates, 1993-7, in each of four three-year age groups:

- 16-18 years
- 19-21 years
- 22-24 years
- 25-27 years

Two *principal components* emerged with eigenvalues greater than 1.0, together accounting for 77.5 per cent of total variance in the data. These two principal components may be characterised as follows (see Table 5.5):

1) *younger ages* – positive loadings on economic activity rate regional:national differentials in all age and gender groups, but with highest loadings amongst the three younger age groups (16-18 years, 19-21 years and 22-24 years) and smallest loadings for those aged 25-27 years; in general, the positive loadings are greater for males than for females
2) *older ages and gender* – positive loadings on regional:national differentials in economic activity rates for older females (especially those aged 25-27 years) and negative loadings on regional:national differentials for younger females and for males in all age groups (but particularly those in the youngest age groups)

Table 5.5: Component matrix – regional:national differences in labour market transitions

Regional:national differential in economic activity rate variable	Component	
	1	2
Males 16-18 years	.806	-.332
Males 19-21 years	.809	-.334
Males 22-24 years	.807	-.244
Males 25-27 years	.855	0.0008
Females 16-18 years	.720	-.303
Females 19-21 years	.902	0.005
Females 22-24 years	.730	.604
Females 25-27 years	.476	.822

A *cluster analysis* was undertaken using the two principal components as classificatory variables. A hierarchical cluster analysis technique was used. Classifications with 3-20 clusters were assessed. The preferred solution capturing the key dimensions of variation was the *9-cluster classification*. The clusters vary in size with the smallest containing 1 region[32] (with the next smallest clusters containing 3 and 9 regions), and the largest cluster containing 40 regions.

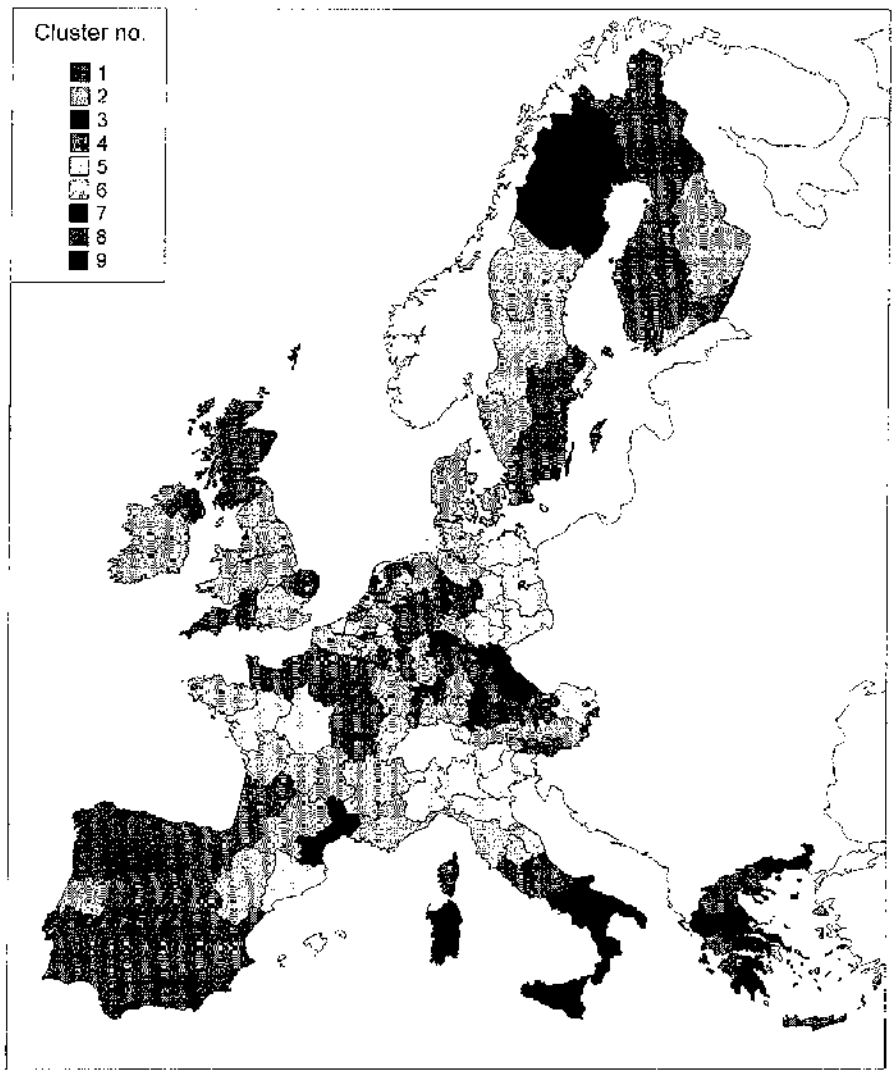
As would be expected for a classification focusing on regional:national differences, a greater range of clusters are represented in country (see Table 5.6 and Figure 5.23) than in the cluster analysis classification presented in Figure 5.22. Nevertheless, in several countries contiguous regions are members of the same cluster (i.e. there is not a complete 'patchwork quilt' effect).

[32] This is a very small region in Finland which may be excluded from further consideration.

Table 5.6: Crosstabulation of Country by 9-cluster classification

Country		Cluster									Total
		1	2	3	4	5	6	7	8	9	
AT	count	2	3			2			2		9
	row %	22.2%	33.3%			22.2%			22.2%		100.0%
	column %	6.1%	8.6%			8.3%			5.0%		5.0%
BE	count	1	4			3	1		2		11
	row %	9.1%	36.4%			27.3%	9.1%		18.2%		100.0%
	column %	3.0%	11.4%			12.5%	4.5%		5.0%		6.1%
DE	count	4	7	4		7	3		13	1	39
	row %	10.3%	17.9%	10.3%		17.9%	7.7%		33.3%	2.6%	100.0%
	column %	12.1%	20.0%	44.4%		29.2%	13.6%		32.5%	8.3%	21.8%
DK	count		1								1
	row %		100.0%								100.0%
	column %		2.9%								.6%
ES	count	5				2	1		8	2	18
	row %	27.8%				11.1%	5.6%		44.4%	11.1%	100.0%
	column %	15.2%				8.3%	4.5%		20.0%	16.7%	10.1%
FI	count	2	1				1	1	1		6
	row %	33.3%	16.7%				16.7%	16.7%	16.7%		100.0%
	column %	6.1%	2.9%				4.5%	100.0%	2.5%		3.4%
FR	count	6	5			2	5		3	1	22
	row %	27.3%	22.7%			9.1%	22.7%		13.6%	4.5%	100.0%
	column %	18.2%	14.3%			8.3%	22.7%		7.5%	8.3%	12.3%
GR	count	3		5	2		1		1	1	13
	row %	23.1%		38.5%	15.4%		7.7%		7.7%	7.7%	100.0%
	column %	9.1%		55.6%	66.7%		4.5%		2.5%	8.3%	7.3%
IE	count		1								1
	row %		100.0%								100.0%
	column %		2.9%								.6%
IT	count					7	4		3	6	20
	row %					35.0%	20.0%		15.0%	30.0%	100.0%
	column %					29.2%	18.2%		7.5%	50.0%	11.2%
LU	count		1								1
	row %		100.0%								100.0%
	column %		2.9%								.6%
NL	count	4	3				3		2		12
	row %	33.3%	25.0%				25.0%		16.7%		100.0%
	column %	12.1%	8.6%				13.6%		5.0%		6.7%
PT	count	2	2		1				2		7
	row %	28.6%	28.6%		14.3%				28.6%		100.0%
	column %	6.1%	5.7%		33.3%				5.0%		3.9%
SE	count	1	1			1	2		2	1	8
	row %	12.5%	12.5%			12.5%	25.0%		25.0%	12.5%	100.0%
	column %	3.0%	2.9%			4.2%	9.1%		5.0%	8.3%	4.5%
UK	count	3	6				1		1		11
	row %	27.3%	54.5%				9.1%		9.1%		100.0%
	column %	9.1%	17.1%				4.5%		2.5%		6.1%
Total	**count**	**33**	**35**	**9**	**3**	**24**	**22**	**1**	**40**	**12**	179
	row %	**18.4%**	**19.6%**	**5.0%**	**1.7%**	**13.4%**	**12.3%**	**.6%**	**22.3%**	**6.7%**	**100.0%**
	column %	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Figure 5.23: Clusters of regional:national differentials in labour market transitions



The key features of the clusters are as follows:

Cluster 1 *(33 members)*
Characteristics: Regions in this cluster are characterised by economic activity rates in excess of the national average for males in all age groups, although regional:national differentials are generally less pronounced with age. For females regional economic activity rates tend to be greater than average (particularly in the younger age groups) until the age range 25-27 years.
Geographical distribution: All countries except Italy and Denmark, Ireland and Luxembourg[33] are represented in this cluster.

[33] These three latter countries are not sub-divided into regions for purposes of analysis.

***Cluster 2** (35 members)*
Characteristics: Regions in this cluster are characterised by regional economic activity rates close to the national average for males, but slightly lower than average for females.
Geographical distribution: All countries except Italy and Spain are represented in this cluster.

***Cluster 3** (9 members)*
Characteristics: Key distinguishing features of regions in this cluster are that there are greater than national average economic activity rates for males in all age groups (particularly the younger age groups identified) and much greater than national economic activity rates for females (again, particularly in the younger age groups).
Geographical distribution: Five regions in Greece and four in Germany (mainly concentrated in the southern and eastern parts of the country) are members of this small cluster.

***Cluster 4** (3 members)*
Characteristics: These three regions are characterised by greater than national average economic activity rates for males (especially in the younger age groups), and much lower than national average economic activity rates for older females.
Geographical distribution: Two regions in Greece and one from Portugal are members of this cluster.

***Cluster 5** (24 members)*
Characteristics: The regions in this cluster are characterised by greater than national average economic activity rates in all age groups, with regional:national differentials being particularly pronounced amongst older females.
Geographical distribution: There are two main 'blocks' of regions in this cluster – one located in northern Italy and the other in eastern Germany. There are also representatives from Belgium, Austria, Spain, France and Sweden in this cluster.

***Cluster 6** (22 members)*
Characteristics: The regions in this cluster are characterised by lower than national average economic activity rates amongst the younger age groups and greater than national average economic activity rates amongst the older age groups.
Geographical distribution: All countries except Austria and Luxembourg (along with Ireland, Denmark and Portugal, which are not subdivided) contain regions which are members of this cluster.

***Cluster 7** (1 member)* – one very small Finnish region.[34]

***Cluster 8** (40 members)*
Characteristics: The regions in this cluster are characterised by lower than national average economic activity rates in all age groups, but particularly in the younger age groups.
Geographical distribution: All countries (except Ireland, Denmark and Luxembourg) have at least one member in this cluster. The largest concentrations of such regions are in Germany and in Spain.

[34] This cluster represents an 'outlier' with extremely unusual characteristics in a very small population.

***Cluster 9** (12 members)*
Characteristics: These regions share with those in cluster 9 the characteristic of having lower than national average economic activity rates in all age groups, with this regional:national differential being especially pronounced in the older rather than in the younger age groups, and for females rather than for males.
Geographical distribution: The single greatest concentration of cluster members is in southern Italy. Spain, Germany, Sweden, Greece, France and Portugal also have at least one representative in this cluster.

5.4 Urban-Rural Differences in Labour Market Transitions

It is possible that employment and educational opportunities for young people may display urban-rural differences. Such differences are explored in this sub-section.

The European Labour Force Survey contains information on the percentage of the population living in:

(i) densely populated,
(ii) intermediate, and
(iii) thinly populated

areas. From these three indicators a five-fold *urban-rural categorisation* of regions was derived, distinguishing (along a spectrum from urban to rural):

- urban (16 regions),
- urban/intermediate (49 regions),
- mixed (61 regions),
- intermediate/rural (33 regions), and
- rural areas (20 regions).

In order to explore whether there are any discernible urban-rural differences in labour market transitions, economic activity rates were calculated separately for males and females in each of four three-year age groups (see first panel in Table 5.7):

- 16-18 years,
- 19-21 years,
- 22-24 years, and
- 25-27 years.

In the case of males, economic activity rates in the youngest age group (16-18 year olds) are highest in urban/intermediate and intermediate/rural areas, and lowest in rural areas. In the 19-21 years age group, male economic activity rates remain highest in the urban/intermediate and intermediate/rural areas, and are lowest in urban areas. This pattern could be indicative of a greater concentration of further and higher education institutions in urban areas. The differentials between urban-rural categories are somewhat smaller in the older age groups (22-24 years and 25-27 years). For females economic activity rates for the youngest age group identified are again highest in the urban/intermediate areas, but otherwise no clear-cut urban-rural pattern is discernible. Hence, the *key conclusion* is that:

- At face value, no marked urban-rural differences in labour market transitions amongst young people are evident – using these indicators and this urban-rural categorisation.

Table 5.7: Urban-rural differences in economic activity rates

Country group	*Urban-rural category*									
	Urban		Urban/ Intermediate		Mixed		Intermediate / Rural		Rural	
	M	F	M	F	M	F	M	F	M	F
ALL										
16-18 years	*26.4*	21.6	*35.9*	30.7	*28.2*	19.4	*33.5*	26.2	*25.8*	20.1
19-21 years	*51.6*	46.8	*60.9*	53.1	*54.6*	46.7	*58.6*	50.6	*54.8*	45.3
22-24 years	*73.9*	66.6	*77.2*	67.4	*77.3*	67.4	*75.1*	62.5	*77.0*	64.6
25-27 years	*87.6*	75.9	*87.2*	72.3	*90.1*	76.4	*84.4*	66.7	*88.3*	72.2
Group 1										
16-18 years	*41.8*	38.1	*48.3*	44.5	*46.0*	36.8	*46.5*	41.9	*27.9*	27.3
19-21 years	*67.8*	62.7	*73.6*	64.9	*73.2*	67.3	*73.9*	66.5	*62.2*	54.4
22-24 years	*78.9*	70.9	*81.8*	72.3	*80.9*	74.8	*81.1*	73.7	*77.5*	66.4
25-27 years	*85.6*	72.8	*87.7*	73.7	*88.2*	80.0	*87.1*	74.8	*87.3*	75.4
Group 2										
16-18 years	*9.8*	4.7	*9.0*	6.3	*14.4*	6.9	*6.9*	5.6	*16.4*	7.0
19-21 years	*32.5*	30.5	*39.4*	33.6	*40.3*	34.5	*44.7*	42.0	*42.9*	33.8
22-24 years	*68.9*	64.7	*73.3*	66.6	*76.2*	67.6	*77.1*	70.6	*80.0*	69.5
25-27 years	*91.5*	81.7	*92.9*	77.7	*94.0*	80.2	*92.1*	79.0	*94.4*	82.7
Group 3										
16-18 years	*16.7*	11.8	*26.2*	19.2	*25.5*	16.5	*24.9*	15.9	*28.9*	19.8
19-21 years	*43.2*	38.5	*49.6*	43.3	*53.1*	41.6	*48.2*	39.7	*53.5*	42.8
22-24 years	*69.4*	61.5	*71.0*	60.0	*74.6*	58.9	*70.2*	53.5	*74.6*	59.3
25-27 years	*87.7*	76.1	*84.4*	68.0	*86.9*	65.8	*81.6*	59.1	*85.7*	61.5

Source: European Labour Force Survey, 1993-97. *Key*: M = male, F = female.
Note: Group 1 contains Denmark, Sweden, Finland, Netherlands, Germany, Austria, United Kingdom, Ireland; Group 2 contains France, Belgium, Luxembourg; Group 3 contains Italy, Greece, Portugal, Spain.

However, it is apparent from sections 5.1 and 5.2.4 that there are marked variations by member state in labour market participation amongst young people. Since different member states have different urban-rural profiles, it is possible that national differences are disguising urban-rural variations. Hence, member states were divided into *three broad groups* on the basis of:

- similarity of labour market transitions (as revealed by the cluster analysis presented in section 5.2.4); and
- on the basis of a typology of European welfare states (Rubery and Smith, 1999).

(It should be recognised that other broad groupings would be possible and that there is no single 'correct' grouping of member states.)

The three broad *country groups* are as follows:

1) *Group 1*: *Denmark, Sweden, Finland, Netherlands, Germany, Austria, United Kingdom, Ireland* – characterised by relatively early entry into the labour market (sometimes in association with an established system of vocational work-based training). This group contains those member states conforming to the Nordic – 'everyone a breadwinner' welfare state model, along with the Netherlands. It also includes Germany and Austria from the Continental European welfare state model; and the UK and Ireland from the Liberal – 'more than one breadwinner' model;
2) *Group 2*: *France, Belgium, Luxembourg* – characterised by relatively late entry into the labour market, all three member states have a welfare state conforming to the Continental European model;
3) *Group 3*: *Italy, Greece, Portugal, Spain* – sharing the Mediterranean 'family as breadwinner' welfare state model.

In the second, third and fourth panels of Table 5.7 economic activity rates are presented for the five-fold urban-rural categorisation of regions within each of the three broad country groups. The following urban-rural differences are apparent:

- In *country group 1* economic activity rates for males tend to be higher in urban/intermediate, intermediate/rural and mixed areas than in either urban or rural areas (particularly up to the age of 24 years), but the differences are not particularly marked. For females there is a tendency for economic activity rates to be lowest in rural areas for those aged up to 24 years.
- In *country group 2* economic activity rates for males tend to be highest in the rural, intermediate/rural and mixed areas in the younger age groups (up to the age of 24 years) and lowest in the urban category (which contains Brussels and the Ile de France). For females economic activity rates also tend to be lowest in the urban category, though once again, differences between the urban-rural categories are no particularly marked.
- In *country group 3* rural areas tend to exhibit amongst the highest economic activity rates for both males and females – particularly in the younger age groups. In these same age groups economic activity rates tend to be lowest in the urban areas, although by the age of 25-27 years it is the urban areas that exhibit the highest economic activity rates for both males and females.

Overall, the *main conclusions* from this exploration of urban-rural differences in labour market transitions are:

- The are no clear-cut and/or universally applicable urban-rural differences in the labour market transitions of young people.
- There is some tendency for economic activity rates to be lower in urban areas than in the other urban-rural categories in the younger age groups, but in general, the 'gap' has been closed by the age of 25-27 years.

5.5 Differences between 'Rich' and 'Poor' Regions in Labour Force Participation

Gross Domestic Product (GDP) is one of the foremost regional economic indicators and has conventionally been used as a measure of regional imbalances. The general pattern across the regions of the EU has been one of convergence in GDP over the period since the mid 1980s (European Commission, 1999), although marked inter-regional differences in GDP per head remain.

Since it has been established that national level variations are important in understanding labour force participation, in order to gain some insights into regional variations regions within member states the emphasis in this section is placed on variations in labour force participation[35] between 'rich' and 'poor' regions within countries. Using average GDP over the period from 1994 to 1996 as an indicator of wealth, within member states regions were divided into two, three or four broad groupings on the basis of GDP per head. No fixed class intervals were used across member states; rather regional groupings were derived largely on the basis of 'breaks' in the frequency distribution of GDP per head at the regional level.

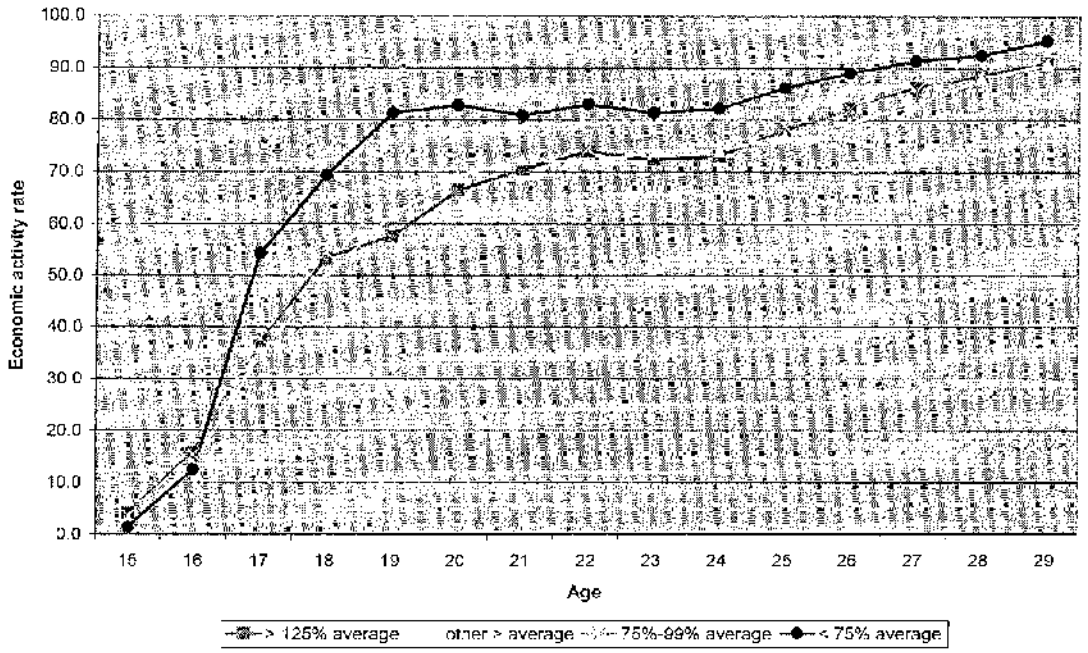
By member state the following patterns of difference between 'rich' and 'poor' regions in labour market transitions of young people are evident:

- *Austria*: For males economic activity rates at younger ages (16-18 years and 19-21 years) tend to be lower in regions characterised by average GDP levels, and this gap is not closed until the age of 25-27 years. Regions characterised by lower than average GDP per head display lower male economic activity rates than regions with average GDP. For females, the regions with average GDP per head display the highest economic activity rates, while the regions characterised by lower than average GDP display the lowest economic activity rates for those aged 16-18 and 19-21 years.
- *Belgium*: For both males and females, regions characterised by the lowest GDP per head are characterised by lower than average economic activity rates in the 19-21, 22-24 and 25-27 years age groups.
- *Germany*: In the case of Germany, four GDP categories are distinguished. Figures 5.24 and 5.26 show that from the age of 17 to 29 years males and females in regions with levels of GDP per head less than 75 per cent than the Germany average (i.e. much of eastern Germany) display higher economic activity rates than the other three GDP categories. However, it is apparent from Figures 5.25 and 5.27 that the same 'gap' is not evident for employment rates: from the age of about 21 years employment rates tend to be no higher than in other parts of Germany. Rather, it is the higher levels of unemployment in the low GDP regions that contribute to higher employment rates. Elsewhere in Germany there is no clear variation in economic activity or employment rates for regions with GDP levels in excess of 125 per cent of the Germany average, other regions displaying levels of GDP per head in excess of the Germany average and those with GDP per head in the range 75-99 per cent of the Germany average.
- *Spain*: For males in the 16-18 and 19-21 years age groups economic activity rates are slightly higher in regions with much lower than average GDP per head than in other regions (Figure 5.28), but no such variation is evident in employment rates (Figure 5.29). However, by the age of 25 years economic activity rates are higher in regions characterised by above average GDP, and there are clearer differentials between GDP categories in employment rates. For females economic activity rates are higher in the

[35] Averaged across the years 1993-97

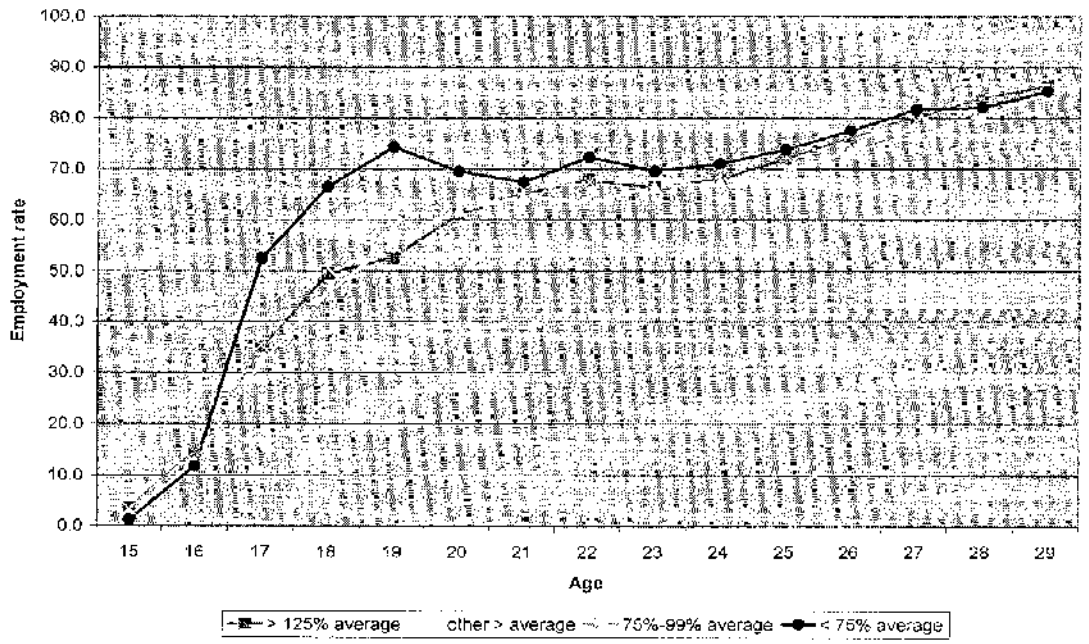
regions with GDP levels above the Spain average by the age of 22 years (Figure 5.30). Again, this pattern of differentials is more marked in the case of employment rates (Figure 5.31), with regions characterised by GDP above the Spain average easily displaying the highest employment rates from the age of 20 years.

Figure 5.24: Male economic activity rates by GDP category, ages 15-29 – Germany



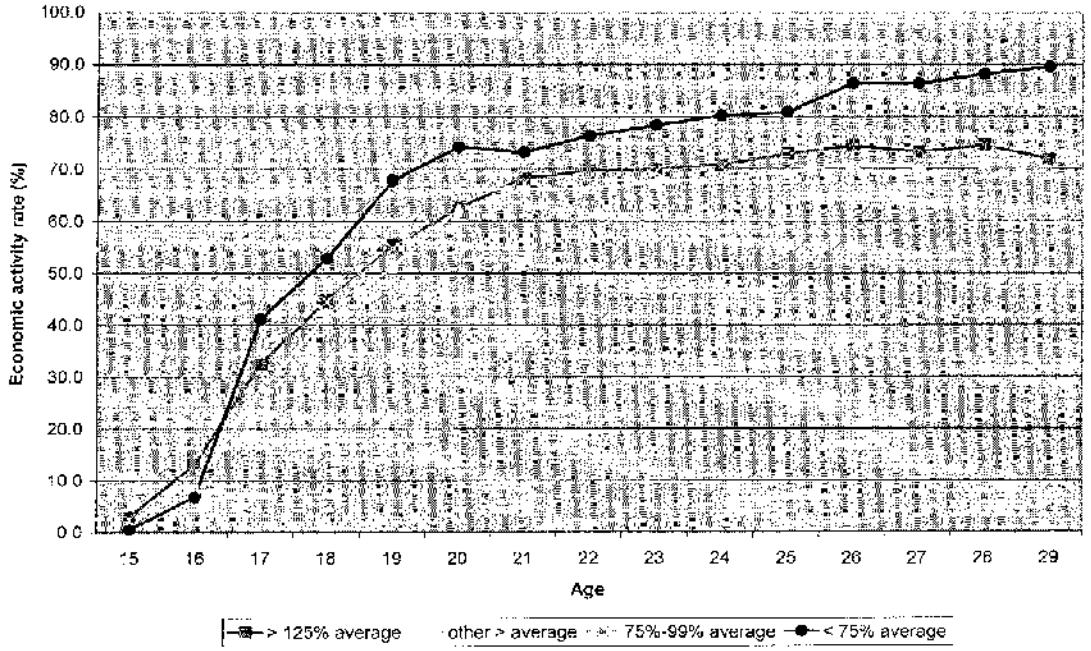
Source: European Labour Force Survey, 1993-97

Figure 5.25: Male employment rates by GDP category, ages 15-29 – Germany



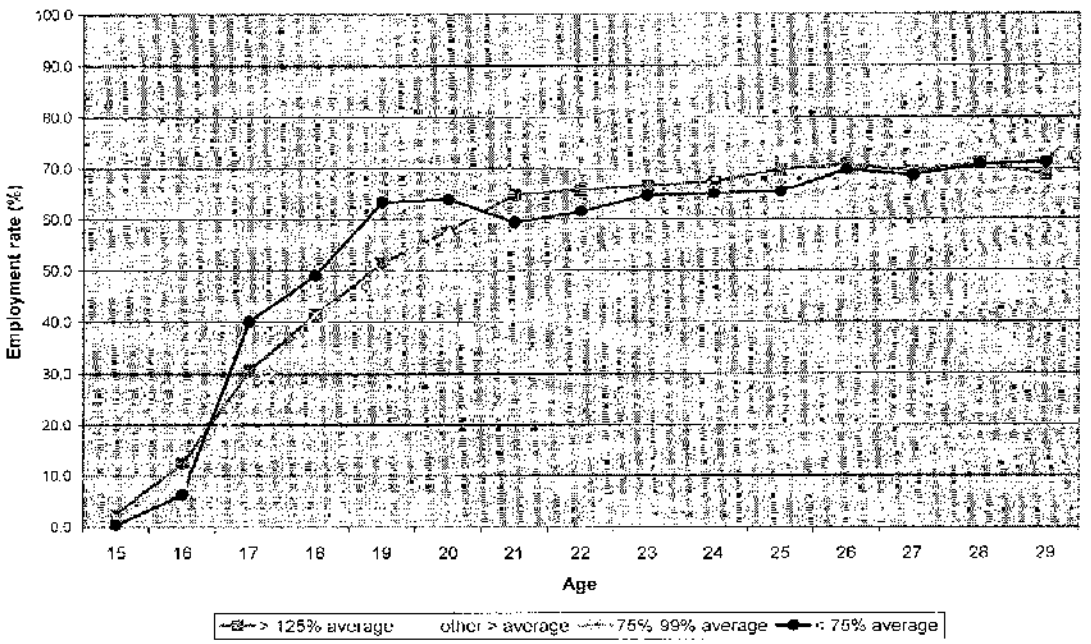
Source: European Labour Force Survey, 1993-97

Figure 5.26: Female economic activity rates by GDP category, ages 15-29 - Germany



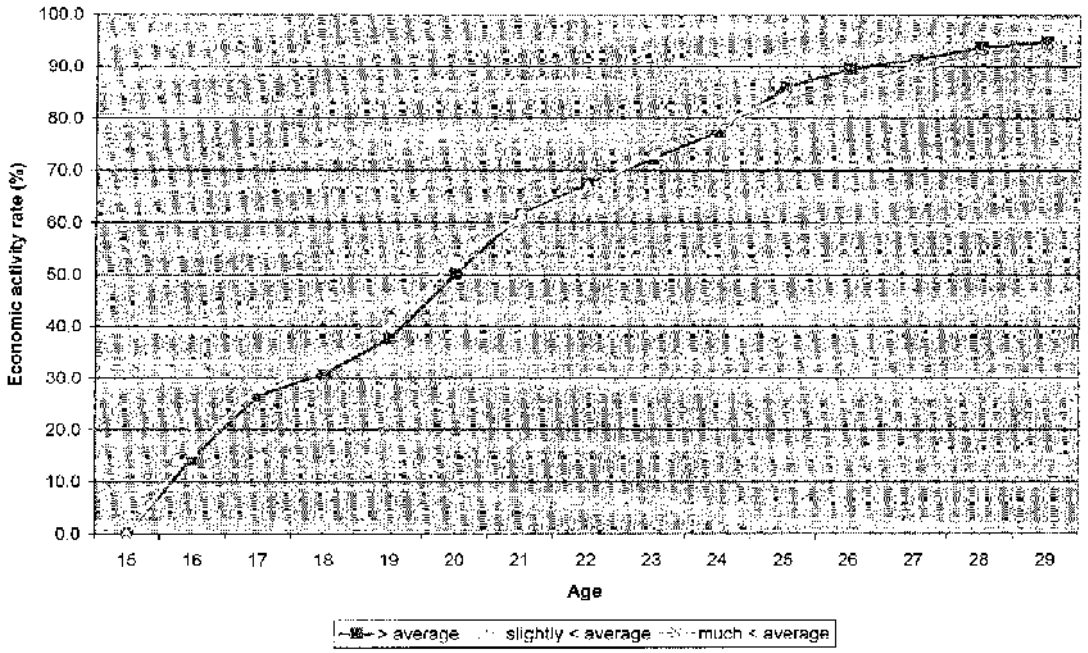
Source: European Labour Force Survey, 1993-97

Figure 5.27: Female employment rates by GDP category, ages 15-29 - Germany



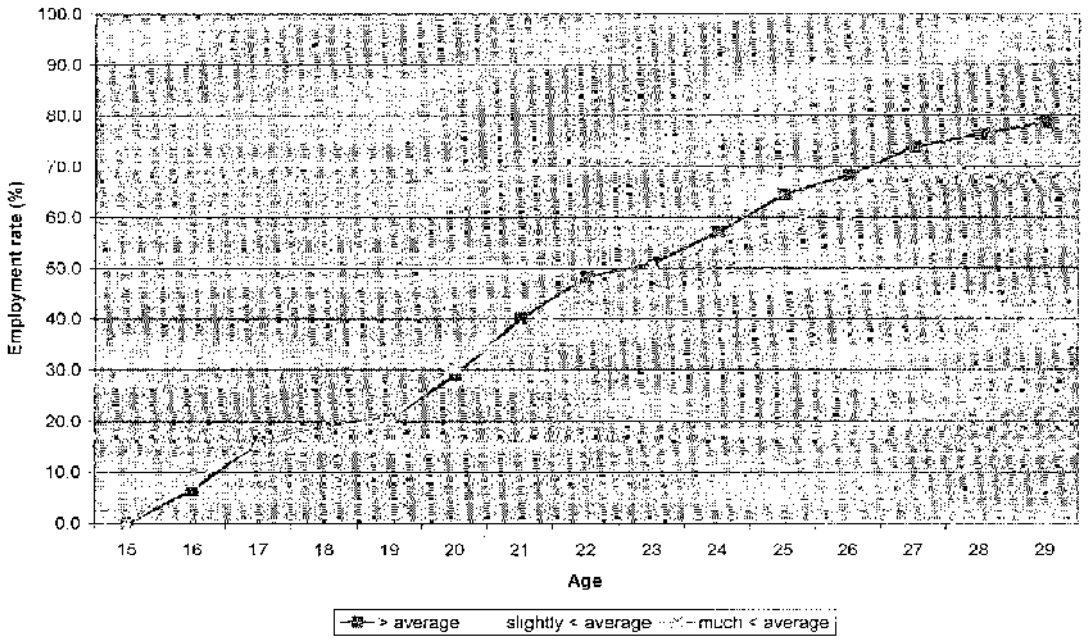
Source: European Labour Force Survey, 1993-97

Figure 5.28: Male economic activity rates by GDP category, ages 15-29 – Spain



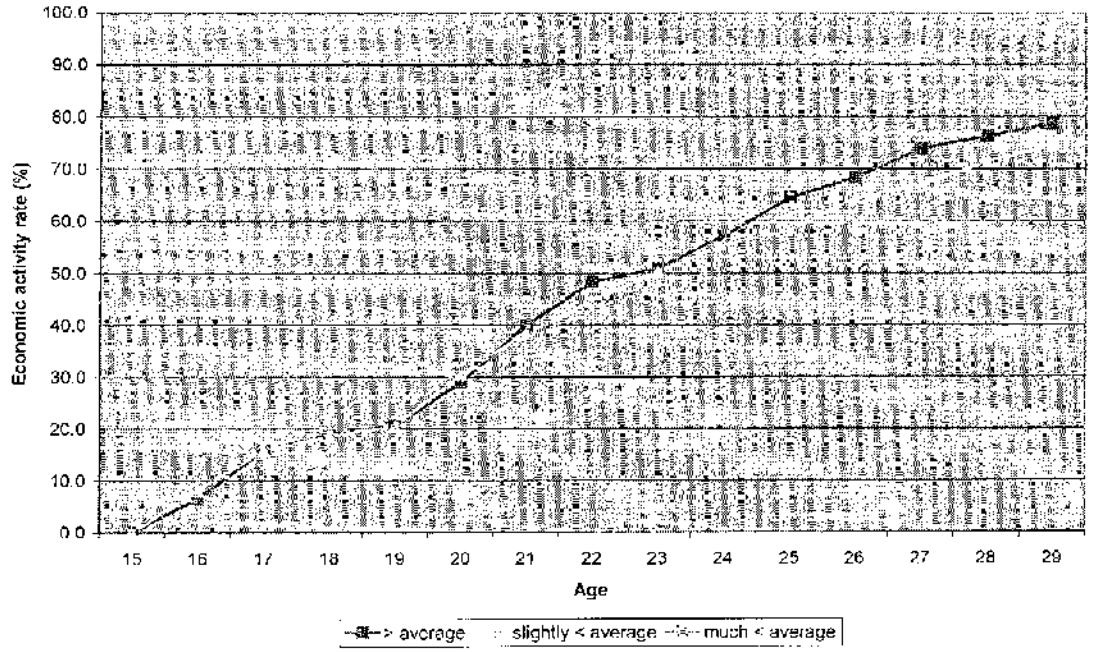
Source: European Labour Force Survey, 1993-97

Figure 5.29: Male employment rates by GDP category, ages 15-29 – Spain



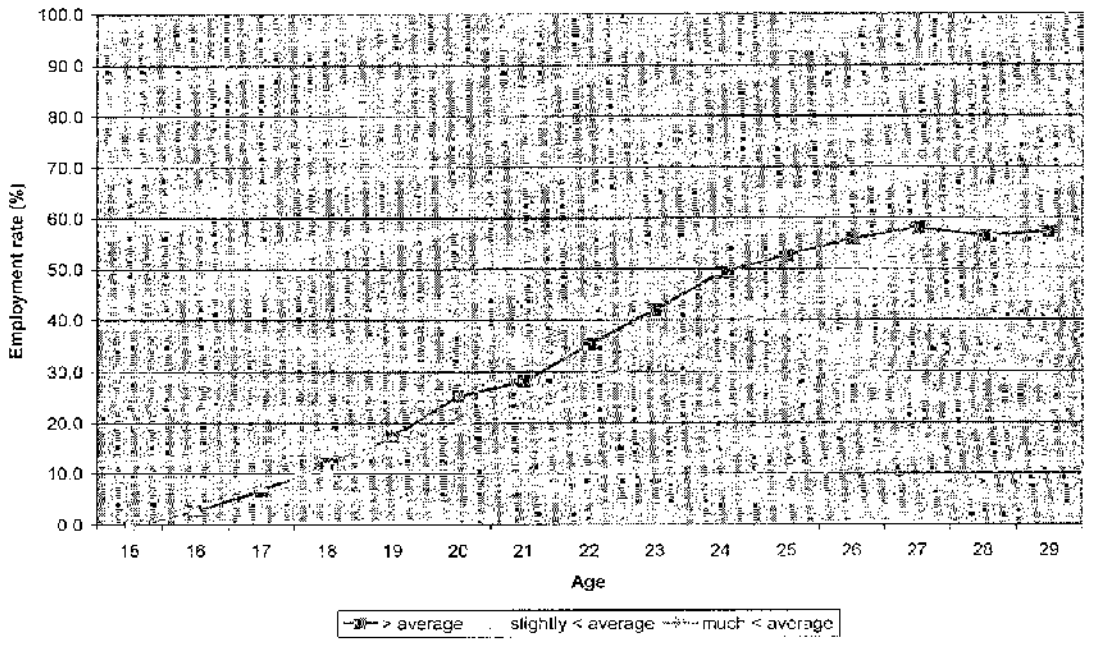
Source: European Labour Force Survey, 1993-97

Figure 5.30: Female economic activity rates by GDP category, ages 15-29 - Spain



Source: European Labour Force Survey, 1993-97

Figure 5.31: Female employment rates by GDP category, ages 15-29 - Spain

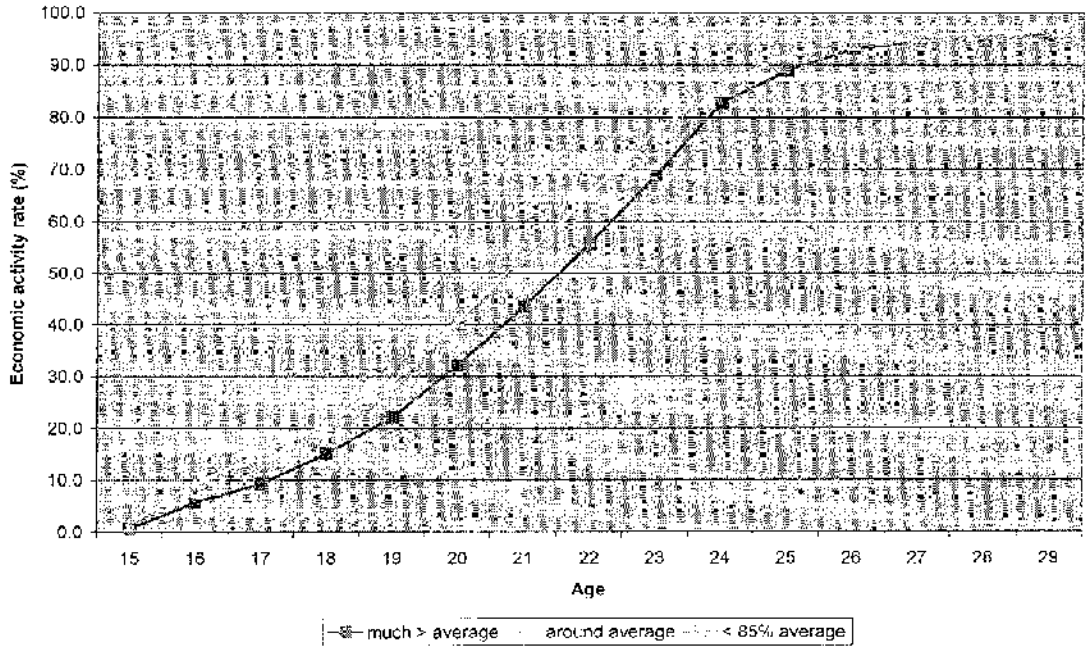


Source: European Labour Force Survey, 1993-97

- *France*: In France the Ile de France is distinguished as having the highest level of GDP. Up to the age of 24 years, for both males (Figure 5.32) and females (Figure 5.34) this high GDP region is characterised by lower economic activity rates than in areas with lower levels of GDP. Elsewhere, economic activity rates are similar in areas with around average GDP levels and regions with GDP levels lower than 85 per cent of the France average. For males the high GDP region displays a lower employment rate than the other GDP categories until the age of 25 years (Figure 5.33), while for females employment rates in the Ile de France exceed those in the other GDP categories from the age of 21 years (Figure 5.35).
- *Greece*: In Greece regions with higher than the national average GDP display lower male economic activity rates than other Greek regions in the 16-18, 19-21, 22-24 and 25-27 years age groups. In the 22-24 years age band high GDP regions display female economic activity rates similar to those for regions displaying slightly below average GDP levels. By the age of 25 years a clear gradation in female economic activity and employment rates is apparent, with the highest rates in high GDP regions and the lowest rates in low GDP regions.
- *Italy*: In Italy, where regional variations in economic activity rates and employment rates are more marked than in most other member states, clear gradations are apparent between GDP categories. Regions with higher than average GDP display higher than average economic activity and employment rates for both males and females from the age of 16 years, and regions characterised by much lower than average GDP display the lowest rates (Figures 5.36-5.39). This gradation is more marked for employment rates than for economic activity rates, and for females than for males.
- *Netherlands*: For males economic activity and employment rates are higher in regions with the lowest GDP per head – implying 'faster' labour market transitions in such areas. However, by the age of 25 years rates are similar across all GDP categories. Similarly for females, in the 16-18 and 19-21 years age groups, economic activity rates are highest in the regions with lowest GDP levels. However, from the age of 22 years the high and medium GDP regions display higher economic activity rate and employment rates for females than the lowest GDP region (Flevoland).
- *Portugal*: For males the high GDP regions display lower economic activity rates in the 16-18, 19-21 and 22-24 years age groups than regions in the high and medium GDP categories, but by the age of 25 years this differential has disappeared. Regions in the lowest GDP category display the highest male economic activity rates up to the age of 24 years. For females economic activity rates are highest in the 16-18, 19-21 and 22-24 years age groups in the 'medium' of three GDP categories identified. From the age of 25 years females economic activity rates are highest in the high GDP areas and lowest in the low GDP areas.
- *Sweden*: In Sweden the main division in GDP levels is between Stockholm (with a higher than average level of GDP per head) and 'the rest'. For males economic activity rates are higher in Stockholm than in other regions from around the age of 29 years, while for females economic activity rates are higher in Stockholm than across the average for all other regions from the age of 16 years onwards. Differences in employment rates are more marked than those in economic activity rates.
- *United Kingdom*: For males there is little difference in economic activity rates by age for regions with above average, close to average, and with GDP levels less than 90 per cent of the UK average (Figure 5.40). There is some evidence for lower male employment rates in regions with the lowest GDP from the age of 19 years (Figure 5.41). In the case

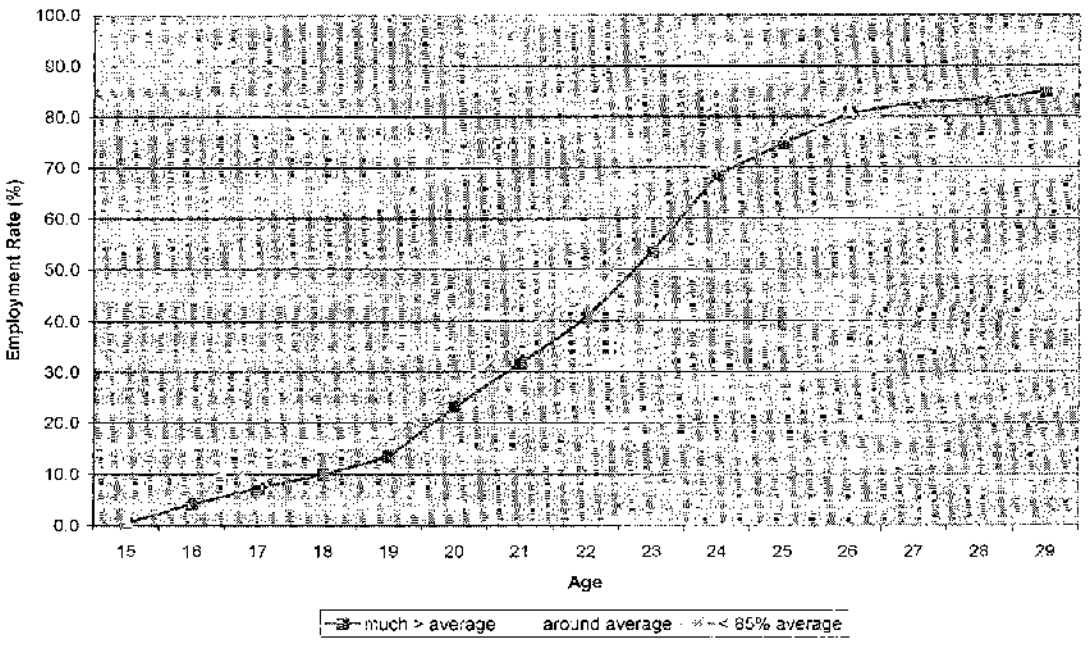
of females, from the age of 21 years a gradation (albeit only slight) between GDP categories is apparent, with highest economic activity and employment rates in high GDP areas (Figures 5.42 and 5.43).

Figure 5.32: Male economic activity rates by GDP category, ages 15-29 – France



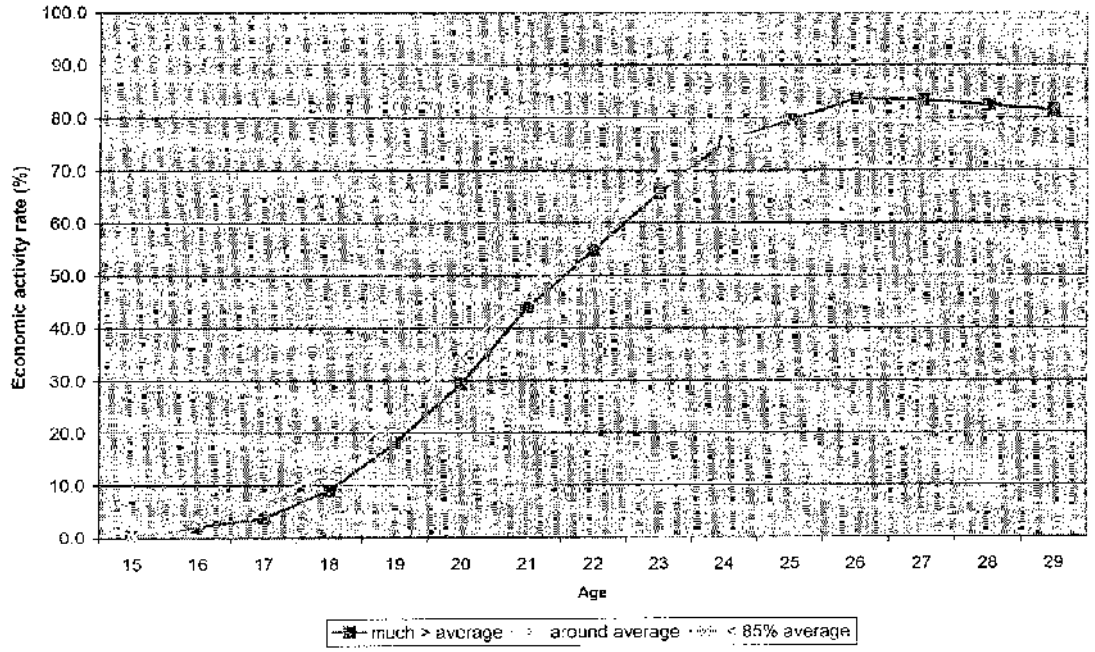
Source: European Labour Force Survey, 1993-97

Figure 5.33: Male employment rates by GDP category, ages 15-29 – France



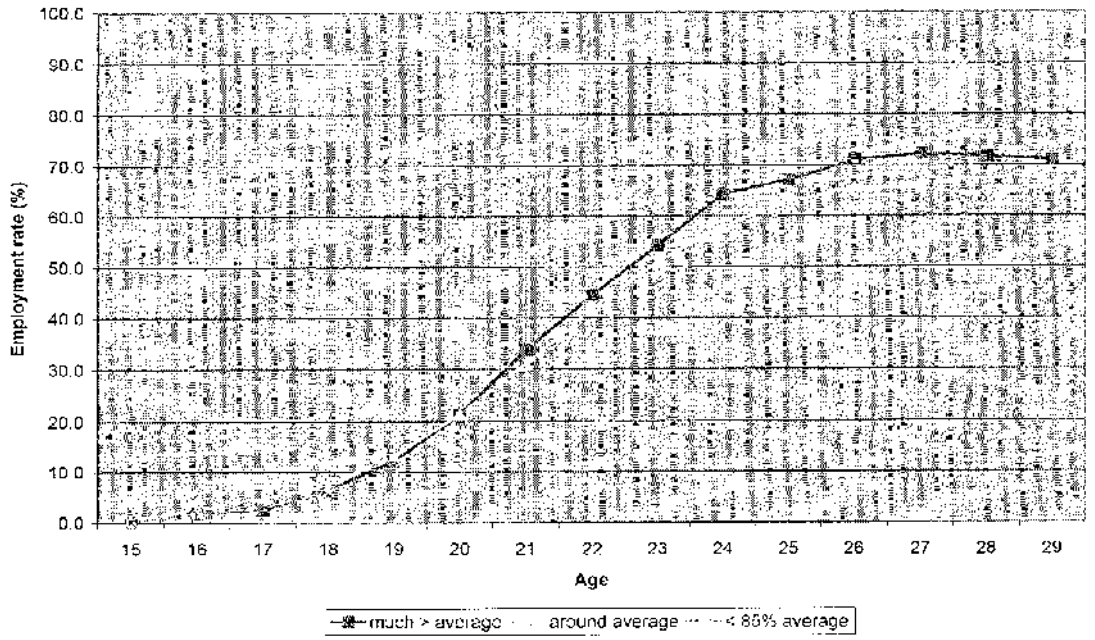
Source: European Labour Force Survey, 1993-97

Figure 5.34: Female economic activity rates by GDP category, ages 15-29 – France



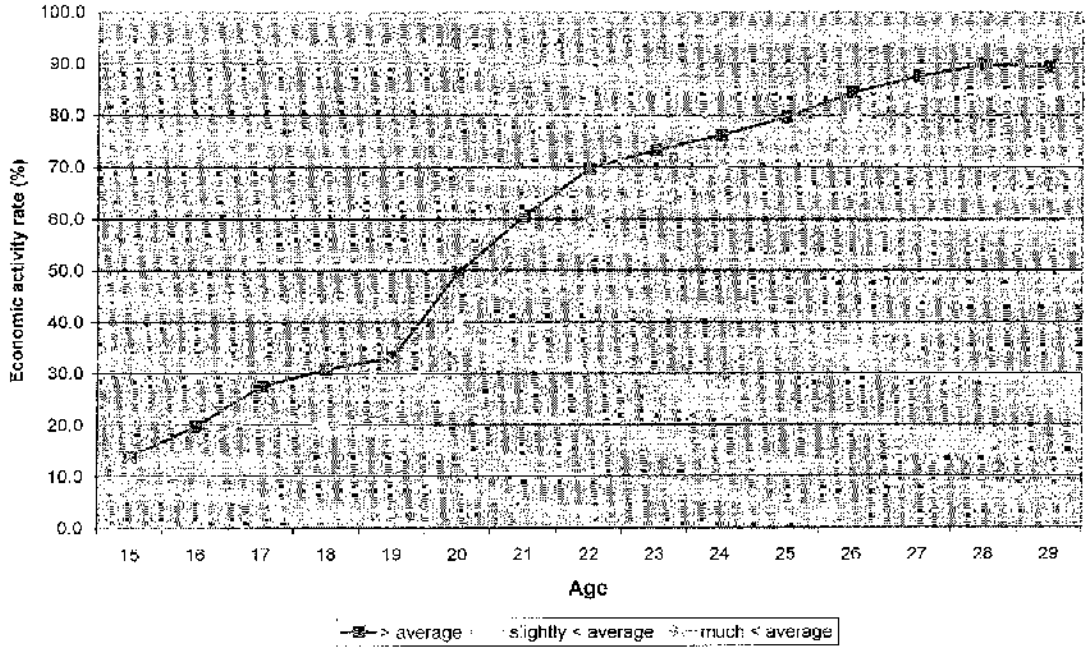
Source: European Labour Force Survey, 1993-97

Figure 5.35: Female employment rates by GDP category, ages 15-29 – France



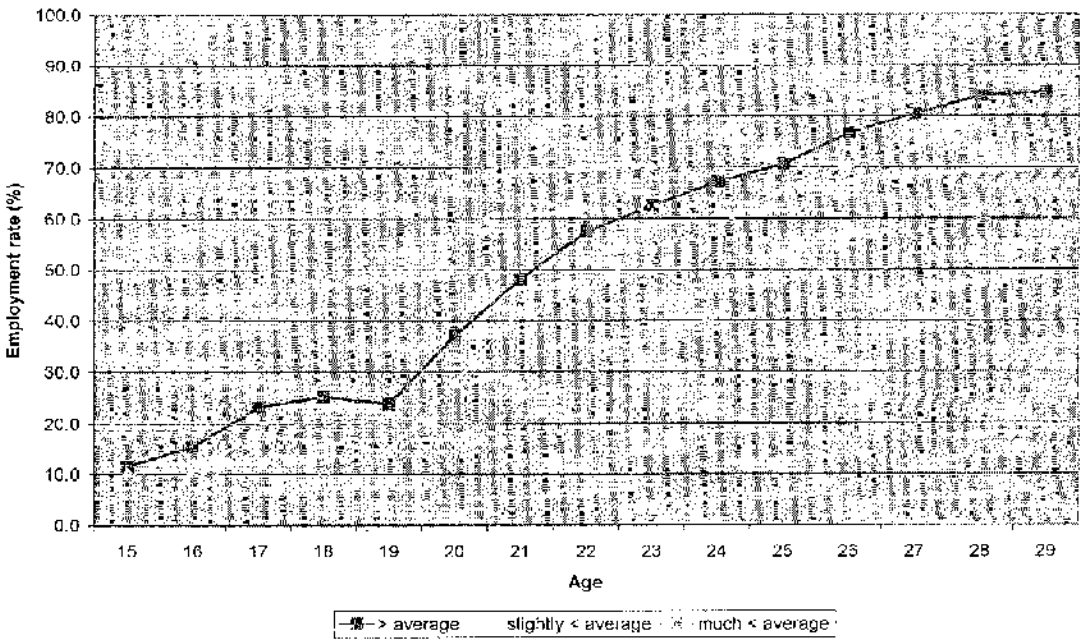
Source: European Labour Force Survey, 1993-97

Figure 5.36: Male economic activity rates by GDP category, ages 15-29 – Italy



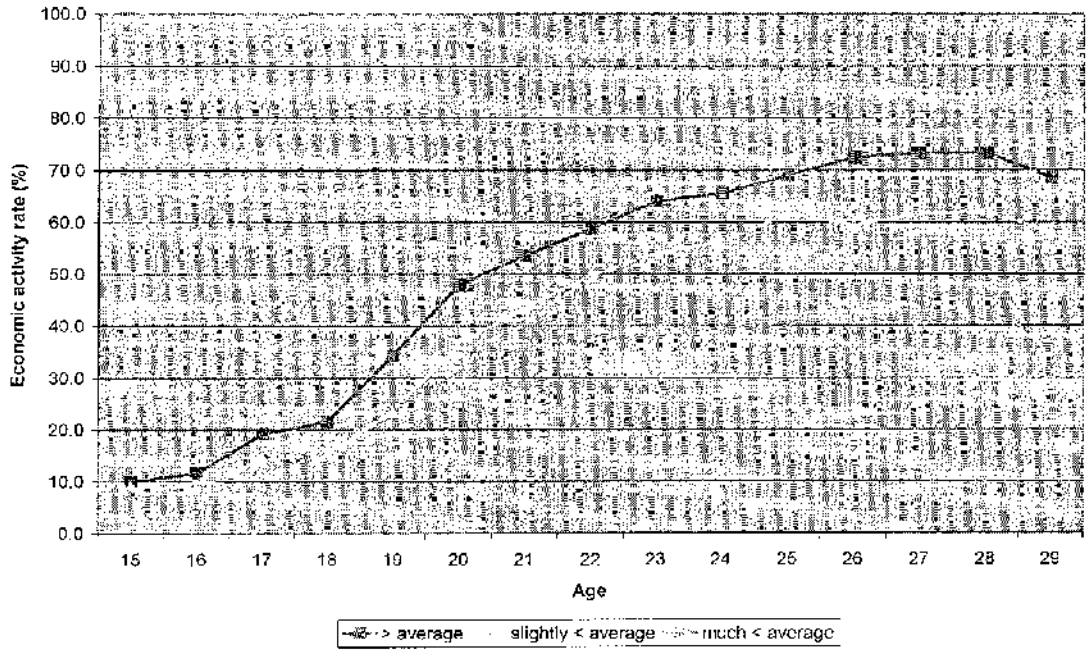
Source: European Labour Force Survey, 1993-97

Figure 5.37: Male employment rates by GDP category, ages 15-29 – Italy



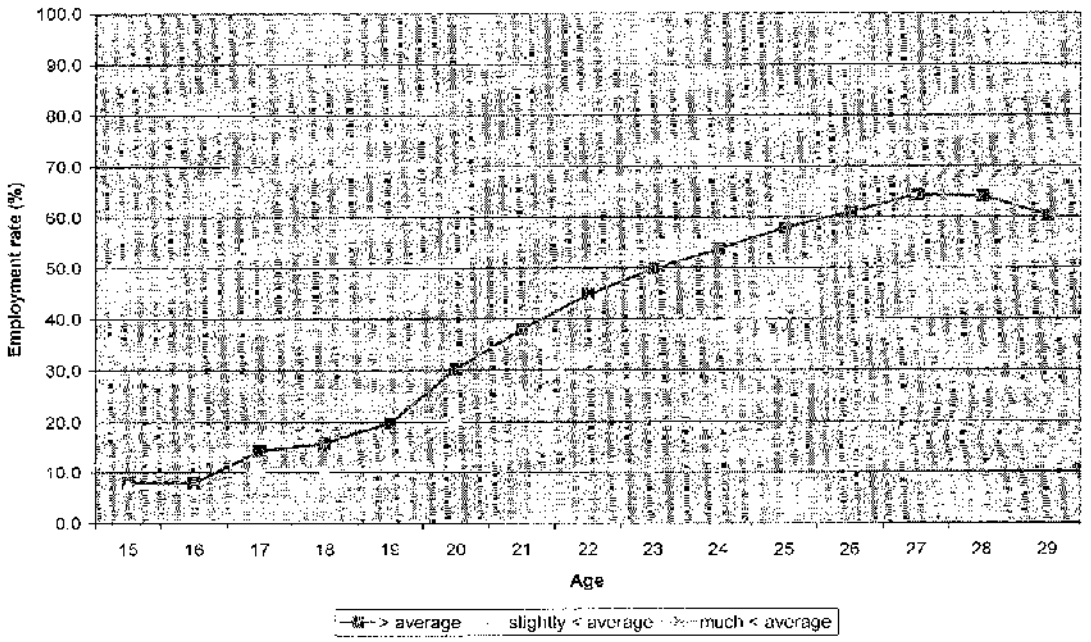
Source: European Labour Force Survey, 1993-97

Figure 5.38: Female economic activity rates by GDP category, ages 15-29 – Italy



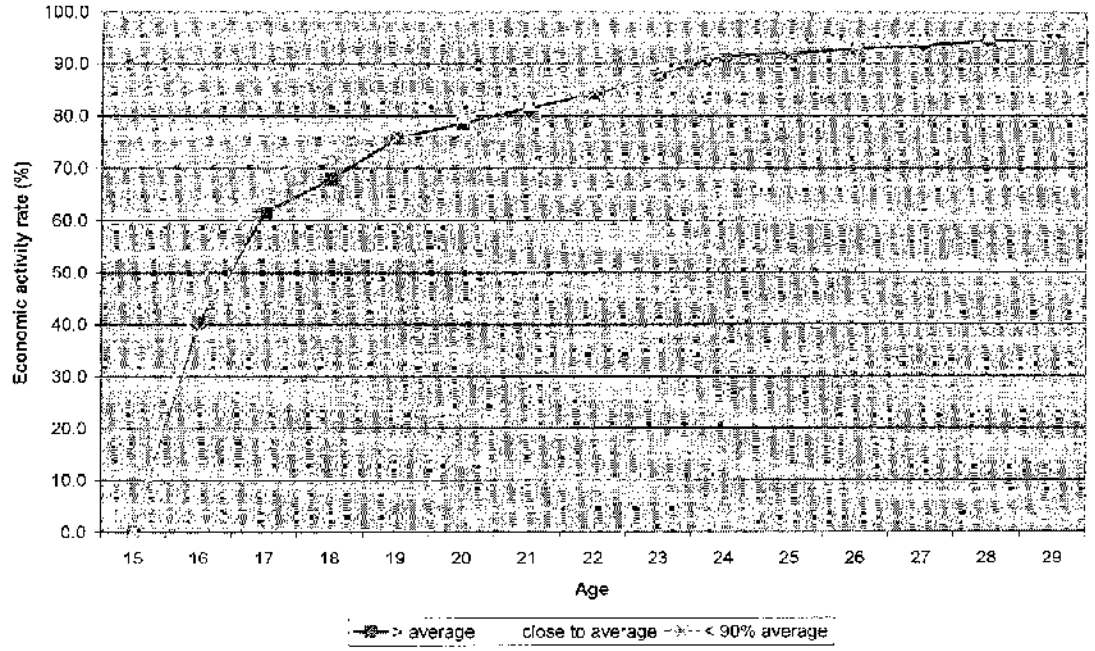
Source: European Labour Force Survey, 1993-97

Figure 5.39: Female employment rates by GDP category, ages 15-29 – Italy



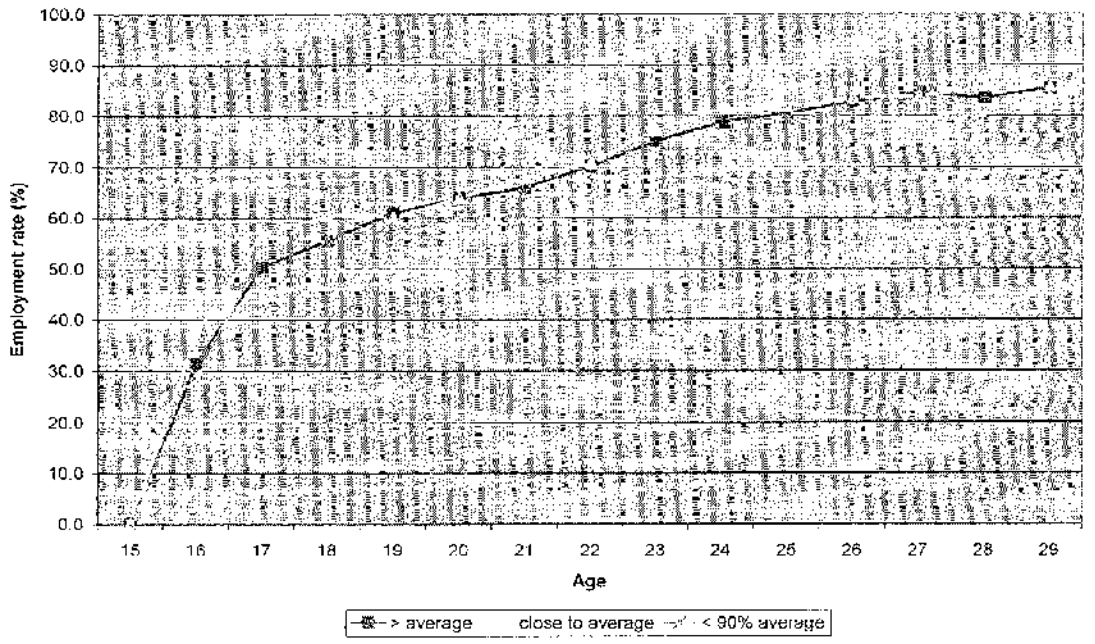
Source: European Labour Force Survey, 1993-97

Figure 5.40: Male economic activity rates by GDP category, ages 15-29 – UK



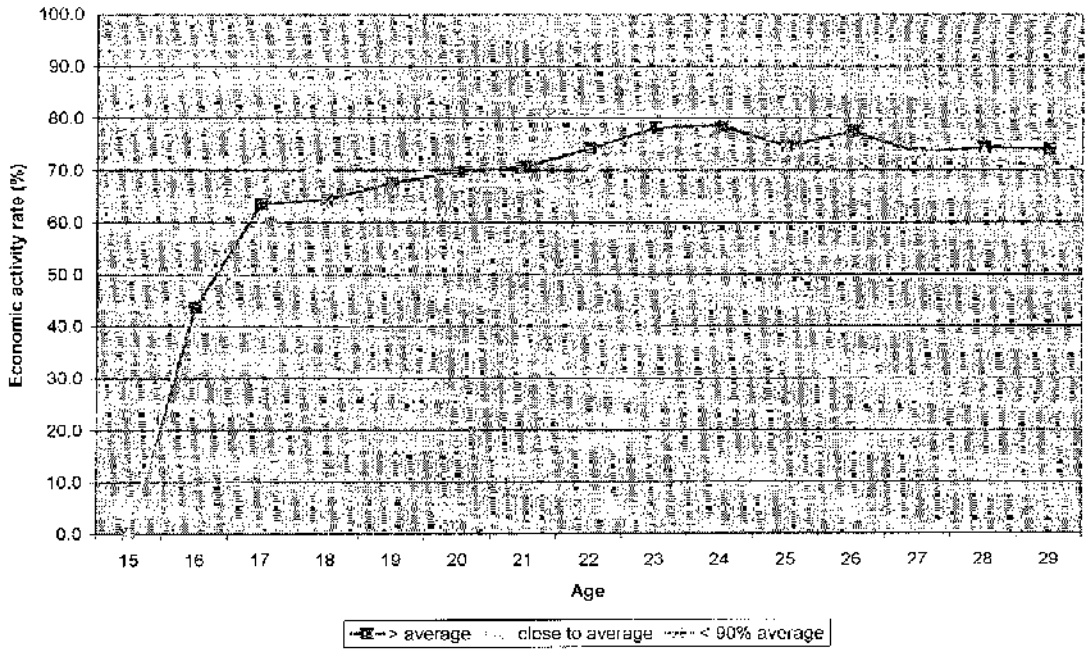
Source: European Labour Force Survey, 1993-97

Figure 5.41: Male employment rates by GDP category, ages 15-29 – UK



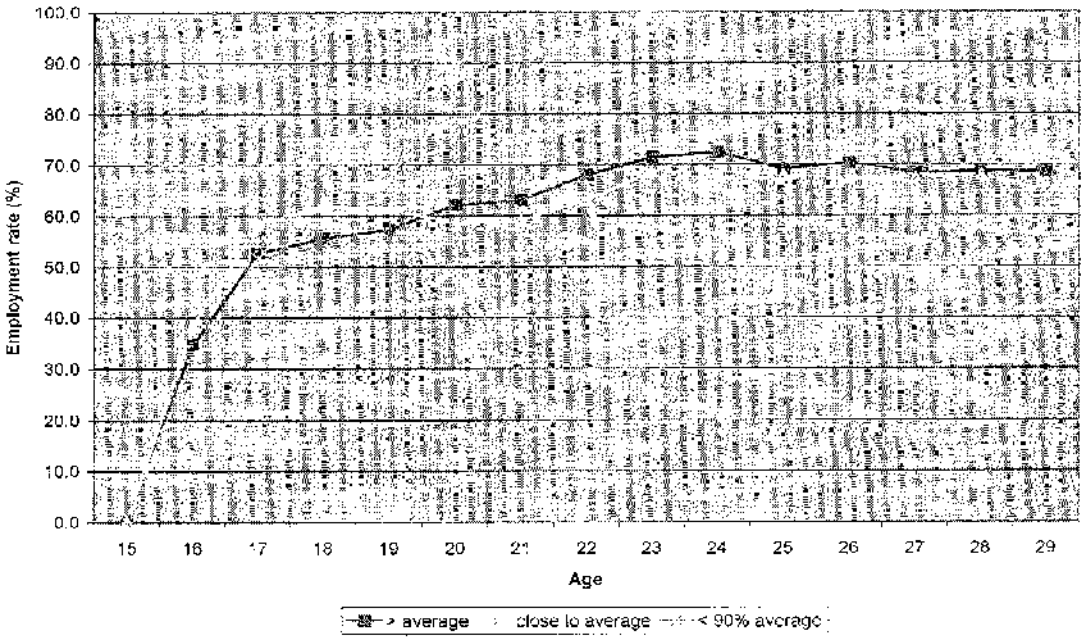
Source: European Labour Force Survey, 1993-97

Figure 5.42: Female economic activity rates by GDP category, ages 15-29 – UK



Source: European Labour Force Survey, 1993-97

Figure 5.43: Female employment rates by GDP category, ages 15-29 – UK



Source: European Labour Force Survey, 1993-97

Overall, the *main conclusions* from an investigation of differences between 'rich' and 'poor' regions in labour force participation of young people are:

- There is no universal pattern of clear gradation between 'rich' and 'poor' areas in economic activity rates.
- In some member states – notably Italy, and to a lesser extent Spain - economic activity rates and employment rates, at least from the age of 20 years (although the pattern is evident earlier in the case of Italy) are highest in high GDP regions and lowest in low GDP regions.
- In other member states – notably France – no such pattern is apparent. Germany emerges as something of a 'special case', with the low GDP eastern regions displaying relatively high economic activity rates.
- Across several member states there is a tendency for high GDP regions to display relatively low participation rates in the younger age groups (such as 16-18 and 19-21 years), but for the 'gap' to be closed and/or reversed by the age of 25 years. This means that in the younger age groups medium and/or low GDP areas may display the highest economic activity rates.

5.6 Differences in Labour Force Participation between Regions Classified by Socio-Economic Structure

Although numerous classification exercises have been undertaken, for a variety or purposes and at varying levels of sophistication, to identify regions/local areas sharing similar socio-economic structures, these have mainly concentrated on individual countries. No off-the-shelf cross-national classifications are available for the precise set of regions used in the analyses of regional labour force participation in this project.[36] Hence, in order to identify regions sharing similar socio-economic structures a *principal components analysis* was undertaken on the following key indicators:

- *Industrial structure*: percentages of total employment in:
  - ◊ agriculture
  - ◊ manufacturing
  - ◊ producer services
  - ◊ other services
- *Occupational structure*: percentages of total employment in:
  - ◊ high-skilled non-manual occupations
  - ◊ medium-skilled non-manual occupations
  - ◊ lower-skilled non-manual occupations
  - ◊ skilled manual occupations
  - ◊ unskilled manual occupations
- *GDP* per head
- *Unemployment rate*

Four *principal components* emerged with eigenvalues greater than 1.0, together accounting for 84 per cent of total variance in the data. These four principal components may be characterised as follows (see Table 5.8):

[36] Cross-national classifications tend to be constrained by data availability and consistency problems (see Alderman and Charlton, 1996).

1) *high skilled non-manual occupations and producer services* – positive loadings on high-skilled and medium-skilled non-manual occupations and the proportion of total employment in producer services, and also on GDP per head, combined with a high negative loading on skilled manual occupations
2) *lower skilled high unemployment service economies* – positive loadings on the unemployment rate, the proportion of employment in other services and the shares of employment in lower-skilled non-manual and unskilled manual occupations, together with negative loadings on the percentage of employment in manufacturing and GDP per head
3) *unskilled manual occupations in manufacturing* – high positive loadings on the proportion of employment in manufacturing and in unskilled manual occupations
4) *lower skilled non-manual low unemployment economies* – a high positive loading on the proportion of employment in lower skilled non-manual occupations and a negative loading on the unemployment rate.

Table 5.8: Component matrix – regions sharing similar socio-economic structures

Socio-economic classificatory variable	Component			
	1	2	3	4
% employment in high-skilled non-manual occupations	.810	-.111	-.176	-.448
% employment in medium-skilled non-manual occupations	.780	-.158	.102	.245
% employment in lower-skilled non-manual occupations	.108	.617	-4.272E-02	.705
% employment in skilled manual occupations	-.944	-.223	-8.788E-02	.108
% employment in unskilled manual occupations	-0.009	.545	.682	-.131
% employment in agriculature	-.844	0.003	-.442	-0.069
% employment in manufacturing	-0.077	-.583	.748	0.076
% employment in producer services	.844	-0.006	-.235	-.145
% employment in other services	.674	.642	-.138	0.076
GDP index (eu = 100)	.702	-.417	.110	.176
Unemployment rate	-.205	.723	.262	-.401

A *cluster analysis* was undertaken using the four principal components as classificatory variables. A hierarchical cluster analysis technique was used. Classifications with 3-20 clusters were assessed. The preferred solution capturing the key dimensions of variation was the *9-cluster classification*. The clusters vary in size with the smallest containing 8 regions and the largest 48 regions.

Table 5.9 shows how cluster membership varies by member state, while the clusters are mapped in Figure 5.44. There is a tendency for regions from the same country to group together in a few clusters,[37] and for contiguous regions in countries (and across national borders) to group together. Three of the nine clusters have members drawn from eight different countries.[38] Two of the smaller clusters have a membership drawn from only two countries.

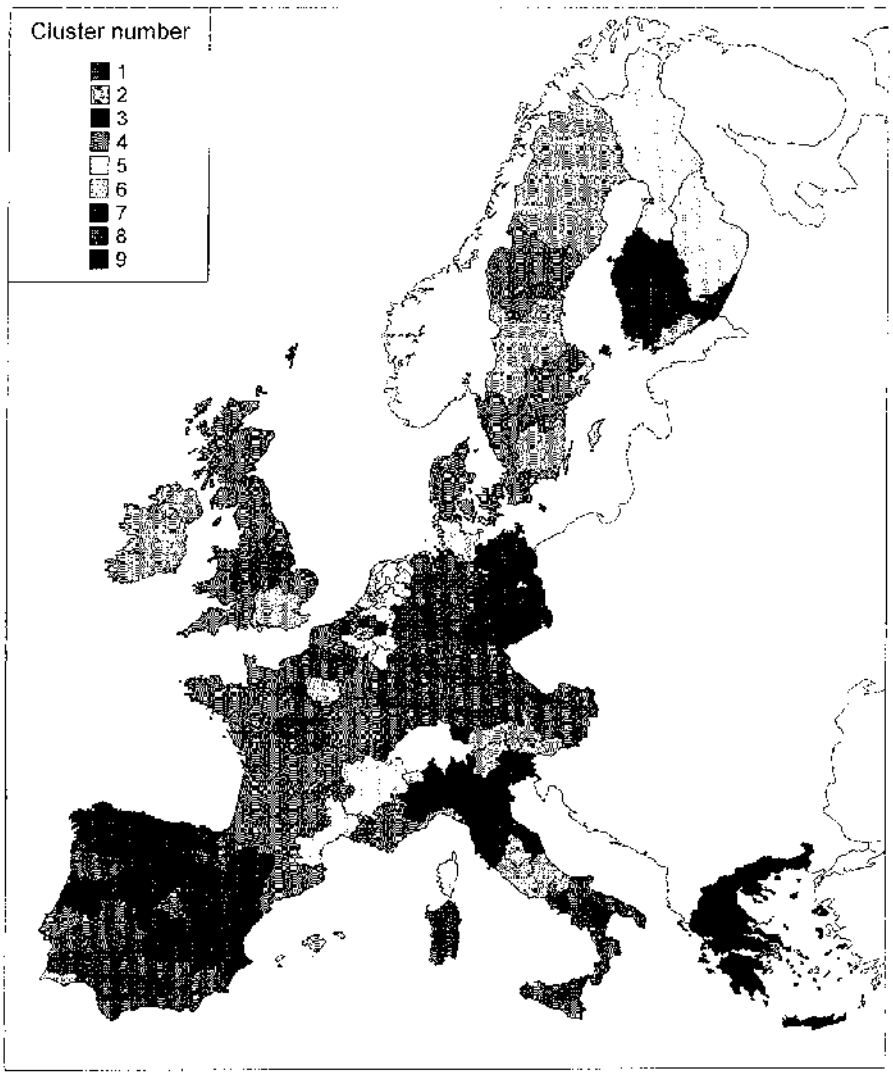
[37] In the cases of Greece, Germany, the Netherlands and the UK one cluster accounts for over three-fifths of all regions.

[38] It should be remembered that Denmark, Ireland and Luxembourg are treated as single regions.

Table 5.9: Crosstabulation of country by 9-cluster socio-economic classification

Country											Total
		1	2	3	4	5	6	7	8	9	
BE	count	4				4	3				11
	row %	36.4%				36.4%	27.3%				100.0%
	column %	8.3%				19.0%	27.3%				6.1%
DE	count	28				3	1	7			39
	row %	71.8%				7.7%	2.6%	17.9%			100.0%
	column %	58.3%				14.3%	9.1%	41.2%			21.8%
DK	count				1						1
	row %				100.0%						100.0%
	column %				3.4%						.6%
ES	count	2	1		2			8	5		18
	row %	11.1%	5.6%		11.1%			44.4%	27.8%		100.0%
	column %	4.2%	5.0%		6.9%			47.1%	45.5%		10.1%
FI	count					2	1	1		2	6
	row %					33.3%	16.7%	16.7%		33.3%	100.0%
	column %					9.5%	9.1%	5.9%		14.3%	3.4%
FR	count	6			12	3	1				22
	row %	27.3%			54.5%	13.6%	4.5%				100.0%
	column %	12.5%			41.4%	14.3%	9.1%				12.3%
GR	count		1		1					11	13
	row %		7.7%		7.7%					84.6%	100.0%
	column %		5.0%		3.4%					78.6%	7.3%
IE	count		1								1
	row %		100.0%								100.0%
	column %		5.0%								.6%
IT	count		7	7				1	5		20
	row %		35.0%	35.0%				5.0%	25.0%		100.0%
	column %		35.0%	87.5%				5.9%	45.5%		11.2%
LU	count	1									1
	row %	100.0%									100.0%
	column %	2.1%									.6%
NL	count				1	8	3				12
	row %				8.3%	66.7%	25.0%				100.0%
	column %				3.4%	38.1%	27.3%				6.7%
PT	count	1	3		1				1	1	7
	row %	14.3%	42.9%		14.3%				14.3%	14.3%	100.0%
	column %	2.1%	15.0%		3.4%				9.1%	7.1%	3.9%
SE	count		3		4		1				8
SE	count		3		4		1				8
	row %		37.5%		50.0%		12.5%				100.0%
	column %		15.0%		13.8%		9.1%				4.5%
UK	count	2	1		7		1				11
	row %	18.2%	9.1%		63.6%		9.1%				100.0%
	column %	4.2%	5.0%		24.1%		9.1%				6.1%
Total	count	48	20	8	29	21	11	17	11	14	179
	row %	26.8%	11.2%	4.5%	16.2%	11.7%	6.1%	9.5%	6.1%	7.8%	100.0%
	column %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 5.44: Clusters of regions sharing similar socio-economic structures



The key features of the clusters are as follows:

***Cluster 1** (48 members)*
Characteristics: Regions in this cluster may be described as *manufacturing-oriented economies*, with *GDP levels higher than the EU average* and *lower than average unemployment*.
Geographical distribution: Approximately 72 per cent of regions in Germany are in this cluster (accounting for about three out of every five cluster members). Regions from Austria, Belgium and France are represented, as well as Luxembourg, the West Midlands and East Midlands in the UK, and two regions from Spain and one from Portugal.

***Cluster 2** (20 members)*
Characteristics: Regions in this cluster are characterised by greater than average shares of employment in *lower-skilled non-manual occupations* and in *other services*, and by around *average GDP* levels.

Geographical distribution: Cluster membership is drawn from Italy, Austria, Portugal, Spain, Sweden, Ireland and Northern Ireland.

***Cluster 3** (8 members)*
Characteristics: This is the smallest and one of the most distinctive of the nine clusters. It comprises *manufacturing-oriented economies* with a *high percentage of skilled manual workers* and *relatively few high skilled non-manual workers*, together with *high GDP* and *low unemployment*.
Geographical distribution: Cluster membership is drawn entirely from northern Italy and a neighbouring region in Austria.

***Cluster 4** (29 members)*
Characteristics: This is the closest of the nine clusters to an '*average*' cluster. Regional economies tend to be *service-based* and have an *average occupational structure*.
Geographical distribution: This cluster includes Denmark and the majority of regions in France and the UK. Other representatives are from Sweden, Portugal, Spain and the Netherlands.

***Cluster 5** (21 members)*
Characteristics: This cluster might be labelled '*2nd tier producer services*' regions. There is a greater than average concentration of employment in producer services and other services.
Geographical distribution: Cluster membership is dominated by the Netherlands and Belgium, with Berlin, Vienna and parts of France and Finland represented also.

***Cluster 6** (11 members)*
Characteristics: This cluster might be labelled '*1st tier producer services*' regions. It is characterised by greater than average shares of employment in producer services and in high-skilled non-manual occupations.
Geographical distribution: Most cluster members are regions based around large cities – notably South East England (London), Ile de France (Paris), Brussels and Amsterdam.

***Cluster 7** (17 members)*
Characteristics: This cluster is characterised by *higher than average proportions of emeployment in manufacturing* and in *unskilled manual occupations* and *low-skilled non-manual occupations*. Other key characteristics are *high unemployment* and *low GDP per head*.
Geographical distribution: Cluster membership is dominated by regions in eastern Germany and northern and central Spain.

***Cluster 8** (11 members)*
Characteristics: The key differentiating characteristic of this cluster is *very high unemployment rates*. Other distinguishing features are the *higher than average share of employment in agriculture, other services* and *low/unskilled occupations*, as well as *low GDP*.
Geographical distribution: Cluster members are concentrated in southern Italy and southern Spain.

***Cluster 9** (14 members)*
Characteristics: The label *'agricultural-dominated economies with low unemployment'* captures the key features of this cluster.
Geographical distribution: Cluster membership is dominated by Greece, with eleven out of fourteen Greek regions falling into this cluster. Finland is also represented.

In order to explore whether there are any marked differences in labour market transitions by socio-economic categories, economic activity rates were calculated separately for males and females in each of the four three-year age groups – 16-18, 19-21,22-24 and 25-29 years - used in the exploration of urban-rural variations. Table 5.10 shows economic activity rates for males, and Table 5.11 shows such rates for females.

Table 5.10: Differences in male economic activity rates by socio-economic cluster

Country group	Socio-economic cluster								
	1	2	3	4	5	6	7	8	9
ALL									
16-18 years	34.5	23.9	28.8	35.3	27.6	36.9	33.2	24.8	22.9
19-21 years	64.1	51.2	51.8	58.1	53.5	59.1	60.9	48.6	55.0
22-24 years	76.9	71.8	75.6	79.8	75.5	79.6	75.8	67.5	77.8
25-27 years	85.6	83.1	85.7	91.5	89.1	91.1	88.0	79.8	91.0
Group 1									
16-18 years	40.2	29.3	*	59.3	40.5	50.8	44.8	n/a	22.3
19-21 years	70.2	65.0	*	76.5	66.6	73.0	81.1	n/a	55.1
22-24 years	76.7	81.1	*	86.7	77.7	84.5	82.0	n/a	73.7
25-27 years	83.4	89.2	*	91.3	87.1	90.9	89.5	n/a	86.9
Group 2									
16-18 years	13.1	n/a	n/a	14.1	10.5	9.2	n/a	n/a	n/a
19-21 years	44.0	n/a	n/a	40.2	36.3	32.1	n/a	n/a	n/a
22-24 years	77.9	n/a	n/a	75.9	72.3	68.7	n/a	n/a	n/a
25-27 years	94.6	n/a	n/a	93.6	92.5	91.4	n/a	n/a	n/a
Group 3									
16-18 years	34.2	19.8	28.6	21.9	n/a	n/a	24.2	24.8	23.0
19-21 years	57.6	41.7	51.6	48.8	n/a	n/a	49.1	48.6	55.0
22-24 years	77.1	66.0	75.6	71.8	n/a	n/a	71.7	67.5	78.1
25-27 years	90.4	79.5	85.7	88.9	n/a	n/a	86.7	79.8	91.3

Source: European Labour Force Survey, 1993-97. *Key*: M = male, F = female.
Key: n/a = not applicable; * denotes only one region.
Note: Group 1 contains Denmark, Sweden, Finland, Netherlands, Germany, Austria, United Kingdom, Ireland; Group 2 contains France, Belgium, Luxembourg; Group 3 contains Italy, Greece, Portugal, Spain.

In the case of *males*, economic activity rates in the younger age group (16-18 and 19-21 years) are highest in clusters 1, 4, 6 and 7. Clusters 9, 8 and 2 display the lowest male

economic activity rates in these age groups. In the 22-24 and 25-27 years age groups clusters 4 and 6 display the highest male economic activity rates and clusters 8 and 2 the lowest rates.

Table 5.11: Differences in female economic activity rates by socio-economic cluster

Country group	Socio-economic cluster								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
ALL									
16-18 years	28.0	16.8	19.3	30.2	22.5	35.3	23.0	16.3	16.0
19-21 years	56.5	44.2	48.5	50.4	49.1	54.5	50.9	36.7	43.1
22-24 years	69.8	59.4	66.6	68.8	69.9	72.5	67.1	47.5	56.6
25-27 years	73.7	66.5	74.8	76.1	78.1	78.5	77.3	50.1	62.8
Group 1									
16-18 years	33.6	22.1	*	57.3	36.2	51.0	32.8	n/a	30.4
19-21 years	62.3	56.2	*	67.7	63.9	67.7	71.3	n/a	51.3
22-24 years	69.6	72.9	*	72.1	74.5	76.5	77.9	n/a	57.1
25-27 years	71.9	76.7	*	73.9	77.3	76.7	84.5	n/a	74.9
Group 2									
16-18 years	7.6	n/a	n/a	7.2	4.8	4.4	n/a	n/a	n/a
19-21 years	37.0	n/a	n/a	34.7	31.0	29.9	n/a	n/a	n/a
22-24 years	71.4	n/a	n/a	67.0	63.5	64.5	n/a	n/a	n/a
25-27 years	80.8	n/a	n/a	78.4	79.5	82.3	n/a	n/a	n/a
Group 3									
16-18 years	29.6	13.1	19.1	16.2	n/a	n/a	16.0	16.3	15.3
19-21 years	49.6	36.5	48.3	43.5	n/a	n/a	39.0	36.7	42.7
22-24 years	66.3	51.3	66.5	65.4	n/a	n/a	60.3	47.5	56.6
25-27 years	78.1	60.7	74.7	77.5	n/a	n/a	71.3	50.1	62.2

Source: European Labour Force Survey, 1993-97. *Key*: M = male, F = female.
Key: n/a = not applicable; * denotes only one region.
Note: Group 1 contains Denmark, Sweden, Finland, Netherlands, Germany, Austria, United Kingdom, Ireland; Group 2 contains France, Belgium, Luxembourg; Group 3 contains Italy, Greece, Portugal, Spain.

However, if the focus shifts to the three 'country groups' (in order to obviate some of the variations in economic activity rates which may be accounted for by the uneven distribution of cluster members by country) some of the patterns emerging are somewhat different. For example:

- The more prosperous[39] manufacturing-oriented regional economies in *cluster 1* display lower than average male economic activity rates (particularly in the older age groups) in Group 1 countries (including Germany) but amongst the highest male economic activity rates in all age groups identified in Group 2 and Group 3 countries.

[39] As measured by higher than average levels of GDP per head.

- The *cluster 4* service-based economies with an average occupational structure display amongst the highest male economic activity rates in all age groups identified in Group 1 and Group 2 countries, but lower than average male economic activity rates in the younger age groups in Group 3 countries.
- The 1st-tier high-level producer service economies of *cluster 6* display amongst the lowest economic activity rates at all ages identified in Group 2 countries, but in Group 1 countries the male economic activity rates in this cluster are amongst the highest of any of the clusters represented.

As for males, so in the case of *females*, economic activity rates are consistently lower in all age groups in clusters 8, 9 and 2 than elsewhere. For females cluster 6 displays amongst the highest economic activity rates – particularly in the older age groups (22-24 years and 25-27 years). Again as for males, so for females:

- The more prosperous manufacturing-oriented regional economies of *cluster 1* consistently display amongst the highest economic activity rates for females in the age groups identified in Group 2 and Group 3 countries. However, amongst the older females identified (i.e. those age 22-24 and 25-27 years) the economic activity rates in cluster 1 are amongst the lowest of any cluster.
- *Cluster 6* (the 1st-tier high-level producer service economies) display amongst the highest economic activity rates for females in Group 1 countries, while in Group 2 countries female economic activity rates are lower than average in the younger age groups, but are the highest of any of the clusters by the age of 25-27 years.

Hence, it is *concluded* that that:

- There are some variations in economic activity rates by socio-economic category, and the general pattern of variation tends to be similar for males and females.
- Some of the differences by socio-economic category identified are attributable to the uneven distribution of cluster membership by country.
- Differences in economic activity rates and in labour market transitions by socio-economic category are not uniform across country groups (i.e. a particular socio-economic cluster may be characterised by higher than average economic activity rates in one country groups, but not in another. The *implication* is that it may be necessary to seek different 'models' to "explain" differences in regional labour force participation in different (groups of) member states.

5.6 Conclusions

The following main conclusions emerge from the exploration and description of regional variations in labour force participation presented in this section:

1) *National level* differences in labour market transition profiles dominate differences in economic activity rates at the regional level.
2) There are important differences in the extent of regional variation in economic activity rates by member states.
3) A focus on regional differences in economic activity rates disguises a somewhat more pronounced degree of regional variation in employment rates.

4) In general, regional differences in labour force participation amongst young people tend to be greater at the younger end of the age range (i.e. amongst 15-19 year olds) than amongst those at the older end of the age range (i.e. those around the age of 25 years).
5) There is some evidence that regional differentials in economic activity rates and employment rates are greater for females than for males, but the size of this gender 'gap' varies between member states.
6) Over the period from 1993 to 1997 in most member states no discernible temporal variations in economic activity rates are evident over the period. The implication is that amalgamating data across years does not result in a marked loss of variation in the data.
7) At face value, no marked urban-rural differences in labour market transitions amongst young people are evident.
8) Likewise, there is no universal gradation in economic activity rates between 'rich' and 'poor' regions. However, there is some suggestion that labour market transitions in 'rich' regions are characterised by lower than average economic activity rates at the younger end of the age range, but for this gap to close by the mid twenties and then for the pattern to reverse.
9) Some variations in economic activity rates are evident by socio-economic category, but patterns are not uniform across country groups. The implication is that it is likely to be difficult to find a single 'model' to explain regional variations in economic activity rates across all regions, and that different 'models' may need to be sought for different groups of countries. (A multiple regression model is fitted in Section 6 in an attempt to pick up some of these regional differences in causation.)

6. TOWARDS AN EXPLANATION OF REGIONAL VARIATIONS IN LABOUR MARKET PARTICPATION RATES: MULTIVARIATE REGRESSION ANALYSIS

6.1 Introduction

This section presents a preliminary attempt to 'explain' differences in labour market participation rates across the Regions of the EU. Such a task is an ambitious one, implying the aim of discerning patterns of cause and effect. This is difficult enough with an ideal data set, designed for the purpose. Considerable effort has been spent, both by Eurostat and the researchers, in order to develop the present data set. However, it has to be recognised that this falls well short of this theoretical ideal. The main limitations and problems are discussed below.

The *approach* adopted here, in order to try to develop explanations of regional variations, is *multivariate regression analysis*. This technique has been widely used in previous research, by economists, sociologist and others, in order to develop models of labour market participation. These studies have used both cross-sectional and time series data. The present data set contains both dimensions, although the main emphasis is on explaining the spatial variations rather than temporal differences.

Multivariate regression analysis is just one of a number of potential tools which could be adopted. Limited time and resources have meant that the present analysis has been restricted to this approach. However, some thoughts on possible alternatives are set out in the conclusions (in Section 6.5).

This is not the place for an extensive review of the literature on the transition from full-time education to work.[40] It is sufficient here to point to previous attempts to summarise this complex area, which encompass both explanations of the decisions by young people about participation in the labour market and participation in non-compulsory education and training.

The decision as to whether or not to participate in the formal economy has been studied by economists and other social scientists for many years as part of the individual labour supply decision. The most simple model sees this decision as being primarily a function of the difference between the wage on offer and the individual's 'reservation wage'. If the former exceeds the latter then the individual will be prepared to supply their labour.

Since the early 1970s, the need to view such decisions in a dynamic context, recognising the important role of life cycle considerations, has gained prominence. This reflects differences in productivity over the life cycle as well as differences in what economists term 'time preference' (i.e. the premium place on enjoying leisure and or consumption goods now as opposed to at some future date).

An important aspect of decision making in a lifetime context is the question of how much education and training to undertake, (which in turn may affect the individual's earning capacity at a later date). In many of the more sophisticated models of life cycle labour supply,

[40] For useful reviews see de Jong (1999), Bosworth *et al.* (1996) and Briscoe and Wilson (1992). These all contain more extensive bibliographies.

wages are endogenised and labour supply, the investment in education and training (human capital) and the lifetime wage profile are seen as jointly determined.

Another key development in the understanding of these phenomena has been the recognition of the importance of seeing these decisions as taking place within the context of a broader household or family context, in which the individual's decision is conditioned by the situation facing other members of the household or family unit to which they belong.

Most studies of differences in economic participation rates have used cross-sectional data on individuals for a single country, although a few analyses have focussed on time series variations in aggregate data. Some key results come through regardless of which kind of data are used. This includes the important role of wages, wealth/income indicators and unemployment. Other features differ markedly, partly because of the nature of the sample variation and the kinds of variables available to the analysts. For example, in the time series work it is very difficult to incorporate meaningful measures of household composition or of specific wage and other indicators. These sort of problems also face the analysts of data-sets such as those developed in this project as will become clear in the discussion below.

6.2 Standard Theoretical Models

6.2.1 Models of economic participation

The standard analysis of labour supply starts from the assumption that individuals are not subject to a job offer constraint (i.e. there is excess demand for labour, the supply side rules). The basic model states that individuals compare the market wage on offer (Wi) with their own reservation wage (Wi*). The individual will participate in the labour market if the following condition holds:

(1) $Wi > Wi^*$

The reservation wage is held to depend upon the relative costs and benefits associated with earning income and enjoying leisure. This in turn will depend on personal characteristics such as age, prior educational experience and attainment, non-labour income and personal tastes. For women, in particular the importance of the valuation of non-market time, especially time associated with family formation, is also a crucial consideration. The reservation wage (W*) is regarded as determined by:

(2) $Wi^* = w^* (Xi^*, Oi)$

where w* indicates that Wi* (the reservation wage of the individual) is a function of Xi*and Oi. Xi* is a vector of observed characteristics for the individual and Oi* a parameter representing factors including personal tastes. The Xi*vector will typically include factors such as educational attainment of the individual and household structure variables, including number of dependent children.

The market wage for the individual is determined by:

(2) $Wi - w (Xi, Si)$

Where Xi is a vector of personal and human capital as well as job characteristics (which may include external labour market conditions such as unemployment and the structure of the local labour market, and Si is a vector of other unobserved personal characteristics.

Since Wi* is unobservable by definition, the participation decision (represented by the probability of the individual being economically active (Ai)) is given by:

(4) $Ai = a(Wi, Xi^*, Oi)$

where Wi is determined by equation (3).

Equations (1) –(4) represent the most general version of the economic model of economic participation.

In the typical cross-sectional analysis, based on data for individuals, i represents the individual case and Ai is the **probability** of economic participation. In a time series context, the i subscript refers to the passage of time and the Ai is the average **rate** of participation (usually for a particular age/gender category). In the present analysis the i subscript should be understood to refer to the different geographical regions which are the subject of the study, and the focus of attention is the average rate of participation (for particular age/gender categories) in each region.

Because the activity rate variable is constrained to lie between 0 and 1 (0 to 100%), it is conventional to re-express this in the form of a logistic or 'log-odds ratio' (Li).

(5) $Li = \ln (Ai /(1 - Ai))$

where ln indicates a natural logarithm. Li can take any real value, and so imposes no constraints on the econometrics. This form approximates a cumulative distribution function of a random variable, producing a sigmoidal shape, where the probabilities asymptotically approach the upper and lower limits as Li is either very small or very large.

6.2.2 Models of participation in non-compulsory education

In a sense the modelling of participation in non-compulsory education represents the other side of the same coin as the modelling of the decision to be economically active. However, the two decisions have only rarely been considered jointly. Moreover, in many countries they have shown an increasingly reduced tendency to be mutually exclusive states, with many young people working part-time in order to finance their 'full-time' education.

The theoretical models of educational participation have generally been couched in terms of investment in human capital. The probability of an individual deciding to stay on in full-time education or training beyond the minimum school leaving age (Pi) is held to be a function of various socio-economic variables which influence the perceived value to the individual of 'staying on' as opposed to 'leaving'.[41]

(6) $Pi = P (Zi, Yi)$

[41] For a review of this literature see Whitfield and Wilson (1991).

where Zi is a vector of personal characteristics, including prior educational experience and attainment, family background (such as class and income) and some unobserved characteristics (such as academic ability) and Yi is a vector of external factors, including the state of the labour market (wages, unemployment etc.).

Again, in most cross-sectional studies, i relates to the individual case. Time series studies use average values (for a particular gender/age category) for each point in time.

In the context of the present project the important point to note is that this literature suggests a similar list of explanatory variables to the literature on economic participation rates. The main difference is the emphasis on human capital type variables, including earnings. Unfortunately, this is one area where it has proved difficult to develop consistent measures across countries. The emphasis in the present project is on modelling economic activity rates rather than educational participation rates.

6.3 Key Results from Previous Research

6.3.1 Evidence from studies of economic participation

The results from the many previous empirical studies (albeit mainly with a single country focus) suggest that for males the effect of the *wage* variable (Wi) is usually weakly negative (i.e. rising wages depress participation)[42]. In contrast, for females most studies indicate a strong positive effect.

Household income, including non-wage income and income of other household members, has generally been found to reduce economic participation.

The presence of *young dependent children* in the household is normally found to depress economic activity rates, especially for women. This is interpreted as increasing the reservation wage. Such indicators have proved rather less successful in time series studies, mainly due to problems in measuring such effects meaningfully. In the present context some average measures of the percentage of the age/gender group in question who have young children are available for each region.[43]

Finally, *unemployment* is normally found to have a depressing impact on economic participation, especially for younger and older workers, the so called 'discouraged worker' effect. Measures of job opportunities and the structure of employment in the 'local labour market' have also been found to be important.

6.3.2 Evidence from studies of participation in education

Again this literature includes example of work using both cross-sectional and time series data.[44] The cross-sectional studies of individuals show a complex pattern of effects. The *wage* on offer to the immediate school leaver, discourages staying on, but this is offset by the

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42 See, for example, Bosworth *et al.* (1996) or Briscoe and Wilson (1992).

43 Unfortunately this variable is not available for the Nordic countries.

44 See Whitfield and Wilson (1991) for a review.

prospect of higher wages at a later date. This is confirmed by time series work. Unfortunately in the present context it has not been possible to develop a measure of this kind of indicator.

Higher *household income* generally encourages continued educational participation. This result is a feature of both time series and cross-sectional studies. Given the present focus on economic activity rates, this suggests a negative relationship between the dependent variable and regional GDP, which is the best measure of income available on a consistent cross-national basis at regional level.

The effects of *unemployment* are complex. In the cross-sectional studies there is evidence that unemployment in the household can discourage educational participation (possibly due to unmeasured income effects). However, the main effect, which also comes through in the time series work, is that higher unemployment discourages early school leaving and prompts young people to stay on in full-time education. In the present analysis, two main types of measure are available, unemployment rates for the relevant age group, which one would expect to have a negative impact on economic activity rates, and aggregate unemployment rates, which might be expected to have the opposite effect. However, these two measures are likely to be highly collinear, so it may not prove possible to discern separate influences.

Social class differences come through very strongly in the cross-sectional studies, with individuals from families in 'higher' socio-economic classes being more likely to stay on in full-time education. Such effects are more difficult to discern in time series models. The present data set does not include any direct measures of social class, although there are some indirect indicators, such as occupational structure. However, these are likely to be rather crude measures compared to what is possible in cross-sectional studies of individuals.

Prior *educational experience* of the individual is of crucial importance in the cross-sectional studies based on data on individuals. However, this is much more difficult to operationalise in time series studies or studies of regional variation as here. The educational experiences of other household members is also found to have a strong positive influence. Again this has proved much easier to operationalise in a cross-sectional study of individual cases. A large number of indicators of educational and vocational training attainment are available in the present data set, covering both the age/gender groups under examination as well as much broader measures for the population at large. However, it remains to be seen if these are sufficiently precise and distinct from other indicators (such as regional GDP) to enable the kind of influences observed in cross-sectional studies of individuals to be picked up. A particular problem is that the focus on young people means that many will be in the process of completing their education. With individual level data it would be possible to observe this process in detail. With aggregate data for the regions, this process is obscured.

6.4 Towards an Empirical Specification

6.4.1 Introduction

The development of an appropriate specification to explain variations in economic participation across the various regions of the European Union faces many of the same problems that the time series studies have had to grapple with. The theoretical models, based on the rational decision making individual, have to be extensively modified to deal with

average data for geographical areas. It is often difficult, if not impossible, to develop empirical measures of many of the explanatory variables suggested by the theory for such areas. Such problems are exacerbated by the many differences between countries in the nature and availability of relevant information.

In the present case, where the unit of observation is the region, there have been particular problems in developing appropriate measures of all the variables, which theoretical considerations suggest are likely to be important determinant of labour market participation rates. While it has been possible to construct a number of indicators based on the Labour Force Survey and other data provided by Eurostat, there are a number of important gaps. Partly these reflect the fact that there is no obvious analogue to the 'individual' level variables suggested by the theory. For example, although one can construct average measures of household structure, including the average of those in certain age groups who have dependent children, this is a far cry from a variable which indicates a particular individual's family or household circumstance. Given the time and resources available it was also not practical to develop many indicators using data other than the LFS. A particular concern is the lack of an adequate measure of the market wage on offer.[45]

6.4.2 A general model

The *general model* that has been explored here takes the following form:

(7) Ai = A(GDPi, Ui, EMPSi, CHILDi, UALLi, EDUCATi, COUNTRY DUMMIES)

where:

- GDPi is a measure of income in the region,
- Ui is a measure of unemployment for the age/gender category concerned,
- UALLi is a measure of aggregate unemployment[46],
- EMPSi is a measure of employment structure[47],
- EDUCATi is an indicator of educational attainment in the region,
- CHILDi is an indicator of the number of children in the age/gender category
- COUNTRY DUMMY are a series of (0/1) dummy variables which have been included to allow for the major difference between countries which have been noted in the earlier sections.

A logistic specification (as in equation (5)) has been adopted for all the variables which are in the form of percentage rates. Other variables were generally entered in logarithmic form.

This specification represents a compromise, partly enforced by lack of data – especially the absence of data on wages. A list of the main variables used and their definitions is given in Table 6.1. It is clear from this table that, despite the problems in developing all the variables that theory suggests might be important, there are many potential independent variables to chose from. Indeed, there are far too many variables for them all to be accommodated within

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45 The inclusion of a question on incomes in the LFS may make this a more feasible aim for future researchers.

46 Different ways of including the unemployment variable were also explored, including the use of measures of unemployment in each region relative to the national average in that country.

47 A number of variables which measure the structure of the regional labour market were used including indicators of industrial structure, occupational structure, and urban/rural mix.

a single model or regression equation. A key problem is how to select which of the myriad combinations of variables to include. Theoretical considerations, as summarised in equation (7) can provide only a rough guide.

Moreover, it is clear that in a number of cases the role of the variables could be interpreted in alternative ways, some of which may have opposite effects on labour market participation rates. For example, although a case has been made above for including GDP as a proxy for household incomes, with an expected negative effect on participation rates. A case could also be made that GDP is an indicator of the level of economic activity in a region. On this interpretation, the higher is GDP, the more jobs are likely to be available and hence the higher might be labour market participation rates. This is precisely the opposite effect to that proposed in equation (7). This illustrates the difficulty of finding regional indicators which can play an unambiguous role in such models.

Regressions have been run for males and females, separately for two broad age groups (15-19 and 20-24 years of age). The separation by gender and age was felt *a priori* to be important given previous research which suggests different patterns for males and females and the evidence from earlier parts of the present report which illustrates the different patterns by age.

Data were prepared for each of the years for 1993-1997. Preliminary analysis of these data suggested that the benefits of expanding the number of observations available were offset by additional 'noise' in the data. The main emphasis was therefore placed on analysing the average values for the 5 years. Results for individual years do not differ markedly from those reported here.

Initially, an attempt was made to develop a general specification for all the regions in the sample. As noted below, this proved problematic, with between country effects dominant. Given the problems encountered in arriving at a satisfactory model the same specifications were also run for three sub-groups of countries in an attempt to minimise between country differences. These groupings were chosen on the basis of the cluster analysis described in Section 5. However, these results were, in general, no better than those for all countries.

The groupings used are defined in Table 6.2. A few regions were regarded as outliers based on the earlier analysis. These have been excluded from the analysis. Details are also given in Table 6.2. In principle, this could be taken to an extreme and separate regressions run for each country. In practice, the number of regions available is too small to make this feasible in all but one case (Germany). As a consequence, this possibility has not been explored further here.

Table 6.1: Definitions of variables used in the regression analysis

Variable	Description
	Dependent variable (entered in Log odds ratio form)
Earm1519	Economic activity rate for males aged 15-19
Earm2024	Economic activity rate for males aged 20-24
Earm1524	Economic activity rate for males aged 15-24
Earf1519	Economic activity rate for females aged 15-19
Earf2024	Economic activity rate for females aged 20-24
Earf1524	Economic activity rate for females aged 15-24
	Alternative dependent variable
Empm1519	Employment rate for males aged 15-19
Empm2024	Employment rate for males aged 20-24
Empm1524	Employment rate for males aged 15-24
Empf1519	Employment rate for females aged 15-19
Empf2024	Employment rate for females aged 20-24
Empf1524	Employment rate for females aged 15-24
	Employment structure variables
Occ1p	% total employment in higher skilled non-manual occupations
Occ2p	% total employment in medium skilled non-manual occupations
Occ3p	% total employment in lower skilled non-manual occupations
Occ4p	% total employment in skilled manual occupations
Occ5p	% total employment in unskilled manual occupations
Occ11524	% young people employment in higher skilled non-manual occupations
Occ21524	% young people employment in medium skilled non-manual occupations
Occ31524	% young people employment in lower skilled non-manual occupations
Occ41524	% young people employment in skilled manual occupations
Occ51524	% young people employment in unskilled manual occupations
Agric	% total employment in agriculture
Manuf	% total employment in manufacturing
Servs	% total employment in other services
Prods	% total employment in producer services
Agricyp	% young people employment in agriculture
Manufyp	% young people employment in manufacturing
Servsyp	% young people employment in other services
Prodsyp	% young people employment in producer services
	Urban-rural structure
Urbanp	% total population in densely populated areas
Intermp	% total population in intermediate areas
Ruralp	% total population in intermediate areas
	Dependent children
Ycm1519	% males aged 15-19 with young children
Ycm2024	% males aged 20-24 with young children
Ycm2024	% males aged 15-24 with young children
Ycf1519	% females aged 15-19 with young children

Table 6.1 (continued): Definitions of variables used in the regression analysis

Ycf2024	% females aged 20-24 with young children
Ycf2024	% females aged 15-24 with young children
	Income measure
GDPEU100	GDP (index EU=100)
	Country Dummy variables
Austria	(0,1)
Belgium	(0,1)
Germany	(0,1)
Denmark	(0,1)
Spain	(0,1)
Finland	(0,1)
France	(0,1)
Greece	(0,1)
Ireland	(0,1)
Italy	(0,1)
Lux	(0,1)
NL	(0,1)
Portugal	(0,1)
Sweden	(0,1)
UK	(0,1)
	Unemployment measures
Urm	Unemployment rate for males
Urf	Unemployment rate for females
Urt	Unemployment rate
Urm1519	Unemployment rate for males aged 15-19
Urm2024	Unemployment rate for males aged 20-24
Urm1524	Unemployment rate for males aged 15-24
Urf1519	Unemployment rate for females aged 15-19
Urf2024	Unemployment rate for females aged 20-24
Urf1524	Unemployment rate for females aged 15-24
Urt1519	Unemployment rate aged 15-19
Urt2024	Unemployment rate aged 20-24
Urt1524	Unemployment rate aged 15-24
Urpr	Unemployment in region relative to the national average
	Educational indicators
Ed1m1519	% males aged 15-19 with less than 1st stage of secondary education
Ed1m2024	% males aged 20-24 with less than 1st stage of secondary education
Ed1m1524	% males aged 20-24 with less than 1st stage of secondary education
Ed1m	% males with less than 1st stage of secondary education
Ed2m1519	% males aged 15-19 with lower secondary education
Ed2m2024	% males aged 20-24 with lower secondary education
Ed2m1524	% males aged 20-24 with lower secondary education
Ed2m	% males with lower secondary education
Ed3m1519	% males aged 15-19 with upper secondary education

Table 6.1 (continued): Definitions of variables used in the regression analysis

	Educational indicators (continued)
Ed3m2024	% males aged 20-24 with upper secondary education
Ed3m1524	% males aged 20-24 with upper secondary education
Ed3m	% males with upper secondary education
Ed4m1519	% males aged 15-19 with third level education
Ed4m2024	% males aged 20-24 with third level education
Ed4m1524	% males aged 20-24 with third level education
Ed4m	% males with third level education
Ed1f1519	% females aged 15-19 with less than 1st stage of secondary education
Ed1f2024	% females aged 20-24 with less than 1st stage of secondary education
Ed1f1524	% females aged 20-24 with less than 1st stage of secondary education
Ed1f	% females with less than 1st stage of secondary education
Ed2f1519	% females aged 15-19 with lower secondary education
Ed2f2024	% females aged 20-24 with lower secondary education
Ed2f1524	% females aged 20-24 with lower secondary education
Ed2f	% females with lower secondary education
Ed3f1519	% females aged 15-19 with upper secondary education
Ed3f2024	% females aged 20-24 with upper secondary education
Ed3f1524	% females aged 20-24 with upper secondary education
Ed3f	% females with upper secondary education
Ed4f1519	% females aged 15-19 with third level education
Ed4f2024	% females aged 20-24 with third level education
Ed4f1524	% females aged 20-24 with third level education
Ed4f	% females with third level education
Ed1t1519	% total aged 15-19 with less than 1st stage of secondary education
Ed1t2024	% total aged 20-24 with less than 1st stage of secondary education
Ed1t1524	% total aged 20-24 with less than 1st stage of secondary education
Ed1t	% total with less than 1st stage of secondary education
Ed2t1519	% total aged 15-19 with lower secondary education
Ed2t2024	% total aged 20-24 with lower secondary education
Ed2t1524	% total aged 20-24 with lower secondary education
Ed2t	% total with lower secondary education
Ed3t1519	% total aged 15-19 with upper secondary education
Ed3t2024	% total aged 20-24 with upper secondary education
Ed3t1524	% total aged 20-24 with upper secondary education
Ed3t	% total with upper secondary education
Ed4t1519	% total aged 15-19 with third level education
Ed4t2024	% total aged 20-24 with third level education
Ed4t1524	% total aged 20-24 with third level education
Ed4t	% total with third level education
	Vocational training indicators
Vt1m1519	% males aged 15-19 with no FE or vocational training (*educfur* code=1)
Vt1m2024	% males aged 20-24 with no FE or vocational training (*educfur* code=1)
Vt1m1524	% males aged 15-24 with no FE or vocational training (*educfur* code=1)
Vt1m	% males with no FE or vocational training (*educfur* code=1)
Vt2m1519	% males aged 15-19 completing a vocational training course (including 'du system') (*educfur* codes=2, 3, 4)

Table 6.1 (continued): Definitions of variables used in the regression analysis

	Vocational training indicators (continued)
Vt2m2024	% males aged 20-24 completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt2m1524	% males aged 15-24 completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt2m	% males completing a vocational training course (including 'dual system') (*educfu* codes=2, 3, 4)
Vt3m1519	% males aged 15-19 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3m2024	% males aged 20-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3m1524	% males aged 15-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3m	% males completing a 3rd level (*educfur* codes=5, 6, 7)
Vt1f1519	% females aged 15-19 with no FE or vocational training (*educfur* code=1)
Vtd1f2024	% females aged 20-24 with no FE or vocational training (*educfur* code=1)
Vt1f1524	% females aged 15-24 with no FE or vocational training (*educfur* code=1)
Vt1f	% females with no FE or vocational training (*educfur* code=1)
Vt2f1519	% females aged 15-19 completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt2f2024	% females aged 20-24 completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt2f1524	% females aged 15-24 completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt2f	% females completing a vocational training course (including 'dual system') (*educfur* codes=2, 3, 4)
Vt3f1519	% females aged 15-19 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3f2024	% females aged 20-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3f1524	% females aged 15-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3f	% females completing a 3rd level (*educfur* codes=5, 6, 7)
Vt1t1519	% total aged 15-19 with no FE or vocational training (*educfur* code=1)
Vt1t2024	% total aged 20-24 with no FE or vocational training (*educfur* code=1)
Vt1t1524	% total aged 15-24 with no FE or vocational training (*educfur* code=1)
Vt1t	% total with no FE or vocational training (*educfur* code=1)
Vt2t1519	% total aged 15-19 completing a vocational training course (including 'dual syste (*educfur* codes=2, 3, 4)
Vt2t2024	% total aged 20-24 completing a vocational training course (including 'dual syste (*educfur* codes=2, 3, 4)
Vt2t1524	% total aged 15-24 completing a vocational training course (including 'dual syste (*educfur* codes=2, 3, 4)
Vt2t	% total completing a vocational training course (including 'dual system') (*educfu* codes=2, 3, 4)
Vt3t1519	% total aged 15-19 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3t2024	% total aged 20-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3t1524	% total aged 15-24 completing a 3rd level (*educfur* codes=5, 6, 7)
Vt3t	% total completing a 3rd level (*educfur* codes=5, 6, 7)

Table 6.2: Definitions of country groupings used in the regression analysis

Country	Acronym	Number of regions
Group 1		*87*
Sweden	SE	8
Denmark	DK	1
Finland	FI	6
Netherlands	NL	12
Germany	DE	39
Austria	AT	9
Ireland	IE	1
United Kingdom	UK	11
Group 2		*34*
France	FR	22
Belgium	BE	11
Luxembourg	LU	1
Group 3		*58*
Spain	ES	18
Greece	GR	13
Italy	IT	20
Portugal	PT	7

Note: The following regions were excluded from the analysis since they appeared to be outliers, which were likely to distort the results: F120 (Finland) and ES63 (Spain).

6.5 Results

6.5.1 Exploring the data

A preliminary exploration of the data-set was conducted using the 'stepwise' procedure in SPSS. This selects variables according to their correlation with the dependent variable and the marginal contribution they make to the explanatory power of the regression equation. In other words it allows the data to 'talk' rather than drawing upon any theoretical considerations of what might be important.

This analysis suggests that *unemployment* is a particularly important variable. The various *educational indicators* also come through strongly. The *GDP* indicator on the other hand rarely comes through as a significant variable and where it does (in the case of the Mediterranean group of countries), it has an unexpected, positive effect. The results of this exercise also revealed very different patterns across country groupings. They confirmed that apart from the *country dummy* variables, there is no obvious common specification that covers all the age/gender categories and all the groups of countries.

A number of variations on the basic theme set out in equation (7) were then explored. These included the modelling of differences in the *employment rate* (as opposed to the *activity rate*) and the use of alternative specifications of the way unemployment is included in the model, such as incorporating differences from national average values (Urpr).

Although it proved simple to develop a specification which was able to 'explain' most of the variation in the data, this was not a very satisfactory outcome, since it relied almost entirely on the *country dummy* variables. This simply confirms the results of the earlier descriptive statistical analysis, which suggested that variations *between* countries, reflecting institutional and cultural differences, was a major factor, tending to outweigh regional variations *within* countries.

6.5.2 A benchmark model

Tables 6.3 and 6.4 provide a summary of this most basic result. In a sense, this provides a benchmark, which other specifications need to 'beat' if they are to improve our understanding of the causes of regional variations in the process of transition from compulsory education to the labour market. The results shown are based on the activity rate as the dependent variable. The results using the employment rate were very similar and are not reported here in detail.

The UK is used as the comparator.[48] The results show quite clearly, the significantly lower rates of labour market activity amongst 15-19 year olds for certain countries such as France, Belgium and Luxembourg (and to a lesser extent Austria (females only), Portugal, Spain, Italy Greece and Ireland). In contrast, activity rates are significantly above the UK levels in Denmark. The Netherlands and Austria (males only) show no significant differences from the UK. All the other differences are highly significant from a statistical point of view. The pattern is very similar for males and females. They tend to confirm the results of the earlier analysis presented in Section 5 and suggest that institutional and cultural differences between countries are a very powerful factor in explaining the overall variation in patterns of economic activity rates between regions. Well over 80 per cent of the variation is accounted for by these country dummy variables according to the R-Squared, adjusted for degrees of freedom.

Table 6.4 shows the corresponding results for 20-24 year olds. The pattern here is similar, although the differences are not now so marked. Germany, Ireland the Netherlands and Luxembourg still show indications of lower economic activity rates than the UK but these are now no longer statistically significant. Similarly the difference for Denmark remains positive but is no longer statistically significant. According to the adjusted R-Squared, the overall explanatory power of this simple model is much less than for the younger age group (around 60 per cent of the variation is explained).

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[48] The choice of comparator is entirely arbitrary but makes no difference to the outcome of the regression analysis. One country has to be omitted to avoid a singularity. However, it is irrelevant which one is omitted. The coefficients on the country dummy variables indicate the effect for any region of being part of that country compared to being a region within the comparator country.

Table 6.3: Country differences: benchmark results, 15-19 year olds

a) Dependent Variable: LOGVAR-earm1519 b) Dependent Variable: LOGVAR-earf1519

	Males		Females	
	Coefficient	T statistic	Coefficient	T statistic
(Constant)	1.130E-02	.127	-.121	-1.242
AUSTRIA	-3.394E-02	-.255	-.416	-2.851
BELGIUM	-2.416	-19.166	-2.762	-19.975
FRANCE	-1.834	-16.794	-2.291	-19.130
GERMANY	-.597	-5.916	-.773	-6.983
IRELAND	-1.115	-3.611	-1.368	-4.040
DENMARK	.700	2.267	.633	1.870
SPAIN	-1.287	-11.246	-1.563	-12.459
FINLAND	-.824	-5.170	-.630	-3.601
SWEDEN	-1.462	-10.644	-1.001	-6.641
GREECE	-1.364	-11.265	-1.570	-11.817
ITALY	-1.293	-11.650	-1.518	-12.471
LUX	-1.618	-5.238	-1.617	-4.774
PORTUGAL	-.901	-6.304	-1.299	-8.284
NL	-.173	-1.399	-.189	-1.395

R	R Square	Adjusted R Square	Std. Error of the Estimate	R	R Square	Adjusted R Square	Std. Error of the Estimate
.923	.851	.839	.2957	.928	.861	.849	.3243

Notes:

The country names indicate a 0/1 dummy, taking a value of 1 for regions within the country concerned.

Table 6.4: Country differences: benchmark results, 20-24 year olds

a) Dependent Variable: LOGVAR-earm2024 b) Dependent Variable: LOGVAR-earf2024

	Males		Females	
	Coefficient	T statistic	Coefficient	T statistic
(Constant)	1.809	20.008	.873	10.261
AUSTRIA	-.671	-4.981	.172	1.357
BELGIUM	-1.402	-10.967	-.733	-6.090
FRANCE	-1.201	-10.846	-.576	-5.524
GERMANY	-.647	-6.320	-1.559E-02	-.162
IRELAND	-.675	-2.154	-8.344E-02	-.283
DENMARK	-.281	-.897	.236	.800
SPAIN	-1.142	-9.843	-.682	-6.249
FINLAND	-.877	-5.425	-.504	-3.312
SWEDEN	-1.062	-7.622	-.374	-2.850
GREECE	-.449	-3.658	-.768	-6.644
ITALY	-1.303	-11.579	-.868	-8.196
LUX	-1.090	-3.481	-.368	-1.249
PORTUGAL	-.822	-5.671	-.617	-4.521
NL	-.675	-5.393	.273	2.314

R	R Square	Adjusted R Square	Std. Error of the Estimate	R	R Square	Adjusted R Square	Std. Error of the Estimate
.793	.629	.597	.2999	.818	.669	.640	.2822

Notes:

The country names indicate a 0/1 dummy, taking a value of 1 for regions within the country concerned.

6.5.3 Towards an economic explanation

The most basic economic explanation possible, using the data available, adds three variables to this basic specification:

- a measure of income: GDP,
  and two measures of unemployment:
- total unemployment rate, and
- the unemployment rate for the age gender category concerned.

The GDP variable is expected to influence activity rates negatively (the higher is income *ceteris paribus*, the more inclined parents will be to encourage youngsters to remain in education as opposed to entering the labour market).

The age-specific unemployment rate is expected to have a negative influence, the higher the rate, the less the probability of finding work and so the less likely participation in the workforce. Finally, the total unemployment rate is expected to have a positive effect as households experiencing unemployment will be forced to encourage youngsters into the labour market to supplement household income.

The results of this basic model are reasonably consistent and in line with prior theoretical considerations. Table 6.5 summarises some of these key findings. For all countries the coefficients are generally of the expected sign and statistically significant. The explanatory power of the equations is generally good and the adjusted R-squared improves compared to the 'benchmark' model results reported in Tables 6.3 and 6.4.

This specification was also run for the three country groupings separately. These results are also shown in Table 6.5[49]. The results for the three country groups separately are somewhat less satisfactory. Explanatory power, as measured by the adjusted R-squared, is significantly reduced, especially for Group 2 for the younger age groups, indicating the failure of this model to provide a fully satisfactory explanation for these countries. A number of the coefficients now have unexpected (wrong) signs, some of which are statistically significant. The most notable example of this is the GDP variable, which comes in with a positive (and statistically significant) effect for females. This lack of consistency casts doubt on the robustness of the results for all countries.

A slight variation on this specification was also tried using a measure of unemployment relative to the national average rather than the absolute rate. This did not perform as well as the absolute rate however, so these results are not reported in detail here.

6.5.4 Extending the model

Table 6.6 shows the results of extending this model by adding two further variables: a measure of the average number of children for the age/gender category (Yc(age group)) and a measure of industry structure (prods) which indicates the share of producer services in total

[49] A reduced set of country dummy variables pertinent to each group was used.

Table 6.5: Summary of key findings: basic economic model (income & unemployment variables)

Variable	Expected Sign	Males							
			15-19			20-24			
		All	Group1	Group 2	Group 3	All	Group 1	Group 2	Group 3
Urt	+	+	--	++	++	-+	++	+-	--
Ur(age group)	-	--	---	--	--	--	--	--	+
GDPEU100	-	--	--	--	--	--	--	--	--
Adjusted r^2		88.5	78.3	67.7	44.1	69.7	61.3	44.0	60.7
		Females							
			15-19			20-24			
		All	Group1	Group 2	Group 3	All	Group 1	Group 2	Group 3
Urt	+	+	--	+	++	+-	++	++	++
Ur(age group)	-	--	--	--	--	--	--	--	--
GDPEU100	-	-	--	-	+-	--	--	--	++
Adjusted r^2		87.4	68.5	48.1	28.6	75.9	49.7	57.4	63.4

Notes: (i) A + or – indicates the sign of the corresponding coefficient in the regression. Expected signs are shown in column 2.
(ii) A double –+ or – indicates a coefficient that is statistically significant at the 10% level or better.
(iii) Each equation also includes a full set of country dummies (limited to the group as appropriate).

Table 6.6 ***Summary of key findings: extended economic model (adding children and industry structure variables)***

Variable	Expected Sign	Males							
			15-19			20-24			
		All	Group1	Group 2	Group 3	All	Group 1	Group 2	Group 3
Urt	+	+	--	-	+	++	++	-+	+
Ur(age group)	-	--	---	--	--	--	--	--	--
GDPEU100	-	--	--	-	+	-	--	-	+
Yc(age group)	?	++	--	-+	++	-	+	-+	+
Prods	+	-	+	-	-	--	--	--	--
Adjusted r^2		89.2	70.8	71.8	49.7	74.4	59.9	75.6	65.3
		Females							
			15-19			20-24			
		All	Group1	Group 2	Group 3	All	Group 1	Group 2	Group 3
Urt	+	-	--	-	-+	++	-+	+	++
Ur(age group)	-	--	--	--	--	--	--	--	--
GDPEU100	-	-	--	-	-+	-	--	-	++
Yc(age group)	?	-+	-	++	-+	--	-	++	-
Prods	+	-	++	+	-	--	-	--	--
Adjusted r^2		87.9	68.0	56.8	39.3	79.8	42.1	82.5	70.5

Notes: (i) A + or – indicates the sign of the corresponding coefficient in the regression. Expected signs are shown in column 2.
(ii) A double ++ or – indicates a coefficient that is statistically significant at the 10% level or better.
(iii) Each equation also includes a full set of country dummies (limited to the group as appropriate).
(iv) Yc(age group) measures the average number of children, prods is a measure of industry employment structure. This is just one of a number of alternative measures of employment structure which were tried.

Table 6.7 ***Summary of key findings: specifications including educational and training indicators***

Variable	Expected	Males				Females			
	Sign	15-19		20-24		15-19		20-24	
		Ed only	Ed + Voc	Ed only	Ed + Voc	Ed only	Ed + Voc	Ed only	Ed + Voc
Urt	–	-	-	+	+	-	-	++	++
Ur(age group)	-	--	--	--	--	--	--	--	--
GDPEC100	-	--	-	+	+	+	+	+	+
Yc(age group)	?	+	+	+	+	+–	+–	--	--
prods	+	+–	+–	+	+	+–	+–	+	+
Ed1t	+	-	-	-	-	-	-	-	--
Ed2t	+	-	+	--	-	+	-	+	-
Ed3t	+	--	--	--	--	--	--	--	--
Ed4t	+	--	--	--	-	--	-	+	+
Vt1t	+		-		-		-		+
Vt2t	+		-		-		+		+–
Vt3t	+		-		-		-		--
Adjusted r^2		.912	.910	.815	.821	.894	.894	.862	.870

Notes: (i) A + or – indicates the sign of the corresponding coefficient in the regression. Expected signs are shown in column 2.
(ii) A double ++ or – indicates a coefficient that is statistically significant at the 10% level or better.
(iii) Each equation also includes a full set of country dummies (limited to the group as appropriate).
(iv) Yc(age group) measures the average number of children, prods is a measure of industry employment structure.
(v) Details of definitions of the education and training variables are given in Table 6.1.

employment in the region. The latter is just one of a large number of employment structure variables which were tried.

The expected signs on these variables are somewhat ambiguous. For example, the presence of young dependent children may encourage participation by males, taking on a 'bread-winner' role. Conversely, it may discourage participation by females taking on a child-rearing role. The industry structure variable is just one of a large selection tried (as listed in Table 6.1). On balance a positive effect is expected, since this measure is taken as an indicator of the scale of job opportunities in the region.

The results across all countries suggest a positive effect of the dependent child variables Yc(age group) for males and the younger female age group. In contrast a negative relationship emerges for older females. These variables are not available for the Nordic countries. Their inclusion therefore causes a singularity if the country dummies are retained. Dropping these variables causes the adjusted R-squared to fall so it is impossible to judge if the overall explanatory power is enhanced by inclusion of the Yc indicators. The results for the country groups are much less robust.

Across all countries, the industry structure variable (prods) generally appears with a negative sign, apart from in the equation for 15-19 year old females. The country group results show a much more mixed pattern, with a number of statistically significant negative coefficients but others showing the reverse effect.

Experiments with alternative employment structure variables, alone and in combination, failed to reveal any consistent patterns. This included measures of urban-rural mix as well as occupational employment structure. These problems were exacerbated when additional variables such as measures of educational or training attainment were added, especially for the smaller country groupings. The remaining results presented here therefore focus on the all country sample, covering all 15 member states.

6.5.5 The role of education and training variables

Table 6.7 shows the effects of including additional educational and training indicators. The inclusion of the education variables was most successful when using the most aggregate indicators (for all age groups) rather than for specific age/gender categories. Results are just reported for these cases here. In studies using individual data, the individual's own educational attainment is a powerful predictor of the decision to participate in education or the labour market. However, it appears that the average measures for specific age/gender groups developed here, are not sufficiently precise to pick up such effects. On the other hand the average level of educational attainment (especially at Level 3) comes through quite strongly, with a negative impact on economic activity rates. This can be interpreted as showing the effects of a better educated household/family background encouraging young people to stay on in full-time education. The signs on the other education variables are rather more mixed and not all statistically significant, but they mostly tell a similar story.

However, it is also clear from the results in Table 6.7, that the inclusion of the education variables has an important impact on the other variables included in the equation. In particular, the GDP variable loses statistical significance. This suggests that the education variables may simply be proxying an 'income' effect. This is symptomatic of one of the

problems which plagued this analysis, which is that many of the independent variables are highly correlated, leading to problems of multi-collinearity.

The inclusion of the education variables also has a dramatic impact on the role of the industry employment structure (prods) variable in the equations, which switches sign to become positive and often highly significant from a statistical viewpoint. The sensitivity of the outcome to this change of specification suggests possible problems of mis-specification.

Table 6.7 also shows the effect of including the various vocational training variables. These are generally much less successful than the education ones. Many take negative signs but few are statistically significant.

Estimating the kinds of models summarised in Table 6.7 for the country groups led to very mixed results, with many switches in size, sign and significance of the coefficients. No consistent patterns emerge from this analysis. This suggests that problems of multi-collinearity, combined with the absence of some key variables such as earnings and the lack of precision in measuring other important variables, mean that satisfactory explanation of the causes of regional variations is probably not possible using the current set of explanatory variables.

A very similar pattern emerged when a corresponding analysis was conducted using the employment rate as the dependent variable in place of activity rates. Again, while simple specifications show some promise, as soon as more than a handful of variables are included the same problems of inconsistency arise. These results are not reported here in detail.

6.5.6 Some typical results incorporating the education variables

Tables 6.8 and 6.9 present some detailed results, incorporating the educational variables, in order to illustrate some of the problems. For males aged 15-19, a specification including both GDP and the educational indicators works quite well. All the coefficients have the expected signs and most are statistically significant. GDP and 'own' unemployment and the educational indicator all have a negative effect. The dependent children and industry structure variable a positive influence. In many respects this could be regarded as a successful specification, the only major difference compared to the theoretical model is that there is no role for aggregate unemployment

For females in the same age group a rather different picture emerges. Own unemployment and three educational indicators play a key negative role. The dependent children and industry structure variables are again positive. There is no role for aggregate unemployment or GDP. If the GDP indicator replaces all three education indicators, GDP takes a negative sign but is not quite statistically significant. The industry structure variable also becomes statistically insignificant.

For males aged 20-24, both own and aggregate unemployment are significant but there is no role at all for GDP. If the education indicator is replaced by GDP, the specification reverts to that summarised in Table 6.5, since the other variables do not play role.

Table 6.8: Detailed results, 15-19 year olds

a) Dependent Variable: LOGVAR-earf1519

Model		Unstandardised Coefficients B	T statistic
1	(Constant)	-.762	-2.599
	AUSTRIA	-.952	-6.571
	BELGIUM	-1.686	-13.545
	FRANCE	-1.750	-17.457
	GERMANY	-1.398	-11.359
	IRELAND	-.539	-2.230
	SPAIN	-.909	-7.558
	GREECE	-.968	-7.370
	ITALY	-1.021	-8.238
	LUX	-1.717	-7.031
	PORTUGAL	-1.328	-10.094
	NL	-.459	-3.914
	LOGVAR-urt1519	-.283	-6.035
	gdp index (eu = 100)	-2.536E-03	-2.019
	LOGVAR-ycm1519	5.720E-02	1.249
	LOGVAR-prods	.297	2.896
	LOGVAR-ed3t	-.477	-5.122
	LOGVAR-ed4t	-.310	-3.268

Dependent Variable: LOGVAR-earm1519

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.960	.922	.912	.2195

Notes:

The country names indicate a 0/1 dummy, taking a value of 1 for regions within the country concerned.

Table 6.8 (continued): Detailed results, 15-19 year olds

b) Dependent Variable: LOGVAR-earm1519

Coefficients

Model		Unstandardised Coefficients B	T statistic
1	(Constant)	-1.243	-2.674
	AUSTRIA	-1.353	-6.142
	BELGIUM	-1.674	-6.031
	FRANCE	-1.731	-5.156
	GERMANY	-1.536	-10.391
	IRELAND	-.455	-1.222
	SPAIN	-.610	-1.687
	GREECE	-.470	-1.401
	ITALY	-.796	-3.247
	LUX	-1.509	-3.839
	PORTUGAL	-.983	-2.466
	NL	5.264E-02	.130
	LOGVAR-urt1519	-.262	-5.017
	LOGVAR-ycf1519	.123	2.216
	LOGVAR-prods	.358	3.258
	LOGVAR-ed1t	-.118	-1.356
	LOGVAR-ed3t	-.463	-3.833
	LOGVAR-ed4t	-.313	-2.276

Dependent Variable: LOGVAR-earf1519

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.952	.907	.896	.2731

Notes:

The country names indicate a 0/1 dummy, taking a value of 1 for regions within the country concerned.

Table 6.9: Detailed results, 20-24 year olds

a) Dependent Variable: LOGVAR-earm2024

Model		Unstandardised Coefficients B	T statistic
1	(Constant)	.592	2.644
	AUSTRIA	-1.468	-12.442
	BELGIUM	-.760	-7.289
	FRANCE	-1.120	-11.970
	GERMANY	-1.585	-14.854
	IRELAND	-.162	-.703
	SPAIN	-.929	-7.374
	GREECE	6.216E-02	.484
	ITALY	-.663	-5.341
	LUX	-1.236	-5.464
	PORTUGAL	-1.192	-9.521
	NL	-1.194	-10.530
	LOGVAR-urt2024	-.413	-4.232
	LOGVAR-urt	.213	1.793
	LOGVAR-ycm2024	6.012E-02	1.176
	LOGVAR-ed3t	-.667	-10.419

Dependent Variable: LOGVAR-earm2024

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.911	.830	.813	.2099

Notes:

The country names indicate a 0/1 dummy, taking a value of 1 for regions within the country concerned.

Table 6.9 (continued): Detailed results, 20-24 year olds

b) Dependent Variable: LOGVAR-earf2024

Model		Unstandardised Coefficients B	T statistic
1	(Constant)	-.410	-1.499
	AUSTRIA	-.760	-7.222
	BELGIUM	-4.404E-02	-.282
	FRANCE	-.238	-1.119
	GERMANY	-.998	-10.122
	IRELAND	.326	1.308
	SPAIN	-.468	-1.771
	GREECE	9.599E-02	.475
	ITALY	-.160	-.851
	LUX	-.366	-1.463
	PORTUGAL	-.659	-2.476
	NL	-.235	-.938
	LOGVAR-urt2024	-.610	-6.893
	LOGVAR-urt	.421	3.806
	LOGVAR-ycf2024	-.141	-2.620
	LOGVAR-prods	9.206E-02	1.395
	LOGVAR-ed1t	-6.212E-02	-1.243
	LOGVAR-ed3t	-.573	-7.163

Dependent Variable: LOGVAR-earf2024

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.937	.877	.863	.1792

Finally for females aged 20-24, again both own and aggregate unemployment are important. The dependent children indicator appears with a negative effect. If the education indicators are replaced by GDP, this takes the expected negative sign but is not quite significant statistically. However, the sign on the prods variable changes to negative and this is statistically significant.

Thus, although it is possible to develop individual equations that show some statistical significance and can be given a theoretical rationale, these lack consistency and are not robust to changes in specification by inclusion or exclusion of other variables.

6.6 Conclusions

Finding a general specification, which draws on the theoretical insights encapsulated in equation (7), and produces results which are both consistent across countries and in line with prior expectations, has proved very difficult. While it is not hard to find individual equations that suggest significant relationships, these have proved not to be very robust to minor changes in specification. They also fail to show many common patterns across age/gender categories and groups of countries. Although some variation is to be expected, this failure to find such common results suggests that these specifications are more likely to be spurious than indicative of strong causal relationships. The main emphasis has been on explaining variations in labour market participation rates. However, results using the employment rate as the dependent variable (not reported in detail here) showed very similar patterns and problems to those discussed above.

The most successful results are probably those from the most basic economic model. This suggests that a reasonable amount of the variation in economic activity rates can be explained in terms of differences in levels of income (GDP) and in unemployment rates. This model applies equally well to males and females. The GDP variable has a strong negative impact on activity rates. This has been interpreted here as indicating the effect of higher household income in encouraging young people to continue their formal education. However, other interpretations are also possible, and for the group of Mediterranean countries there is some evidence of a positive relationship, especially if other variables such as educational indicators are also included. The unemployment rate for the group of young people concerned has a strong negative impact on activity rates. This is probably the most robust result of all. It suggests that young people are encourage to continue their formal education if the probability of getting work is reduced. The overall aggregate unemployment rate also plays an important role in many (but notably not all) of the specifications, indicating a positive relationship. This has been interpreted as showing the effects of high unemployment forcing young people to enter the labour market to supplement family income when other members of the household are unemployed.

There is some evidence to support the role of other socio-economic effects. The variables measuring the number of dependent children as well as the indicators of education and training all play a significant role in *some* specifications. However, this is usually at the expense of other key variables. This has been interpreted as resulting from the lack of precision with which such indicators are measured and to problems of multi-collinearity. Compared to the situation in cross-sectional studies, where such variables are precisely tailored to each individual case, in the present data set, the education and household structure

variables are rather crude aggregate, average values. Many of the variables are highly collinear, especially the education and GDP measures, making distinction of causal linkages very difficult.

Subject to the caveats expressed above, the most basic economic specification could provide a mechanism by which some benchmark projections might be made. This would require predictions of the key independent variables (GDP and unemployment rates). These should be available in most countries from the regular macroeconomic forecasts produced by public and private sector forecasters. However, it has to recognised that the results obtained are not very robust and that the precise values of many of the elasticities are very sensitive to changes in the specification of the equations.

The failure to find a very robust explanation of regional differences in economic activity rates is not entirely surprising, given the outcome of the exploratory analysis in Section 5, which highlighted, once again, the importance of differences *between* as opposed to *within* countries. This is reflected in the key role played by the country dummy variables in all the models shown here.

The analysis outlined above has indicated the limitations of multivariate regression analysis for this particular problem. In part, this has reflected data inadequacies, which could, in principle, be partially overcome given additional time and resources. In particular, inclusion of indicators of wage rates might be expected to improve the explanatory power of this type of model.

Another possibility, not explored here, would be the application of multi-level modelling, which might enable a more precise focus on variation of economic activity rates within countries, having taken account of national differences.

PART 3: SYNTHESIS

7. CONCLUSIONS

The aim of this report has been to identify differences in economic activity rates for young people in the EU at the regional level and to analyse the factors underlying these regional variations.

7.1 Contextual Issues

The *transition from education to work* is one of a number of inter-linked youth transitions. Such transitions are moulded by the demographic and economic context, the organisation of the education/training system and the labour market, the role of the state in shaping labour supply and the organisation of the family economy. In recent years there has been a tendency for youth transitions to lengthen, become more ambiguous and more diverse in the context of the demographic downturn in the number of young people and the increase in participation in post compulsory education. Amongst the implications of these changes are:

- In examining labour market transitions it may be useful to extend the conventional definition of 'young people' beyond the age of 24 years to include 25-29 year olds.
- Since the transitions from education to work is becoming less clear-cut than formerly, it is likely to be increasingly difficult to explain regional differences in the labour market activity of young people.

Despite common economic and demographic pressures facing EU member states, there continues to be a wide *range* and *variety* of education systems. The implication of this is that:

- *National level* variations in labour market transitions across the EU remain extremely important.

7.2 Methodological Issues

The term 'transition' implies a *longitudinal* perspective, yet the European Labour Force Survey (used for the bulk of the analyses reported in Section 5 and 6) provides a series of *cross-sectional 'snapshots'* at regional level. Sample size constraints and problems of 'missing data' mean that the analyses conducted have fallen short of the 'ideal'. In order to obviate sample size constraints and in order to examine sub-groups of young people (on the basis of age and gender disaggregations), a decision was taken to aggregate data from subsequent Labour Force Surveys to provide a more robust data set covering the years 1993 to 1997.

As more questions are included in the Labour Force Survey some of the problems of 'missing data' may be overcome. However, in order to gain greater insights into regional variations in the economic activity of young people within individual countries it may be worthwhile to undertake country-specific studies – making use of country-specific data sources.

7.3 Exploring and Describing Regional Variations

There is considerable variation in profiles of transition into the labour market at the *national* level. Such *between* country differences tend to be greater than *within* country differences. Indeed, a cluster analysis of regions sharing similar labour market transitions emphasised the dominance of the 'national' dimension in regional variations in economic activity rates. It also confirmed the existence of some contiguous 'super-regions' sharing similar economic activity rate profiles spanning national boundaries.

Overall, regional variations around the national average tended to be more marked for females than for males, for younger than for older age groups, and for employment rates than for economic activity rates. Moreover, important variations were evident between member states in the degree of regional dispersion in economic activity and employment rates, with Italy consistently displaying some of the highest levels of regional dispersion and the UK some of the lowest levels.

An exploratory analysis of urban-rural differences in labour market transitions amongst young people failed to identify a clear-cut and/or universally applicable pattern. Likewise, it did not prove possible to find a universal gradation in economic activity rates between 'rich' and 'poor' regions. However, there was some suggestion that labour market transitions in 'rich' regions are characterised by lower than average economic activity rates at the younger end of the age range, but for this gap to close as young people reach their mid twenties, and then for the pattern to reverse. Some variations in economic activity rates by socio-economic category were found, but patterns were not uniform across countries.

7.4 Explaining Regional Variations – Results Obtained and The Way Forward

Multivariate regression analysis was adopted in an attempt to develop explanations of regional variations in labour force participation, by using alternative sets of explanatory variables in a stepwise regression approach.

A *general model* was explored in which economic activity (for the 15-19 years and 20-24 years age groups, disaggregated by gender) was a function of GDP, youth unemployment, aggregate unemployment, educational attainment in the region, presence of young children in the household, and country dummies. Most of the variation was found to be explained by the *country dummies* - underlining the importance of variations *between* countries (reflecting institutional and cultural differences) as the most important factor, tending to outweigh regional variations *within* countries.

When GDP, the aggregate unemployment rate and the youth unemployment rate (for the age and gender category concerned) were added to the basic 'country' specification the explanatory power of the model improved, with:

- GDP influencing economic activity rates negatively (i.e. the higher the level of income, the lower the economic activity rates of young people);
- the aggregate unemployment rate having a positive influence (i.e. the higher the unemployment rate in the region the higher the economic activity rate of young people, suggesting that youngsters enter the labour market at an early age to supplement household income); but with

- the sub-category-specific unemployment rate having a negative influence (i.e. the higher the youth unemployment rate, the lower the economic activity rate of young people).

Extensions to the model to include *young dependent children* and *employment structure* variables had mixed results. Inclusion of *education and training* variables in the models was most successful when aggregate indicators (i.e. all age and gender sub-groups aggregated together) were included. In general, the higher the level of educational attainment of the population generally, the lower the economic activity rates of young people.

The *most successful results* are probably those from the most *basic economic model*. This suggests that a reasonable amount of variation in economic activity rates of young people can be explained in terms of differences in levels of income (GDP) and unemployment rates. The relative success of this specification suggests that benchmark projections of the economic activity rates of young people at the regional level could be made using projections of GDP and unemployment as independent variables.

In future analyses, it may be worthwhile to pursue a multi-level modelling approach in an attempt to gain a greater understanding of regional variations in economic activity rates remaining once national differences have been accounted for.

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APPENDIX 1: REGIONAL VARIATION IN YOUNG PEOPLE IN/NOT IN EDUCATION/TRAINING

The Table below shows coefficients of variation for participation in education/training (for those aged 15-19 years) and for non-participation in education/training (for those aged 20-14 years and 25-29 years). (For further details on interpretation of coefficients of variation see Section 5.2.2.)

Key features emerging are:

- In the youngest age group (i.e. those aged 15-19 years) Portugal and Greece display the greatest regional variations in the proportion of persons in education/training.
- The age group displaying the greatest regional variations in non-participation in education and training is the 20-24 years age group (i.e. the age group covering the majority of those in post-compulsory education). Here Greece, the Netherlands, Belgium, Portugal and the Netherlands display the greatest regional variations. Regional variations are least pronounced in the UK.
- In the age group 25-29 years regional variations in non-participation in education/training are not particularly pronounced.

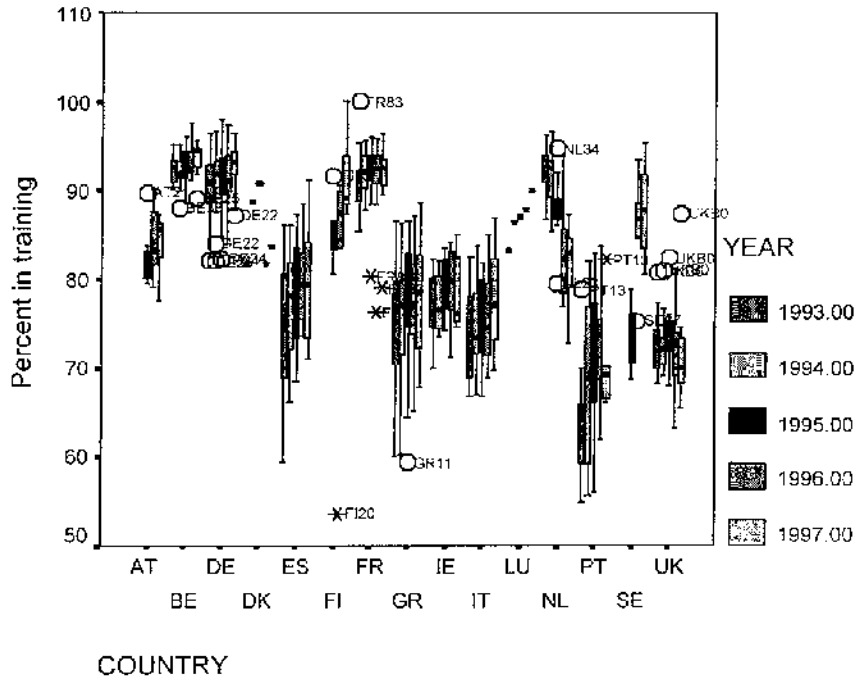
Table A1.1: Coefficients of variation for (non)-participation in education/training, 1993-1997

Age	State	In education / training		Age	State	Not in education / training		Age	State	Not in education / training	
		Males	Females			Males	Females			Males	Females
15-19	AT	2.3	3.4	*20-24*	AT	9.4	6.6	*25-29*	AT	5.3	4.7
	BE	1.3	1.4		BE	12.3	12.0		BE	3.9	3.0
	DE	2.6	3.1		DE	9.2	6.3		DE	6.2	3.9
	DK	n/a	n/a		DK	n/a	n/a		DK	n/a	n/a
	ES	7.2	7.4		ES	8.5	13.9		ES	3.0	4.6
	FI	5.1	3.3		FI	11.2	38.0		FI	4.6	5.0
	FR	2.4	2.0		FR	6.9	8.0		FR	1.8	2.1
	GR	8.8	9.5		GR	12.9	12.9		GR	2.2	1.7
+	IE	n/a	n/a	+	IE	n/a	n/a	+	IE	n/a	n/a
	IT	5.8	5.6		IT	6.6	7.6		IT	2.3	2.9
	LU	n/a	n/a		LU	n/a	n/a		LU	n/a	n/a
	NL	2.6	3.2		NL	12.2	14.7		NL	5.8	5.2
	PT	11.1	10.9		PT	11.0	10.6		PT	3.9	3.2
	SE	4.9	4.0		SE	8.4	7.8		SE	6.6	4.3
	UK	5.1	5.6		UK	3.2	3.7		UK	1.6	1.1

Source: European Labour Force Survey, 1993-1997

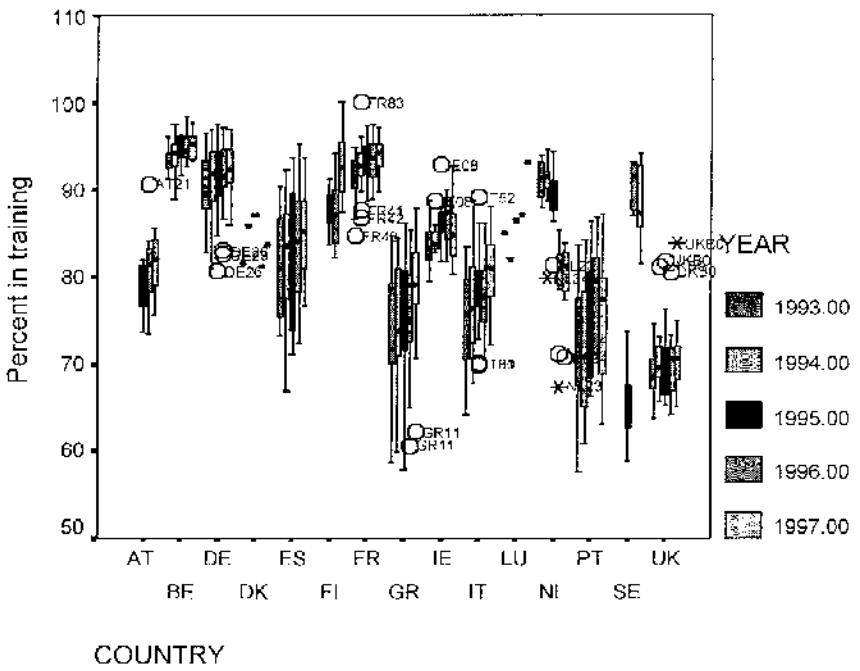
Figures A1.1-A1.2 show boxplots for participation in education/training of males and females, respectively, in the 15-19 years age group. Figures A1.3-A1.4 show boxplots for non-participation in education/training of males and females, respectively, in the 20-24 years age group. (For information on interpretation of boxplots see Section 5.2.3.)

Figure A1.1: Boxplots – participation in education/training for males aged 15-19, 1993-97



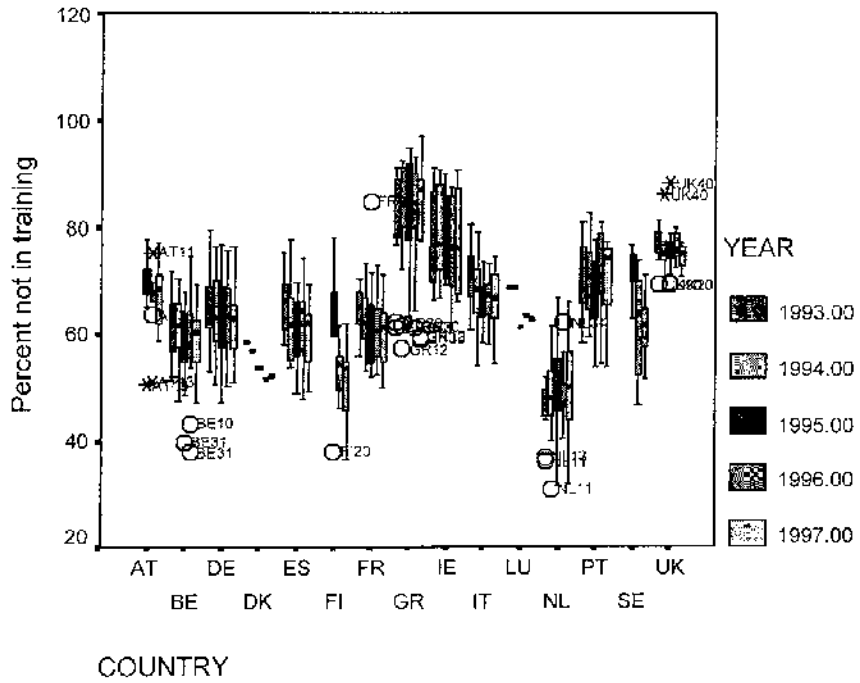
Source: European Labour Force Survey, 1993-97.

Figure A1.2: Boxplots – participation in education/training for females aged 15-19, 1993-97



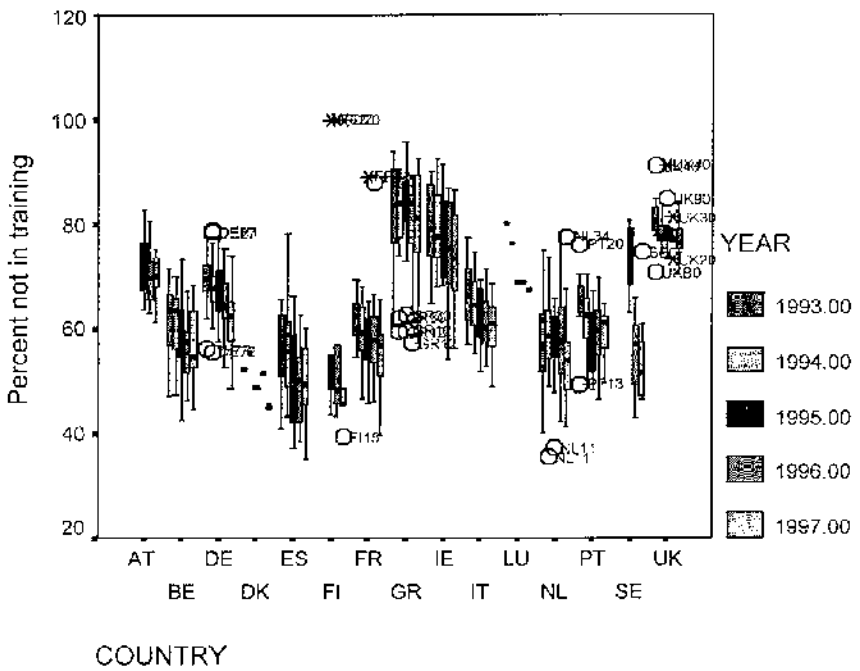
Source: European Labour Force Survey, 1993-97.

Figure A1.3: Boxplots – non-participation in education/training for males aged 20-24, 1993-97



Source: European Labour Force Survey, 1993-97.

Figure A1.4: Boxplots – non-participation in education/training for males aged 20-24, 1993-97



Source: European Labour Force Survey, 1993-97.

APPENDIX 2: REGIONS USED IN ANALYSES

Region code	Region name	Similar transitions cluster[50]	Regional:national differences cluster[51]	Socio-economic structure cluster[52]
AT Austria				
AT11	Burgenland	1	1	1
AT12	Niederosterreich	1	5	1
AT13	Wien	2	8	5
AT21	Karnten	2	8	2
AT22	Steiermark	1	2	1
AT31	Oberosterreich	1	1	1
AT32	Salzburg	1	2	2
AT33	Tirol	1	2	2
AT34	Vorarlberg	1	5	3
BE Belgium				
BE10	Bruxelles	3	8	6
BE20	Antwerpen	5	2	1
BE22	Limburg	5	5	1
BE23	Oost-Vlaanderen	5	5	1
BE24	Vlaams-Brabant	5	6	6
BE25	West-Vlaanderen	5	5	1
BE31	Babant-Wallen	3	8	6
BE32	Hainaut	5	2	5
BE33	Liege	5	2	5
BE34	Luxembourg	5	1	5
BE35	Namur	5	2	5
DE Germany				
DE11	Stuggart	2	2	1
DE12	Karlsruhe	2	8	1
DE13	Freiburg	2	2	1
DE14	Tubingen	2	2	1
DE21	Oberbayern	1	1	1
DE22	Niederbayern	1	3	1
DE23	Oberpflaz	1	3	1
DE24	Oberfranken	1	3	1
DE25	Mittelfranken	1	1	1
DE26	Unterfranken	1	1	1
DE27	Schwaben	1	3	1

[50] For further details on this cluster analysis classification see section 5.2.4.
[51] For further details on this cluster analysis classification see section 5.3.
[52] For further details on this cluster analysis classification see section 5.6.

Region code	Region name	Similar transitions cluster	Regional:national differences cluster	Socio-economic structure cluster
DE31	West Berlin	2	8	5
DE32	Ost Berlin	2	6	5
DE40	Brandenbourg	1	5	7
DE50	Bremen	3	8	1
DE60	Hamburg	2	8	6
DE71	Darmstadt	2	8	1
DE72	Giessen	2	9	1
DE73	Kassel	2	2	1
DE80	Mecklenburg-Vorpommen	1	5	7
DE91	Braunschweig	2	8	1
DE92	Hannover	2	8	1
DE93	Luneburg	1	6	1
DE94	Weser-Ems	2	2	1
DEA1	Dusseldorf	2	8	1
DEA2	Koln	2	8	1
DEA3	Munster	2	8	1
DEA4	Detmold	2	8	1
DEA5	Arnsberg	2	8	1
DEB1	Koblenz	2	6	1
DEB2	Trier	2	1	1
DEB3	Rheinhessen-Pflaz	2	2	1
DEC0	Saarland	2	8	1
DED0	Sachsen	1	5	7
DEE1	Dessau	1	5	7
DEE2	Halle	1	5	7
DEE3	Magdeburg	1	5	7
DEF0	Schleswig-Holstein	2	2	5
DEG0	Thuringen	1	5	7
DK Denmark				
DK00	Denmark	1	2	4
ES Spain				
ES11	Galicia	3	8	7
ES12	Asturias	3	8	7
ES13	Cantabria	3	8	7
ES21	Pais Vasco	5	8	7
ES22	Navarra	5	8	1
ES23	La Rioja	3	8	1
ES24	Aragon	3	6	7
ES30	Madrid	3	8	4

Region code	Region name	Similar transitions cluster	Regional:national differences cluster	Socio-economic structure cluster
ES41	Castilla-Leon	3	8	7
ES42	Castille-La-Mancha	3	1	7
ES43	Extremadura	3	1	8
ES51	Cataluna	3	5	4
ES52	Comunidad Valenciana	3	1	7
ES53	Baleares	3	5	2
ES61	Andalucia	3	1	8
ES62	Murcia	3	1	8
ES63	Ceuta y Melilla	3	9	8
ES70	Canarias	3	9	8
FI Finland				
FI11	Uusimaa	2	6	6
FI12	Etela-Suomi	2	1	7
FI13	Ita-Suomi	2	2	5
FI14	Vali-Suomi	3	8	9
FI15	Pohjois-Suomi	3	1	5
FI20	Ahvenanmaa/Aland	2	7	9
FR France				
FR10	Ile de France	5	8	6
FR21	Champagne-Ardenne	5	1	4
FR22	Picardie	5	1	1
FR23	Haute-Normandie	5	1	1
FR24	Centre	5	5	1
FR25	Basse-Normandie	5	1	4
FR26	Bourgogne	5	1	4
FR30	Nord-Pas-De-Calais	3	2	4
FR41	Lorraine	5	2	1
FR42	Alsace	3	1	1
FR43	Franche-Comté	5	6	1
FR51	Pays de la Loire	5	5	4
FR52	Bretagne	5	6	4
FR53	Poitou-Charentes	5	6	4
FR61	Aquitaine	5	8	4
FR62	Midi-Pyrenees	5	2	4
FR63	Limousin	5	6	4
FR71	Rhone-Alpes	5	6	5
FR72	Auvergne	5	2	4
FR81	Languedoc-Roussillon	3	9	5
FR82	Provence-Alpes-Cote-d'Az	3	2	4

Region code	Region name	Similar transitions cluster	Regional:national differences cluster	Socio-economic structure cluster
FR83	Corse	5	8	5
GR Greece				
GR11	Anatoliki Makedo	6	3	9
GR12	Kentriki Makedo	3	8	9
GR13	Dykiti Makedo	6	1	9
GR14	Thessalia	6	3	9
GR21	Ipeiros	6	9	9
GR22	Ionia Nisia	6	3	9
GR23	Dikity Ellada	6	1	9
GR24	Sterea Ellada	6	3	9
GR25	Peloponnisa	6	3	9
GR30	Attikiti	3	6	4
GR41	Voreio Aigaio	6	4	9
GR42	Notio Aigaio	6	4	2
GR43	Kriti	6	1	9
IE Ireland				
IE00	Ireland	3	2	2
IT Italy				
IT11	Piemonte	3	5	3
IT12	Valle d'Aosta	3	5	2
IT13	Liguria	3	6	2
IT20	Lombardia	3	5	3
IT31	Trentino-Alto Adige	3	5	2
IT32	Veneto	3	5	3
IT33	Friuli-Veneza Giulia	3	5	3
IT40	Emilia-Romagna	3	5	3
IT51	Toscana	3	6	3
IT52	Umbria	3	6	2
IT53	Marche	3	6	3
IT60	Lazio	4	8	2
IT71	Abruzzo	4	8	2
IT72	Molise	4	8	2
IT80	Campania	4	9	8
IT91	Puglia	4	9	8
IT92	Bascilicata	4	9	7
IT93	Calabria	4	9	8
ITA0	Sicilia	4	9	8
ITB0	Sardegna	4	9	8

Region code	Region name	Similar transitions cluster	Regional:national differences cluster	Socio-economic structure cluster
LU Luxembourg				
LU00	Luxembourg	3	2	1
NL Netherlands				
NL11	Groningen	1	8	5
NL12	Friesland	1	8	5
NL13	Drenthe	1	6	5
NL21	Overijssel	1	2	5
NL22	Gelderland	1	2	5
NL23	Flevoland	1	1	5
NL31	Utrecht	1	1	6
NL32	Noor-Holland	1	1	6
NL33	Zuid-Holland	1	2	6
NL34	Zeeland	1	1	4
NL41	Noord-Brabant	1	6	5
NL42	Limburg	1	6	5
PT Portugal				
PT11	Norte	3	1	1
PT12	Centro	3	2	9
PT13	Lisboa e Vale do Tejo	3	8	4
PT14	Alentejo	3	1	8
PT15	Algarve	3	8	2
PT20	Acores	6	4	2
PT30	Madeira	3	2	2
SE Sweden				
SE01	Stockholm	2	5	6
SE02	Ostra Mellansverige	2	8	4
SE03	Smaland med oarna	3	1	2
SE04	Sydsverige	2	8	4
SE05	Vastsverige	2	2	4
SE06	Norra Mellansverige	3	6	2
SE07	Mellestra Noorland	3	6	4
SE08	Ovre Noorland	2	9	2
UK United Kingdom				
UK10	North	1	2	4
UK20	Yorkshire and Humberside	1	2	4
UK30	East Midlands	1	2	1
UK40	East Anglia	1	1	4

Region code	Region name	Similar transitions cluster	Regional:national differences cluster	Socio-economic structure cluster
UK50	South East	1	6	6
UK60	South West	1	1	4
UK70	West Midlands	1	2	1
UK80	North West	1	2	4
UK90	Wales	1	2	4
UKA0	Scotland	1	1	4
UKB0	Nothern Ireland	1	8	2